

United States Army Corps of Engineers

Nashville District

CELRN-EC-H / Water Management Section

Station: 3WOL10001

Project: Wolf Creek

Location: Cumberland River, Mile 460.4

State: Kentucky

Latitude: 36° 52" 19.9'

Quad: Wolf Creek Dam, KY

County: Russell

Longitude: 85° 8" 57.4'

HUC: 05130103

Sample Date: 06 Aug 2013

Water Surface Elevation = 548.4 ft

Stream Flow = 3780 cfs

Results of Laboratory Analyses

Profile Measurements

Sample Depth ft	0.0	Depth ft	Water Temp deg C	Water Temp deg F	Dis Oxygen mg/l	Dis Oxygen % sat	Spec Cond umho/cm	pH units	Chloro a F ug/l
Alkalinity, Tot mg/L	54	0.0	15.4	59.7	5.9	59.3	170.0	6.9	0.5
Alkalinity, Phenol mg/L	0								
Solids, Tot mg/L	140								
Solids, Tot Diss mg/L	106								
Solids, Tot Susp mg/L	7.00								
Solids, Vol mg/L	124								
Solids, Vol Diss mg/L	124								
Solids, Vol Susp mg/L	<4.00								
Ammonia N, Tot mg/L	0.0851								
Kjeldahl N, Tot mg/L	0.380								
NO3+NO2, Tot mg/L	0.328								
Phosphorus, Tot mg/L	<0.002								
Phosphorus, Diss mg/L	<0.002								
OrthoPhosphate, D mg/L	<0.05								
Organic Carbon, T mg/L	2.60								
Hardness, Tot mg/L	69								
Sulfate, Tot mg/L	30.9								
Calcium, Tot mg/L	17.6								
Magnesium, Tot mg/L	6.08								
Sodium, Tot mg/L	5.72								
Potassium, Tot mg/L	1.50								
Chloride, Tot mg/L	3.64								
Arsenic, Tot ug/L	0.2								
Barium, Tot ug/L	17.8								
Beryllium, Tot ug/L	<0.2								
Cadmium, Tot ug/L	<0.2								
Chromium, Tot ug/L	<0.2								
Cobalt, Tot ug/L	<0.2								
Copper, Tot ug/L	0.5								
Iron, Tot ug/L	35.7								
Iron, Diss ug/L	20.9								
Lead, Tot ug/L	<0.2								
Lead, Diss ug/L	0.3								
Manganese, Tot ug/L	14.7								
Manganese, Diss ug/L	2.6								
Thallium, Tot ug/L	<0.2								
Molybdenum, Tot ug/L	<0.2								
Nickel, Tot ug/L	1.9								
Silver, Tot ug/L	<0.2								
Vanadium, Tot ug/L	<0.2								
Zinc, Tot ug/L	3.1								
Zinc, Diss ug/L	2.2								
Antimony, Tot ug/L	<0.2								
Aluminum, Tot ug/L	10.8								
Aluminum, Diss ug/L	2.4								
Selenium, Tot ug/L	1.0								
Mercury, Tot ug/L	<0.005								

United States Army Corps of Engineers

Station: 3WOL10001

State: Kentucky
County: Russell

Sample Date: 06 Aug 2013

Nashville District

Project: Wolf Creek

Latitude: 36° 52" 19.9'
Longitude: 85° 8" 57.4'

Water Surface Elevation = 556.5 ft

CELRN-EC-H / Water Management Section

Location: Cumberland River, Mile 460.4

Quad: Wolf Creek Dam, KY
HUC: 05130103

Stream Flow = 16240 cfs

(No Laboratory Analyses)

Profile Measurements							
Depth	Water Temp	Water Temp	Dis Oxygen	Dis Oxygen	Spec Cond	pH	Chloro a F
ft	deg C	deg F	mg/l	% sat	umho/cm	units	ug/l
0.0	15.2	59.4	5.3	53.0	170.0	7.0	0.5

CELNRN-EC-H / Water Management Section

Location: Cumberland River, Mile 562.4

Quad: Cumberland Falls, KY
HUC: 05130101

Stream Flow =

Profile Measurements

[illegible]

