

This report was prepared by the Kentucky Water Research Institute as a product of the statewide Kentucky Watershed Management process. Information presented in this report was collected from many sources. Reasonable attempts were made to ensure that information and figures are as accurate as possible, but no representation or guarantee is made as to either the correctness or suitability of information for particular purposes. All critical information should be independently verified. Please address questions or corrections to Basin Coordinator, KWRI, Rm. 233 Mining and Minerals Resources Building, University of Kentucky, Lexington, Kentucky 40506-0107.

Summary of Basin Characteristics and Facilities

General Land-use Characteristics:

<i>Total Land Area (Acres):</i>	<input type="text" value="80,540"/>	<i>Acres</i>	<i>% of Total</i>		
<i>Residential Area:</i>	<input type="text" value="3,584"/>	<input type="text" value="3,584"/>	<input type="text" value="4.5"/>	<i>Number of Mine Permits:</i>	<input type="text" value="0"/>
<i>Commercial Area:</i>	<input type="text" value="2,130"/>	<input type="text" value="2,130"/>	<input type="text" value="2.6"/>	<i>Total Permitted Mining Area (Acres):</i>	<input type="text" value="0"/>
<i>Industrial Area:</i>	<input type="text" value="152"/>	<input type="text" value="152"/>	<input type="text" value="0.2"/>	<i>Number of Identified Wetland Areas:</i>	<input type="text" value="130"/>
<i>Agricultural Area:</i>	<input type="text" value="62,437"/>	<input type="text" value="62,437"/>	<input type="text" value="77.6"/>	<i>Total Wetland Area (Acres):</i>	<input type="text" value="57"/>
<i>Rural and Wooded Area:</i>	<input type="text" value="11,697"/>	<input type="text" value="11,697"/>	<input type="text" value="14.5"/>		
<i>Other Land-use Area:</i>	<input type="text" value="485"/>	<input type="text" value="485"/>	<input type="text" value="0.6"/>		

Withdrawal and Discharge Sites:

<i>Number of Public Water Supplies and Water Withdrawal Sites:</i>	<input type="text" value="3"/>	<i>Number of KPDES Discharge Permits:</i>	<input type="text" value="17"/>
<i>Surface Water Withdrawals:</i>	<input type="text" value="3"/>		
<i>Groundwater Withdrawals:</i>	<input type="text" value="0"/>		
<i>No. of Potable Water Treatment Facilities:</i>	<input type="text" value="1"/>		

Sampling Site Statistics:

<i>Number of USGS Gaging Stations:</i>	<input type="text" value="0"/>
<i>Number of Kentucky Division of Water Sampling Sites:</i>	<input type="text" value="2"/>
<i>Number of Kentucky Dept. of Fish and Wildlife Sampling Sites:</i>	<input type="text" value="0"/>
<i>Number of US Forest Service Sampling Sites:</i>	<input type="text" value="0"/>
<i>Number of US Army Corps of Engineers Sampling Sites:</i>	<input type="text" value="0"/>
<i>Number of Kentucky River Watershed Watch Sampling Sites:</i>	<input type="text" value="2"/>
<i>Number of Lexington-Fayette Urban Co. Gov. Sampling Sites:</i>	<input type="text" value="0"/>

Watershed Name:

Silver Creek

11-Digit Watershed Identity Number:

05100205090

Watershed Indicators and Ranking Categories:

Overall Watershed Ranking:

Protection Ranking

Observed Impacts

Potential Impacts

Restoration Ranking

Medium

Medium

Medium

High

Medium

Protection Categories:

Indicator	Value	Units	Range of All Watersheds	Mean of All Watersheds
Wetland Areas	57	Acres	0 - 106	12
Surface Drinking Water Sources	3	No. of sources	0 - 14	2
Ground Drinking Water Sources	0	No. of sources	0 - 17	1
Groundwater Sensitivity	3.35	Score	2 - 5	3.21
KY Dept. of Fish and Wildlife Management Areas	878	Acres	0 - 2951	93
U.S. Forest Service Management Areas	0	Acres	0 - 155253	12,600
Kentucky State Park Areas	0	Acres	0 - 1928	42
Nature Preserves Commission Areas	0	Acres	0 - 1430	32
Nature Conservancy Areas	0	Acres	0 - 2473	28
Reference Reach Watersheds	0.00	Score	0 - 100	3.08
Outstanding Resource Watersheds	0.00	Score	0 - 0	0.00
Recognized Stream Resources	0	No. of resources	0 - 8	1
Kentucky Rivers Assessment Scores	2.52	Score	0 - 11	1.80

