

December 6, 2013

Monitoring Data Analysis for October 22 – November 18, 2013

Gills Creek Monitoring Sites

During the October to November monitoring period, typical diurnal patterns in water temperature, pH, and dissolved oxygen were observed at all stations. As is generally observed when water temperature decreases in the winter months, dissolved oxygen levels were higher than in previous months at all stations. No significant abnormalities were observed in any of the parameters, and no water quality violations were observed.

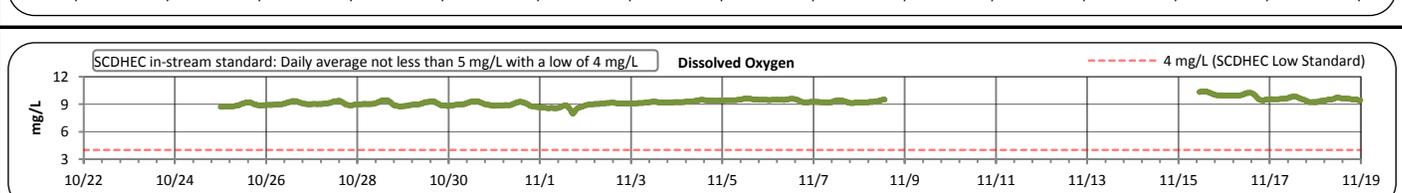
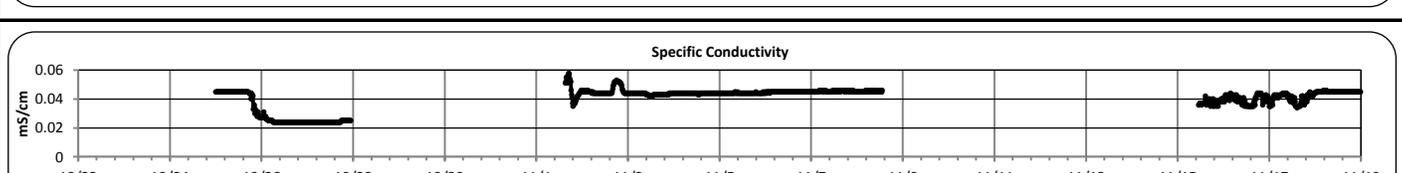
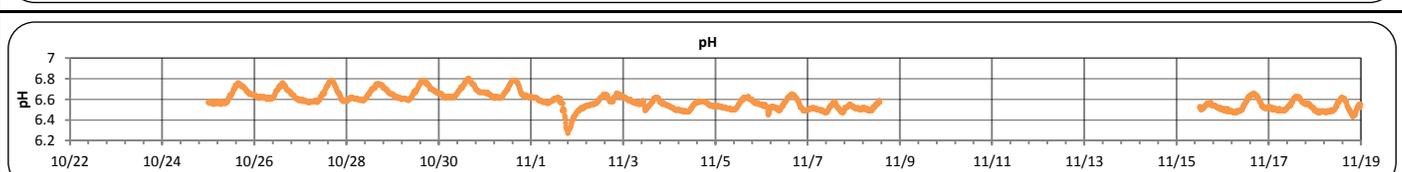
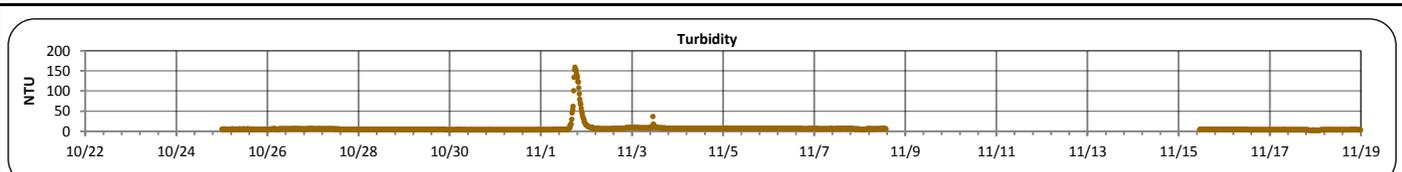
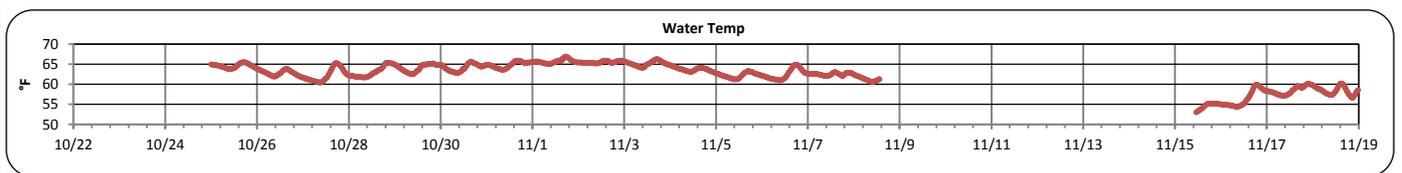
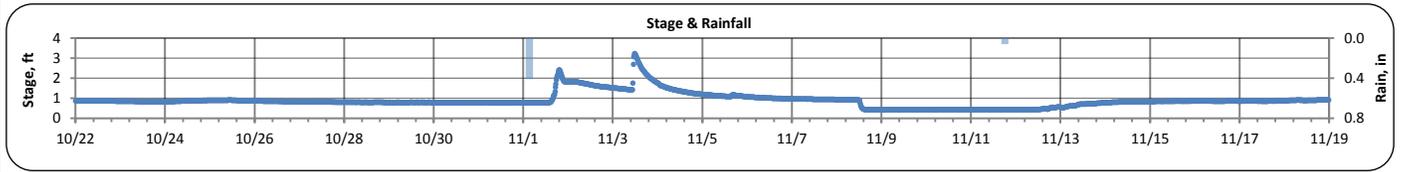
At Gills Creek A station, submergence issues were observed during two periods. Between October 28th and November 1st, the specific conductivity probe at Gills Creek A was unsubmerged due to low water levels. During this time it appears that all other probes remained in the stream, and as a result the data set only shows a gap for the specific conductivity parameter. The second submergence issue occurred from November 8th through November 15th, when the stage at Gills Creek A was very low, and the data sonde became unsubmerged. When cold air temperatures threatened to freeze the probe membranes, the data sonde was removed from that station and brought into the office. The data sonde was returned to the creek on November 15th.