CELNRN-EC-H / Water Management Section

Location: Wolf Creek Dam Finger Drain, Mile 0.0

Quad: Wolf Creek Dam, KY
HUC: 05130103

Stream Flow =

Profile Measurements

Depth ft	Water Temp deg C	Water Temp deg F	Dis Oxygen mg/l	Dis Oxygen % sat	Spec Cond umho/cm	pH units	Chloro a F ug/l
0.0	17.6	63.7	3.6	37.9	307.0	6.3	

United States Army Corps of Engineers

Nashville District

CELRN-EC-H / Water Management Section

Station: 3WOL20002

Project: Wolf Creek

Location: Cumberland River, Mile 461.4

State: Kentucky
County: RussellLatitude: 36° 51' 29.1'
Longitude: 85° 8' 24.7'Quad: Wolf Creek Dam, KY
HUC: 05130103

Sample Date: 06 Aug 2013

Water Surface Elevation = 702.9 ft

Secchi Disk = 2.7 m

Results of Laboratory Analyses

Profile Measurements

Sample Depth ft	0.0	40.0	90.0	155.0	Depth ft	Water Temp deg C	Water Temp deg F	Dis Oxygen mg/l	Dis Oxygen % sat	Spec Cond umho/cm	pH units	Chloro a F ug/l
Alkalinity, Tot mg/L	56	60	50	62	0.0	27.9	82.2	9.1	115.7	185.0	8.6	1.1
Alkalinity, Phenol mg/L	3	0	0	0	5.0	27.6	81.7	9.2	116.4	185.0	8.6	2.2
Solids, Tot mg/L	144	146	136	156	10.0	27.5	81.5	9.3	117.4	185.0	8.6	2.4
Solids, Tot Diss mg/L	109	120	111	131	15.0	27.3	81.1	9.3	117.0	185.0	8.6	2.1
Solids, Tot Susp mg/L	5.00	5.00	3.00	3.00	20.0	27.2	81.0	9.2	115.6	184.0	8.6	2.5
Solids, Vol mg/L	150	75.0	120	109	25.0	26.9	80.4	9.1	113.8	184.0	8.6	1.9
Solids, Vol Diss mg/L	150	75.0	120	104	30.0	24.9	76.8		6.9	203.0	7.4	3.0
Solids, Vol Susp mg/L	<4.00	<4.00	<4.00	5.00	35.0	22.0	71.6	3.9	44.7	197.0	7.0	2.0
Ammonia N, Tot mg/L	0.0312	0.0279	0.0273	0.107	40.0	21.1	70.0	3.5	39.4	185.0	6.9	1.4
Kjeldahl N, Tot mg/L	<0.130	0.140	<0.130	<0.130	45.0	20.2	68.4	3.6	39.9	176.0	6.9	1.2
NO3+NO2, Tot mg/L	<0.0200	0.157	0.313	0.449	50.0	19.5	67.1	4.2	45.9	161.0	6.9	1.1
Phosphorus, Tot mg/L	<0.002	<0.002	0.0024	0.0072	55.0	18.6	65.5	4.3	46.1	163.0	6.8	1.0
Phosphorus, Diss mg/L	<0.002	<0.002	<0.002	0.0082	60.0	18.0	64.4	3.6	38.2	172.0	6.8	0.7
OrthoPhosphate, D mg/L	<0.05	<0.05	<0.05	<0.05	65.0	16.6	61.9	3.3	34.0	172.0	6.8	0.5