Observed Impact Categories:

Human Health Impact Categories:

Indicator	Value	Units	Range of All Watersheds	Mean of All Watersheds
Flood Declarations	3	Number since 1970	0 - 10	4
Water Supply Inadequacy	1.00	Score	0 - 2	0.22
Observed Impacts to Surface Drinking Water	1.00	Score	1 - 1	1.00
Observed Impacts to Fish Consumption	1.00	Score	1 - 1	1.00
Observed Impacts to Primary Water Contact	2.00	Score	1 - 3	1.33
Contamination Sites Impacting Human Health	9	Number of sites	0 - 71	4

Ecological Health Impact Categories:

Indicator	Value	Units	Range of All Watersheds	Mean of All Watersheds
Observed Impacts to Aquatic Life	1.64	Score	1 - 3	1.31
Contamination Sites Impacting Ecological Health	9	Number of sites	0 - 71	4

Potential Impact Categories:

Indicator	Value	Units	Range of All Watersheds	Mean of All Watersheds
Potential Contamination Sites	32	Number of sites	1 - 121	12
Potential Pesticide Loading	31	Est. sales in tons	0 - 45	10
Potential Fertilizer Loading	1,108	Est. tons applied	0 - 2747	394
Agricultural Erosion Potential	4.07	Est. tons erosion / acre	0 - 9	3.20
Livestock Operations Potential Impact	28,181	Animal units	55 - 43826	7,021
KPDES Discharge Violations	116	Number of violations	0 - 541	39
KY Division of Water Citizen Complaints	18	Number of complaints	0 - 53	9
Toxic Release Inventory	104,928	Score	0 - 11547626	231,638
Population Change Projection	1,904	Number of persons	-149 - 11030	448
Population Not on Public Sewer Systems	2,858	Number of persons	12 - 4511	1,114
Mining Area	0	Acres	0 - 6305	355
Surface Water Runoff Potential	74.00	SCS Curve Number	60 - 79	68
KPDES Permitted Discharges	17	Number of sites	0 - 56	6

Stream and Waterbody Use Support Summary

Total Stream Miles: <input type="text" value="100.82"/>	Number of Seaments	Stream Miles Assessed	Miles * Fully Supportina	Miles * Partially Supportina	Miles * Not Supportina	Miles * Threatened
Segments Assessed:	5	33.7	0.0	30.2	0.0	3.5
Designated Uses						
Aquatic Life:	5	33.7	10.9	19.3	0.0	3.5
Primary Contact:	1	10.9	0.0	10.9	0.0	0.0
Fish Consumption:	1	10.9	10.9	0.0	0.0	0.0
Drinking Water:						

* Blank values indicate no assessed segments for this category.

Assessed Stream Segments and Waterbodies					
Stream or Waterbody Name *	Starting Milepoint	Ending Milepoint	Segment Length (miles)	Designated Uses *	Overall Level of Support
Harts Fork	3.2	4.2	1	AL	Partially Supporting
Hays Fork	1.2	4.7	3.5	AL	Threatened
Silver Creek	10.9	29.2	18.3	AL	Partially Supporting
Silver Creek	0	10.9	10.9	AL, FC, PC	Partially Supporting
Wilgreen Lake	0	0	0	AL, SC	Partially Supporting

*Abbreviations: AL - Aquatic Life Support, PC - Primary Contact Recreation, SC - Secondary Contact Recreation, FC - Fish Consumption, DW - Drinking Water Supply, UT - Unnamed Tributary

Causes for Nonsupport or Impairment of Designated Uses					
Stream or Waterbody Name *	Starting Milepoint	Ending Milepoint	Segment Length (miles)	Impaired or Threatened Designated Use	Level of Support
Harts Fork	3.2	4.2	1	Aquatic Life Support	Partially Supporting
Possible Causes of Impairment:			Possible Sources For Impairment:		
pH, Suspended solids, Organic enrichment/Low DO, Unionized Ammonia			Industrial Point Sources		
Silver Creek	0	10.9	10.9	Primary Contact (Recr)	Partially Supporting
Possible Causes of Impairment:			Possible Sources For Impairment:		
Pathogens			Agriculture		
Silver Creek	10.9	29.2	18.3	Aquatic Life Support	Partially Supporting
Possible Causes of Impairment:			Possible Sources For Impairment:		
Siltation			Agriculture, Crop-related Sources, Grazing related Sources, Municipal Point Sources, Nonirrigated Crop Production, Pasture grazing - Riparian and/or Upland, Silviculture		
Wilgreen Lake	0	0	0	Secondary Contact (Recr)	Partially Supporting

