Appendix 5

REEDY CREEK FEASIBILITY STUDY
REEDY CREEK STREAM RESTORATION BENTHIC MACROINVERTABRATE MONITORING AND WATER QUALITY SAMPLING SUMMARY REPORT

S&ME Project No. 1357-11-011
Individual Project Order No. 015016139-1

Prepared for:

Kimley-Horn and Associates, Inc.

4651 Charlotte Park Drive
Charlotte, North Carolina 28217

Prepared by:

S&ME

Charlotte, North Carolina

June 29, 2011

June 29, 2011

Kimley-Horn and Associates, Inc.
4651 Charlotte Park Drive
Suite 300
Charlotte, North Carolina 28217

Attention: Mr. Will Wilhelm, P.E.

Subject: **Sampling Results**
Reedy Creek Feasibility Study
Charlotte, North Carolina
S&ME Project No. 1357-11-011

Dear Mr. Wilhelm:

S&ME, Inc. (S&ME) is pleased to present Kimley-Horn and Associates, Inc. (KHA) with benthic macroinvertebrate monitoring and water quality sampling results in connection with the above-referenced project. The work was performed in general accordance with S&ME Proposal No. 1357-23735-11 rev3 and a March 2010 Master Agreement for Continuing Professional Services between KHA and S&ME, as referenced in the KHA individual project order number 015016139-1.

If you need additional information with respect to this report, please do not hesitate to contact us at 704.523.4726.

Sincerely,

S&ME

D. David Homans
Natural Resources Project Professional

Darrin M. Peine, QEP
Natural Resources Project Professional

Senior Review by Liz Porter, V.P.

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BACKGROUND INFORMATION

KHA is conducting an assessment of the Reedy Creek drainage basin for Charlotte-Mecklenburg Storm Water Services. The project area consists of three reaches of Reedy Creek tributaries within the Reedy Creek Park and Nature Preserve, located off Rocky River Road. The Reedy Creek Park and Nature Preserve is owned and managed by Mecklenburg County Parks and Recreation. The approximate location of the project area is depicted by a Site Vicinity map (Figure 1) and the appropriate portion of the 1996 Harrisburg, N.C. USGS topographic map (Figure 2). In support of Kimley Horn's assessment, S&ME conducted benthic macroinvertebrate monitoring and water quality sampling at three representative locations (Reach 1, Reach 2 and Reach 3) within three segments (reaches) of Reedy Creek tributaries that Kimley Horn identified for possible restoration opportunities. The locations of these sampling site areas are identified on Figure 2, and a 2010 aerial photograph (Figure 3). Monitoring site Reach 1 is located at approximately 35.26365^{o} N, -80.71160^{o} W, monitoring site Reach 2 is located at approximately 35.26355^{o} N, -80.71336^{o} W, and monitoring site Reach 3 is located at approximately 35.26803^{o} N, -80.71033^{o} W. Fieldwork was conducted jointly by S&ME and Kimley Horn personnel on May 24, 2011.

1. SCOPE OF SERVICES

S&ME's approach to conducting the necessary sampling was based on Tasks 2.2.2 as specified in the *Reedy Creek Tech Memo - Scope of Services* provided for S&ME by KHA, and is as follows:

1.1 Benthic Macroinvertebrate Sampling

S&ME conducted benthic macroinvertebrate sampling in accordance with Task 2.2.2 of the aforementioned *Reedy Creek Tech Memo - Scope of Services* at three specific biomonitoring sites determined by KHA. The field collection effort was lead by S&ME staff trained and certified to collect benthic macroinvertebrate as part of the Division of Water Quality (DWQ) 401 certification process, and who have obtained a Certification of Compliance from DWQ's training course: *Aquatic Insect Collection Protocols for Stream Mitigation and Restoration Projects as Related to NCDENR DWQ 401 Certifications*. S&ME staff was assisted in the field by a biologist from KHA.

The Qual-4 collection method (used for perennial streams having catchment sizes of less than 640 acres) was utilized. The Qual-4 collection method entails four samples taken at each monitoring site: one kick net sample, one sweep net sample, one leafpack, and one "visual." In this method, organisms collected were "picked" and preserved in the field using 95% Ethyl Alcohol. S&ME then sent the collected samples and associated Benthos Collection Cards to Lenat Consulting Services (Lenat) in Raleigh, North Carolina. Lenat identified the collected specimens to the lowest possible taxonomic level, and provided abundance values for each taxon. The calculation of metrics from the Qual-4 method include total and EPT taxa richness, EPT abundance, North Carolina Biotic Index (NCBI), and bioclassification values. Metrics were calculated according to the NC Department of Environment and Natural Resources (NCDENR) DWQ July 2006 *Standard Operating Procedure for Benthic Macroinvertebrates*.

1.2 Water Quality Sampling

S&ME also conducted water quality monitoring in general accordance with Task 2.2.2 of the aforementioned *Reedy Creek Tech Memo - Scope of Services*. Water quality parameters were collected approximately concurrently with biological data at each monitoring site. Specifically, the parameters were collected during normal flow conditions and were then used to calculate a water quality index (WQI) using the Charlotte-Mecklenburg Storm Water Services prescribed method. A water quality meter was used to determine ambient water conditions, e.g., surface water temperature, dissolved oxygen, and pH. Grab samples were collected to assess the surface water chemical conditions, e.g., fecal coliform, phosphorous, nitrates, biological oxygen demand, total solids and total dissolved solids. Laboratory results of the grab samples were analyzed and reported by Shealy Environmental Services, Inc.

Following completion of the field and laboratory work identified above, S&ME prepared this written summary that describes the findings of our fieldwork and laboratory analysis. We have included maps of station locations, a list of taxa collected, and summary statistics (taxa richness, abundance, biotic index values, etc.). Ambient and laboratory water quality measurements were also used to provide a calculation of the WQI.

2. RESULTS

2.1 Benthic Macroinvertebrate Sampling

Table 3.1 summarizes the benthic macroinvertebrate data collected at each monitoring site, sampled on May 24, 2011. Benthos collection cards, a list of identified taxa prepared by Lenat Consulting Services, and the summary data calculation worksheet is included in Appendix II.

Table 3.1 Summary of Benthic Macroinvertebrate Data

Parameter	Monitoring Sites		
	Reach 1	Reach 2	Reach 3
Total Taxa Richness	16	17	22
Total Abundance	66	55	82
EPT Taxa Richness	4	2	9
EPT Abundance	34	8	48
NCBI	6.5 Fair	7.1 Poor	4.9 Good

Because the three monitored stream reaches are smaller than four meters wide and have a drainage area less than three square miles, the NCBI values are used to determine bioclassification ratings. Summary data indicated that a healthier macroinvertebrate community was present in Reach 3, than in Reach 1 and Reach 2, with overall more individuals and taxa, highest EPT taxa richness, and a lower NCBI value. Reach 3 was also different from Reach 1 and Reach 2 with several intolerant species being present: *Chimarra, Diplectrona modesta*, and *Paraleptophlebia* and *Baetis pluto*.

2.2 Water Quality Sampling

Results of the general water quality sampling are presented in two reports dated June 3 and June 27, 2011 prepared by Shealy Environmental Services, Inc. (Appendix III), and summarized in Table 3.2. A second sampling effort was necessary in order to obtain the

Total Solids and lab turbidity parameters used to calculate the WQI. These parameters were not collected during the initial sampling effort.