Organic Carbon, T mg/L	2.50	2.80	2.30	2.40	70.0	15.0	59.0	4.2	41.8	170.0	6.8	0.4
Hardness, Tot mg/L	74.0	76.9	69.2	80.7	75.0	14.5	58.1	4.3	42.4	173.0	6.8	0.3
Sulfate, Tot mg/L	33.6	37.0	30.1	29.9	80.0	13.8	56.8	5.3	51.4	176.0	6.9	0.3
Calcium, Tot mg/L	18.9	18.9	17.8	21.6	85.0	13.4	56.1	5.9	56.7	165.0	6.9	0.4
Magnesium, Tot mg/L	6.52	7.21	6.02	6.50	90.0	12.9	55.2	5.9	56.1	166.0	6.8	0.4
Sodium, Tot mg/L	6.19	7.59	5.67	5.79	95.0	12.3	54.1	5.7	53.5	164.0	6.8	0.4
Potassium, Tot mg/L	1.49	1.75	1.45	1.50	100.0	11.4	52.5	5.3	48.7	166.0	6.8	0.3
Chloride, Tot mg/L	3.31	3.40	3.87	4.06	105.0	10.7	51.3	4.6	41.6	166.0	6.7	0.3
Arsenic, Tot ug/L	0.3	0.3	0.2	0.3	110.0	10.3	50.5	4.2	37.6	168.0	6.7	0.3
Barium, Tot ug/L	18.5	20.9	17.8	14.4	115.0	10.0	50.0	4.0	35.6	171.0	6.7	0.3
Beryllium, Tot ug/L	<0.2	<0.2	<0.2	<0.2	120.0	9.9	49.8	3.7	32.8	172.0	6.7	0.3
Cadmium, Tot ug/L	<0.2	<0.2	<0.2	<0.2	125.0	9.6	49.3	3.5	30.8	178.0	6.7	0.3
Chromium, Tot ug/L	0.2	<0.2	<0.2	<0.2	130.0	9.6	49.3	3.4	29.9	178.0	6.7	0.3
Cobalt, Tot ug/L	<0.2	<0.2	<0.2	<0.2	135.0	9.5	49.1	3.2	28.1	182.0	6.7	0.3
Copper, Tot ug/L	0.4	0.48	0.44	0.4	140.0	9.3	48.7	2.7	23.6	184.0	6.7	0.2
Iron, Tot ug/L	3.1	11.5	20.5	18.1	145.0	9.2	48.6	2.3	20.1	186.0	6.7	0.2
Iron, Diss ug/L	<2.0	4.7	8.0	3.1	150.0	9.2	48.6	2.1	18.3	187.0	6.8	0.2
Lead, Tot ug/L	<0.2	<0.2	<0.2	0.3	155.0	9.1	48.4	2.0	17.4	186.0	6.8	0.3
Lead, Diss ug/L	<0.2	<0.2	<0.2	0.3	160.0	9.0	48.2	2.0	17.4	186.0	6.8	0.2
Manganese, Tot ug/L	1.7	3.3	6.3	148.0	162.0	9.0	48.2	1.8	15.6	191.0	6.8	0.3
Manganese, Diss ug/L	0.4	0.5	1.4	0.4								
Thallium, Tot ug/L	<0.2	<0.2	<0.2	<0.2								
Molybdenum, Tot ug/L	<0.2	<0.2	<0.2	<0.2								
Nickel, Tot ug/L	0.4	0.7	0.6	0.5								
Silver, Tot ug/L	<0.2	<0.2	<0.2	<0.2								
Vanadium, Tot ug/L	<0.2	<0.2	<0.2	<0.2								
Zinc, Tot ug/L	0.5	1.0	0.9	1.1								
Zinc, Diss ug/L	1.5	3.1	1.2	1.1								
Antimony, Tot ug/L	<0.2	<0.2	<0.2	<0.2								
Aluminum, Tot ug/L	<2.0	<2.0	<2.0	<2.0								
Aluminum, Diss ug/L	<2.0	<2.0	<2.0	<2.0								
Selenium, Tot ug/L	1.1	1.0	1.2	1.3								
Mercury, Tot ug/L	0.287	0.163	0.093	0.076								