Watershed Name: Silver Creek

11-Digit Watershed Identity Number: 05100205090

Wilgreen Lake	0	0	0	Aquatic Life Support	Partially Supporting
<i>Possible Causes of Impairment:</i> Nutrients			<i>Possible Sources For Impairment:</i> Land Disposal, Onsite Wastewater Systems (Septic Tanks)		
<i>*Abbreviations: UT - Unnamed Tributary</i>					

Watershed Name: Silver Creek

11-Digit Watershed Identity Number: 05100205090

Withdrawal Sites and Discharge Facilities:

<i>Public Water Supplies and Water Withdrawal</i>			
<i>Facility</i>	<i>Origin of Source</i>	<i>Type of Facility</i>	<i>Permit ID Number</i>
BEREA COLLEGE WATER DEPARTMENT	Surface Water	Water Treatment Plant	0760030
BEREA COLLEGE WATER DEPARTMENT	Surface Water	Water Withdrawal Site	0760030

<i>KPDES Permitted Discharge Facilities</i>		
<i>Facility</i>	<i>Type of Facility</i>	<i>KPDES Site ID Number</i>
ALCAN RECYCLING	2NDARY SMELT/NONFERROUS METALS	KY0091081
BEREA STP	SEWERAGE SYSTEMS	KY0079898
BLUEGRASS ARMY DEPOT	NATIONAL SECURITY	KY0020737
BROCKLYN SUBD	LAND SUBDIVIDERS & DEV, EX CEM	KY0081299
EXECUTIVE PARK SUBD MCSD	LAND SUBDIVIDERS & DEV, EX CEM	KY0056561
HAYES WHEELS INTERNATIONAL INC	MOTOR VEHICLE PARTS & ACCESSOR	KY0097276
KINGSTON ELEM SCHOOL	ELEMENTARY & SECONDARY SCHOOLS	KY0074543
KIRKSVILLE ELEM SCHOOL	ELEMENTARY & SECONDARY SCHOOLS	KY0074560
KTC MADISON CO REST AREA I 75	BUS TERMINAL & SERVICE FACILIT	KY0025500
OKONITE CO	MISC. FABRICATED WIRE PRODUCTS	KY0041254
REED DUPLEX APT BLDG	OPERATORS OF APART BUILDINGS	KY0095036
SHERMAN WILLIAMS AUTOMOTIVE	PAINTS/VARNISH/LACQUERS/ENAMEL	KY0096822
YUASA-EXIDE INC	STORAGE BATTERIES	KY0097381

Gaging Stations and Sampling Sites:

<i>US Geological Survey and US Army Corps of Engineers Stream Gaging Stations</i>			
<i>Stream Location</i>	<i>Agency</i>	<i>Station ID Number</i>	<i>Sampling Parameter</i>
Old Town Branch	USGS	USGS03284340	Flow
Silver Creek	USGS	USGS03284350	Flow
Silver Creek	USGS	USGS03284310	Flow
Silver Creek	USGS	USGS03284300	Flow

<i>KY Division of Water Sampling Sites</i>	
<i>Stream Name</i>	<i>Type of Sampling</i>
Silver Creek	Biological Monitoring
Silver Creek	Physical/Chemical Monitoring

<i>KY River Watershed Watch Sampling Sites</i>		
<i>Stream Name</i>	<i>KRWW Sample ID No.</i>	<i>Site Description</i>
Silver Creek	K39	below I-75 bridge
Silver Creek	K38	Ruthton

Results from 1999 KY River Watershed Watch Sampling:

Conventional Parameters:

Sample ID Number: K38 Stream: Silver Creek

Physical Data (May):

pH	8.5	Alkalinity	130
Temperature	20	Total Hardness	156
Dissolved Oxygen	10	Chlorides	19.8
		Conductivity	353
		Total Organic Carbon	3.3
		Total Suspended Solids	8