Table 3.2 Summary of Water Quality Data

Testing Parameter		Monitoring Site			Class C Water Quality Standards or Typical Range
	Units	Reach 1	Reach 2	Reach 3	
Nitrate	mg/L	0.49	0.086	1.3	<1 mg/L[3]
Phosphorus	mg/L	0.054	0.021	0.025	<0.4 mg/L[3]
BOD5	mg/L	ND	ND	ND	<5 mg/L[3]
Fecal Coliform	col/100ml	520	100	690	< 200/100ml mean[2]
Turbidity (lab)	NTU	ND	4.4	1.2	< 50 NTU[2]
pH	SU	6.95	6.26	7.44	Between 6.0 and 9.0[2]
DO	mg/L	9.22	6.54	8.93	> than 5.0 mg/l[2]
Temperature	°C	19.25	18.4	19.22	< 2.8° C above natural water temperature[2]
TDS	mg/L	100	92	130	<200 mg/L[3]
TS	mg/L	96	100	93	<200 mg/L[3]
WQI[1]	-	**83.5**	**77.4**	**83.6**	**-**

mg/L = milligram per liter; col/100ml = colonies per 100 milliliters; NTU = nephelometric turbidity unit
SU = standard units; °C = degrees Celsius; ND = Not detected
[1] WQI Scores: 0-25 = poor; 26-50 = fair; 51-70 = average; 71-90 = good; and 91-100 = excellent
[2] Class C Water Quality Standard
[3] Typical Range

Each of the three monitoring sites had an adjusted WQI rating classification of "good." However, a source of possible water quality impairment was observed at Reach 1 and Reach 3 where fecal coliform levels were slightly elevated.

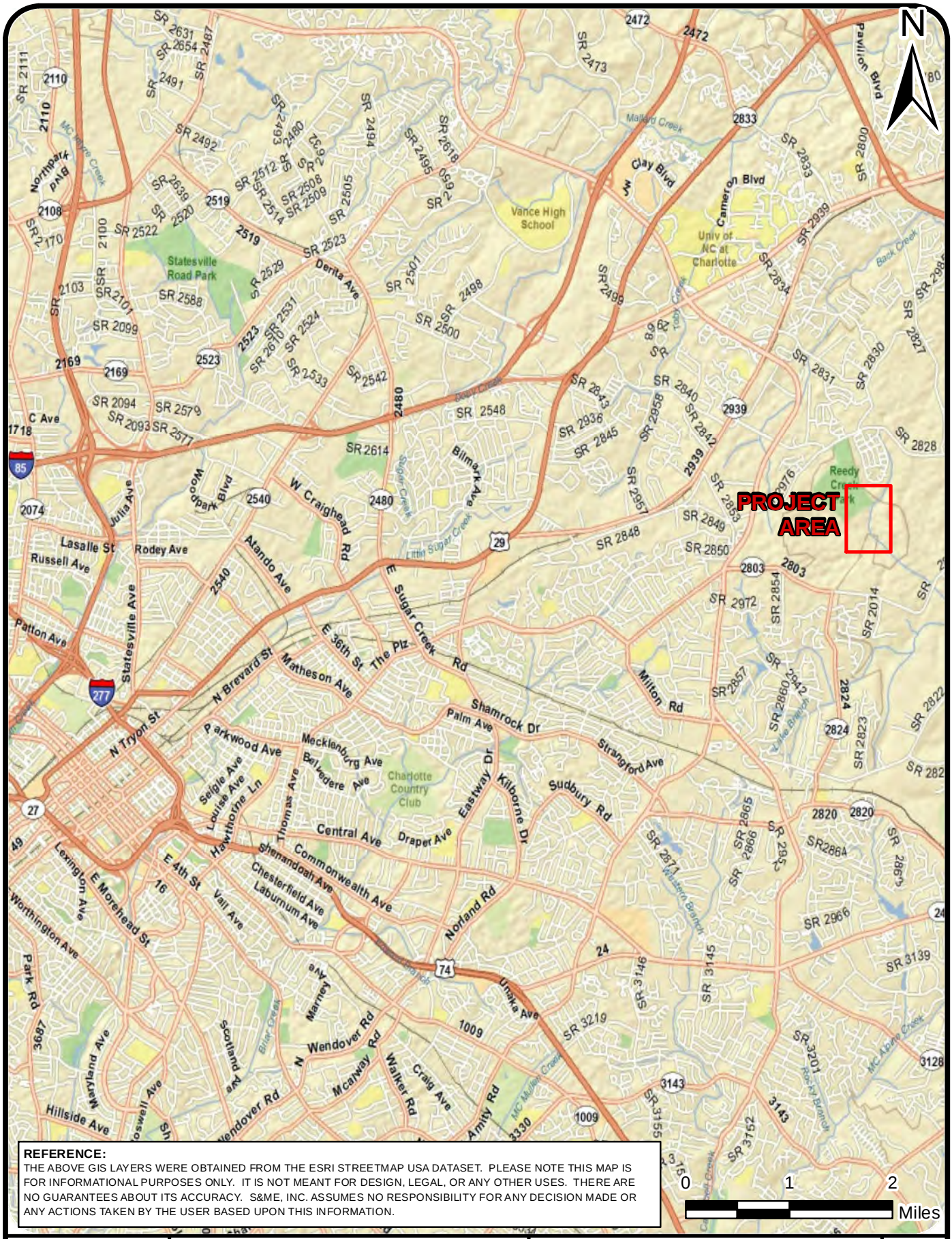
3. CONCLUSIONS

Although much of the area around the three monitoring sites contains forested buffer (which would typically facilitate greater macroinvertebrate density by providing habitat, shade, and coarse particulate organic matter), Reach 1 and Reach 2 exhibited an impaired benthic community and received low total and EPT taxa richness and a high biotic index value relative to Reach 3. The macroinvertebrate community at Reach 1 and Reach 2 are likely limited due to a lack of high quality riffle habitat which often supports a great deal of the macroinvertebrate community diversity in headwater streams.

Although WQI scores and benthic macroinvertebrate results observed were at a level considered acceptable for activities involving direct contact with the water, they generally appear to be in the declining stages of impairment that are typical of their surrounding urban setting located outside of the park area. This is particularly true at sites Reach 1 and Reach 2 where degraded stream banks appear to be impairing the condition of the macroinvertebrate community present. Reach 3, which is located slightly higher in the watershed, also exhibited degraded stream banks; however, this site also contained more suitable substrate habitat such as rocks and cobble and therefore does not appear to be experiencing significant impairment to the macroinvertebrate community at this time. It is possible that the macrobenthic community is being limited by bed scour occurring during flash flows that often occur frequently in streams in urban settings.

Although streams of this size are too small to be formally rated, the presence of several intolerant species in Reach 3 (*Chimarra, Diplectrona modesta,* and *Paraleptophlebia* and *Baetis Pluto*) indicates that the streams are likely capable of supporting a healthier macroinvertebrate community if environmental stressors typical of an urbanized watershed were mitigated.

FIGURES



REFERENCE:
THE ABOVE GIS LAYERS WERE OBTAINED FROM THE ESRI STREETMAP USA DATASET. PLEASE NOTE THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. IT IS NOT MEANT FOR DESIGN, LEGAL, OR ANY OTHER USES. THERE ARE NO GUARANTEES ABOUT ITS ACCURACY. S&ME, INC. ASSUMES NO RESPONSIBILITY FOR ANY DECISION MADE OR ANY ACTIONS TAKEN BY THE USER BASED UPON THIS INFORMATION.

