

United States Army Corps of Engineers

Nashville District

CELRN-EC-H / Water Management Section

Station: 3COR10001

Project: Cordell Hull

Location: Cumberland River, Mile 313.2

State: Tennessee

Latitude: 36° 17" 13'

Quad: Carthage, TN

County: Smith

Longitude: 85° 56" 27'

HUC: 05130106

Sample Date: 26 Jun 2013

Water Surface Elevation = 448.2 ft

Stream Flow = 15300 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 70	0.0	20.2	68.4	7.9	87.4	189.0	7.4	
Alkalinity, Phenol	mg/L 0								
Solids, Tot	mg/L 156								
Solids, Tot Diss	mg/L 133								
Solids, Tot Susp	mg/L 8.00								
Solids, Vol	mg/L 127								
Solids, Vol Diss	mg/L 118								
Solids, Vol Susp	mg/L 9.00								
Ammonia N, Tot	mg/L 0.0767								
Kjeldahl N, Tot	mg/L 0.380								
NO3+NO2, Tot	mg/L 0.229								
Phosphorus, Tot	mg/L 0.0141								
Phosphorus, Diss	mg/L 0.0035								
OrthoPhosphate, D	mg/L <0.05								
Organic Carbon, T	mg/L 2.50								
Hardness, Tot	mg/L 101.8								
Sulfate, Tot	mg/L 27.8								
Calcium, Tot	mg/L 21.7								
Magnesium, Tot	mg/L 5.78								
Sodium, Tot	mg/L 4.69								
Potassium, Tot	mg/L 1.32								
Chloride, Tot	mg/L 3.95								
Arsenic, Tot	ug/L <0.5								
Barium, Tot	ug/L 21.6								
Beryllium, Tot	ug/L <0.5								
Cadmium, Tot	ug/L <0.5								
Chromium, Tot	ug/L 1.0								
Cobalt, Tot	ug/L <0.5								
Copper, Tot	ug/L 0.5								
Iron, Tot	ug/L 109.0								
Iron, Diss	ug/L 14.9								
Lead, Tot	ug/L <0.5								
Lead, Diss	ug/L <0.5								
Manganese, Tot	ug/L 83.8								
Manganese, Diss	ug/L 15.5								
Thallium, Tot	ug/L <0.5								
Molybdenum, Tot	ug/L <0.5								
Nickel, Tot	ug/L 2.1								
Silver, Tot	ug/L <0.5								
Vanadium, Tot	ug/L <0.5								
Zinc, Tot	ug/L 2.2								
Zinc, Diss	ug/L 2.2								
Antimony, Tot	ug/L <0.5								
Aluminum, Tot	ug/L 68.2								
Aluminum, Diss	ug/L 10.1								
Selenium, Tot	ug/L <0.5								
Mercury, Tot	ug/L <0.005								

Water Quality Physical / Chemical Data Report

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United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3C0R10020

Project: Cordell Hull

Location: Defeated Creek, Mile 5.2

State: Tennessee

Latitude: 36° 21" 8.5'

Quad: Carthage, TN

County: Smith

Longitude: 85° 53" 37.2'