Fecal Data (July / August):

	Coliform Count	Strep Count	Coliform/Strep Ratio
July	30	200	0.15
August			

Sample ID Number: K39 Stream: Silver Creek

Physical Data (May):

pH	7.5	Alkalinity	145
Temperature	19	Total Hardness	158
Dissolved Oxygen	6.5	Chlorides	54.2
		Conductivity	585
		Total Organic Carbon	6.3
		Total Suspended Solids	

Fecal Data (July / August):

	Coliform Count	Strep Count	Coliform/Strep Ratio
July	70	300	0.23
August			

Note: Most indicators are in milligrams per liter (mg/L) which is equivalent to parts per million (ppm). Temperature is in Celsius degrees. Alkalinity and hardness are as mg/L of calcium carbonate. Bacterial counts are in colonies per 100 milliliters. Conductivity units are micro-mhos per centimeter.

Nutrient Parameters:

Sample ID Number: K38 Stream: Silver Creek

Ammonia		Orthophosphate as Phosphate	0.093	Sulfate	24.0
Ammonia Nitrogen		Orthophosphate as Phosphorus	0.030		
Total Kjeldahl Nitrogen as NH3		Total Recoverable Phosphorus	0.06		
Total Kjeldahl Nitrogen as N					
Nitrate	0.2				
Nitrate Nitrogen	0.04				

Note: All indicators are in milligrams per liter (mg/L) which is equivalent to parts per million (ppm).

Sample ID Number: K39 Stream: Silver Creek

Ammonia	0.09	Orthophosphate as Phosphate	2.348	Sulfate	57.4
Ammonia Nitrogen	0.07	Orthophosphate as Phosphorus	0.766		
Total Kjeldahl Nitrogen as NH3		Total Recoverable Phosphorus	0.66		
Total Kjeldahl Nitrogen as N					
Nitrate	9.8				
Nitrate Nitrogen	2.21				

Note: All indicators are in milligrams per liter (mg/L) which is equivalent to parts per million (ppm).

Metals and Mineral Parameters:

Sample ID Number: K38 Stream: Silver Creek

Aluminum	0.40	Calcium	42.77	Lead		Selenium		Thallium	
Antimony		Chromium		Lithium		Silicon	1.44	Vanadium	
Barium	0.03	Cobalt	0.003	Magnesium	10.11	Sodium	10.87	Zinc	0.006
Beryllium	0.001	Copper		Manganese	0.04	Strontium	0.12		
Boron	0.12	Iron	0.16	Potassium	4.66	Sulfur	6.80		

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Note: All indicators are in milligrams per liter (mg/L) which is equivalent to parts per million (ppm).

Sample ID Number: **K39** Stream: **Silver Creek**

Aluminum	<input type="text" value="0.07"/>	Calcium	<input type="text" value="47.69"/>	Lead	<input type="text"/>	Selenium	<input type="text"/>	Thallium	<input type="text"/>
Antimony	<input type="text"/>	Chromium	<input type="text"/>	Lithium	<input type="text"/>	Silicon	<input type="text" value="2.75"/>	Vanadium	<input type="text"/>
Barium	<input type="text" value="0.03"/>	Cobalt	<input type="text" value="0.003"/>	Magnesium	<input type="text" value="10.30"/>	Sodium	<input type="text" value="50.14"/>	Zinc	<input type="text" value="0.02"/>
Beryllium	<input type="text"/>	Copper	<input type="text"/>	Manganese	<input type="text" value="0.02"/>	Strontium	<input type="text" value="0.12"/>		
Boron	<input type="text" value="0.36"/>	Iron	<input type="text" value="0.20"/>	Potassium	<input type="text" value="11.90"/>	Sulfur	<input type="text" value="15.43"/>		

Note: All indicators are in milligrams per liter (mg/L) which is equivalent to parts per million (ppm).

Pesticide/Herbicide Parameters:

Sample ID No.	Stream	2,4-D	Chlorpyrifos	Triazines
K38	Silver Creek	<input type="text"/>	<input type="text"/>	<input type="text"/>
K39	Silver Creek	<input type="text"/>	<input type="text"/>	<input type="text"/>

Note: All indicators are in micrograms per liter which is equivalent to parts per billion (ppb).