

Hinkson Creek CAM Science Team Recommendation for Specific Conductance Data Logger Deployment

Executive Summary

Chloride is a known stressor of aquatic life and concentrations exceeding water quality standards have been documented in Hinkson Creek. While chloride is an apparent cause of impairment in Hinkson Creek, there are likely other physical, chemical, and/or hydrological issues that contribute to aquatic life impairment. Studies on Hinkson Creek have shown that chloride concentrations are about four-times higher than those in reference/control streams. Chloride concentrations in Hinkson Creek tend to be lower in upstream sites where the watershed is more rural, and increase downstream as the watershed becomes more urbanized. Some of the chloride values that have been measured exceeded water quality criteria levels, indicating toxic chloride events have occurred in Hinkson Creek. Specific conductance can fluctuate greatly in Hinkson Creek during the winter months, indicating water quality is dynamic. Studies show that while elevated chloride levels are most likely to occur during winter months, high concentrations can occur during non-winter periods. The Science Team recommends deploying six (6) specific conductance sensors, in complement with those deployed by Lincoln University (Sean Zeiger), for a minimum of three (3) years. This will document seasonal variation, track the moving baseline resulting from continued development in the watershed, and assist with identifying tributaries that have the greatest relative contribution of chlorides and other dissolved ions.

Lincoln University Specific Conductance Monitoring (Sean Zeiger)

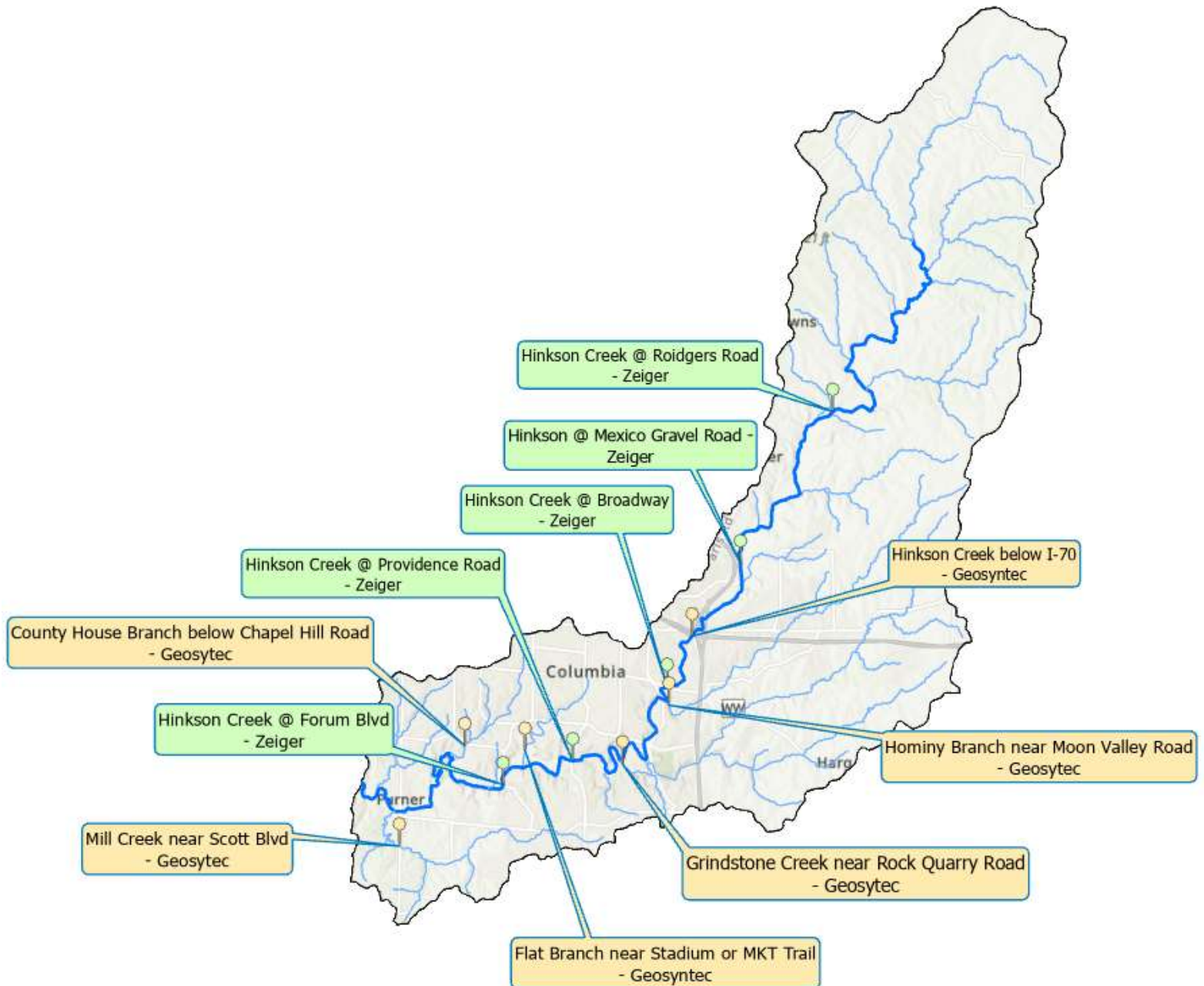
Sean Zeiger has installed discharge gages at five (5) sites on Hinkson Creek and plans to deploy specific conductance data loggers at each of these sites as well.

1. Hinkson Creek near Rodgers Road
2. Hinkson Creek near Mexico Gravel Road
3. Hinkson Creek near Broadway
4. Hinkson Creek near Providence
5. Hinkson Creek near Forum

Geosyntec Specific Conductance Monitoring

Geosyntec has provided a proposal and budget for the deployment, operation, and maintenance of specific conductance data loggers (attached). The Science Team recommends funding the deployment of data loggers for a minimum of three (3) years at the following sites:

1. Hinkson Creek below I-70
2. Hominy Branch near Moon Valley Road
3. Grindstone Creek near Rock Quarry Road
4. Flat Branch near Stadium or MKT Trail
5. County House Branch below Chapel Hill Road
6. Mill Creek near Scott Boulevard



Data Management and Analysis

In order to assure that data collected by Geosyntec and by Lincoln University are comparable both parties will calibrate and validate instruments to the same standards and perform maintenance on comparable schedules. It would be beneficial – but not essential – that they both use the same models of specific conductance instruments.

The parties will jointly develop and employ identical data editing and processing procedures, including criteria to identify and delete spikes or other erroneous data. Both parties will also agree to use an identical data format. Data and metadata (including spatial and temporal ranges, methods, and formatting information) will be delivered to the Science Team and will be posted on the Help the Hinkson website after an embargo period of 1 year after the end of data collection. The embargo will enable Geosyntec and Lincoln University the opportunity to analyze, interpret, and publish the data.