HUC: 05130106

Sample Date: 26 Jun 2013

Water Surface Elevation =

Stream Flow =

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 188	0.0	22.1	71.8	13.9	159.5	310.0	7.9	
Alkalinity, Phenol	mg/L 3								
Solids, Tot	mg/L 226								
Solids, Tot Diss	mg/L 216								
Solids, Tot Susp	mg/L 1.00								
Solids, Vol	mg/L 128								
Solids, Vol Diss	mg/L 128								
Solids, Vol Susp	mg/L <4.00								
Ammonia N, Tot	mg/L 0.126								
Kjeldahl N, Tot	mg/L 0.120								
NO3+NO2, Tot	mg/L 0.536								
Phosphorus, Tot	mg/L 0.169								
Phosphorus, Diss	mg/L <0.010								
OrthoPhosphate, D	mg/L 0.130								
Organic Carbon, T	mg/L 1.50								
Hardness, Tot	mg/L 197.7								
Sulfate, Tot	mg/L 10.9								
Calcium, Tot	mg/L 57.2								
Magnesium, Tot	mg/L 6.66								
Sodium, Tot	mg/L 1.77								
Potassium, Tot	mg/L 1.28								
Chloride, Tot	mg/L 2.94								
Arsenic, Tot	ug/L <0.5								
Barium, Tot	ug/L 14.5								
Beryllium, Tot	ug/L <0.5								
Cadmium, Tot	ug/L <0.5								
Chromium, Tot	ug/L 2.1								
Cobalt, Tot	ug/L <0.5								
Copper, Tot	ug/L 0.5								
Iron, Tot	ug/L 43.8								
Iron, Diss	ug/L								
Lead, Tot	ug/L <0.5								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 23.6								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L <0.5								
Molybdenum, Tot	ug/L 0.7								
Nickel, Tot	ug/L 3.8								
Silver, Tot	ug/L <0.5								
Vanadium, Tot	ug/L 0.7								
Zinc, Tot	ug/L 1.7								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L <0.5								
Aluminum, Tot	ug/L 46.3								
Aluminum, Diss	ug/L								
Selenium, Tot	ug/L <0.5								
Mercury, Tot	ug/L								

Water Quality Physical / Chemical Data Report

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United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3C0R10022

Project: Cordell Hull

Location: Martin Creek, Mile 4.0

State: Tennessee

Latitude: 36° 14" 22'

Quad: Buffalo Valley, TN

County: Jackson

Longitude: 85° 45" 50'

HUC: 05130106

Sample Date: 26 Jun 2013

Water Surface Elevation =

Stream Flow =

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 159	0.0	21.7	71.1	10.4	118.4	306.0	7.8	
Alkalinity, Phenol	mg/L 0								
Solids, Tot	mg/L 196								
Solids, Tot Diss	mg/L 181								
Solids, Tot Susp	mg/L 2.00								
Solids, Vol	mg/L 99.0								
Solids, Vol Diss	mg/L 99.0								
Solids, Vol Susp	mg/L <4.00								
Ammonia N, Tot	mg/L 0.0464								
Kjeldahl N, Tot	mg/L <0.0700								
NO3+NO2, Tot	mg/L 0.243								
Phosphorus, Tot	mg/L 0.0914								
Phosphorus, Diss	mg/L <0.010								
OrthoPhosphate, D	mg/L 0.0705								
Organic Carbon, T	mg/L 1.50								
Hardness, Tot	mg/L 181.8								
Sulfate, Tot	mg/L 10.8								
Calcium, Tot	mg/L 47.2								
Magnesium, Tot	mg/L 7.76								
Sodium, Tot	mg/L 1.95								
Potassium, Tot	mg/L 0.974								
Chloride, Tot	mg/L 3.68								
Arsenic, Tot	ug/L <0.5								
Barium, Tot	ug/L 14.2								
Beryllium, Tot	ug/L <0.5								
Cadmium, Tot	ug/L <0.5								
Chromium, Tot	ug/L 1.9								
Cobalt, Tot	ug/L <0.5								
Copper, Tot	ug/L 0.67								
Iron, Tot	ug/L 23.4								
Iron, Diss	ug/L								
Lead, Tot	ug/L <0.5								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 8.5								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L <0.5								
Molybdenum, Tot	ug/L 0.8								
Nickel, Tot	ug/L 3.2								
Silver, Tot	ug/L <0.5								
Vanadium, Tot	ug/L <0.5								
Zinc, Tot	ug/L 5.5								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L <0.5								
Aluminum, Tot	ug/L 20.5								
Aluminum, Diss	ug/L								
Selenium, Tot	ug/L <0.5								
Mercury, Tot	ug/L								