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3WOL20004

Project: Wolf Creek

Location: Cumberland River, Mile 487.0

State: Kentucky
County: WayneLatitude: 36° 56" 14'
Longitude: 84° 54" 10'Quad: Jabez, KY
HUC: 05130103

Sample Date: 06 Aug 2013

Water Surface Elevation = 702.9 ft

Secchi Disk = 2.6 m

Results of Laboratory Analyses

Results of Laboratory Analyses				Profile Measurements									
Sample Depth ft	0.0	60.0	120.0	Depth ft	Water Temp deg C	Water Temp deg F	Dis Oxygen mg/l	Dis Oxygen % sat	Spec Cond umho/cm	pH units	Chloro a F ug/l		
Alkalinity, Tot mg/L	56	50	52	0.0	28.6	83.5	9.1	117.1	194.0	8.7	1.5		
Alkalinity, Phenol mg/L	3	0	0	5.0	28.0	82.4	9.5	121.0	193.0	8.8	2.2		
Solids, Tot mg/L	148	134	134	10.0	27.5	81.5	9.5	120.0	192.0	8.8	2.6		
Solids, Tot Diss mg/L	127	109	112	15.0	27.4	81.3	9.3	117.2	193.0	8.7	2.6		
Solids, Tot Susp mg/L	3.00	2.00	1.00	20.0	27.0	80.6	9.2	115.2	193.0	8.6	3.3		
Solids, Vol mg/L	66.0	58.0	98.0	25.0	25.4	77.7		7.5	186.0	7.6	4.3		
Solids, Vol Diss mg/L	66.0	58.0	98.0	30.0	24.3	75.7	6.1	72.9	176.0	7.3	2.6		
Solids, Vol Susp mg/L	<4.00	<4.00	<4.00	35.0	22.5	72.5	5.3	61.3	161.0	7.1	1.2		
Ammonia N, Tot mg/L	0.0372	0.0373	0.0294	40.0	21.2	70.2	5.4	60.9	151.0	7.0	1.0		
Kjeldahl N, Tot mg/L	0.150	0.270	<0.130	45.0	20.1	68.2	5.4	59.7	140.0	6.9	0.9		
NO3+NO2, Tot mg/L	<0.0200	0.272	0.420	50.0	19.5	67.1	5.7	62.2	136.0	6.9	0.9		
Phosphorus, Tot mg/L	<0.002	0.0047	<0.002	55.0	18.7	65.7	4.9	52.7	148.0	6.9	0.8		
Phosphorus, Diss mg/L	<0.002	<0.002	0.004	60.0	17.9	64.2	4.3	45.5	161.0	6.9	0.6		
OrthoPhosphate, D mg/L	<0.05	<0.05	<0.05	65.0	16.8	62.2	3.7	38.3	168.0	6.9	0.4		
Organic Carbon, T mg/L	2.60	2.90	2.10	70.0	15.8	60.4	4.0	40.5	164.0	6.8	0.4		