During the observation period, there was one significant precipitation event, which totaled 1.2 inches of precipitation and led to typical water quality responses at all stations, including spikes in turbidity, decreased pH readings, and an increase and subsequent decrease in specific conductivity readings. Additionally, dissolved oxygen levels dropped following the rain event, but stayed well above the DHEC low standard. A minor precipitation event was also observed at all three stations; however, the precipitation levels were so low during this event that little noticeable effect was observed on water quality.

Over the course of this monitoring period, there were three instances during which the data deviated from typically observed trends. Early on November 1st, there was an increase in turbidity readings and a simultaneous increase in specific conductivity observed at Gills Creek B. This deviation was not observed at any other stations. November 1st was a period of inclement weather, and this change in water quality may have been the result of precipitation occurring elsewhere in the watershed, but not at the installed rain gage, or alternatively may have been caused by activities upstream at the Lake Katherine control structure. A second deviation from typical trends was observed on November 3rd, when the stage at all three monitoring stations increased rapidly and then slowly decreased. This can most likely be explained by releases from upstream control structures. Finally, a strange pattern in turbidity and stage (as measured by the CS450—see fieldnet website) was observed at the Gills Creek C station during the end of the monitoring period. A series of slight fluctuations in turbidity, lasting a few hours and occurring at approximately noon every day, was observed along with very minimal increases in stage. This occurred only at Gills Creek C station and did not appear to affect any other water quality parameters. This pattern is subtle and cannot be readily explained, but should be monitored in the future.