Water Quality Physical / Chemical Data Report

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United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3C0R10023

Project: Cordell Hull

Location: Roaring River, Mile 6.2

State: Tennessee

Latitude: 36° 21" 36.5'

Quad: Dodson Branch, TN

County: Jackson

Longitude: 85° 35" 1.8'

HUC: 05130106

Sample Date: 26 Jun 2013

Water Surface Elevation =

Stream Flow =

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 118	0.0	24.5	76.1	8.1	97.1	245.0	7.6	
Alkalinity, Phenol	mg/L 0								
Solids, Tot	mg/L 164								
Solids, Tot Diss	mg/L 152								
Solids, Tot Susp	mg/L 2.00								
Solids, Vol	mg/L 163								
Solids, Vol Diss	mg/L 158								
Solids, Vol Susp	mg/L 5.00								
Ammonia N, Tot	mg/L 0.0266								
Kjeldahl N, Tot	mg/L <0.0700								
NO3+NO2, Tot	mg/L 0.561								
Phosphorus, Tot	mg/L 0.0182								
Phosphorus, Diss	mg/L <0.010								
OrthoPhosphate, D	mg/L <0.05								
Organic Carbon, T	mg/L 1.20								
Hardness, Tot	mg/L 135.2								
Sulfate, Tot	mg/L 7.02								
Calcium, Tot	mg/L 36.4								
Magnesium, Tot	mg/L 5.38								
Sodium, Tot	mg/L 2.52								
Potassium, Tot	mg/L 1.27								
Chloride, Tot	mg/L 5.77								
Arsenic, Tot	ug/L <0.5								
Barium, Tot	ug/L 21.5								
Beryllium, Tot	ug/L <0.5								
Cadmium, Tot	ug/L <0.5								
Chromium, Tot	ug/L 1.6								
Cobalt, Tot	ug/L <0.5								
Copper, Tot	ug/L <0.5								
Iron, Tot	ug/L 22.1								
Iron, Diss	ug/L								
Lead, Tot	ug/L <0.5								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 12.3								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L <0.5								
Molybdenum, Tot	ug/L 0.7								
Nickel, Tot	ug/L 2.5								
Silver, Tot	ug/L <0.5								
Vanadium, Tot	ug/L 0.6								
Zinc, Tot	ug/L 1.8								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L <0.5								
Aluminum, Tot	ug/L 17.2								
Aluminum, Diss	ug/L								
Selenium, Tot	ug/L <0.5								
Mercury, Tot	ug/L								

Water Quality Physical / Chemical Data Report

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United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3C0R10024

Project: Cordell Hull

Location: Mill Creek, Mile 1.7

State: Tennessee

Latitude: 36° 29" 36"

Quad: Burrirstown, TN

County: Clay

Longitude: 85° 33" 3"