Hardness, Tot mg/L	75.4	63.8	68.7	75.0	14.8	58.6	4.5	44.6	159.0	6.8	0.4		
Sulfate, Tot mg/L	35.8	28.4	30.7	80.0	13.6	56.5	4.3	41.5	155.0	6.8	0.4		
Calcium, Tot mg/L	19.0	15.9	17.0	85.0	13.3	55.9	3.8	36.5	155.0	6.8	0.4		
Magnesium, Tot mg/L	6.79	5.84	6.38	90.0	12.6	54.7	3.3	31.2	156.0	6.8	0.4		
Sodium, Tot mg/L	6.78	5.36	5.16	95.0	12.3	54.1	3.2	30.0	157.0	6.7	0.4		
Potassium, Tot mg/L	1.52	1.65	1.46	100.0	11.7	53.1	3.0	27.8	158.0	6.7	0.4		
Chloride, Tot mg/L	3.29	2.91	3.18	105.0	11.2	52.2	2.9	26.5	160.0	6.7	0.4		
Arsenic, Tot ug/L	0.3	0.27	0.2	110.0	10.9	51.6	3.0	27.2	161.0	6.7	0.3		
Barium, Tot ug/L	18.4	19.6	15.5	115.0	10.4	50.7	3.1	27.8	164.0	6.7	0.3		
Beryllium, Tot ug/L	<0.2	<0.2	<0.2	120.0	10.1	50.2	3.2	28.5	165.0	6.7	0.3		
Cadmium, Tot ug/L	<0.2	<0.2	<0.2	125.0	9.9	49.8	3.2	28.4	165.0	6.7	0.3		
Chromium, Tot ug/L	<0.2	<0.2	<0.2	130.0	9.7	49.5	2.9	25.6	166.0	6.7	0.3		
Cobalt, Tot ug/L	<0.2	<0.2	<0.2										
Copper, Tot ug/L	0.5	0.6	0.4										
Iron, Tot ug/L	4.1	77.3	27.9										
Iron, Diss ug/L													
Lead, Tot ug/L	<0.2	<0.2	<0.2										
Lead, Diss ug/L													
Manganese, Tot ug/L	5.4	8.1	97.4										
Manganese, Diss ug/L													
Thallium, Tot ug/L	<0.2	<0.2	<0.2										
Molybdenum, Tot ug/L	<0.2	<0.2	<0.2										
Nickel, Tot ug/L	0.5	0.9	0.7										
Silver, Tot ug/L	<0.2	<0.2	<0.2										
Vanadium, Tot ug/L	<0.2	<0.2	<0.2										
Zinc, Tot ug/L	1.0	1.1	1.0										
Zinc, Diss ug/L													
Antimony, Tot ug/L	<0.2	<0.2	<0.2										
Aluminum, Tot ug/L	<2.0	34.2	3.8										
Aluminum, Diss ug/L													
Selenium, Tot ug/L	1.1	0.9	1.3										
Mercury, Tot ug/L													