Gills Creek A (Oct 22 -- Nov 18, 2013)

PARAMETER	DESCRIPTION	CONTINUOUS WATER QUALITY PARAMETERS:	SUMMARY STATISTICS				
			MINIMUM OBSERVED	MAXIMUM OBSERVED	MEDIAN OBSERVED	MEAN OBSERVED	STANDARD DEVIATION
STREAM NAME:	Gills Creek	STAGE (FT):	0.4	3.2	0.8	0.9	0.4
LOCATION:	Forest Drive Bridge	TEMPERATURE (°F):	53	67	63	62	3
ADDRESS:	4840 Forest Drive, Columbia, SC 29206	TURBIDITY (NTU):	3	159	5	7	12
COORDINATES:	34.019826, -80.963566	pH:	6.3	6.8	6.6	6.6	0.1
TMDL/IMPAIRMENT:	Fecal & Dissolved Oxygen	SPECIFIC CONDUCTIVITY (mS/cm):	0.024	0.058	0.044	0.041	0.007
NEIGHBORING LANDUSE:	Residential and commercial	DISSOLVED OXYGEN (mg/L):	7.9	10.4	9.2	9.2	0.4
APPROX. DRAINAGE AREA:	48 square miles						
SPATIAL LOCATION:	Most upstream site						
TOTAL NO. STORMS OVER 0.1 INCH:	2						
MAX. DAILY RAINFALL:	1.2 inches						
TOTAL RAINFALL (FOR PERIOD):	1.4 inches						



Note: Data gaps appear when the sonde is removed for calibration or when the flow depth is below the sensors

**Continuous Water Quality
Monitoring Periodic Report**

Gills Creek A (Oct 22 -- Nov 18, 2013)

Explanation of Statistics:

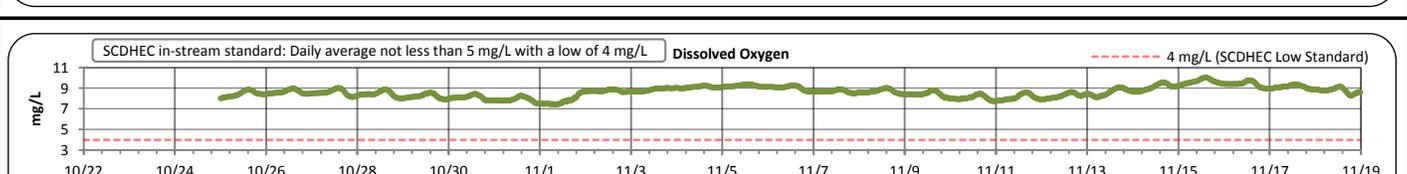
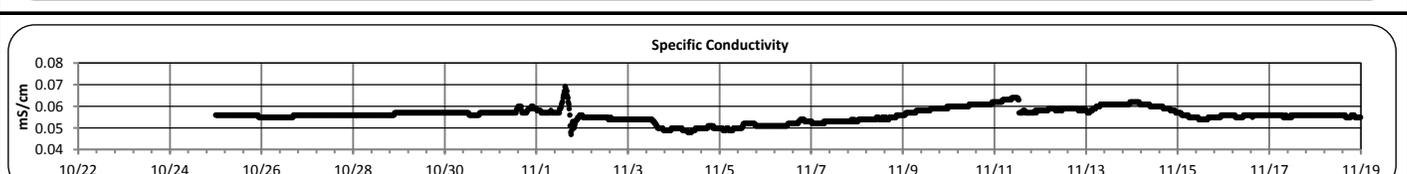
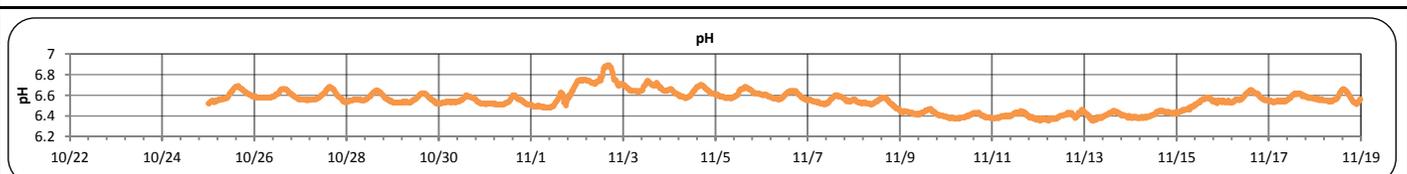
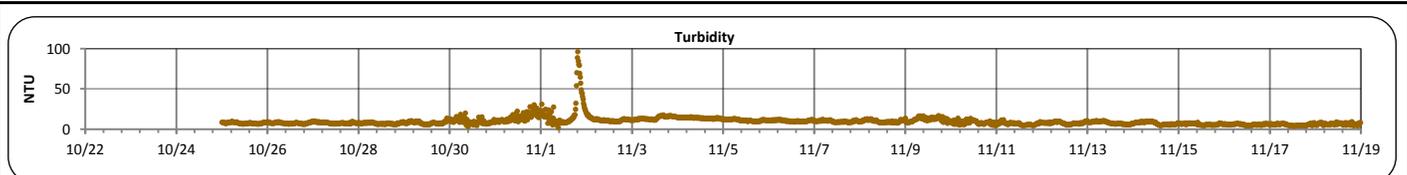
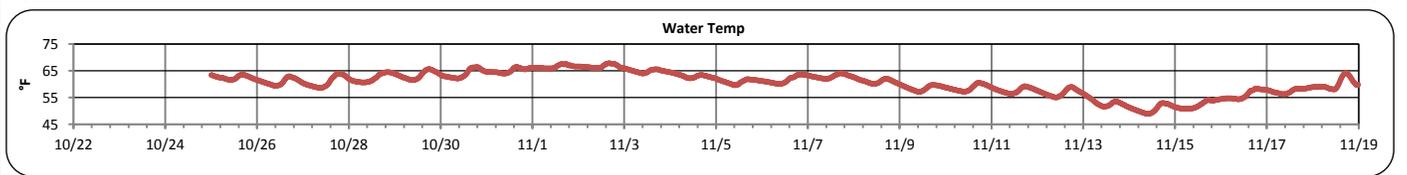
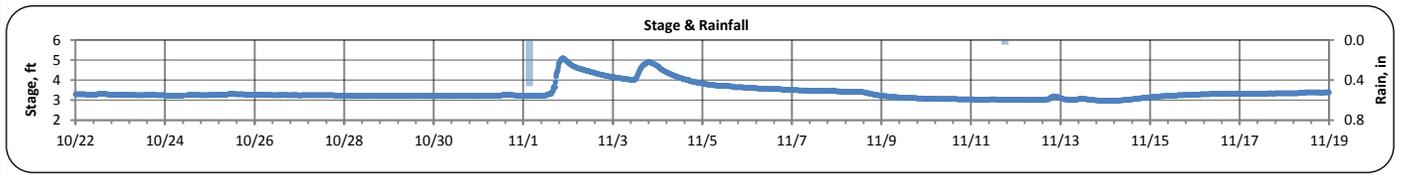
MINIMUM OBSERVED	The minimum of the values recorded by the datasonde in 15 minute intervals.
MAXIMUM OBSERVED	The maximum of the values recorded by the datasonde in 15 minute intervals.
MEDIAN OBSERVED	The median of all the values recorded by the datasonde in 15 minute intervals.
MEAN OBSERVED	The average of all the values recorded by the datasonde in 15 minute intervals.
STANDARD DEVIATION	The standard deviation of all the values recorded by the datasonde in 15 minute intervals.

Note: Data gaps appear when the sonde is removed for calibration or when the flow depth is below the sensors

REPORT GENERATED ON 12/5/2013

Gills Creek B (Oct 22 -- Nov 18, 2013)

PARAMETER	DESCRIPTION	CONTINUOUS WATER QUALITY PARAMETERS:	SUMMARY STATISTICS				
			MINIMUM OBSERVED	MAXIMUM OBSERVED	MEDIAN OBSERVED	MEAN OBSERVED	STANDARD DEVIATION
STREAM NAME:	Gills Creek	STAGE (FT):	3.0	5.1	3.3	3.4	0.4
LOCATION:	Devine Street bridge	TEMPERATURE (°F):	49	68	61	60	4
ADDRESS:	4716 Devine Street Columbia, SC 29209	TURBIDITY (NTU):	2	96	8	10	6
COORDINATES:	33.989656, -80.97433	pH:	6.4	6.9	6.6	6.5	0.1
TMDL/IMPAIRMENT:	Fecal & Dissolved Oxygen	SPECIFIC CONDUCTIVITY (mS/cm):	0.047	0.069	0.056	0.056	0.003
NEIGHBORING LANDUSE:	Residential and commercial	DISSOLVED OXYGEN (mg/L):	7.4	10.0	8.7	8.6	0.5
APPROX. DRAINAGE AREA:	59 square miles						
SPATIAL LOCATION:	Middle site						
TOTAL NO. STORMS OVER 0.1 INCH:	2						
MAX. DAILY RAINFALL:	1.2 inches						
TOTAL RAINFALL (FOR PERIOD):	1.3 inches						