HUC: 05130106

Sample Date: 26 Jun 2013

Water Surface Elevation =

Stream Flow =

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 164	0.0	19.5	67.1	9.0	98.3	373.0	7.6	
Alkalinity, Phenol	mg/L 0								
Solids, Tot	mg/L 260								
Solids, Tot Diss	mg/L 252								
Solids, Tot Susp	mg/L <0.250								
Solids, Vol	mg/L 156								
Solids, Vol Diss	mg/L 156								
Solids, Vol Susp	mg/L <4.00								
Ammonia N, Tot	mg/L 0.0340								
Kjeldahl N, Tot	mg/L 0.290								
NO3+NO2, Tot	mg/L 0.0977								
Phosphorus, Tot	mg/L 0.0145								
Phosphorus, Diss	mg/L <0.010								
OrthoPhosphate, D	mg/L <0.05								
Organic Carbon, T	mg/L 1.20								
Hardness, Tot	mg/L 218.2								
Sulfate, Tot	mg/L 36.2								
Calcium, Tot	mg/L 55.9								
Magnesium, Tot	mg/L 9.55								
Sodium, Tot	mg/L 4.38								
Potassium, Tot	mg/L 1.14								
Chloride, Tot	mg/L 7.24								
Arsenic, Tot	ug/L <0.5								
Barium, Tot	ug/L 17.5								
Beryllium, Tot	ug/L <0.5								
Cadmium, Tot	ug/L <0.5								
Chromium, Tot	ug/L 1.9								
Cobalt, Tot	ug/L <0.5								
Copper, Tot	ug/L <0.5								
Iron, Tot	ug/L 26.8								
Iron, Diss	ug/L								
Lead, Tot	ug/L <0.5								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 17.1								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L <0.5								
Molybdenum, Tot	ug/L 0.7								
Nickel, Tot	ug/L 3.7								
Silver, Tot	ug/L <0.5								
Vanadium, Tot	ug/L <0.5								
Zinc, Tot	ug/L 2.3								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L <0.5								
Aluminum, Tot	ug/L 16.5								
Aluminum, Diss	ug/L								
Selenium, Tot	ug/L <0.5								
Mercury, Tot	ug/L								

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3C0R20002

Project: Cordell Hull

Location: Cumberland River, Mile 314.0

State: Tennessee

Latitude: 36° 17" 47'

Quad: Carthage, TN

County: Smith

Longitude: 85° 56" 58'

HUC: 05130106

Sample Date: 26 Jun 2013

Water Surface Elevation = 504.3 ft

Secchi Disk = 1.7 m

Results of Laboratory Analyses

Profile Measurements

Sample	Depth ft	0.0	70.0	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	68	62	0.0	29.8	85.6	10.9	143.0	194.0	9.0	
Alkalinity, Phenol	mg/L	10	0	5.0	28.4	83.1		11.9	192.0	9.0	
Solids, Tot	mg/L	150	137	10.0	23.9	75.0	9.7	115.0	193.0	8.2	
Solids, Tot Diss	mg/L	126	124	15.0	22.2	72.0	7.6	87.4	192.0	7.6	
Solids, Tot Susp	mg/L	1.00	13.0	20.0	20.7	69.3	6.3	70.4	189.0	7.4	
Solids, Vol	mg/L	112	79.0	25.0	19.5	67.1	6.8	74.3	187.0	7.4	
Solids, Vol Diss	mg/L	112	70.0	30.0	18.9	66.0	7.1	76.6	185.0	7.3	
Solids, Vol Susp	mg/L	<4.00	9.00	35.0	18.6	65.5	7.3	78.3	184.0	7.3	
Ammonia N, Tot	mg/L	0.0512	0.0928	40.0	18.4	65.1	7.4	79.1	184.0	7.3	
Kjeldahl N, Tot	mg/L	0.190	0.390	45.0	18.3	64.9	7.3	77.8	183.0	7.3	
NO3+NO2, Tot	mg/L	<0.0200	0.270	50.0	18.3	64.9	7.3	77.8	184.0	7.3	
Phosphorus, Tot	mg/L	0.0060	0.0150	55.0	18.1	64.6	7.2	76.5	184.0	7.3	
Phosphorus, Diss	mg/L	0.0047	0.0078	60.0	18.1	64.6	7.2	76.5	184.0	7.3	
OrthoPhosphate, D	mg/L	<0.05	<0.05	65.0	18.1	64.6	7.2	76.5	183.0	7.3	
Organic Carbon, T	mg/L	2.80	2.00	70.0	18.1	64.6	7.2	76.5	184.0	7.3	
Hardness, Tot	mg/L	105.9	101.0	75.0	18.1	64.6	7.1	75.4	184.0	7.3	
Sulfate, Tot	mg/L	26.1	28.7	78.0	18.1	64.6	7.0	74.3	184.0	7.3	
Calcium, Tot	mg/L	23.4	21.2								
Magnesium, Tot	mg/L	5.76	5.83								
Sodium, Tot	mg/L	4.44	4.79								
Potassium, Tot	mg/L	1.32	1.32								
Chloride, Tot	mg/L	4.10	3.87								
Arsenic, Tot	ug/L	<0.5	<0.5								
Barium, Tot	ug/L	18.0	22.0								
Beryllium, Tot	ug/L	<0.5	<0.5								
Cadmium, Tot	ug/L	<0.5	<0.5								
Chromium, Tot	ug/L	1.0	0.89								
Cobalt, Tot	ug/L	<0.5	<0.5								
Copper, Tot	ug/L	0.6	0.6								
Iron, Tot	ug/L	39.0	166.0								
Iron, Diss	ug/L	7.3	9.2								
Lead, Tot	ug/L	<0.5	<0.5								
Lead, Diss	ug/L	0.5	<0.5								
Manganese, Tot	ug/L	21.5	162.0								
Manganese, Diss	ug/L	2.8	80.0								
Thallium, Tot	ug/L	<0.5	<0.5								
Molybdenum, Tot	ug/L	<0.5	<0.5								
Nickel, Tot	ug/L	2.0	2.2								
Silver, Tot	ug/L	<0.5	<0.5								
Vanadium, Tot	ug/L	<0.5	<0.5								
Zinc, Tot	ug/L	<0.5	1.0								
Zinc, Diss	ug/L	4.4	0.69								
Antimony, Tot	ug/L	<0.5	<0.5								
Aluminum, Tot	ug/L	50.3	67.1								
Aluminum, Diss	ug/L	10.3	7.4								
Selenium, Tot	ug/L	<0.5	<0.5								
Mercury, Tot	ug/L	0.052	0.021								

