

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: 25 Sep 2014

Water Surface Elevation = 449.0 ft

Stream Flow = 15600 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 62	0.0	18.4	65.1	8.5	90.8	189.0	7.5	
Alkalinity, Phenol	mg/L 0								
Solids, Tot	mg/L 158								
Solids, Tot Diss	mg/L 155								
Solids, Tot Susp	mg/L 3.00								
Solids, Vol	mg/L <1.00								
Solids, Vol Diss	mg/L <1.00								
Solids, Vol Susp	mg/L <1.40								
Ammonia N, Tot	mg/L 0.0369								
Kjeldahl N, Tot	mg/L 0.230								
NO3+NO2, Tot	mg/L 0.326								
Phosphorus, Tot	mg/L 0.0116								
Phosphorus, Diss	mg/L <0.007								
OrthoPhosphate, D	mg/L <0.05								
Organic Carbon, T	mg/L 1.70								
Hardness, Tot	mg/L 81.2								
Sulfate, Tot	mg/L 5.55								
Calcium, Tot	mg/L 22.4								
Magnesium, Tot	mg/L 6.16								
Sodium, Tot	mg/L 5.90								
Potassium, Tot	mg/L 1.47								
Chloride, Tot	mg/L 29.3								
Arsenic, Tot	ug/L 0.4								
Barium, Tot	ug/L								
Beryllium, Tot	ug/L								
Cadmium, Tot	ug/L								
Chromium, Tot	ug/L								
Cobalt, Tot	ug/L								
Copper, Tot	ug/L 1.0								
Iron, Tot	ug/L 69.0								
Iron, Diss	ug/L 8.9								
Lead, Tot	ug/L 0.68								
Lead, Diss	ug/L 0.6								
Manganese, Tot	ug/L 53.9								
Manganese, Diss	ug/L 5.4								
Thallium, Tot	ug/L								
Molybdenum, Tot	ug/L								
Nickel, Tot	ug/L 2.0								
Silver, Tot	ug/L								
Vanadium, Tot	ug/L								
Zinc, Tot	ug/L 11.0								
Zinc, Diss	ug/L 3.9								
Antimony, Tot	ug/L								
Aluminum, Tot	ug/L 20.9								
Aluminum, Diss	ug/L <7.0								
Selenium, Tot	ug/L 0.3								
Mercury, Tot	ug/L <0.005								

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: 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: 25 Sep 2014

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 190	0.0	19.5	67.1	10.3	112.5	368.0	7.9	
Alkalinity, Phenol	mg/L 0								
Solids, Tot	mg/L 244								
Solids, Tot Diss	mg/L 242								
Solids, Tot Susp	mg/L 2.00								
Solids, Vol	mg/L <1.00								
Solids, Vol Diss	mg/L <1.00								
Solids, Vol Susp	mg/L <1.40								
Ammonia N, Tot	mg/L 0.0418								
Kjeldahl N, Tot	mg/L <0.2								
NO3+NO2, Tot	mg/L 0.632								
Phosphorus, Tot	mg/L 0.158								
Phosphorus, Diss	mg/L 0.151								
OrthoPhosphate, D	mg/L 0.127								
Organic Carbon, T	mg/L <1.00								
Hardness, Tot	mg/L 193								
Sulfate, Tot	mg/L 3.82								
Calcium, Tot	mg/L 64.5								
Magnesium, Tot	mg/L 7.78								
Sodium, Tot	mg/L 2.30								
Potassium, Tot	mg/L 1.41								
Chloride, Tot	mg/L 12.1								
Arsenic, Tot	ug/L 0.4								
Barium, Tot	ug/L								
Beryllium, Tot	ug/L								
Cadmium, Tot	ug/L								
Chromium, Tot	ug/L								
Cobalt, Tot	ug/L								
Copper, Tot	ug/L 0.5								
Iron, Tot	ug/L 37.4								
Iron, Diss	ug/L								
Lead, Tot	ug/L 0.6								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 28.2								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L								
Molybdenum, Tot	ug/L								
Nickel, Tot	ug/L 3.4								
Silver, Tot	ug/L								
Vanadium, Tot	ug/L								
Zinc, Tot	ug/L 2.2								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L								
Aluminum, Tot	ug/L 12.9								
Aluminum, Diss	ug/L								
Selenium, Tot	ug/L 0.4								
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: 25 Sep 2014