0 1 2 Miles

SCALE:	AS SHOWN
DATE:	6-29-2011
DRAWN BY:	DDH
CHECKED BY:	DMP

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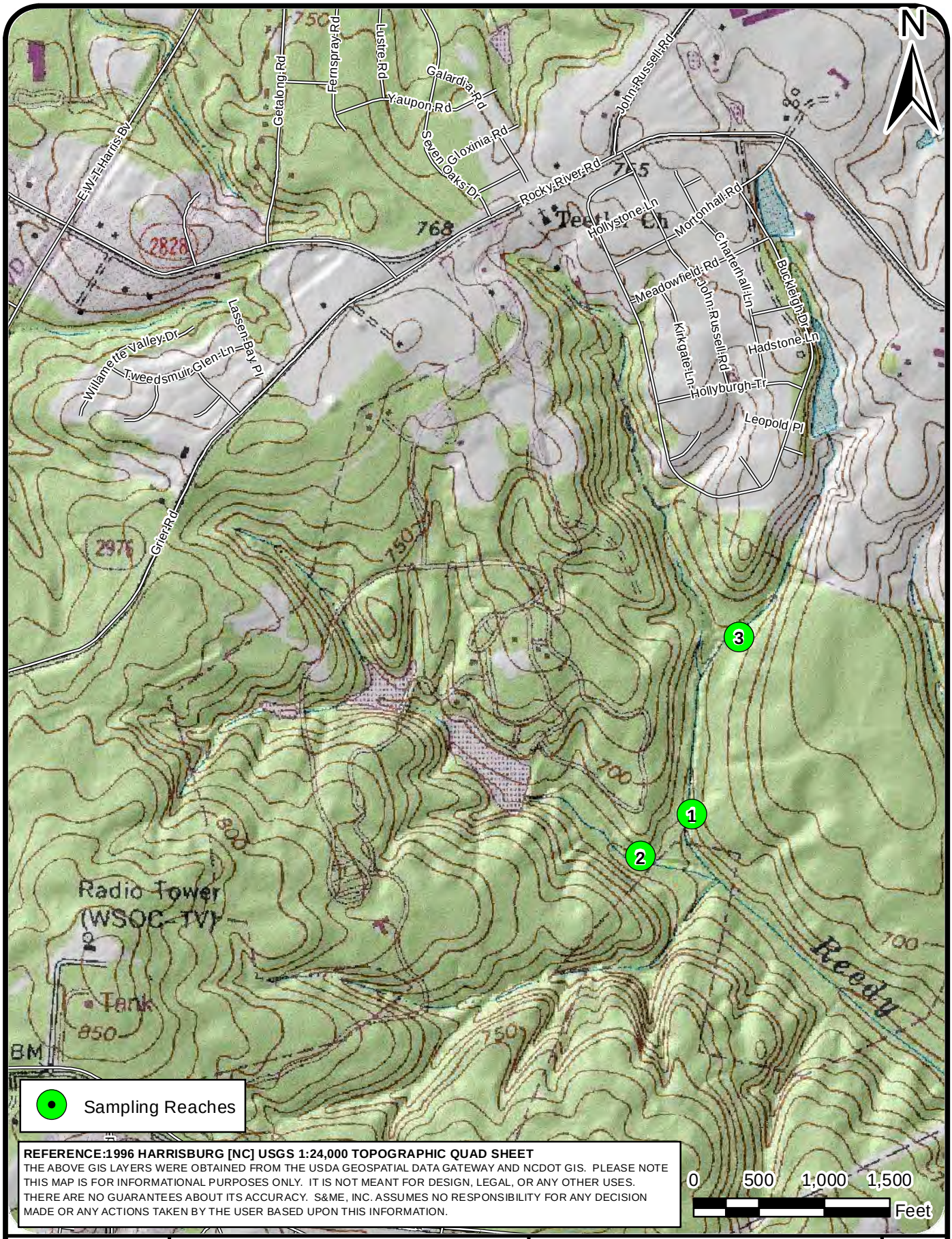
SITE VICINITY MAP

Reedy Creek Feasability Study
Charlotte, North Carolina

PROJECT NO: 1357-11-011

FIGURE NO. 1



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DATE:	6-29-2011
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CHECKED BY:	DMP

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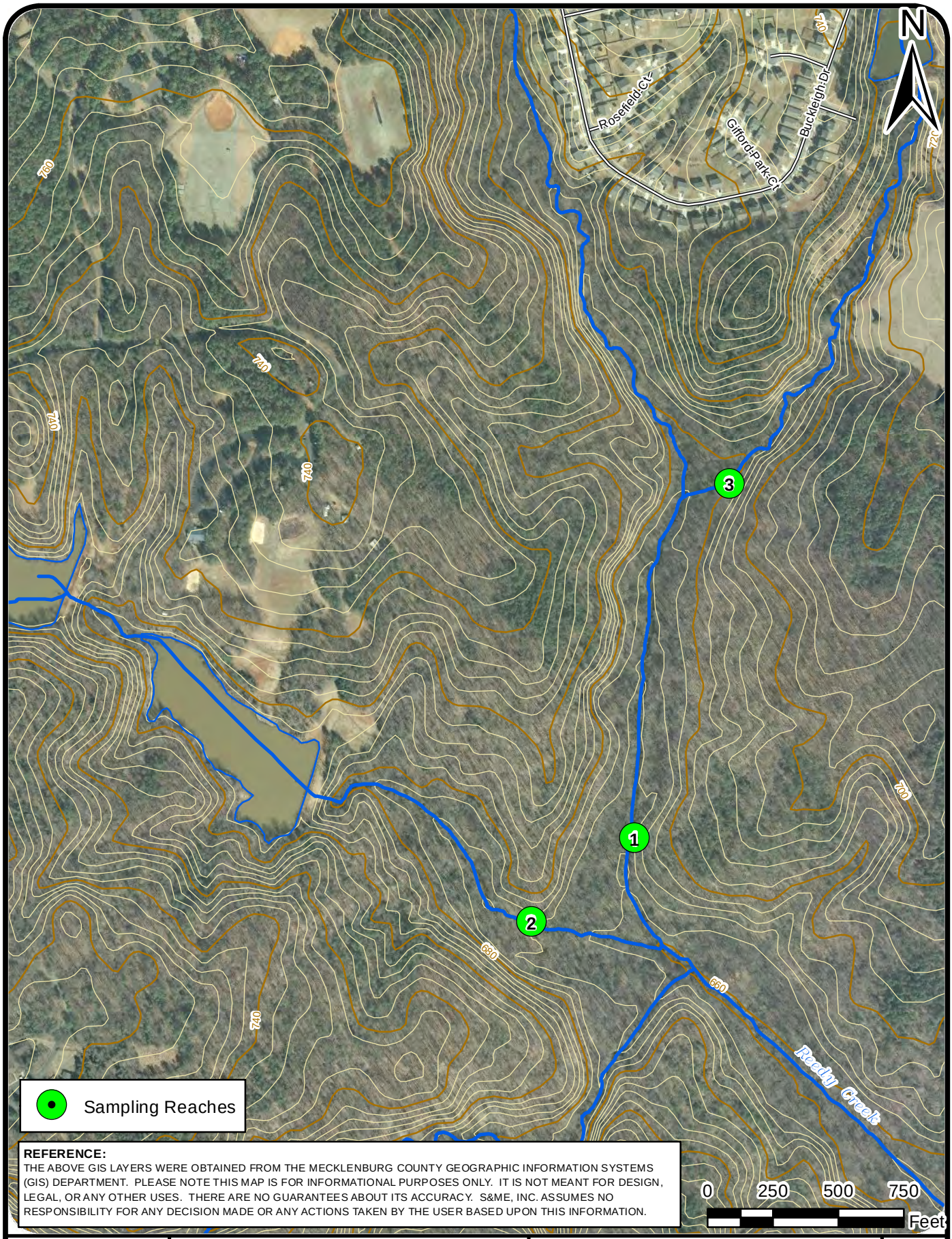
USGS TOPOGRAPHIC MAP