Water Quality Physical / Chemical Data Report

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United States Army Corps of Engineers

Nashville District

CELRN-EC-H / Water Management Section

Station: 3COR20003

Project: Cordell Hull

Location: Cumberland River, Mile 323.0

State: Tennessee

Latitude: 36° 16" 47'

Quad: Carthage, TN

County: Smith

Longitude: 85° 53" 10'

HUC: 05130106

Sample Date: 26 Jun 2013

Water Surface Elevation = 504.3 ft

Secchi Disk = 1.6 m

(No Laboratory Analyses)

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	29.9	85.8	9.7	127.5	194.0	8.8	
5.0	26.9	80.4	10.6	132.5	193.0	8.7	
10.0	23.1	73.6	8.7	101.7	190.0	7.8	
15.0	21.0	69.8	8.7	97.8	186.0	7.6	
20.0	19.8	67.6	8.2	90.1	184.0	7.5	
25.0	18.8	65.8	7.8	84.0	183.0	7.4	
30.0	18.6	65.5	7.6	81.5	183.0	7.4	
35.0	18.4	65.1	7.5	80.1	183.0	7.3	
40.0	18.4	65.1	7.5	80.1	183.0	7.3	
45.0	18.3	64.9	7.4	78.9	183.0	7.3	
50.0	18.3	64.9	7.4	78.9	183.0	7.3	
55.0	18.3	64.9	7.4	78.9	184.0	7.3	
60.0	18.3	64.9	7.3	77.8	184.0	7.3	
65.0	18.3	64.9	7.3	77.8	184.0	7.2	
70.0	18.3	64.9	7.3	77.8	183.0	7.2	

Water Quality Physical / Chemical Data Report

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United States Army Corps of Engineers

Nashville District

CELRN-EC-H / Water Management Section

Station: 3COR20004

Project: Cordell Hull

Location: Cumberland River, Mile 327.9

State: Tennessee

Latitude: 36° 16" 51'

Quad: Granville, TN

County: Smith

Longitude: 85° 50" 11'

HUC: 05130106

Sample Date: 26 Jun 2013

Water Surface Elevation = 504.3 ft

Secchi Disk = 1.1 m

(No Laboratory Analyses)