CELNRN-EC-H / Water Management Section

Location: Cumberland River, Mile 509.3

Quad: Frazer, KY
HUC: 05130103

Secchi Disk = 1.6 m

Profile Measurements

Sample				Depth	Water Temp	Water Temp	Dis	Oxygen	Dis	Oxygen	Spec Cond	pH	Chloro a F
Depth	ft	0.0	55.0	120.0	ft	deg C	deg F	mg/l	% sat		umho/cm	units	ug/l
Alkalinity, Tot	mg/L	64	40	54	0.0	27.7	81.9	10.0	126.7		204.0	9.0	1.6
Alkalinity, Phenol	mg/L	6	0	0	5.0	27.7	81.9	10.1	128.0		204.0	8.9	2.7
Solids, Tot	mg/L	160	114	138	10.0	27.6	81.7	10.2	129.0		203.0	8.9	2.9
Solids, Tot Diss	mg/L	119	86.0	110	15.0	27.4	81.3		10.0		203.0	8.9	3.2
Solids, Tot Susp	mg/L	5.00	9.00	7.00	20.0	27.2	81.0	9.5	119.4		204.0	8.8	3.0
Solids, Vol	mg/L	144	85.0	65.0	25.0	25.5	77.9	5.2	63.4		226.0	7.5	1.6
Solids, Vol Diss	mg/L	144	85.0	61.0	30.0	23.6	74.5	4.6	54.3		262.0	7.3	0.9
Solids, Vol Susp	mg/L	<4.00	<4.00	<4.00	35.0	22.5	72.5	4.6	53.2		201.0	7.2	0.8
Ammonia N, Tot	mg/L	0.0405	0.0437	0.0523	40.0	21.4	70.5	4.9	55.5		150.0	7.1	0.8
Kjeldahl N, Tot	mg/L	0.210	<0.0700	0.0900	45.0	20.3	68.5	4.2	46.6		148.0	7.0	1.0
NO3+NO2, Tot	mg/L	<0.0200	0.248	0.447	50.0	19.5	67.1	5.3	57.9		119.0	7.0	1.0
Phosphorus, Tot	mg/L	<0.002	0.0046	0.0086	55.0	19.0	66.2	5.4	58.4		114.0	6.9	0.9
Phosphorus, Diss	mg/L	0.003	0.007	0.004	60.0	18.0	64.4	4.5	47.7		116.0	6.9	0.9
OrthoPhosphate, D	mg/L	<0.05	<0.05	<0.05	65.0	16.9	62.4	2.8	29.0		137.0	6.8	0.8
Organic Carbon, T	mg/L	2.80	3.30	2.30	70.0	15.3	59.5	1.5	15.0		161.0	6.8	0.6
Hardness, Tot	mg/L	79.3	48.4	70.7	75.0	14.2	57.6	1.1	10.8		162.0	6.8	0.5
Sulfate, Tot	mg/L	38.4	18.2	29.5	80.0	13.6	56.5	1.2	11.6		159.0	6.8	0.5
Calcium, Tot	mg/L	19.4	12.6	17.6	85.0	13.1	55.6	1.5	14.3		159.0	6.8	0.5
Magnesium, Tot	mg/L	7.50	4.11	6.49	90.0	12.6	54.7	1.8	17.0		157.0	6.8	0.5
Sodium, Tot	mg/L	7.54	2.91	5.02	95.0	12.3	54.1	1.4	13.1		159.0	6.8	0.5
Potassium, Tot	mg/L	1.69	1.46	1.49	100.0	11.8	53.2	1.0	9.3		162.0	6.8	0.5
Chloride, Tot	mg/L	3.37	1.76	3.10	105.0	11.2	52.2	1.1	10.1		162.0	6.8	0.4
Arsenic, Tot	ug/L	0.4	0.3	0.3	110.0	10.8	51.4	1.1	10.0		163.0	6.8	0.4
Barium, Tot	ug/L	19.9	19.0	15.9	115.0	10.5	50.9	1.0	9.0		166.0	6.7	0.4
Beryllium, Tot	ug/L	<0.2	<0.2	<0.2	120.0	10.2	50.4	0.7	6.3		167.0	6.7	0.4
Cadmium, Tot	ug/L	<0.2	<0.2	<0.2	125.0	10.1	50.2	0.2	1.8		170.0	6.7	0.4
Chromium, Tot	ug/L	<0.2	0.2	<0.2									
Cobalt, Tot	ug/L	<0.2	<0.2	<0.2									
Copper, Tot	ug/L	0.6	0.8	0.5									
Iron, Tot	ug/L	7.7	198.0	64.6									
Iron, Diss	ug/L												
Lead, Tot	ug/L	0.4	0.5	0.28									
Lead, Diss	ug/L												
Manganese, Tot	ug/L	12.7	21.6	152.0									
Manganese, Diss	ug/L												
Thallium, Tot	ug/L	<0.2	<0.2	<0.2									
Molybdenum, Tot	ug/L	0.2	<0.2	<0.2									
Nickel, Tot	ug/L	0.6	1.1	0.8									
Silver, Tot	ug/L	<0.2	<0.2	<0.2									
Vanadium, Tot	ug/L	<0.2	0.3	<0.2									
Zinc, Tot	ug/L	1.1	2.3	1.3									
Zinc, Diss	ug/L												
Antimony, Tot	ug/L	<0.2	<0.2	<0.2									
Aluminum, Tot	ug/L	<2.0	96.2	23.3									
Aluminum, Diss	ug/L												
Selenium, Tot	ug/L	1.1	1.1	1.2									
Mercury, Tot	ug/L												

