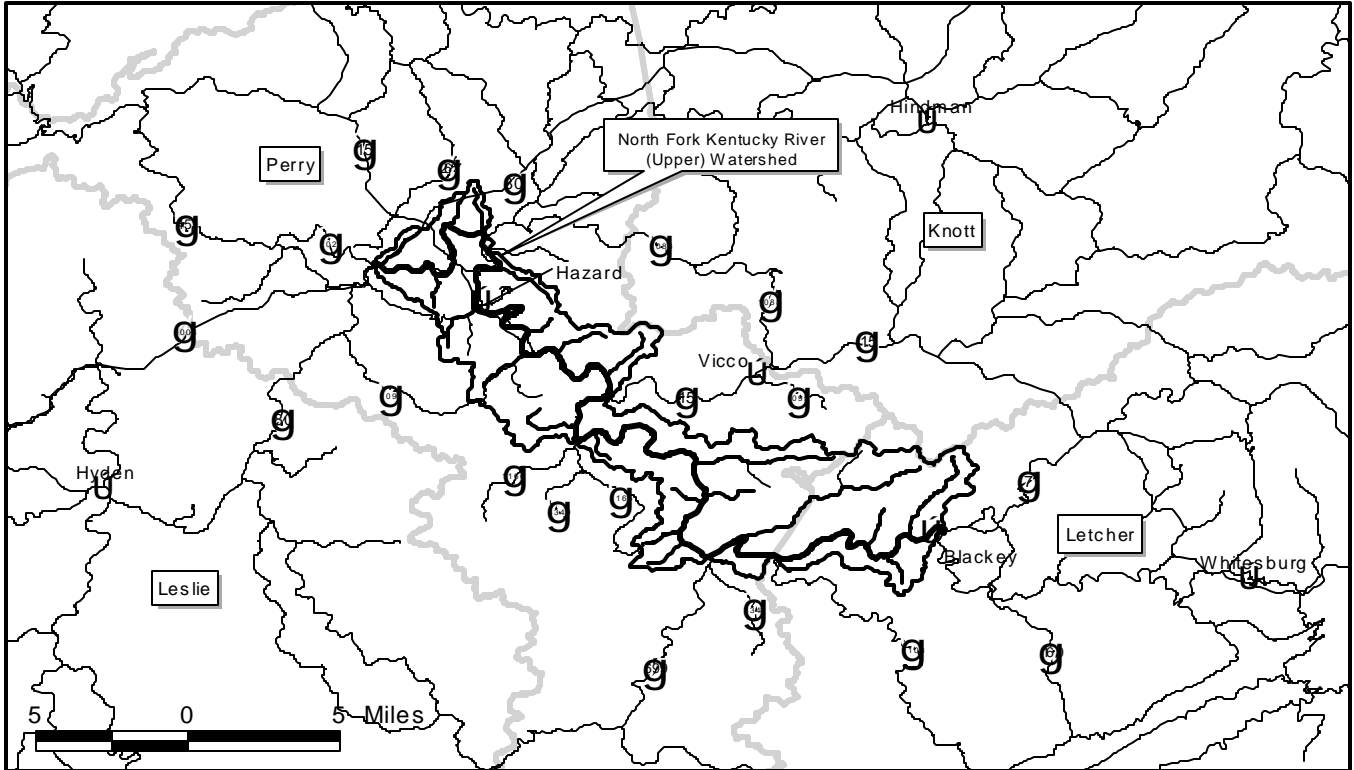


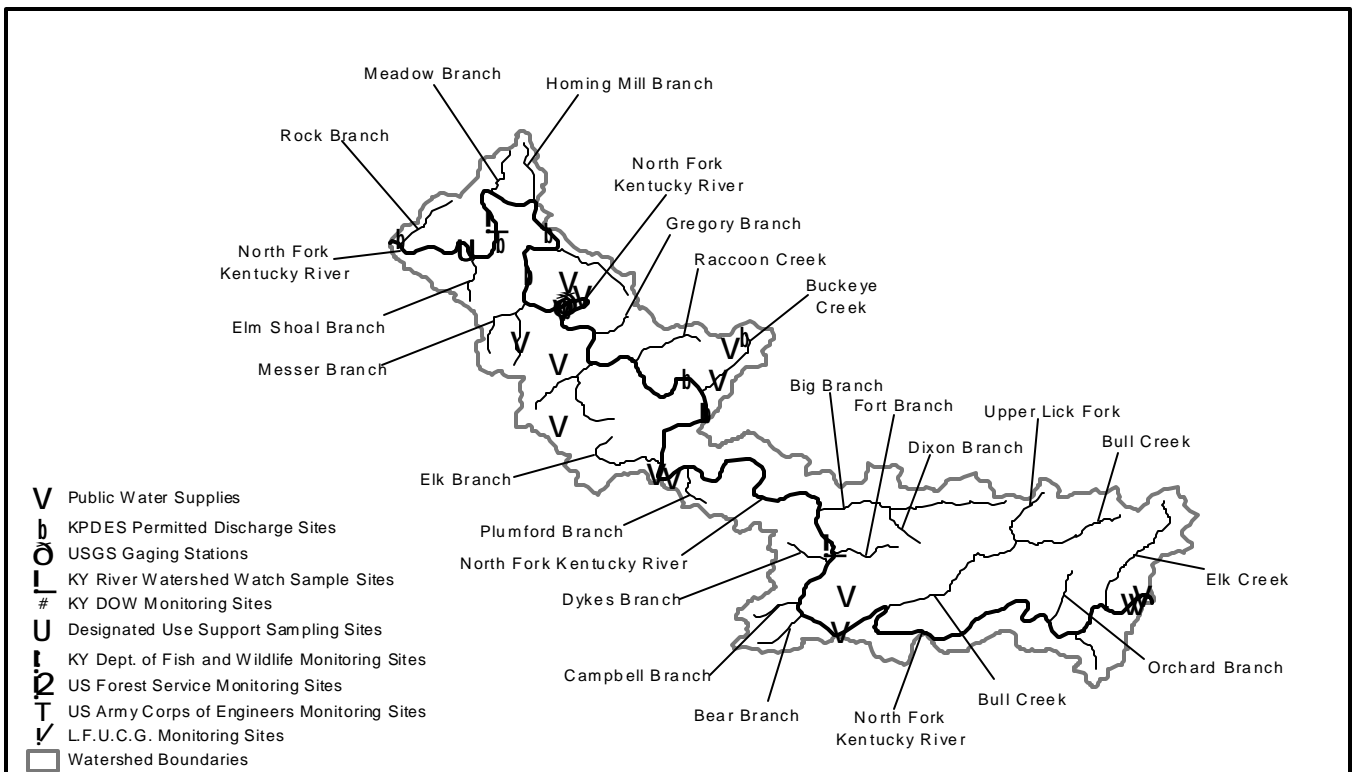
North Fork Kentucky River (Upper) Watershed

Watershed Number: 05100201030

Location Map



Watershed Features



Geography. The North Fork Kentucky River (upper) watershed covers the northwest corner of Letcher County and part of Perry County. The land is in the Eastern Kentucky Coal Field physiographic region, characterized by mountainous terrain, rapid surface runoff, and moderate rates of groundwater drainage. The watershed is underlain by coals, sandstones, and shales: this geology is generally conducive to productive wells, although water quality may be low for wells that draw from coal layers.

Waterways. This watershed includes the section of the North Fork between the mouth of Rockhouse Creek (near Blackey) and the mouth of Big Creek (between Combs and Typo at the Daniel Boone Parkway). Among many creeks that feed it within this watershed are Bull Creek, Big Branch, and Buckeye Creek. Water also flows into this watershed from the North Fork (headwaters), Rockhouse Creek, Line Fork, Leatherwood Creek, Maces Creek, Carr Fork and Lotts Creek watersheds.

Land and water use. Land in the watershed is nearly all rural and wooded. The surface waters of the watershed supply the drinking water for municipal systems in Blackey and Hazard. Nine businesses and organizations hold permits for discharges into the creeks. See tables for details.

Agency data assessment. The assessed creek segment in this watershed does not support some or all of its designated uses, based on biological and/or water-quality data. See tables for details.

Watershed rankings. The ranking formula provides a preliminary ranking by synthesizing a broad spectrum of watershed characteristics, current conditions, and threats. This watershed ranks in the group with the highest need for protection and/or restoration. This rating is for the watershed on average: particular sites and particular waters within the watershed may vary widely. See tables for details.

Volunteer data. Two sites were sampled in 1999. Data show high levels of bacteria indicative of fecal contamination at one of the sites (above 200 colonies/ml). Phosphorus levels there were elevated enough to cause potential nutrient enrichment problems (> 0.1 mg/L). Both sites also exhibited high levels of several metals. See tables for details.