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	28.2	82.8	10.6	135.4	191.0	8.9	
5.0	26.3	79.3	10.8	133.6	190.0	8.7	
10.0	22.9	73.2	9.5	110.6	188.0	8.2	
15.0	20.3	68.5	8.5	94.3	186.0	7.7	
20.0	19.5	67.1	8.0	87.4	184.0	7.5	
25.0	18.7	65.7	7.7	82.8	183.0	7.4	
30.0	18.6	65.5	7.7	82.6	183.0	7.4	
35.0	18.5	65.3	7.6	81.4	183.0	7.3	
40.0	18.5	65.3	7.6	81.4	183.0	7.3	
45.0	18.4	65.1	7.6	81.2	183.0	7.3	
50.0	18.4	65.1	7.5	80.1	183.0	7.3	
55.0	18.4	65.1	7.5	80.1	183.0	7.3	
60.0	18.4	65.1	7.5	80.1	183.0	7.3	
63.0	18.4	65.1	7.5	80.1	183.0	7.3	

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3C0R20005

Project: Cordell Hull

Location: Cumberland River, Mile 340.8

State: Tennessee

Latitude: 36° 19" 11'

Quad: Gainesboro, TN

County: Jackson

Longitude: 85° 44" 47'

HUC: 05130106

Sample Date: 26 Jun 2013

Water Surface Elevation = 504.3 ft

Secchi Disk = 0.8 m

Results of Laboratory Analyses

Profile Measurements

Sample Depth ft	25.0	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 60	0.0	26.4	79.5	11.5	142.5	186.0	8.8	
Alkalinity, Phenol	mg/L 0	5.0	23.1	73.6	11.9	139.1	183.0	8.6	
Solids, Tot	mg/L 154	10.0	20.1	68.2	9.4	103.8	182.0	7.8	
Solids, Tot Diss	mg/L 118	15.0	19.0	66.2	8.5	91.9	182.0	7.6	
Solids, Tot Susp	mg/L 4.00	20.0	18.6	65.5	8.1	86.9	182.0	7.5	
Solids, Vol	mg/L 163	25.0	18.5	65.3	8.1	86.7	182.0	7.4	
Solids, Vol Diss	mg/L 156	30.0	18.4	65.1	8.0	85.5	183.0	7.4	
Solids, Vol Susp	mg/L 7.00	35.0	18.3	64.9	8.0	85.3	183.0	7.4	
Ammonia N, Tot	mg/L 0.0565	40.0	18.3	64.9	8.0	85.3	182.0	7.4	
Kjeldahl N, Tot	mg/L 0.300	45.0	18.2	64.8	8.0	85.1	183.0	7.4	
NO3+NO2, Tot	mg/L 0.332	50.0	18.2	64.8	7.8	83.0	183.0	7.4	
Phosphorus, Tot	mg/L 0.0107	55.0	18.2	64.8	7.6	80.9	184.0	7.3	
Phosphorus, Diss	mg/L <0.010								
OrthoPhosphate, D	mg/L <0.05								
Organic Carbon, T	mg/L 2.20								
Hardness, Tot	mg/L 99.2								
Sulfate, Tot	mg/L 27.3								
Calcium, Tot	mg/L 21.0								
Magnesium, Tot	mg/L 5.68								
Sodium, Tot	mg/L 4.58								
Potassium, Tot	mg/L 1.40								
Chloride, Tot	mg/L 3.95								
Arsenic, Tot	ug/L <0.5								
Barium, Tot	ug/L 19.5								
Beryllium, Tot	ug/L <0.5								
Cadmium, Tot	ug/L <0.5								
Chromium, Tot	ug/L 1.1								
Cobalt, Tot	ug/L <0.5								
Copper, Tot	ug/L 0.6								
Iron, Tot	ug/L 87.3								
Iron, Diss	ug/L								
Lead, Tot	ug/L <0.5								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 42.9								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L <0.5								
Molybdenum, Tot	ug/L <0.5								
Nickel, Tot	ug/L 2.1								
Silver, Tot	ug/L <0.5								
Vanadium, Tot	ug/L <0.5								
Zinc, Tot	ug/L <0.5								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L <0.5								
Aluminum, Tot	ug/L 68.8								
Aluminum, Diss	ug/L								
Selenium, Tot	ug/L <0.5								
Mercury, Tot	ug/L								