CELNRN-EC-H / Water Management Section

Location: Cumberland River, Mile 519.0

Quad: Somerset, KY
HUC: 05130103

Secchi Disk = 1.6 m

Profile Measurements

Sample					Depth	Water Temp	Water Temp	Dis Oxygen	Dis Oxygen	Spec Cond	pH	Chloro a F
Sample	Depth ft	0.0	35.0	90.0	ft	deg C	deg F	mg/l	% sat	umho/cm	units	ug/l
Alkalinity, Tot	mg/L	62	80	60	0.0	27.9	82.2	10.0	127.1	206.0	8.9	3.7
Alkalinity, Phenol	mg/L	4	0	0	5.0	27.9	82.2	10.0	127.1	206.0	8.9	3.9
Solids, Tot	mg/L	162	222	154	10.0	27.8	82.0		10.0	206.0	8.9	4.0
Solids, Tot Diss	mg/L	132	194	131	15.0	27.4	81.3	9.6	121.0	206.0	8.8	3.8
Solids, Tot Susp	mg/L	7.00	8.00	9.00	20.0	26.7	80.1	7.1	88.5	231.0	7.9	3.7
Solids, Vol	mg/L	146	159	164	25.0	25.0	77.0	4.5	54.4	288.0	7.3	1.3
Solids, Vol Diss	mg/L	146	155	159	30.0	24.1	75.4	4.5	53.6	308.0	7.3	1.0
Solids, Vol Susp	mg/L	<4.00	<4.00	5.00	35.0	23.3	73.9	3.8	44.6	298.0	7.2	0.8
Ammonia N, Tot	mg/L	0.0270	0.0372	0.0414	40.0	21.4	70.5	4.2	47.6	222.0	7.1	0.6
Kjeldahl N, Tot	mg/L	0.370	<0.0700	0.240	45.0	20.2	68.4	4.9	54.2	146.0	7.0	0.8
NO3+NO2, Tot	mg/L	<0.0200	0.224	0.108	50.0	19.6	67.3	4.5	49.2	150.0	7.0	0.8
Phosphorus, Tot	mg/L	0.0061	<0.002	0.0037	55.0	19.0	66.2	4.1	44.3	150.0	6.9	0.8
Phosphorus, Diss	mg/L	0.004	0.003	0.005	60.0	18.0	64.4	4.5	47.7	115.0	6.9	0.9
OrthoPhosphate, D	mg/L	<0.05	<0.05	<0.05	65.0	17.1	62.8	4.2	43.7	122.0	6.8	0.8
Organic Carbon, T	mg/L	2.80	2.50	3.00	70.0	15.9	60.6	1.7	17.3	145.0	6.8	0.7
Hardness, Tot	mg/L	81.1	108.2	77.1	75.0	14.6	58.3	0.7	6.9	154.0	6.8	0.6
Sulfate, Tot	mg/L	38.6	64.8	35.2	80.0	13.8	56.8	0.8	7.8	155.0	6.8	0.6
Calcium, Tot	mg/L	20.0	24.2	19.1	85.0	13.4	56.1	0.3	2.9	159.0	6.8	0.7
Magnesium, Tot	mg/L	7.57	11.6	7.15	90.0	13.1	55.6	0.0	0.0	164.0	6.8	1.1
Sodium, Tot	mg/L	7.76	15.1	7.12	93.0	12.5	54.5	0.0	0.0	171.0	6.9	1.1
Potassium, Tot	mg/L	1.71	2.24	1.69								
Chloride, Tot	mg/L	3.36	4.26	4.26								
Arsenic, Tot	ug/L	0.4	0.4	0.4								
Barium, Tot	ug/L	20.8	30.1	23.0								
Beryllium, Tot	ug/L	<0.2	<0.2	<0.2								
Cadmium, Tot	ug/L	<0.2	<0.2	<0.2								
Chromium, Tot	ug/L	0.2	<0.2	0.2								
Cobalt, Tot	ug/L	<0.2	<0.2	0.2								
Copper, Tot	ug/L	0.7	0.7	1.2								
Iron, Tot	ug/L	7.2	96.5	115.0								
Iron, Diss	ug/L											
Lead, Tot	ug/L	<0.2	0.2	0.5								
Lead, Diss	ug/L											
Manganese, Tot	ug/L	9.1	81.7	188.0								
Manganese, Diss	ug/L											
Thallium, Tot	ug/L	<0.2	<0.2	<0.2								
Molybdenum, Tot	ug/L	0.3	0.2	0.2								
Nickel, Tot	ug/L	0.6	1.0	0.9								
Silver, Tot	ug/L	<0.2	<0.2	<0.2								
Vanadium, Tot	ug/L	<0.2	<0.2	0.2								
Zinc, Tot	ug/L	1.0	1.4	9.7								
Zinc, Diss	ug/L											
Antimony, Tot	ug/L	<0.2	<0.2	<0.2								
Aluminum, Tot	ug/L	<2.0	25.7	51.8								
Aluminum, Diss	ug/L											
Selenium, Tot	ug/L	1.1	1.3	1.0								
Mercury, Tot	ug/L											

CELNRN-EC-H / Water Management Section

Location: Big South Fork Cumberland River, Mile 2.3

Quad: Burnside, KY
HUC: 05130104

Secchi Disk = 1.9 m

Profile Measurements

[illegible]

CELNRN-EC-H / Water Management Section

Location: Pitman Creek, Mile 2.1

Quad: Somerset, KY
HUC: 05130103

Secchi Disk = 1.4 m

Profile Measurements

[illegible]