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 170	0.0	19.3	66.7	9.3	101.2	338.0	7.7	
Alkalinity, Phenol	mg/L 0								
Solids, Tot	mg/L 224								
Solids, Tot Diss	mg/L 224								
Solids, Tot Susp	mg/L <2.00								
Solids, Vol	mg/L <1.00								
Solids, Vol Diss	mg/L <1.00								
Solids, Vol Susp	mg/L <1.40								
Ammonia N, Tot	mg/L 0.0281								
Kjeldahl N, Tot	mg/L <0.2								
NO3+NO2, Tot	mg/L 0.290								
Phosphorus, Tot	mg/L 0.0890								
Phosphorus, Diss	mg/L 0.085								
OrthoPhosphate, D	mg/L 0.0710								
Organic Carbon, T	mg/L <1.00								
Hardness, Tot	mg/L 178								
Sulfate, Tot	mg/L 4.69								
Calcium, Tot	mg/L 56.0								
Magnesium, Tot	mg/L 9.25								
Sodium, Tot	mg/L 2.49								
Potassium, Tot	mg/L 1.03								
Chloride, Tot	mg/L 11.3								
Arsenic, Tot	ug/L 0.4								
Barium, Tot	ug/L								
Beryllium, Tot	ug/L								
Cadmium, Tot	ug/L								
Chromium, Tot	ug/L								
Cobalt, Tot	ug/L								
Copper, Tot	ug/L 0.6								
Iron, Tot	ug/L 21.9								
Iron, Diss	ug/L								
Lead, Tot	ug/L 0.9								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 9.0								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L								
Molybdenum, Tot	ug/L								
Nickel, Tot	ug/L 2.9								
Silver, Tot	ug/L								
Vanadium, Tot	ug/L								
Zinc, Tot	ug/L 4.0								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L								
Aluminum, Tot	ug/L 46.6								
Aluminum, Diss	ug/L								
Selenium, Tot	ug/L 0.3								
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: 25 Sep 2014

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 124	0.0	22.1	71.8	9.8	112.5	252.0	7.9	
Alkalinity, Phenol	mg/L 0								
Solids, Tot	mg/L 166								
Solids, Tot Diss	mg/L 166								
Solids, Tot Susp	mg/L <2.00								
Solids, Vol	mg/L <1.00								
Solids, Vol Diss	mg/L <1.00								
Solids, Vol Susp	mg/L <1.40								
Ammonia N, Tot	mg/L 0.0292								
Kjeldahl N, Tot	mg/L <0.2								
NO3+NO2, Tot	mg/L 0.251								
Phosphorus, Tot	mg/L 0.0167								
Phosphorus, Diss	mg/L 0.025								
OrthoPhosphate, D	mg/L <0.05								
Organic Carbon, T	mg/L <1.00								
Hardness, Tot	mg/L 125								
Sulfate, Tot	mg/L 7.01								
Calcium, Tot	mg/L 39.4								
Magnesium, Tot	mg/L 6.36								
Sodium, Tot	mg/L 2.92								
Potassium, Tot	mg/L 1.39								
Chloride, Tot	mg/L 8.76								
Arsenic, Tot	ug/L 0.4								
Barium, Tot	ug/L								
Beryllium, Tot	ug/L								
Cadmium, Tot	ug/L								
Chromium, Tot	ug/L								
Cobalt, Tot	ug/L								
Copper, Tot	ug/L 0.4								
Iron, Tot	ug/L 19.1								
Iron, Diss	ug/L								
Lead, Tot	ug/L 0.61								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 10.1								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L								
Molybdenum, Tot	ug/L								
Nickel, Tot	ug/L 2.2								
Silver, Tot	ug/L								
Vanadium, Tot	ug/L								
Zinc, Tot	ug/L 1.6								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L								
Aluminum, Tot	ug/L <7.0								
Aluminum, Diss	ug/L								
Selenium, Tot	ug/L 0.3								
Mercury, Tot	ug/L								