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3C0R20006

Project: Cordell Hull

Location: Cumberland River, Mile 358.6

State: Tennessee

Latitude: 36° 23" 5'

Quad: Whitleyville, TN

County: Jackson

Longitude: 85° 38" 31'

HUC: 05130106

Sample Date: 26 Jun 2013

Water Surface Elevation = 504.3 ft

Secchi Disk = 1.7 m

Results of Laboratory Analyses

Profile Measurements

Sample Depth ft	15.0	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	0.0	19.8	67.6	9.1	99.9	182.0	7.6	
Alkalinity, Phenol	mg/L 0	5.0	19.6	67.3		9.2	182.0	7.6	
Solids, Tot	mg/L 148	10.0	18.9	66.0	8.8	95.0	182.0	7.5	
Solids, Tot Diss	mg/L 130	15.0	18.7	65.7	8.8	94.6	182.0	7.5	
Solids, Tot Susp	mg/L 3.00	20.0	18.5	65.3	8.7	93.1	182.0	7.5	
Solids, Vol	mg/L 77.0	25.0	18.4	65.1	8.7	93.0	182.0	7.5	
Solids, Vol Diss	mg/L 72.0	30.0	18.3	64.9	8.5	90.6	184.0	7.5	
Solids, Vol Susp	mg/L 5.00	33.0	18.3	64.9	8.5	90.6	187.0	7.5	
Ammonia N, Tot	mg/L 0.0907								
Kjeldahl N, Tot	mg/L 0.590								
NO3+NO2, Tot	mg/L 0.320								
Phosphorus, Tot	mg/L 0.0045								
Phosphorus, Diss	mg/L <0.010								
OrthoPhosphate, D	mg/L <0.05								
Organic Carbon, T	mg/L 2.20								
Hardness, Tot	mg/L 98.9								
Sulfate, Tot	mg/L 80.8								
Calcium, Tot	mg/L 20.0								
Magnesium, Tot	mg/L 5.94								
Sodium, Tot	mg/L 4.97								
Potassium, Tot	mg/L 1.33								
Chloride, Tot	mg/L 3.97								
Arsenic, Tot	ug/L <0.5								
Barium, Tot	ug/L 20.0								
Beryllium, Tot	ug/L <0.5								
Cadmium, Tot	ug/L <0.5								
Chromium, Tot	ug/L 1.0								
Cobalt, Tot	ug/L <0.5								
Copper, Tot	ug/L 0.7								
Iron, Tot	ug/L 69.3								
Iron, Diss	ug/L								
Lead, Tot	ug/L <0.5								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 42.7								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L <0.5								
Molybdenum, Tot	ug/L <0.5								
Nickel, Tot	ug/L 2.0								
Silver, Tot	ug/L <0.5								
Vanadium, Tot	ug/L <0.5								
Zinc, Tot	ug/L 0.9								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L <0.5								
Aluminum, Tot	ug/L 86.2								
Aluminum, Diss	ug/L								
Selenium, Tot	ug/L <0.5								
Mercury, Tot	ug/L								

United States Army Corps of Engineers
Station: 3COR20007
State: Tennessee
County: Clay
Sample Date: 26 Jun 2013

Nashville District
Project: Cordell Hull
Latitude: 36° 29" 44'
Longitude: 85° 34" 19'
Water Surface Elevation = 504.3 ft

