APPLICATIONS TO PROLONGING DATA COLLECTION EFFICIENCY IN STREAM CHANNELS

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Within small first and second order streams, such as tributaries of the North Oconee River watershed, the response time to precipitation is fast. This response makes repetitive measurement of discharge and water chemistry necessary. Continual data collection in streams can be more efficiently measured with an automated system. The discharge of a stream is easily determined by a pressure transducer, but water chemistry proves to be more problematic. Probe calibration is prone to drift if continually left in the water. Three electrical conductivity systems are compared in this study. They are tested in Birdsong Creek of the North Oconee River watershed. One system is a conductivity probe that remains in the stream taking measurements every five minutes. The second system is driven by peristaltic pumps that draw water from the stream in order to fill a reservoir for measurement. This system measures conductivity every hour. The last system is a track that lowers a probe into the water on the hour and then raises it. The anticipated result is that the peristaltic pump apparatus will be the most efficient system due to more isolated measurement and greater protection from the stream. However, early failures have occurred when the air temperature drops below freezing or the intake is buried under shifting sands of the channel. The submerged probe has also failed from burial. When operating properly both systems have shown similar results, however the probe that stays submerged displays more drift in calibration over time. This research exhibits how reliable chemical data can be collected in remote areas where field visits are infrequent.

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