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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: 25 Sep 2014

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 180	0.0	16.4	61.5	7.2	73.9	421.0	7.6	
Alkalinity, Phenol	mg/L 0								
Solids, Tot	mg/L 320								
Solids, Tot Diss	mg/L 318								
Solids, Tot Susp	mg/L 2.00								
Solids, Vol	mg/L <1.00								
Solids, Vol Diss	mg/L <1.00								
Solids, Vol Susp	mg/L <1.40								
Ammonia N, Tot	mg/L 0.0360								
Kjeldahl N, Tot	mg/L <0.2								
NO3+NO2, Tot	mg/L 0.0451								
Phosphorus, Tot	mg/L 0.0125								
Phosphorus, Diss	mg/L 0.015								
OrthoPhosphate, D	mg/L <0.05								
Organic Carbon, T	mg/L <1.00								
Hardness, Tot	mg/L 213								
Sulfate, Tot	mg/L 10.2								
Calcium, Tot	mg/L 65.8								
Magnesium, Tot	mg/L 11.7								
Sodium, Tot	mg/L 5.98								
Potassium, Tot	mg/L 1.34								
Chloride, Tot	mg/L 45.6								
Arsenic, Tot	ug/L 0.4								
Barium, Tot	ug/L								
Beryllium, Tot	ug/L								
Cadmium, Tot	ug/L								
Chromium, Tot	ug/L								
Cobalt, Tot	ug/L								
Copper, Tot	ug/L 0.5								
Iron, Tot	ug/L 33.8								
Iron, Diss	ug/L								
Lead, Tot	ug/L 0.6								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 23.7								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L								
Molybdenum, Tot	ug/L								
Nickel, Tot	ug/L 3.7								
Silver, Tot	ug/L								
Vanadium, Tot	ug/L								
Zinc, Tot	ug/L 1.9								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L								
Aluminum, Tot	ug/L <7.0								
Aluminum, Diss	ug/L								
Selenium, Tot	ug/L 0.3								
Mercury, Tot	ug/L								