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**Continuous Water Quality
Monitoring Periodic Report**

Gills Creek B (Oct 22 -- Nov 18, 2013)

Explanation of Statistics:

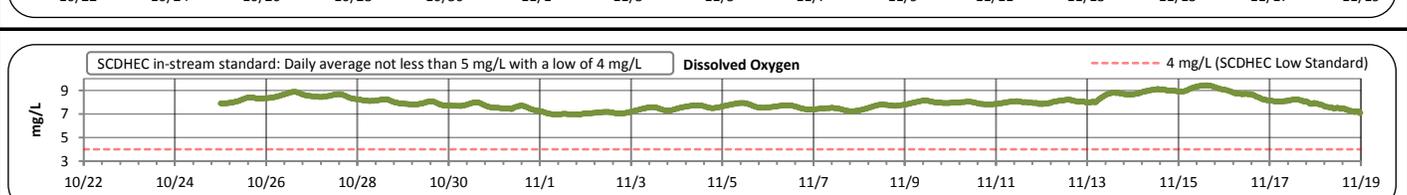
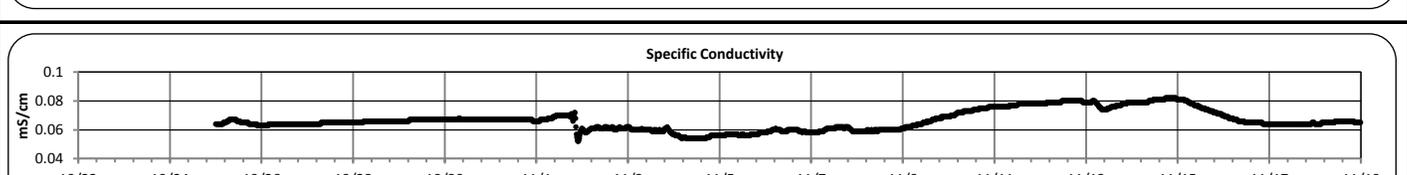
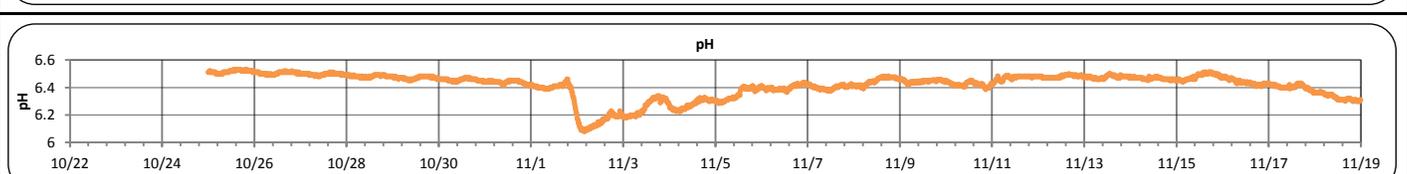
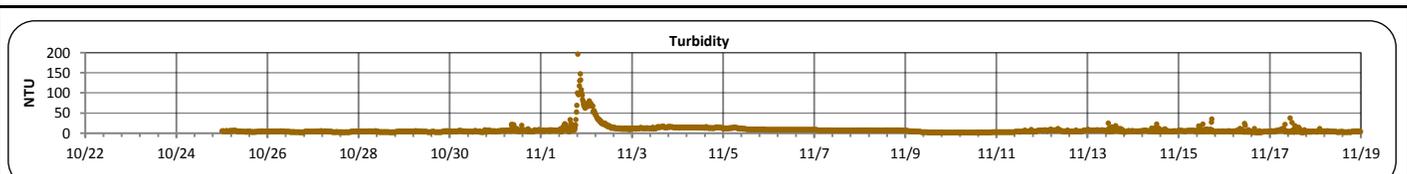
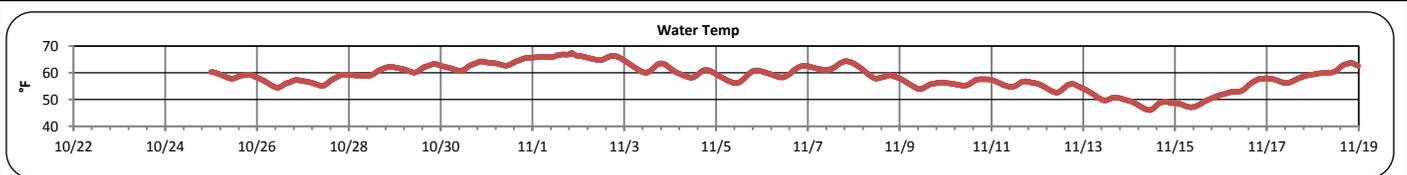
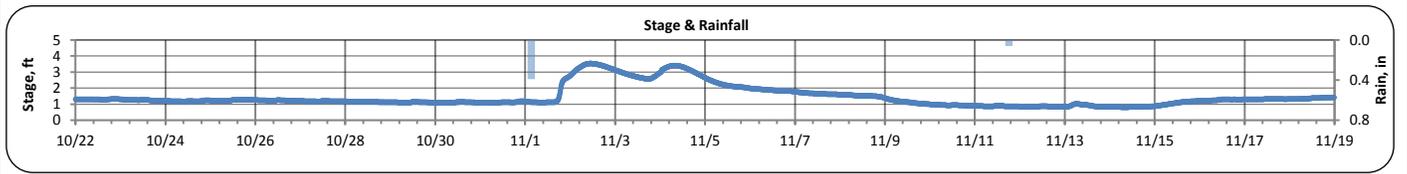
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REPORT GENERATED ON 12/5/2013