Reedy Creek Feasability Study
Charlotte, North Carolina

PROJECT NO: 1357-11-011

FIGURE NO. 2



REFERENCE:
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SCALE:	1" = 500'
DATE:	6-29-2011
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CHECKED BY:	DMP

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2010 AERIAL PHOTOGRAPH

Reedy Creek Feasability Study
Charlotte, North Carolina

PROJECT NO: 1357-11-011

FIGURE NO. 3

APPENDIX I

BIOLOGICAL FIELD ASSESSMENT DATA

Benthos Collection Cards

List of Collected Taxa, and

Biomonitoring Summary Data Calculation Worksheet

Sample Site: Reach 1 Reedy Creek

BENTHOS COLLECTION CARD

DATE	**5/24/11**	COLLECT. TIME	**10:00**	COLLECTORS	**S&ME, KHA**	CARD#	**1**
STAT. LOC.	**35.26365, -80.71160**	RIVER BASIN	**Catawba**	COUNTY	**Mecklenburg**		

Substrate:			River:		Field Parameters:				
Boulder (10")	**0**	%	Mid depth	**1 ft**	Bank erosion	None	Mod	**Severe**	
Cobble (2 ½ - 10")	**5**	%	Max depth	**3 ft**	Canopy %	**100**	Type	**trees**	
Gravel (2 ½ - 1/12")	**5**	%	Width	**6 ft**	Aufwuchs	None	**Mod**	Severe	
Sand (1/12")	**60**	%	Current	**slow**	Podostemum	**None**	Mod	Severe	
Silt, fine particles	**30**	%	Recent Rain?	**No**	Tribs present?		**no**		
Other	**-**	%	Photos (#)						

Instream Habitat: (0, +, ++)				Samples: (# + Comments)		Water Chemistry	
Pools	**+**	Backwaters	**0**	Kicks	**1**	pH	**6.95**
Riffles	**+**	Detritus	**+**	Sweeps	**1**	Conductivity	
Snags	**0**	Aquatic weeds	**0**	Leaf Packs	**1**	Dissolved Oxygen	**9.22**
Undercut	**+**	Other		Rock-Log		Temperature	**19.25 C**
Root Mats	**0**			Sand		Total Dissovled Solids	
				Visuals	**1**		
				Other			

Field Observation: **Severely eroded banks, unknown cause**

Sample Site: Reach 2 Reedy Creek

BENTHOS COLLECTION CARD

DATE	**5/24/11**	COLLECT. TIME	**10:45**	COLLECTORS	**S&ME, KHA**	CARD#	**2**
STAT. LOC.	**35.26355, -80.71336**	RIVER BASIN	**Catawba**	COUNTY	**Mecklenburg**		

Substrate:			River:		Field Parameters:				
Boulder (10")	**0**	%	Mid depth	**1 ft**	Bank erosion	None	Mod	**Severe**	
Cobble (2 ½ - 10")	**10**	%	Max depth	**3 ft**	Canopy %	**100**	Type	**trees**	
Gravel (2 ½ - 1/12")	**10**	%	Width	**6 ft**	Aufwuchs	None	**Mod**	Severe	
Sand (1/12")	**60**	%	Current	**slow**	Podostemum	**None**	Mod	Severe	
Silt, fine particles	**20**	%	Recent Rain?	**No**	Tribs present?		**no**		
Other	**-**	%	Photos (#)						

Instream Habitat: (0, +, ++)				Samples: (# + Comments)		Water Chemistry	
Pools	**+**	Backwaters	**0**	Kicks	**1**	pH	**6.26**
Riffles	**+**	Detritus	**+**	Sweeps	**1**	Conductivity	
Snags	**+**	Aquatic weeds	**0**	Leaf Packs	**1**	Dissolved Oxygen	**6.54**
Undercut	**+**	Other		Rock-Log		Temperature	**18.4 C**
Root Mats	**0**			Sand		Total Dissovled Solids	
				Visuals	**1**		
				Other			

Field Observation: **Severely eroded banks, unknown cause; substrate course sand**

Sample Site: Reach 3 Reedy Creek

BENTHOS COLLECTION CARD

DATE	**5/24/11**	COLLECT. TIME	**12:45**	COLLECTORS	**S&ME, KHA**	CARD#	**3**
STAT. LOC.	**35.26803, -80.71033**	RIVER BASIN	**Catawba**	COUNTY	**Mecklenburg**		

Substrate:			River:		Field Parameters:				
Boulder (10")	**0**	%	Mid depth	**1 ft**	Bank erosion	None	Mod	**Severe**	
Cobble (2 ½ - 10")	**10**	%	Max depth	**3 ft**	Canopy %	**100**	Type	**trees**	
Gravel (2 ½ - 1/12")	**10**	%	Width	**9 ft**	Aufwuchs	None	**Mod**	Severe	
Sand (1/12")	**60**	%	Current	**slow**	Podostemum	**None**	Mod	Severe	
Silt, fine particles	**20**	%	Recent Rain?	**No**	Tribs present?		**no**		
Other	**-**	%	Photos (#)						

Instream Habitat: (0, +, ++)				Samples: (# + Comments)		Water Chemistry	
Pools	**+**	Backwaters	**0**	Kicks	**1**	pH	**7.4**
Riffles	**+**	Detritus	**+**	Sweeps	**1**	Conductivity	
Snags	**+**	Aquatic weeds	**0**	Leaf Packs	**1**	Dissolved Oxygen	**8.9**
Undercut	**+**	Other		Rock-Log		Temperature	**19.2 C**
Root Mats	**0**			Sand		Total Dissovled Solids	
				Visuals	**1**		
				Other			

Field Observation: **Severely eroded banks, unknown cause; substrate course sand with bedrock**

Taxa list and abundance for Reedy Creek sites (Reach 1 (R1), Reach 2 (R2), Reach 3 (R3)), Mecklenburg County, 25 May 2011, S&ME.
DATA SOURCE: LENAT CONSULTING