United States Army Corps of Engineers

Nashville District

CELRN-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: 25 Sep 2014

Water Surface Elevation = 503.9 ft

Secchi Disk = 1.5 m

Results of Laboratory Analyses

Profile Measurements

Sample Depth ft	40.0	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 62	0.0	22.8	73.0	10.7	124.4	201.0	8.8	12.6
Alkalinity, Phenol	mg/L 0	5.0	22.7	72.9	10.9	126.5	200.0	8.7	12.9
Solids, Tot	mg/L 150	10.0	22.2	72.0	11.2	128.8	200.0	8.7	15.4
Solids, Tot Diss	mg/L 147	15.0	19.8	67.6	9.6	105.4	199.0	7.9	25.4
Solids, Tot Susp	mg/L 3.00	20.0	18.2	64.8	7.6	80.9	198.0	7.5	12.6
Solids, Vol	mg/L <1.00	25.0	17.6	63.7	7.4	77.8	197.0	7.4	7.7
Solids, Vol Diss	mg/L <1.00	30.0	17.1	62.8	7.2	74.9	196.0	7.3	7.1
Solids, Vol Susp	mg/L <1.40	35.0	16.7	62.1	7.2	74.3	196.0	7.3	5.8
Ammonia N, Tot	mg/L 0.0510	40.0	16.6	61.9	7.0	72.1	196.0	7.3	5.1
Kjeldahl N, Tot	mg/L <0.2	45.0	16.4	61.5	7.0	71.8	196.0	7.3	4.4
NO3+NO2, Tot	mg/L 0.397	50.0	16.3	61.3	7.0	71.7	196.0	7.3	4.1
Phosphorus, Tot	mg/L 0.0076	55.0	16.3	61.3	7.0	71.7	196.0	7.3	4.2
Phosphorus, Diss	mg/L <0.007	60.0	16.2	61.2	6.9	70.5	196.0	7.3	3.9
OrthoPhosphate, D	mg/L <0.05	65.0	16.2	61.2	6.8	69.5	196.0	7.3	3.7
Organic Carbon, T	mg/L 1.50	70.0	16.2	61.2	6.8	69.5	196.0	7.3	3.9
Hardness, Tot	mg/L 79.4	75.0	16.2	61.2	6.8	69.5	195.0	7.3	3.7
Sulfate, Tot	mg/L 5.70	80.0	16.2	61.2	6.9	70.5	196.0	7.3	3.7
Calcium, Tot	mg/L 21.7								
Magnesium, Tot	mg/L 6.12								
Sodium, Tot	mg/L 5.87								
Potassium, Tot	mg/L 1.45								
Chloride, Tot	mg/L 29.8								
Arsenic, Tot	ug/L 0.4								
Barium, Tot	ug/L								
Beryllium, Tot	ug/L								
Cadmium, Tot	ug/L								
Chromium, Tot	ug/L								
Cobalt, Tot	ug/L								
Copper, Tot	ug/L 0.5								
Iron, Tot	ug/L 67.9								
Iron, Diss	ug/L <7.0								
Lead, Tot	ug/L <0.2								
Lead, Diss	ug/L <0.2								
Manganese, Tot	ug/L 53.1								
Manganese, Diss	ug/L 1.8								
Thallium, Tot	ug/L								
Molybdenum, Tot	ug/L								
Nickel, Tot	ug/L 1.7								
Silver, Tot	ug/L								
Vanadium, Tot	ug/L								
Zinc, Tot	ug/L 1.2								
Zinc, Diss	ug/L 1.5								
Antimony, Tot	ug/L								
Aluminum, Tot	ug/L 21.1								
Aluminum, Diss	ug/L <7.0								
Selenium, Tot	ug/L 0.3								
Mercury, Tot	ug/L 0.06								

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: 25 Sep 2014

Water Surface Elevation = 503.9 ft

Secchi Disk = 1.7 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	23.9	75.0	9.7	115.0	201.0	8.3	7.0
5.0	21.7	71.1	10.3	117.3	200.0	8.4	11.0
10.0	19.7	67.5	10.9	119.5	198.0	8.2	20.4
15.0	18.9	66.0	9.8	105.8	198.0	7.8	14.5
20.0	18.1	64.6	9.0	95.6	197.0	7.7	12.8
25.0	17.2	63.0	8.4	87.6	196.0	7.5	10.7
30.0	16.8	62.2	7.9	81.7	196.0	7.4	8.3
35.0	16.7	62.1	7.9	81.5	195.0	7.4	7.0
40.0	16.5	61.7	7.7	79.1	195.0	7.4	6.0
45.0	16.4	61.5	7.6	78.0	196.0	7.3	5.7
50.0	16.4	61.5	7.4	75.9	196.0	7.3	5.5
55.0	16.4	61.5	7.4	75.9	196.0	7.3	4.7
60.0	16.3	61.3	7.4	75.7	196.0	7.3	4.8
65.0	16.4	61.5	7.4	75.9	196.0	7.3	4.7
70.0	16.4	61.5	7.4	75.9	195.0	7.3	4.7

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: 25 Sep 2014

Water Surface Elevation = 503.9 ft

Secchi Disk = 1.4 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	21.2	70.2	10.2	115.1	199.0	8.3	8.3
5.0	19.2	66.6	10.6	115.1	199.0	8.3	16.1
10.0	18.3	64.9	9.9	105.6	197.0	7.9	18.8
15.0	18.0	64.4	9.6	101.7	196.0	7.7	17.4
20.0	17.2	63.0	8.7	90.7	196.0	7.6	10.7
25.0	16.8	62.2	8.3	85.8	195.0	7.5	7.7
30.0	16.7	62.1	8.1	83.6	195.0	7.4	7.6
35.0	16.6	61.9	8.0	82.4	196.0	7.4	7.4
40.0	16.6	61.9	7.9	81.4	195.0	7.4	6.8
45.0	16.6	61.9	7.9	81.4	195.0	7.4	6.6
50.0	16.5	61.7	7.8	80.2	196.0	7.4	6.4
55.0	16.5	61.7	7.7	79.1	195.0	7.4	5.8