CELNRN-EC-H / Water Management Section

Location: Beaver Creek, Mile 5.3

Quad: Cumberland City, KY
HUC: 05130103

Secchi Disk = 2.2 m

Profile Measurements

Sample				Depth	Water Temp	Water Temp	Dis Oxygen	Dis Oxygen	Spec Cond	pH	Chloro a F	
Depth ft		0.0	60.0	110.0	ft	deg C	deg F	mg/l	% sat	umho/cm	units	ug/l
Alkalinity, Tot	mg/L	60	60	86	0.0	28.6	83.5	8.9	114.5	185.0	8.7	0.7
Alkalinity, Phenol	mg/L	2	0	0	5.0	27.9	82.2	9.1	115.7	185.0	8.6	2.6
Solids, Tot	mg/L	160	138	164	10.0	27.6	81.7	9.2	116.4	184.0	8.7	2.6
Solids, Tot Diss	mg/L	115	124	150	15.0	27.5	81.5	9.1	114.9	184.0	8.6	2.3
Solids, Tot Susp	mg/L	3.00	3.00	3.00	20.0	27.2	81.0	8.9	111.8	184.0	8.6	2.2
Solids, Vol	mg/L	117	77.0	98.0	25.0	25.5	77.9		8.2	198.0	7.8	3.8
Solids, Vol Diss	mg/L	117	77.0	98.0	30.0	23.8	74.8	6.9	81.7	201.0	7.5	2.8
Solids, Vol Susp	mg/L	<4.00	<4.00	<4.00	35.0	22.0	71.6	4.0	45.8	195.0	7.1	1.5
Ammonia N, Tot	mg/L	0.0546	0.0307	0.0727	40.0	20.9	69.6	3.7	41.5	178.0	7.0	1.2
Kjeldahl N, Tot	mg/L	0.210	<0.130	<0.130	45.0	20.2	68.4	3.9	43.2	170.0	6.9	1.0
NO3+NO2, Tot	mg/L	<0.0200	0.307	0.481	50.0	19.6	67.3	4.2	46.0	165.0	6.9	0.9
Phosphorus, Tot	mg/L	0.0035	<0.002	0.0095	55.0	18.9	66.0	3.7	39.9	170.0	6.9	1.3
Phosphorus, Diss	mg/L	<0.002	<0.002	0.004	60.0	18.0	64.4	2.8	29.7	183.0	6.9	0.5
OrthoPhosphate, D	mg/L	<0.05	<0.05	<0.05	65.0	17.0	62.6	1.6	16.6	197.0	6.9	0.4
Organic Carbon, T	mg/L	2.50	2.40	2.30	70.0	15.7	60.3	1.4	14.2	207.0	7.0	0.3
Hardness, Tot	mg/L	74.9	75.1	96.7	75.0	14.8	58.6	2.0	19.8	213.0	7.0	0.3
Sulfate, Tot	mg/L	31.9	30.4	24.1	80.0	14.1	57.4	2.7	26.4	211.0	7.1	0.3
Calcium, Tot	mg/L	19.5	19.9	28.8	85.0	13.7	56.7	2.7	26.1	217.0	7.1	0.4
Magnesium, Tot	mg/L	6.36	6.18	6.02	90.0	13.2	55.8	1.8	17.2	227.0	7.1	0.4
Sodium, Tot	mg/L	5.79	5.58	4.82	95.0	12.5	54.5	1.4	13.2	221.0	7.0	0.4
Potassium, Tot	mg/L	1.44	1.49	1.40	100.0	11.5	52.7	3.2	29.5	200.0	7.0	0.3
Chloride, Tot	mg/L	3.28	3.36	4.00	105.0	11.0	51.8	2.2	20.0	207.0	7.0	0.3
Arsenic, Tot	ug/L	0.3	0.3	0.6	110.0	10.5	50.9	0.2	1.8	224.0	6.9	0.3
Barium, Tot	ug/L	18.0	19.9	18.2	115.0	10.3	50.5	0.0	0.0	227.0	7.0	0.4
Beryllium, Tot	ug/L	<0.2	<0.2	<0.2	120.0	10.2	50.4	0.0	0.0	230.0	7.0	1.0
Cadmium, Tot	ug/L	<0.2	<0.2	<0.2								
Chromium, Tot	ug/L	<0.2	<0.2	<0.2								
Cobalt, Tot	ug/L	<0.2	<0.2	0.2								
Copper, Tot	ug/L	0.7	0.4	0.3								
Iron, Tot	ug/L	7.5	32.9	64.2								
Iron, Diss	ug/L											
Lead, Tot	ug/L	<0.2	<0.2	<0.2								
Lead, Diss	ug/L											
Manganese, Tot	ug/L	3.2	6.5	456.0								
Manganese, Diss	ug/L											
Thallium, Tot	ug/L	<0.2	<0.2	<0.2								
Molybdenum, Tot	ug/L	<0.2	<0.2	0.3								
Nickel, Tot	ug/L	0.4	0.8	0.6								
Silver, Tot	ug/L	<0.2	<0.2	<0.2								
Vanadium, Tot	ug/L	<0.2	<0.2	<0.2								
Zinc, Tot	ug/L	2.2	0.9	1.1								
Zinc, Diss	ug/L											
Antimony, Tot	ug/L	<0.2	<0.2	<0.2								
Aluminum, Tot	ug/L	<2.0	9.3	<2.0								
Aluminum, Diss	ug/L											
Selenium, Tot	ug/L	1.0	1.0	1.2								
Mercury, Tot	ug/L											