Taxon	TV	Feeding Gr[1]	R1	R2	R3
EPHEMEROPTERA					
Baetis flavistriga	7.0	Scraper	16	-	1
Baetis pluto	4.3	Scraper	2	-	6
Acerpenna pygmaea	3.9	C-G	-	-	2
Maccaffertium modestum	5.5	C-G	-	2	12
Paraleptophlebia sp	0.9	C-G	-	-	2
TRICHOPTERA					
Cheumatopsyche spp	6.2	Filterer	12	6	11
Hydropsyche betteni	7.8	Filterer	4	-	1
Diplectrona modesta	2.2	Filterer	-	-	2
Chirnarra sp	2.8	Filterer	-	-	11
COLEOPTERA					
Stenelmis crenata	7.0	C-G	-	-	1
Neoporus sp	8.6	Predator	-	6	-
ODONATA					
Argia sp	8.2	Predator	-	-	3
DIPTERA: MISCELANEOUS					
Tipula spp	7.3	Shredder	7	11	3
Antocha sp	4.3	Scraper	-	-	1
Hexatoma sp	4.3	Predator	-	-	5
Pseuodplimnophila sp	7.2	C-G	-	-	2
Anopheles sp	8.6	Filterer	1	-	-
Dixa spp	2.6	Predator	-	2	6
Empididae	7.6	C-G	-	1	-
Simulium sp	6.0	Predator	8	2	4
Simulium venustum	7.1	Predator	1	8	-
Bittacomorpha sp	-	C-G	-	1	-
DIPTERA: CHIRONOMIDAE					
Ablabesmyia mallochi	7.2	Predator	-	-	1
Conchapelopia group	8.4	Predator	1	1	2
Chironomus spp	9.6	C-G	-	5	-
Cryptochironomus sp	6.4	Predator	-	-	1
Microtendipes sp	5.5	C-G	3	-	4
Phaenopsectra flavipes gr.	7.9	C-G	1	-	-
Phaenopsectra sp	6.5	C-G	4	-	-
Paracladopelma sp	5.5	Predator?	1	-	-
Polypedilum illinoense	9.0	C-G	1	-	-
Polypedilum flavum	4.9	C-G	-	2	1
Polypedilum fallax	6.4	C-G	-	1	-
Rheotanytarsus sp	5.9	Filterer	-	1	-
Eukifferiella claripennis gr	5.6	C-G	2	-	-
Parametriocnemus lundbecki	3.7	C-G	2	2	-
CRUSTACEA					
Cambarus sp	7.6	Omnivore	-	3	-
MOLLUSCA					
Physella sp	8.8	Scraper	-	1	-

[1]C-G = Collector-Gatherer, TV = Tolerance Value

Biomonitoring Summary Data Calculation Worksheet

Reedy Creek Feasability Study **1357-11-011**

		Number Identified			Abundance Value			TV*N		
Taxon	**Tolerance Value**	**Reach1**	**Reach2**	**Reach3**	**Reach1**	**Reach2**	**Reach3**	**Reach1**	**Reach2**	**Reach3**
Baetis flavistriga	7	16	-	1	10		1	70	0	7
Baetis pluto	4.3	2	-	6	1		3	4.3	0	12.9
Acerpenna pygmaea	3.9	-	-	2			1	0	0	3.9
Maccaffertium modestum	5.5	-	2	12		1	10	0	5.5	55
Paraleptophlebia sp	0.9	-	-	2			1	0	0	0.9
Cheumatopsyche spp	6.2	12	6	11	10	3	10	62	18.6	62
Hydropsyche betteni	7.8	4	-	1	3		1	23.4	0	7.8
Diplectrona modesta	2.2	-	-	2			1	0	0	2.2
Chirnarra sp	2.8	-	-	11			10	0	0	28
Stenelmis crenata	7	-	-	1			1	0	0	7
Neoporus sp	8.6	-	6	-		3		0	25.8	0
Argia sp	8.2	-	-	3			3	0	0	24.6
Tipula sp	7.3	7	11	3	3	10	3	21.9	73	21.9
Antocha sp	4.3	-	-	1			1	0	0	4.3
Hexatoma sp	4.3	-	-	5			3	0	0	12.9
Pseuodplimnophila sp	7.2	-	-	2			1	0	0	7.2
Anopheles sp	8.6	1	-	-	1			8.6	0	0
Dixa spp	2.6	-	2	6		1	3	0	2.6	7.8
Empididae	7.6	-	1	-		1		0	7.6	0
Simulium sp	6	8	2	4	3	1	3	18	6	18
Simulium venustum	7.1	1	8	-	1	3		7.1	21.3	0
Bittacomorpha sp		-	1	-		1		0	0	0
Ablabesmyia mallochi	7.2	-	-	1			1	0	0	7.2
Conchapelopia group	8.4	1	1	2	1	1	1	8.4	8.4	8.4
Chironomus spp	9.6	-	5	-		3		0	28.8	0
Cryptochironomus sp	6.4	-	-	1			1	0	0	6.4
Microtendipes sp	5.5	3	-	4	3		3	16.5	0	16.5
Phaenopsectra flavipes gr.	7.9	1	-	-	1			7.9	0	0
Phaenopsectra sp	6.5	4	-	-	3			19.5	0	0
Paracladopelma sp	5.5	1	-	-	1			5.5	0	0
Polypedilum illinoense	9	1	-	-	1			9	0	0
Polypedilum fallax	6.4	-	1	-		1		0	6.4	0
Rheotanytarsus sp	5.9	-	1	-		1		0	5.9	0
Eukifferiella claripennis gr	5.6	2	-	-	1			5.6	0	0
Parametriocnemus lundbecki	3.7	2	2	-	1	1		3.7	3.7	0
Physella sp	8.8	-	1	-		1		0	8.8	0
Cambarus sp	7.6	-	3	-		3		0	22.8	0
Polypedilum flavum	4.9	-	2	1		1	1	0	4.9	4.9
	TOTALS	**66**	**55**	**82**	**44**	**36**	**63**	**291.4**	**250.1**	**326.8**

Summary Metrics	**Reach1**	**Reach2**	**Reach3**
Total Taxa Richness	16	17	22
Total Abundance	66	55	82
EPT Taxa Richness	4	2	9
EPT Abundance	34	8	48
NC Raw Biotic Index	6.62	6.95	5.19
Biotic Index Bioclassification Score	6.5 (fair)	7.1 (poor)	4.9 (good)

APPENDIX II

PHYSIOCHEMICAL FIELD ASSESSMENT DATA

Field Water Chemistry Results

Water Quality Index (WQI) Calculations, and

Water Quality Laboratory Results

FIELD WATER CHEMISTRY RESULTS

Project: **1357-11-011**
Name: **Reedy Creek Feasability Study**

Collector: **Jesse Degnan**
Unit: **Horiba U-22**
Date: **5/24/2011**

Site	Reach1	Reach2	Reach3
Time	11:00	10:45	11:30
pH	6.95	6.26	7.44
Temperature (°C)	19.25	18.4	19.22
DO(ppm)	9.22	6.54	8.93
Turbidity (NTU)	4.1	7.1	9.7

Reach 1 Water Quality Index Calculation

Parameter	Test Results		Q-Value	Weighing Factor	Total	Adjusted Weighting Factor	Adjusted Total
Nitrate	0.49	mg/L	**97**	0.1	9.7	0.11	**10.8**
TP	0.054	mg/L	**98**	0.1	9.8	0.11	**10.9**
BOD-5*	0	mg/L	**100**	0.11	11	0.12	**12.2**
Fecal Coliform	520	c/100ml	**28**	0.16	4.48	0.18	**5.0**
Turbidity	0	NTU	**99**	0.08	7.92	0.09	**8.8**
pH	6.95	Units	**87**	0.11	9.57	0.12	**10.6**
DO	97	% sat***	**99**	0.17	16.83	0.19	**18.7**
	9.22	mg/L					
Temperature**	19.25	^{o}C	**--**	0.1	--	--	**--**
TS	96	mg/L	**84**	0.07	5.88	0.08	**6.5**
				TOTALS:	**75.2**		**83.5**