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: 25 Sep 2014

Water Surface Elevation = 503.9 ft

Secchi Disk = 1.1 m

Results of Laboratory Analyses

Profile Measurements

Sample Depth ft	20.0	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	21.0	69.8	9.9	111.3	198.0	8.0	11.7
Alkalinity, Phenol	mg/L 0	5.0	17.5	63.5	9.5	99.7	196.0	7.8	12.7
Solids, Tot	mg/L 134	10.0	16.8	62.2	8.7	90.0	195.0	7.6	9.8
Solids, Tot Diss	mg/L 130	15.0	16.7	62.1	8.3	85.7	194.0	7.5	8.0
Solids, Tot Susp	mg/L 4.00	20.0	16.7	62.1	8.2	84.6	194.0	7.5	8.2
Solids, Vol	mg/L <1.00	25.0	16.5	61.7	8.2	84.3	195.0	7.4	6.3
Solids, Vol Diss	mg/L <1.00	30.0	16.5	61.7	8.0	82.2	195.0	7.4	6.1
Solids, Vol Susp	mg/L <1.40	35.0	16.4	61.5	8.0	82.1	195.0	7.4	5.8
Ammonia N, Tot	mg/L 0.0385	40.0	16.4	61.5	8.0	82.1	195.0	7.4	5.4
Kjeldahl N, Tot	mg/L <0.2	45.0	16.4	61.5	7.9	81.0	195.0	7.4	5.4
NO3+NO2, Tot	mg/L 0.432	50.0	16.4	61.5	7.9	81.0	195.0	7.4	5.4
Phosphorus, Tot	mg/L 0.0082	55.0	16.4	61.5	7.9	81.0	194.0	7.4	5.5
Phosphorus, Diss	mg/L <0.007	58.0	16.4	61.5	7.9	81.0	195.0	7.4	5.5
OrthoPhosphate, D	mg/L <0.05								
Organic Carbon, T	mg/L 1.60								
Hardness, Tot	mg/L 78.9								
Sulfate, Tot	mg/L 5.47								
Calcium, Tot	mg/L 21.6								
Magnesium, Tot	mg/L 6.03								
Sodium, Tot	mg/L 5.69								
Potassium, Tot	mg/L 1.44								
Chloride, Tot	mg/L 29.4								
Arsenic, Tot	ug/L 0.3								
Barium, Tot	ug/L								
Beryllium, Tot	ug/L								
Cadmium, Tot	ug/L								
Chromium, Tot	ug/L								
Cobalt, Tot	ug/L								
Copper, Tot	ug/L 0.6								
Iron, Tot	ug/L 56.1								
Iron, Diss	ug/L								
Lead, Tot	ug/L <0.2								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 32.8								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L								
Molybdenum, Tot	ug/L								
Nickel, Tot	ug/L 1.9								
Silver, Tot	ug/L								
Vanadium, Tot	ug/L								
Zinc, Tot	ug/L 2.8								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L								
Aluminum, Tot	ug/L 13.5								
Aluminum, Diss	ug/L								
Selenium, Tot	ug/L 0.24								
Mercury, Tot	ug/L								

United States Army Corps of Engineers

Nashville District

CELRN-EC-H / Water Management Section

Station: 3COR20006

Project: Cordell Hull

Location: Cumberland River, Mile 358.6

State: Tennessee
County: Jackson

Latitude: 36° 23" 5'
Longitude: 85° 38" 31'

Quad: Whitleyville, TN
HUC: 05130106

Sample Date: 25 Sep 2014

Water Surface Elevation = 503.9 ft

Secchi Disk = 2.1 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	16.4	61.5	8.2	84.1	189.0	7.4	1.8	
5.0	15.6	60.1	8.2	82.7	190.0	7.4	2.1	
10.0	15.4	59.7	8.2	82.4	190.0	7.4	2.5	
15.0	15.4	59.7	8.1	81.4	190.0	7.4	2.3	
20.0	15.4	59.7	8.0	80.3	189.0	7.4	2.3	
25.0	15.4	59.7	8.0	80.3	189.0	7.4	2.2	
30.0	15.4	59.7	8.0	80.3	189.0	7.4	2.2	
35.0	15.4	59.7	8.0	80.3	190.0	7.4	2.2	

