

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="37,152"/>	<i>Acres</i>	<i>% of Total</i>		
<i>Residential Area:</i>	<input type="text" value="6"/>		<input type="text" value="0.0"/>	<i>Number of Mine Permits:</i>	<input type="text" value="1"/>
<i>Commercial Area:</i>	<input type="text" value="395"/>		<input type="text" value="1.1"/>	<i>Total Permitted Mining Area (Acres):</i>	<input type="text" value="5"/>
<i>Industrial Area:</i>	<input type="text" value="441"/>		<input type="text" value="1.2"/>	<i>Number of Identified Wetland Areas:</i>	<input type="text" value="3"/>
<i>Agricultural Area:</i>	<input type="text" value="1,798"/>		<input type="text" value="4.8"/>	<i>Total Wetland Area (Acres):</i>	<input type="text" value="2"/>
<i>Rural and Wooded Area:</i>	<input type="text" value="34,398"/>		<input type="text" value="92.7"/>		
<i>Other Land-use Area:</i>	<input type="text" value="64"/>		<input type="text" value="0.2"/>		

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="6"/>
<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="2"/>		

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="5"/>
<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="2"/>
<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 Indicators and Ranking Categories:

Overall Watershed Ranking:

Protection Ranking

Observed Impacts

Potential Impacts

Restoration Ranking

Low

High

Low

Low

Low

Protection Categories:

Indicator	Value	Units	Range of All Watersheds	Mean of All Watersheds
Wetland Areas	2	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	3.08	Score	2 - 5	3.21
KY Dept. of Fish and Wildlife Management Areas	0	Acres	0 - 2951	93
U.S. Forest Service Management Areas	36,732	Acres	0 - 155253	12,600
Kentucky State Park Areas	1,928	Acres	0 - 1928	42
Nature Preserves Commission Areas	1,430	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	4	No. of resources	0 - 8	1
Kentucky Rivers Assessment Scores	0.78	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	2	Number since 1970	0 - 10	4
Water Supply Inadequacy	0.00	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	1.00	Score	1 - 3	1.33
Contamination Sites Impacting Human Health	1	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	1.00	Score	1 - 3	1.31
Contamination Sites Impacting Ecological Health	1	Number of sites	0 - 71	4

Potential Impact Categories:

Indicator	Value	Units	Range of All Watersheds	Mean of All Watersheds
Potential Contamination Sites	9	Number of sites	1 - 121	12
Potential Pesticide Loading	2	Est. sales in tons	0 - 45	10
Potential Fertilizer Loading	100	Est. tons applied	0 - 2747	394
Agricultural Erosion Potential	0.71	Est. tons erosion / acre	0 - 9	3.20
Livestock Operations Potential Impact	1,665	Animal units	55 - 43826	7,021
KPDES Discharge Violations	37	Number of violations	0 - 541	39
KY Division of Water Citizen Complaints	9	Number of complaints	0 - 53	9
Toxic Release Inventory	0	Score	0 - 11547626	231,638
Population Change Projection	146	Number of persons	-149 - 11030	448
Population Not on Public Sewer Systems	686	Number of persons	12 - 4511	1,114
Mining Area	4	Acres	0 - 6305	355
Surface Water Runoff Potential	61.21	SCS Curve Number	60 - 79	68
KPDES Permitted Discharges	6	Number of sites	0 - 56	6

Stream and Waterbody Use Support Summary

Total Stream Miles: 74.72	<i>Number of Segments</i>	<i>Stream Miles Assessed</i>	<i>Miles * Fully Supportina</i>	<i>Miles * Partially Supportina</i>	<i>Miles * Not Supportina</i>	<i>Miles * Threatened</i>
Segments Assessed:	7	21.3	21.3	0.0	0.0	0.0
Designated Uses						
Aquatic Life:	7	21.3	21.3	0.0	0.0	0.0
Primary Contact:						
Fish Consumption:						
Drinking Water:	1	0	0	0	0	0

* Blank values indicate no assessed segments for this category.

Assessed Stream Segments and Waterbodies					
<i>Stream or Waterbody Name *</i>	<i>Starting Milepoint</i>	<i>Ending Milepoint</i>	<i>Segment Length (miles)</i>	<i>Designated Uses *</i>	<i>Overall Level of Support</i>
Lower Hood Branch	0	1.3	1.3	AL	Fully Supporting
Middle Fork Red River	1.8	8.3	6.5	AL	Fully Supporting
Mill Creek Lake	0	0	0	AL, DW	Fully Supporting
Sand Lick Fork	0	1.8	1.8	AL	Fully Supporting
South Fork Red River	3.9	10.1	6.2	AL	Fully Supporting
South Fork Red River	0	3.9	3.9	AL	Fully Supporting
Upper Hood Branch	0	1.6	1.6	AL	Fully Supporting

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

Applicable Total Maximum Daily Load (TMDL) Reports:	
<i>Stream or Waterbody</i>	<i>TMDL Report Status</i>
Sand Lick Fork	Final draft complete
Stump Cave Br.	Final draft complete
South Fork Red River	Final draft complete