Reach 2 Water Quality Index Calculation

Parameter	Test Results		Q-Value	Weighing Factor	Total	Adjusted Weighting Factor	Adjusted Total
Nitrate	0.086	mg/L	**97**	0.1	9.7	0.11	**10.8**
TP	0.021	mg/L	**99**	0.1	9.9	0.11	**11.0**
BOD-5*	0	mg/L	**100**	0.11	11	0.12	**12.2**
Fecal Coliform	100	c/100ml	**44**	0.16	7.04	0.18	**7.8**
Turbidity	4.4	NTU	**87**	0.08	6.96	0.09	**7.7**
pH	6.26	Units	**62**	0.11	6.82	0.12	**7.6**
DO	69	% sat***	**73**	0.17	12.41	0.19	**13.8**
	6.54	mg/L					
Temperature**	18.4	^{o}C	**--**	0.1	--	--	**--**
TS	100	mg/L	**83**	0.07	5.81	0.08	**6.5**
				TOTALS:	**69.6**		**77.4**

Reach 3 Water Quality Index Calculation

Parameter	Test Results		Q-Value	Weighing Factor	Total	Adjusted Weighting Factor	Adjusted Total
Nitrate	1.3	mg/L	**96**	0.1	9.6	0.11	**10.7**
TP	0.025	mg/L	**99**	0.1	9.9	0.11	**11.0**
BOD-5*	0	mg/L	**100**	0.11	11	0.12	**12.2**
Fecal Coliform	690	c/100ml	**26**	0.16	4.16	0.18	**4.6**
Turbidity	1.2	NTU	**95**	0.08	7.6	0.09	**8.4**
pH	7.44	Units	**93**	0.11	10.23	0.12	**11.4**
DO	96	% sat***	**99**	0.17	16.83	0.19	**18.7**
	8.93	mg/L					
Temperature**	19.22	^{o}C	**--**	0.1	--	--	**--**
TS	93	mg/L	**84**	0.07	5.88	0.08	**6.5**
				TOTALS:	**75.2**		**83.6**

*BOD results were below the reporting limit, thus the reporting limit of 3.7 was used to provide a conservative Q-value estimate.

**No exposed upstream area was availible for temperature change sampling. In order to compensate for this, the weighting factors of all other components of the WQI were adjusted up so that the sum of the remaining factors equals 1.

***DO percent saturation calucated based on the known saturation level for the observed mg/L at the observed temperature

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

S&ME, Inc.
9751 Southern Pine Blvd
Charlotte, NC 28273
Attention: Joey Lawler

Project Name: **Reedy Creek**

Project Number: **1357-11-011**

Lot Number: **ME24031**

Date Completed: **06/03/2011**

Nisreen Saikaly
Project Manager

The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

ME24031

Case Narrative
S&ME, Inc.
Lot Number: ME24031

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

Shealy is not NELAC certified for Phosphorus by 365.1 but is certified in SC and NC.

Shealy is not NELAC certified for VPH, but is certified for VPH in NC.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary

S&ME, Inc.

Lot Number: ME24031

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	Reach 1	Aqueous	05/24/2011 1200	05/24/2011
002	Reach 2	Aqueous	05/24/2011 1100	05/24/2011
003	Reach 3	Aqueous	05/24/2011 1220	05/24/2011

(3 samples)

Executive Summary

S&ME, Inc.

Lot Number: ME24031

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	Reach 1	Aqueous	Nitrate - N	353.2	0.49		mg/L	5
001	Reach 1	Aqueous	Phosphorus	365.1	0.054		mg/L	5
001	Reach 1	Aqueous	TDS	SM 2540C	100		mg/L	5
001	Reach 1	Aqueous	Fecal Coliform-MF	SM 9222D	520		col/100	5
002	Reach 2	Aqueous	Nitrate - N	353.2	0.086		mg/L	6
002	Reach 2	Aqueous	Phosphorus	365.1	0.021		mg/L	6
002	Reach 2	Aqueous	TDS	SM 2540C	92		mg/L	6
002	Reach 2	Aqueous	Fecal Coliform-MF	SM 9222D	100	*	col/100	6
003	Reach 3	Aqueous	Nitrate - N	353.2	1.3		mg/L	7
003	Reach 3	Aqueous	Phosphorus	365.1	0.025		mg/L	7
003	Reach 3	Aqueous	TDS	SM 2540C	130		mg/L	7
003	Reach 3	Aqueous	Fecal Coliform-MF	SM 9222D	690	*	col/100	7

(12 detections)

Inorganic non-metals

Client: **S&ME, Inc.**
Laboratory ID: **ME24031-001**
Description: **Reach 1**
Matrix: **Aqueous**
Date Sampled: **05/24/2011 1200**
Date Received: **05/24/2011**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(BOD, 5 day) SM 5210B	1	05/30/2011 1002	LDJ	05/25/2011 1141	6379
1		(Nitrate - N) 353.2	1	05/24/2011 1829	SMH		60308
1		(Phosphorus) 365.1	1	05/26/2011 1835	PMM	05/26/2011 0937	60426
1		(TDS) SM 2540C	1	05/25/2011 1400	MML		60331
1		(Fecal Colifo) SM	1	05/25/2011 1610	HBB	05/24/2011 1628	

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
BOD, 5 day		SM 5210B	ND		2.0	mg/L	1
Nitrate - N		**353.2**	**0.49**		**0.020**	**mg/L**	**1**
Phosphorus	**7723-14-0**	**365.1**	**0.054**		**0.010**	**mg/L**	**1**
TDS		**SM 2540C**	**100**		**10**	**mg/L**	**1**
Fecal Coliform-MF		**SM 9222D**	**520**		**2**	**col/100mL**	**1**

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
ND = Not detected at or above the PQL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Inorganic non-metals

Client: **S&ME, Inc.**
Laboratory ID: **ME24031-002**
Description: **Reach 2**
Matrix: **Aqueous**
Date Sampled: **05/24/2011 1100**
Date Received: **05/24/2011**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(BOD, 5 day) SM 5210B	1	05/30/2011 1002	LDJ	05/25/2011 1141	6379
1		(Nitrate - N) 353.2	1	05/24/2011 1832	SMH		60308
1		(Phosphorus) 365.1	1	05/26/2011 1835	PMM	05/26/2011 0937	60426
1		(TDS) SM 2540C	1	05/25/2011 1400	MML		60331
1		(Fecal Colifo) SM	1	05/25/2011 1610	HBB	05/24/2011 1628	

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
BOD, 5 day		SM 5210B	ND		2.0	mg/L	1
Nitrate - N		**353.2**	**0.086**		**0.020**	**mg/L**	**1**
Phosphorus	**7723-14-0**	**365.1**	**0.021**		**0.010**	**mg/L**	**1**
TDS		**SM 2540C**	**92**		**10**	**mg/L**	**1**
Fecal Coliform-MF		**SM 9222D**	**100**	*****	**2**	**col/100mL**	**1**

Footnote(s): * Estimated

PQL = Practical quantitation limit
ND = Not detected at or above the PQL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Inorganic non-metals