United States Army Corps of Engineers

Station: 3COR20007

State: Tennessee

County: Clay

Sample Date: 25 Sep 2014

Nashville District

Project: Cordell Hull

Latitude: 36° 29" 44'

Longitude: 85° 34" 19'

Water Surface Elevation = 503.9 ft

CELRN-EC-H / Water Management Section

Location: Cumberland River, Mile 374.0

Quad: Burrstown, TN

HUC: 05130106

Secchi Disk = 2.8 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	14.8	58.6	8.5	84.3	191.0	7.4	1.2	
5.0	14.9	58.8	8.5	84.5	190.0	7.4	1.3	
10.0	14.8	58.6	8.4	83.3	191.0	7.4	1.5	
15.0	14.8	58.6	8.4	83.3	191.0	7.4	1.6	
20.0	14.8	58.6	8.4	83.3	191.0	7.4	1.7	
25.0	14.7	58.5	8.4	83.1	191.0	7.4	1.6	
29.0	14.7	58.5	8.4	83.1	190.0	7.4	1.7	

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3C0R20008

Project: Cordell Hull

Location: Defeated Creek, Mile 1.0

State: Tennessee

Latitude: 36° 18" 11'

Quad: Carthage, TN

County: Smith

Longitude: 85° 54" 9'

HUC: 05130106

Sample Date: 25 Sep 2014

Water Surface Elevation = 503.9 ft

Secchi Disk = 1.4 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 68	0.0	22.1	71.8	11.9	136.5	202.0	9.0	11.3
Alkalinity, Phenol	mg/L 0	5.0	21.6	70.9	12.2	138.7	201.0	9.0	27.2
Solids, Tot	mg/L 156	10.0	19.7	67.5	9.5	104.1	201.0	8.0	29.9
Solids, Tot Diss	mg/L 153	15.0	19.2	66.6	7.9	85.8	203.0	7.6	27.4
Solids, Tot Susp	mg/L 3.00	20.0	18.2	64.8	4.3	45.8	201.0	7.3	14.2
Solids, Vol	mg/L <1.00	25.0	17.5	63.5	3.2	33.6	199.0	7.1	9.1
Solids, Vol Diss	mg/L <1.00	30.0	16.6	61.9	3.7	38.1	198.0	7.1	6.8
Solids, Vol Susp	mg/L <1.40	35.0	16.4	61.5	3.8	39.0	198.0	7.1	6.8
Ammonia N, Tot	mg/L 0.0429								
Kjeldahl N, Tot	mg/L 0.230								
NO3+NO2, Tot	mg/L 0.243								
Phosphorus, Tot	mg/L 0.0105								
Phosphorus, Diss	mg/L <0.007								
OrthoPhosphate, D	mg/L <0.05								
Organic Carbon, T	mg/L 1.70								
Hardness, Tot	mg/L 82.7								
Sulfate, Tot	mg/L 5.69								
Calcium, Tot	mg/L 22.9								
Magnesium, Tot	mg/L 6.22								
Sodium, Tot	mg/L 5.72								
Potassium, Tot	mg/L 1.53								
Chloride, Tot	mg/L 28.8								
Arsenic, Tot	ug/L 0.5								
Barium, Tot	ug/L								
Beryllium, Tot	ug/L								
Cadmium, Tot	ug/L								
Chromium, Tot	ug/L								
Cobalt, Tot	ug/L								
Copper, Tot	ug/L 0.4								
Iron, Tot	ug/L 36.4								
Iron, Diss	ug/L								
Lead, Tot	ug/L 0.3								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 34.9								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L								
Molybdenum, Tot	ug/L								
Nickel, Tot	ug/L 1.7								
Silver, Tot	ug/L								
Vanadium, Tot	ug/L								
Zinc, Tot	ug/L 3.2								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L								
Aluminum, Tot	ug/L <7.0								
Aluminum, Diss	ug/L								
Selenium, Tot	ug/L 0.37								
Mercury, Tot	ug/L								