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:

Total Land Area (Acres):	40,555	Acres	% of Total		
Residential Area:	646		1.6	Number of Mine Permits:	41
Commercial Area:	241		0.6	Total Permitted Mining Area (Acres):	2,354
Industrial Area:	29		0.1	Number of Identified Wetland Areas:	5
Agricultural Area:	135		0.3	Total Wetland Area (Acres):	1
Rural and Wooded Area:	38,926		96.2		
Other Land-use Area:	484		1.2		

Withdrawal and Discharge Sites:

Number of Public Water Supplies and Water Withdrawal Sites:	15	Number of KPDES Discharge Permits:	9
Surface Water Withdrawals:	8		
Groundwater Withdrawals:	7		
No. of Potable Water Treatment Facilities:	8		

Sampling Site Statistics:

Number of USGS Gaging Stations:	1
Number of Kentucky Division of Water Sampling Sites:	0
Number of Kentucky Dept. of Fish and Wildlife Sampling Sites:	0
Number of US Forest Service Sampling Sites:	0
Number of US Army Corps of Engineers Sampling Sites:	0
Number of Kentucky River Watershed Watch Sampling Sites:	2
Number of Lexington-Fayette Urban Co. Gov. Sampling Sites:	0

Watershed Indicators and Ranking Categories:

Overall Watershed Ranking:

Protection Ranking	Observed Impacts	Potential Impacts	Restoration Ranking
High	High	High	High

High

Protection Categories:

Indicator	Value	Units	Range of All Watersheds	Mean of All Watersheds
Wetland Areas	1	Acres	0 - 106	12
Surface Drinking Water Sources	8	No. of sources	0 - 14	2
Ground Drinking Water Sources	7	No. of sources	0 - 17	1
Groundwater Sensitivity	3.00	Score	2 - 5	3.21
KY Dept. of Fish and Wildlife Management Areas	0	Acres	0 - 2951	93
U.S. Forest Service Management Areas	30,615	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	4.03	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	9	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	3.00	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	16	Number of sites	1 - 121	12
Potential Pesticide Loading	0	Est. sales in tons	0 - 45	10
Potential Fertilizer Loading	10	Est. tons applied	0 - 2747	394
Agricultural Erosion Potential	3.19	Est. tons erosion / acre	0 - 9	3.20
Livestock Operations Potential Impact	272	Animal units	55 - 43826	7,021
KPDES Discharge Violations	153	Number of violations	0 - 541	39
KY Division of Water Citizen Complaints	16	Number of complaints	0 - 53	9
Toxic Release Inventory	0	Score	0 - 11547626	231,638
Population Change Projection	328	Number of persons	-149 - 11030	448
Population Not on Public Sewer Systems	1,643	Number of persons	12 - 4511	1,114
Mining Area	2,356	Acres	0 - 6305	355
Surface Water Runoff Potential	60.56	SCS Curve Number	60 - 79	68
KPDES Permitted Discharges	9	Number of sites	0 - 56	6

Watershed Name: North Fork Kentucky River

11-Digit Watershed Identity Number: 05100201030

Stream and Waterbody Use Support Summary

<i>Total Stream Miles:</i>						
<input type="text" value="89.91"/>	<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>
<i>Segments Assessed:</i>	1	6.0	0.0	0.0	6.0	0.0
<i>Designated Uses</i>						
<i>Aquatic Life:</i>	1	6.0	6.0	0.0	0.0	0.0
<i>Primary Contact:</i>	1	6.0	0.0	0.0	6.0	0.0
<i>Fish Consumption:</i>						
<i>Drinking Water:</i>						

* 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>
North Fork Kentucky River	93.2	99.2	6	AL, PC	Not Supporting

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

Watershed Name: North Fork Kentucky River

11-Digit Watershed Identity Number: 05100201030

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>
BLACKEY SENIOR CITIZENS CENTER	Groundwater	Water Treatment Plant	0672848
BLACKEY WATER SYSTEM	Surface Water	Water Withdrawal Site	0670462
CHRISTY'S DAIRY BAR/RESTAURANT	Groundwater	Water Treatment Plant	0972190
FELTNER'S TRAILER COURT	Groundwater	Water Treatment Plant	0970839
HAZARD WATER DEPARTMENT	Surface Water	Water Treatment Plant	0970184
HAZARD WATER DEPARTMENT	Surface Water	Water Withdrawal Site	0970184
LEECO, INC.	Surface Water	Water Withdrawal Site	WW0999
LEECO, INC.	Surface Water	Water Withdrawal Site	WW1089
MOUNTAIN HERITAGE HEADSTART	Groundwater	Water Treatment Plant	0673054
NEW TRIBES MISSION	Groundwater	Water Treatment Plant	0970922
ROARK'S BP FOOD MART	Groundwater	Water Treatment Plant	0973409
VIPER ELEM SCHOOL	Groundwater	Water Treatment Plant	0972313
WHITAKER COAL COMPANY	Surface Water	Water Withdrawal Site	WW1227
WHITAKER COAL CORPORATION	Surface Water	Water Withdrawal Site	WW1091
WHITAKER COAL CORPORATION	Surface Water	Water Withdrawal Site	WW1133