Client: **S&ME, Inc.**
Laboratory ID: **ME24031-003**
Description: **Reach 3**
Matrix: **Aqueous**
Date Sampled: **05/24/2011 1220**
Date Received: **05/24/2011**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(BOD, 5 day) SM 5210B	1	05/30/2011 1002	LDJ	05/25/2011 1141	6379
1		(Nitrate - N) 353.2	1	05/24/2011 1833	SMH		60308
1		(Phosphorus) 365.1	1	05/26/2011 1835	PMM	05/26/2011 0937	60426
1		(TDS) SM 2540C	1	05/25/2011 1400	MML		60331
1		(Fecal Colifo) SM	1	05/25/2011 1610	HBB	05/24/2011 1628	

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
BOD, 5 day		SM 5210B	ND		2.0	mg/L	1
Nitrate - N		**353.2**	**1.3**		**0.020**	**mg/L**	**1**
Phosphorus	**7723-14-0**	**365.1**	**0.025**		**0.010**	**mg/L**	**1**
TDS		**SM 2540C**	**130**		**10**	**mg/L**	**1**
Fecal Coliform-MF		**SM 9222D**	**690**	*	**2**	**col/100mL**	**1**

Footnote(s): * Estimated

PQL = Practical quantitation limit
ND = Not detected at or above the PQL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive
West Columbia, South Carolina 29172
Telephone No. (803) 791-9700 Fax No. (803) 791-9111

SHEALY Chain of Custody Record

Number 113149

Client	Report to Contact	Telephone No. / Fax No. / E-mail	Quote No.
S&ME			12656
Address	**Sampler's Signature**	**Waybill No.**	Page 1 of 1
	x Damm M. Pierce		
City / **State** / **Zip Code**	**Printed Name:** Darren Pierce	**Analysis (Attach list if more space is needed.)**	
Project Name Reedy Creek			
Project No. 1357-11-011	**P.O. No.** 54500		**Lot No.** ME24031

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	G=Grab C=Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No. of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Na2S2O3	BOD	TDS	Nitrate	Total Phos	Fecal Coliform	Remarks / Cooler I.D.
Reach 1	5/24	12:00	G	✓			2	1					1	X	X	X	X		
Reach 2	5/24	11:00	G	✓			1	1					1	1	1	1	1		
Reach 3	5/24	12:20	G	✓			1	1					1	1	1	1	1		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Disposal by Lab

Note: All samples are retained for six weeks from receipt unless other arrangements are made.

Turn Around Time Required (Prior lab approval required for expedited TAT.)
☑ Standard ☐ Rush (Specify) Std. 7 Day T.A.T.

QC Requirements (Specify)

	Relinquished by	Date	Time	Received by	Date	Time
1.	S&ME 5-24-11	5-24-11	13:45		5-24-11	13:45
2.		5-24-11	1455		5-24-11	1455
3.		5-24-11	1625	Laboratory received by	5-24-11	1625

Comments

LAB USE ONLY
Received on Ice (Circle) Yes No Ice Pack
Receipt Temp. 1.0 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-012 Effective Date: 06-04-02

Shealy Environmental Services, Inc.
Document Number: F-AD-016
Revision Number: 8

Replaces Date: 02/23/11
Effective Date: 05/06/11

Sample Receipt Checklist (SRC)

Client: SAME Cooler Inspected by/date: WHL / 5/24/11 Lot #: ME 2403

Means of receipt: ☒ SESI ☐ Client ☐ UPS ☐ FedEx ☐ Airborne Exp ☐ Other			
Yes ☐	No ☒		1. Were custody seals present on the cooler?
Yes ☐	No ☐		2. If custody seals were present, were they intact and unbroken?
Cooler ID/temperature upon receipt 1 / 0.0 °C / °C / °C / °C / °C / °C / °C / °C Method: ☐ Temperature Blank ☒ Against Bottles Method of coolant: ☒ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None			
If response is No (or Yes for 14, 15, 16), an explanation/resolution must be provided.			
Yes ☐	No ☐	NA ☒	3. If temperature of any cooler exceeded 6.0°C, was Project Manager notified? PM notified by SRC, phone, note (circle one), other:_____. (For coolers received via commercial courier, PMs are to be notified immediately.
Yes ☐	No ☐	NA ☒	4. Is the commercial courier's packing slip attached to this form?
Yes ☒	No ☐		5. Were proper custody procedures (relinquished/received) followed?
Yes ☐	No ☐	NA ☒	5a Were samples relinquished by client to commercial courier?
Yes ☒	No ☐		6. Were sample IDs listed?
Yes ☒	No ☐		7. Was collection date & time listed?
Yes ☒	No ☐		8. Were tests to be performed listed on the COC?
Yes ☒	No ☐		9. Did all samples arrive in the proper containers for each test?
Yes ☒	No ☐		10. Did all container label information (ID, date, time) agree with COC?
Yes ☒	No ☐		11. Did all containers arrive in good condition (unbroken, lids on, etc.)?
Yes ☒	No ☐		12. Was adequate sample volume available?
Yes ☐	No ☒		13. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
Yes ☐	No ☒		14. Were any samples containers missing?
Yes ☐	No ☒		15. Were there any excess samples not listed on COC?
Yes ☐	No ☐	NA ☒	16. Were bubbles present >"pea-size" (¼"or 6mm in diameter) in any VOA vials?
Yes ☒	No ☐	NA ☐	17. Were all metals/O&G/HEM/nutrient samples received at a pH of <2?
Yes ☐	No ☐	NA ☒	18. Were all cyanide and/or sulfide samples received at a pH >12?
Yes ☐	No ☐	NA ☒	19. Were all applicable NH3/TKN/cyanide/phenol/BNA/pest/PCB/herb (<0.2mg/L)samples free of residual chlorine?
Yes ☐	No ☐	NA ☒	20. Were collection temperatures documented on the COC for NC samples?

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s)_____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H_2SO_4,HNO_3,HCl,NaOH) with the SR # (number) _____.

Sample(s)_____ were received with bubbles >6 mm in diameter.

Sample(s)_____ were received with TRC >0.2 mg/L for NH3/ TKN/cyanide/BNA/pest/PCB/herb.

Corrective Action taken, if necessary:

Was client notified: Yes ☐ No ☐ Did client respond: Yes ☐ No ☐

SESI employee:_____ Date of response:_____

Comments:_____

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

S&ME, Inc.
9751 Southern Pine Blvd
Charlotte, NC 28273
Attention: Darrin Peine

Project Name: Reedy Creek

Project Number: 1357-11-011

Lot Number: MF16043

Date Completed: 06/27/2011

Nisreen Saikaly
Project Manager

The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

MF16043

Case Narrative
S&ME, Inc.
Lot Number: MF16043

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

Shealy is not NELAC certified for Phosphorus by 365.1 but is certified in SC and NC.

Shealy is not NELAC certified for VPH, but is certified for VPH in NC.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary

S&ME, Inc.

Lot Number: MF16043

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	Reach 1	Aqueous	06/16/2011 1100	06/16/2011
002	Reach 2	Aqueous	06/16/2011 1045	06/16/2011
003	Reach 3	Aqueous	06/16/2011 1130	06/16/2011

(3 samples)

Executive Summary

S&ME, Inc.