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: 25 Sep 2014

Water Surface Elevation = 503.9 ft

Secchi Disk = 2.7 m

Results of Laboratory Analyses

Profile Measurements

Sample Depth ft	5.0	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 58	0.0	15.0	59.0	8.2	81.7	189.0	7.4	1.5
Alkalinity, Phenol	mg/L 0	5.0	14.9	58.8	8.1	80.5	188.0	7.4	1.9
Solids, Tot	mg/L 154	10.0	14.9	58.8	8.1	80.5	188.0	7.4	1.7
Solids, Tot Diss	mg/L 150	15.0	14.9	58.8	8.2	81.5	188.0	7.4	1.7
Solids, Tot Susp	mg/L 4.00	20.0	14.9	58.8	8.1	80.5	188.0	7.4	1.7
Solids, Vol	mg/L <1.00								
Solids, Vol Diss	mg/L <1.00								
Solids, Vol Susp	mg/L <1.40								
Ammonia N, Tot	mg/L 0.0503								
Kjeldahl N, Tot	mg/L <0.2								
NO3+NO2, Tot	mg/L 0.473								
Phosphorus, Tot	mg/L <0.007								
Phosphorus, Diss	mg/L <0.007								
OrthoPhosphate, D	mg/L <0.05								
Organic Carbon, T	mg/L 1.60								
Hardness, Tot	mg/L 74.3								
Sulfate, Tot	mg/L 31.8								
Calcium, Tot	mg/L 19.6								
Magnesium, Tot	mg/L 6.17								
Sodium, Tot	mg/L 6.24								
Potassium, Tot	mg/L 1.49								
Chloride, Tot	mg/L 5.31								
Arsenic, Tot	ug/L 0.3								
Barium, Tot	ug/L								
Beryllium, Tot	ug/L								
Cadmium, Tot	ug/L								
Chromium, Tot	ug/L								
Cobalt, Tot	ug/L								
Copper, Tot	ug/L 0.6								
Iron, Tot	ug/L 46.6								
Iron, Diss	ug/L								
Lead, Tot	ug/L <0.2								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 23.1								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L								
Molybdenum, Tot	ug/L								
Nickel, Tot	ug/L 1.6								
Silver, Tot	ug/L								
Vanadium, Tot	ug/L								
Zinc, Tot	ug/L 3.4								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L								
Aluminum, Tot	ug/L 14.3								
Aluminum, Diss	ug/L								
Selenium, Tot	ug/L 0.2								
Mercury, Tot	ug/L								

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3C0R20015

Project: Cordell Hull

Location: Martin Creek, Mile 1.0

State: Tennessee

Latitude: 36° 16" 20'

Quad: Granville, TN

County: Jackson

Longitude: 85° 47" 27.6'