<i>KPDES Permitted Discharge Facilities</i>			<i>KPDES Site ID Number</i>
<i>Facility</i>	<i>Type of Facility</i>		
ACECO INC	OPER OF NONRESIDENTIAL BLDGS	KY0070076	
CSX TRANSPORTATION HAZARD	RAILROADS, LINE HAUL OPERATING	KY0046965	
HAZARD STP	SEWERAGE SYSTEMS	KY0020079	
HAZARD WTP	WATER SUPPLY	KY0003280	
JEFF PROPERTIES	OPERATORS OF APART BUILDINGS	KY0094528	
KY W VA GAS CO	NATURAL GAS TRANSMISSION	KY0081558	
LKLP COMMUNITY ACTION COUNCIL	ELEMENTARY & SECONDARY SCHOOLS	KY0093530	
MOUNTAIN ENTERPRISES INC	PAVING MIXTURES AND BLOCKS	KY0092291	
SERVICE PUMP & SUPPLY INC	OPER OF NONRESIDENTIAL BLDGS	KY0093611	

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>
North Fork Kentucky River	USGS	USGS03277500	Flow
North Fork Kentucky River	US COE	USNWS15-3714-45	Flow

<i>KY River Watershed Watch Sampling Sites</i>		
<i>Stream Name</i>	<i>KRWW Sample ID No.</i>	<i>Site Description</i>
North Fork KY River	K82	Perry Co Park
North Fork KY River	K81	Fusonia below Fort Branch

Results from 1999 KY River Watershed Watch Sampling:

Conventional Parameters:

Sample ID Number: K81 Stream: North Fork KY River

Physical Data (May):	
pH	7.75
Temperature	0
Dissolved Oxygen	8.9
Alkalinity	177
Total Hardness	266
Chlorides	31.7
Conductivity	1003
Total Organic Carbon	2.6
Total Suspended Solids	15

Fecal Data (July / August):		
Coliform Count	Strep Count	Coliform/Strep Ratio
July	160	190
August		0.84

Sample ID Number: K82 Stream: North Fork KY River

Physical Data (May):	
pH	7.7
Temperature	0
Dissolved Oxygen	8.2
Alkalinity	156
Total Hardness	282
Chlorides	30.3
Conductivity	932
Total Organic Carbon	2.3
Total Suspended Solids	7

Fecal Data (July / August):		
Coliform Count	Strep Count	Coliform/Strep Ratio
July	1100	400
August	>60000	30000
		>2.0

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: K81 Stream: North Fork KY River

Ammonia		Orthophosphate as Phosphate	0.042	Sulfate	305
Ammonia Nitrogen		Orthophosphate as Phosphorus	0.014		
Total Kjeldahl Nitrogen as NH3		Total Recoverable Phosphorus	0.08		
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: K82 Stream: North Fork KY River

Ammonia	0.06	Orthophosphate as Phosphate	0.307	Sulfate	287
Ammonia Nitrogen	0.05	Orthophosphate as Phosphorus	0.100		
Total Kjeldahl Nitrogen as NH3		Total Recoverable Phosphorus	0.16		
Total Kjeldahl Nitrogen as N					
Nitrate	4.5				
Nitrate Nitrogen	1.01				

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: K81 Stream: North Fork KY River

Aluminum	0.07	Calcium	53.04	Lead		Selenium	0.009	Thallium	
Antimony	0.16	Chromium	0.04	Lithium	0.02	Silicon	1.98	Vanadium	0.06
Barium	0.08	Cobalt		Magnesium	33.72	Sodium	103.31	Zinc	0.01
Beryllium		Copper	0.01	Manganese	0.08	Strontium	1.17		
Boron	0.14	Iron	0.42	Potassium	6.69	Sulfur	66.86		

Watershed Name: North Fork Kentucky River

11-Digit Watershed Identity Number: 05100201030

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

Sample ID Number: K82 Stream: North Fork KY River

Aluminum	<input type="text"/>	Calcium	<input type="text" value="59.98"/>	Lead	<input type="text"/>	Selenium	<input type="text"/>	Thallium	<input type="text" value="0.023"/>
Antimony	<input type="text"/>	Chromium	<input type="text"/>	Lithium	<input type="text" value="0.02"/>	Silicon	<input type="text" value="1.67"/>	Vanadium	<input type="text"/>
Barium	<input type="text" value="0.06"/>	Cobalt	<input type="text" value="0.007"/>	Magnesium	<input type="text" value="35.28"/>	Sodium	<input type="text" value="87.10"/>	Zinc	<input type="text" value="0.003"/>
Beryllium	<input type="text" value="0.001"/>	Copper	<input type="text"/>	Manganese	<input type="text" value="0.12"/>	Strontium	<input type="text" value="0.99"/>		
Boron	<input type="text" value="0.14"/>	Iron	<input type="text" value="0.26"/>	Potassium	<input type="text" value="7.33"/>	Sulfur	<input type="text" value="70.78"/>		

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
K81	North Fork KY River	<input type="text"/>	<input type="text"/>	<input type="text"/>
K82	North Fork KY 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).