Gills Creek C (Oct 22 -- Nov 18, 2013)

PARAMETER	DESCRIPTION	CONTINUOUS WATER QUALITY PARAMETERS:	SUMMARY STATISTICS				
			MINIMUM OBSERVED	MAXIMUM OBSERVED	MEDIAN OBSERVED	MEAN OBSERVED	STANDARD DEVIATION
STREAM NAME:	Gills Creek	STAGE (FT):	0.8	3.5	1.2	1.4	0.7
LOCATION:	Bluff Road bridge	TEMPERATURE (°F):	46	67	59	58	5
ADDRESS:	3009 Bluff Rd. Columbia, SC 29209	TURBIDITY (NTU):	1	196	5	8	11
COORDINATES:	33.948043, -80.9889	pH:	6.1	6.5	6.4	6.4	0.1
TMDL/IMPAIRMENT:	Fecal & Dissolved Oxygen	SPECIFIC CONDUCTIVITY (mS/cm):	0.052	0.082	0.065	0.066	0.007
NEIGHBORING LANDUSE:	Residential and commercial	DISSOLVED OXYGEN (mg/L):	6.9	9.44	7.9	7.9	0.6
APPROX. DRAINAGE AREA:	64 square miles						
SPATIAL LOCATION:	Most downstream site						
TOTAL NO. STORMS OVER 0.1 INCH:	2						
MAX. DAILY RAINFALL:	1.2 inches						
TOTAL RAINFALL (FOR PERIOD):	1.3 inches						



Note: Data gaps appear when the sonde is removed for calibration or when the flow depth is below the sensors

**Continuous Water Quality
Monitoring Periodic Report**

Gills Creek C (Oct 22 -- Nov 18, 2013)

Explanation of Statistics:

MINIMUM OBSERVED	The minimum of the values recorded by the datasonde in 15 minute intervals.
MAXIMUM OBSERVED	The maximum of the values recorded by the datasonde in 15 minute intervals.
MEDIAN OBSERVED	The median of all the values recorded by the datasonde in 15 minute intervals.
MEAN OBSERVED	The average of all the values recorded by the datasonde in 15 minute intervals.
STANDARD DEVIATION	The standard deviation of all the values recorded by the datasonde in 15 minute intervals.

Note: Data gaps appear when the sonde is removed for calibration or when the flow depth is below the sensors

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