HUC: 05130106

Sample Date: 25 Sep 2014

Water Surface Elevation = 503.9 ft

Secchi Disk = 1.4 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 61	0.0	22.3	72.1	11.2	129.0	206.0	8.8	7.8
Alkalinity, Phenol	mg/L 0	5.0	21.1	70.0	11.4	128.4	205.0	8.8	17.6
Solids, Tot	mg/L 146	10.0	18.0	64.4	8.3	88.0	197.0	8.0	22.7
Solids, Tot Diss	mg/L 142	15.0	16.9	62.4	6.1	63.2	196.0	7.4	12.9
Solids, Tot Susp	mg/L 4.00	20.0	16.6	61.9	3.5	36.1	198.0	7.1	9.1
Solids, Vol	mg/L <1.00	25.0	16.2	61.2	0.8	8.2	200.0	7.0	9.4
Solids, Vol Diss	mg/L <1.00	28.0	16.1	61.0	0.2	2.0	202.0	7.0	9.4
Solids, Vol Susp	mg/L 1.90								
Ammonia N, Tot	mg/L 0.0375								
Kjeldahl N, Tot	mg/L 0.300								
NO3+NO2, Tot	mg/L 0.314								
Phosphorus, Tot	mg/L 0.0102								
Phosphorus, Diss	mg/L 0.008								
OrthoPhosphate, D	mg/L <0.05								
Organic Carbon, T	mg/L 1.80								
Hardness, Tot	mg/L 79.8								
Sulfate, Tot	mg/L 5.50								
Calcium, Tot	mg/L 22.0								
Magnesium, Tot	mg/L 6.03								
Sodium, Tot	mg/L 5.79								
Potassium, Tot	mg/L 1.47								
Chloride, Tot	mg/L 29.5								
Arsenic, Tot	ug/L 0.4								
Barium, Tot	ug/L								
Beryllium, Tot	ug/L								
Cadmium, Tot	ug/L								
Chromium, Tot	ug/L								
Cobalt, Tot	ug/L								
Copper, Tot	ug/L 0.5								
Iron, Tot	ug/L 54.6								
Iron, Diss	ug/L								
Lead, Tot	ug/L <0.2								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 50.9								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L								
Molybdenum, Tot	ug/L								
Nickel, Tot	ug/L 1.7								
Silver, Tot	ug/L								
Vanadium, Tot	ug/L								
Zinc, Tot	ug/L 3.2								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L								
Aluminum, Tot	ug/L 13.7								
Aluminum, Diss	ug/L								
Selenium, Tot	ug/L 0.3								
Mercury, Tot	ug/L								

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3C0R20016

Project: Cordell Hull

Location: Roaring River, Mile 0.8

State: Tennessee

Latitude: 36° 22" 43'

Quad: Whitleyville, TN

County: Jackson

Longitude: 85° 38" 7.8'

HUC: 05130106

Sample Date: 25 Sep 2014

Water Surface Elevation = 503.9 ft

Secchi Disk = 0.9 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 73	0.0	20.3	68.5	9.8	108.7	253.0	8.3	11.0
Alkalinity, Phenol	mg/L 0	5.0	16.3	61.3	8.1	82.9	200.0	7.7	33.4
Solids, Tot	mg/L 166	10.0	15.6	60.1	7.6	76.7	197.0	7.5	11.0
Solids, Tot Diss	mg/L 158	15.0	15.5	59.9	6.6	66.4	198.0	7.3	9.4
Solids, Tot Susp	mg/L 8.00	20.0	15.4	59.7	4.1	41.2	200.0	7.2	7.4
Solids, Vol	mg/L <1.00	24.0	15.4	59.7	3.7	37.2	202.0	7.1	7.5
Solids, Vol Diss	mg/L <1.00								
Solids, Vol Susp	mg/L 1.70								
Ammonia N, Tot	mg/L 0.0614								
Kjeldahl N, Tot	mg/L 0.340								
NO3+NO2, Tot	mg/L 0.397								
Phosphorus, Tot	mg/L 0.0099								
Phosphorus, Diss	mg/L 0.008								
OrthoPhosphate, D	mg/L <0.05								
Organic Carbon, T	mg/L 1.60								
Hardness, Tot	mg/L 85.8								
Sulfate, Tot	mg/L 5.53								
Calcium, Tot	mg/L 24.3								
Magnesium, Tot	mg/L 6.13								
Sodium, Tot	mg/L 5.46								
Potassium, Tot	mg/L 1.48								
Chloride, Tot	mg/L 27.1								
Arsenic, Tot	ug/L 0.4								
Barium, Tot	ug/L								
Beryllium, Tot	ug/L								
Cadmium, Tot	ug/L								
Chromium, Tot	ug/L								
Cobalt, Tot	ug/L								
Copper, Tot	ug/L 0.5								
Iron, Tot	ug/L 90.0								
Iron, Diss	ug/L								
Lead, Tot	ug/L <0.2								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 73.8								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L								
Molybdenum, Tot	ug/L								
Nickel, Tot	ug/L 1.9								
Silver, Tot	ug/L								
Vanadium, Tot	ug/L								
Zinc, Tot	ug/L 3.8								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L								
Aluminum, Tot	ug/L 27.8								
Aluminum, Diss	ug/L								
Selenium, Tot	ug/L 0.3								
Mercury, Tot	ug/L								