CELRN-EC-H / Water Management Section
Location: Cumberland River, Mile 374.0
Quad: Burrstown, TN
HUC: 05130106
Secchi Disk = 1.8 m

(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	17.6	63.7	8.7	91.5	180.0	7.7	
5.0	17.4	63.3	8.8	92.1	179.0	7.6	
10.0	17.4	63.3	8.7	91.1	179.0	7.6	
15.0	17.4	63.3	8.7	91.1	179.0	7.6	
20.0	17.4	63.3	8.7	91.1	179.0	7.5	
25.0	17.4	63.3	8.7	91.1	179.0	7.5	
29.0	17.4	63.3	8.7	91.1	179.0	7.5	

CELNRN-EC-H / Water Management Section

Location: Defeated Creek, Mile 1.0

Quad: Carthage, TN
HUC: 05130106

Secchi Disk = 1.1 m

Profile Measurements

[illegible]

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3C0R20010

Project: Cordell Hull

Location: Cumberland River, Mile 381.0

State: Tennessee

Latitude: 36° 33" 23'

Quad: Celina, TN-KY

County: Clay

Longitude: 85° 30" 44'

HUC: 05130103

Sample Date: 26 Jun 2013

Water Surface Elevation = 504.3 ft

Secchi Disk = 2.0 m

Results of Laboratory Analyses

Profile Measurements

Sample Depth ft	10.0	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	0.0	18.2	64.8	9.2	97.9	177.0	8.0	
Alkalinity, Phenol	mg/L 0	5.0	17.8	64.0		9.1	176.0	7.8	
Solids, Tot	mg/L 150	10.0	17.8	64.0	9.1	96.1	177.0	7.7	
Solids, Tot Diss	mg/L 125	15.0	17.7	63.9	9.2	96.9	177.0	7.7	
Solids, Tot Susp	mg/L 3.00	20.0	17.7	63.9	9.2	96.9	177.0	7.7	
Solids, Vol	mg/L 79.0								
Solids, Vol Diss	mg/L 79.0								
Solids, Vol Susp	mg/L <4.00								
Ammonia N, Tot	mg/L 0.0980								
Kjeldahl N, Tot	mg/L 0.350								
NO3+NO2, Tot	mg/L 0.334								
Phosphorus, Tot	mg/L 0.0070								
Phosphorus, Diss	mg/L <0.010								
OrthoPhosphate, D	mg/L <0.05								
Organic Carbon, T	mg/L 2.50								
Hardness, Tot	mg/L 94.5								
Sulfate, Tot	mg/L 31.3								
Calcium, Tot	mg/L 18.4								
Magnesium, Tot	mg/L 5.89								
Sodium, Tot	mg/L 5.32								
Potassium, Tot	mg/L 1.32								
Chloride, Tot	mg/L 4.12								
Arsenic, Tot	ug/L <0.5								
Barium, Tot	ug/L 19.2								
Beryllium, Tot	ug/L <0.5								
Cadmium, Tot	ug/L <0.5								
Chromium, Tot	ug/L 0.7								
Cobalt, Tot	ug/L <0.5								
Copper, Tot	ug/L 0.7								
Iron, Tot	ug/L 82.5								
Iron, Diss	ug/L								
Lead, Tot	ug/L <0.5								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 36.1								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L <0.5								
Molybdenum, Tot	ug/L <0.5								
Nickel, Tot	ug/L 1.9								
Silver, Tot	ug/L <0.5								
Vanadium, Tot	ug/L <0.5								
Zinc, Tot	ug/L 0.6								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L <0.5								
Aluminum, Tot	ug/L 61.1								
Aluminum, Diss	ug/L								
Selenium, Tot	ug/L <0.5								
Mercury, Tot	ug/L								

CELNRN-EC-H / Water Management Section

Location: Roaring River, Mile 0.8

Quad: Whitleyville, TN
HUC: 05130106

Secchi Disk = 1.0 m

Profile Measurements

[illegible]