Lot Number: MF16043

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	Reach 1	Aqueous	TS	SM 2540B	96		mg/L	5
002	Reach 2	Aqueous	TS	SM 2540B	100		mg/L	6
002	Reach 2	Aqueous	Turbidity	180.1	4.4		NTU	6
003	Reach 3	Aqueous	TS	SM 2540B	93		mg/L	7
003	Reach 3	Aqueous	Turbidity	180.1	1.2		NTU	7

(5 detections)

Inorganic non-metals

Client: S&ME, Inc.
Description: Reach 1
Date Sampled: 06/16/2011 1100
Date Received: 06/16/2011

Laboratory ID: MF16043-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(TS) SM 2540B	1	06/22/2011 0813	ARW		62360
1		(Turbidity) 180.1	1	06/17/2011 1330	ARW		

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
TS		SM 2540B	96		10	mg/L	1
Turbidity		180.1	ND		1.0	NTU	1

PQL = Practical quantitation limit
ND = Not detected at or above the PQL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Inorganic non-metals

Client: S&ME, Inc.
Description: Reach 2
Date Sampled: 06/16/2011 1045
Date Received: 06/16/2011

Laboratory ID: MF16043-002
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(TS) SM 2540B	1	06/22/2011 0813	ARW		62360
1		(Turbidity) 180.1	1	06/17/2011 1330	ARW		

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
TS		SM 2540B	100		10	mg/L	1
Turbidity		180.1	4.4		1.0	NTU	1

PQL = Practical quantitation limit
ND = Not detected at or above the PQL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

Inorganic non-metals

Client: S&ME, Inc.
Description: Reach 3
Date Sampled: 06/16/2011 1130
Date Received: 06/16/2011

Laboratory ID: MF16043-003
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(TS) SM 2540B	1	06/22/2011 0813	ARW		62360
1		(Turbidity) 180.1	1	06/17/2011 1330	ARW		

Parameter	CAS Number	Analytical Method	Result	Q	PQL	Units	Run
TS		SM 2540B	93		10	mg/L	1
Turbidity		180.1	1.2		1.0	NTU	1

PQL = Practical quantitation limit
ND = Not detected at or above the PQL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
N = Recovery is out of criteria
H = Out of holding time

SHEALY ENVIRONMENTAL SERVICES, INC.

106 Vantage Point Drive
West Columbia, South Carolina 29172
Telephone No. (803) 791-9700 Fax No. (803) 791-9111

SHEALY *Chain of Custody Record*

Number 113335

Client: S & ME	Report to Contact: Darrin Peine	Telephone No. / Fax No. / E-mail: 704 523 4726 dpeine@smeinc.com	Quote No.
Address:	Sampler's Signature: x Darrin M. Peine	Waybill No.	Page ____ of ____
City / State / Zip Code:	Printed Name: Darrin M. Peine	Analysis (Attach list if more space is needed.)	
Project Name: Reedy Creek			
Project No.: 1357-11-011	P.O. No.: 54676		Lot No.: M F16043

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	G=Grab C=Composite	Matrix: Aqueous	Solid	Non-Aqueous	No. of Containers by Preservative Type: Unpres.	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Turbidity	TS	Remarks / Cooler I.D.
Reach 1	6/16/11	11:00	G	✓									✓	✓	
Reach 2	6/16/11	10:45	G	✓									✓	✓	
Reach 3	6/16/11	11:30	G	✓									✓	✓	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab

Note: All samples are retained for six weeks from receipt unless other arrangements are made.

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☐ Rush (Specify): Std: 7 Day T.A.T.

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished by: S & ME	6/16/11	12:30	1. Received by:	6-16-11	12:30
2. Relinquished by:	6-16-11	15:25	2. Received by:	Date	Time
3. Relinquished by:	Date	Time	3. Laboratory received by:	6-16-11	1525

Comments:

LAB USE ONLY
Received on ice (Circle) Yes No Ice Pack

Receipt Temp. 4.1 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Level 1 Report v2.1

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
Document Number: F-AD-016
Revision Number: 8

Replaces Date: 02/23/11
Effective Date: 05/06/11

Sample Receipt Checklist (SRC)

Client: S&ME Cooler Inspected by/date: LM 12/16/14 Lot #: MF16043

Means of receipt: ☒ SESI ☐ Client ☐ UPS ☐ FedEx ☐ Airborne Exp ☐ Other			
Yes ☐	No ☒		1. Were custody seals present on the cooler?
Yes ☐	No ☒		2. If custody seals were present, were they intact and unbroken?
Cooler ID/temperature upon receipt 5 / 5 °C ___/___°C ___/___°C ___/___°C ___/___°C ___/___°C ___/___°C ___/___°C ___/___°C			
Method: ☐ Temperature Blank ☒ Against Bottles Method of coolant: ☒ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None			
If response is No (or Yes for 14, 15, 16), an explanation/resolution must be provided.			
Yes ☐	No ☐	NA ☒	3. If temperature of any cooler exceeded 6.0°C, was Project Manager notified? PM notified by SRC, phone, note (circle one), other:_____. (For coolers received via commercial courier, PMs are to be notified immediately.
Yes ☐	No ☐	NA ☐	4. Is the commercial courier's packing slip attached to this form?
Yes ☒	No ☐		5. Were proper custody procedures (relinquished/received) followed?
Yes ☐	No ☐	NA ☒	5a Were samples relinquished by client to commercial courier?
Yes ☒	No ☐		6. Were sample IDs listed?
Yes ☒	No ☐		7. Was collection date & time listed?
Yes ☒	No ☐		8. Were tests to be performed listed on the COC?
Yes ☒	No ☐		9. Did all samples arrive in the proper containers for each test?
Yes ☒	No ☐		10. Did all container label information (ID, date, time) agree with COC?
Yes ☒	No ☐		11. Did all containers arrive in good condition (unbroken, lids on, etc.)?
Yes ☒	No ☐		12. Was adequate sample volume available?
Yes ☒	No ☐		13. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
Yes ☐	No ☒		14. Were any samples containers missing?
Yes ☐	No ☒		15. Were there any excess samples not listed on COC?
Yes ☐	No ☐	NA ☒	16. Were bubbles present >"pea-size" (¼"or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☒	17. Were all metals/O&G/HEM/nutrient samples received at a pH of <2?
Yes ☐	No ☐	NA ☒	18. Were all cyanide and/or sulfide samples received at a pH >12?
Yes ☐	No ☐	NA ☒	19. Were all applicable NH3/TKN/cyanide/phenol/BNA/pest/PCB/herb (<0.2mg/L)samples free of residual chlorine?
Yes ☐	No ☐	NA ☒	20. Were collection temperatures documented on the COC for NC samples?
Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)			
Sample(s)_____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H_2SO_4,HNO_3,HCl,NaOH) with the SR # (number)_____.			
Sample(s)_____ were received with bubbles >6 mm in diameter.			
Sample(s)_____ were received with TRC >0.2 mg/L for NH3/TKN/cyanide/BNA/pest/PCB/herb.			

Corrective Action taken, if necessary:

Was client notified: Yes ☐ No ☐ Did client respond: Yes ☐ No ☐

SESI employee:_____ Date of response:_____

Comments:_____

APPENDIX III

SITE PHOTOGRAPHS

1 **Reach 1**. Facing upstream

2 **Reach 1**. Facing downstream

3 **Reach 2**. Facing upstream

4 **Reach 2**. Facing downstream

5 **Reach 3**. Facing upstream

6 **Reach 3**. Facing downstream

Taken by: DMP	S&ME	SITE PHOTOGRAPHS Reedy Creek Feasibility Study Mecklenburg County, North Carolina
Checked by: DMH		
Date Taken: 5/24/11		Project No.: 1357-11-011 **Photo Page 1**