Watershed Name: Middle Fork of Red River

11-Digit Watershed Identity Number: 05100204140

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>
NATURAL BRIDGE STATE PARK	Surface Water	Water Treatment Plant	0992545
NATURAL BRIDGE STATE PARK	Surface Water	Water Withdrawal Site	0992545
TECUMSCH RESORT/BED/BREAKFAST	Surface Water	Water Treatment Plant	0993349

<i>KPDES Permitted Discharge Facilities</i>			<i>KPDES Site ID Number</i>
<i>Facility</i>	<i>Type of Facility</i>		
DESSIE SCOTT CHILDRENS HOME	RESIDENTIAL CARE	KY0082651	
KJC NORTHPOINT TRAINING CENTER	CORRECTIONAL INSTITUTIONS	KY0033901	
KTC POWELL CO REST AREA	INSPECTION & FIXED FACILITIE	KY0077895	
KY DOP NATURAL BRIDGE ST PK	AMUSEMENT AND RECREATION, NEC	KY0095516	
MT PARKWAY STONE	CRUSHED AND BROKEN LIMESTONE	KYG840181	

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>
Middle Fork Red River	USGS	USGS03283305	Flow

<i>KY Division of Water Sampling Sites</i>	
<i>Stream Name</i>	<i>Type of Sampling</i>
Middle Fork Red River	Other Monitoring
South Fork Red River	Other Monitoring
Sand Lick	Other Monitoring
South Fork Red River	Other Monitoring
Middle Fork Red River	Physical/Chemical Monitoring

<i>US Forest Service Sampling Sites</i>		
<i>11-Digit HUC</i>	<i>HUC Name</i>	<i>US Forest Service Site ID</i>
05100204140	Middle Fork of Red River	0510020430002
05100204140	Middle Fork of Red River	0510020406025

<i>KY River Watershed Watch Sampling Sites</i>		
<i>Stream Name</i>	<i>KRWW Sample ID No.</i>	<i>Site Description</i>
Mdl Fork	K73	KY 715 Bridge over Middle Fork
South Fork of Red River	K89	40 yds upstream of Hwy 11/15 bridge

Results from 1999 KY River Watershed Watch Sampling:

Conventional Parameters:

Sample ID Number: K73 Stream: Middle Fork

Physical Data (May):	
pH	7.7
Temperature	0
Dissolved Oxygen	8
Alkalinity	130
Total Hardness	144
Chlorides	32.1
Conductivity	353
Total Organic Carbon	2.3
Total Suspended Solids	

Fecal Data (July / August):		
Coliform Count	Strep Count	Coliform/Strep Ratio
July	10	220
August		0.045

Sample ID Number: K89 Stream: South Fork of Red River

Physical Data (May):	
pH	7.7
Temperature	0
Dissolved Oxygen	8.2
Alkalinity	
Total Hardness	
Chlorides	
Conductivity	
Total Organic Carbon	
Total Suspended Solids	

Fecal Data (July / August):		
Coliform Count	Strep Count	Coliform/Strep Ratio
July	10	660
August		0.015

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: K73 Stream: Middle Fork

Ammonia	0.09	Orthophosphate as Phosphate	0.020	Sulfate	6.2
Ammonia Nitrogen	0.07	Orthophosphate as Phosphorus	0.007		
Total Kjeldahl Nitrogen as NH3		Total Recoverable Phosphorus			
Total Kjeldahl Nitrogen as N					
Nitrate					
Nitrate Nitrogen					

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

Sample ID Number: K89 Stream: South Fork of Red River

Ammonia		Orthophosphate as Phosphate		Sulfate	
Ammonia Nitrogen		Orthophosphate as Phosphorus			
Total Kjeldahl Nitrogen as NH3		Total Recoverable Phosphorus			
Total Kjeldahl Nitrogen as N					
Nitrate					
Nitrate Nitrogen					

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: K73 Stream: Middle Fork

Aluminum	0.31	Calcium	42.76	Lead		Selenium		Thallium	
Antimony		Chromium		Lithium		Silicon	1.48	Vanadium	
Barium	0.08	Cobalt	0.007	Magnesium	5.84	Sodium	17.22	Zinc	
Beryllium		Copper		Manganese	0.14	Strontium	0.13		
Boron	0.10	Iron	0.38	Potassium	3.39	Sulfur	1.59		

Watershed Name: Middle Fork of Red River

11-Digit Watershed Identity Number: 05100204140

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

Sample ID Number: K89 Stream: South Fork of Red River

Aluminum	<input type="text"/>	Calcium	<input type="text"/>	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"/>	Vanadium	<input type="text"/>
Barium	<input type="text"/>	Cobalt	<input type="text"/>	Magnesium	<input type="text"/>	Sodium	<input type="text"/>	Zinc	<input type="text"/>
Beryllium	<input type="text"/>	Copper	<input type="text"/>	Manganese	<input type="text"/>	Strontium	<input type="text"/>		
Boron	<input type="text"/>	Iron	<input type="text"/>	Potassium	<input type="text"/>	Sulfur	<input type="text"/>		

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
K73	Middle Fork	<input type="text"/>	<input type="text"/>	<input type="text"/>
K89	South Fork of Red River	<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).