

Study title: Long-term changes in streamwater chemistry in three Shenandoah National Park watersheds

Study#: SHEN-00430; Permit#: SHEN-2013-SCI-0023

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Title: Investigator's Annual Report (IAR)

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In accordance and compliance with our active scientific research and collecting permit, we obtained water samples at 71 discrete surface water locations (springs and streams) in three watersheds of Shenandoah National Park during the spring of 2013 and 2014 as follows:

- 16 locations (see Fig. 1) were sampled in Staunton River on March 24, 2013 and again on April 13, 2014;
- 36 locations (see Fig. 2) were sampled in Paine Run on March 23, 2013 and again on April 12, 2014; and
- 19 locations (see Fig. 3) were sampled in Piney River on March 22, 2013 and again on April 11, 2014.

Additional duplicate samples were collected from a small, random subset of these locations to assess the reproducibility (duplicate precision) of our measurements. All samples were kept on ice in coolers until we could transport them back to Appalachian Laboratory in Frostburg, Maryland where they were processed and analyzed for the following constituents in our water chemistry laboratory: acid neutralizing capacity, pH, specific conductance, orthophosphate-P, total dissolved N, ammonia-N, nitrite-N, nitrate-N, dissolved organic N, dissolved organic C, chloride, bromide, sulfate, sodium, potassium, magnesium, and calcium concentrations. The water chemistry data from 2013 and 2014 have been added to our database that will be used to examine long-term trends in water chemistry constituents at the time of project completion. It appears that current funding may be adequate to support resampling of the same 71 stations during spring 2015, although a final decision on sampling has not yet been made.

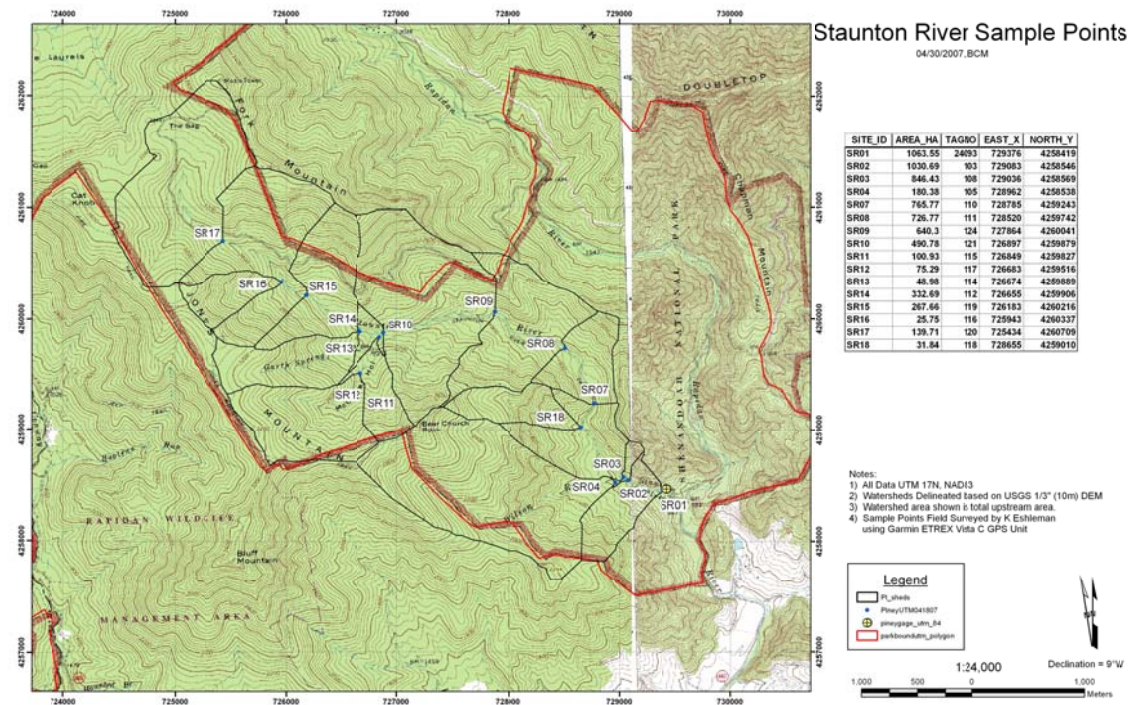


Fig. 1. Stream sampling locations and subwatersheds in the Staunton River watershed.

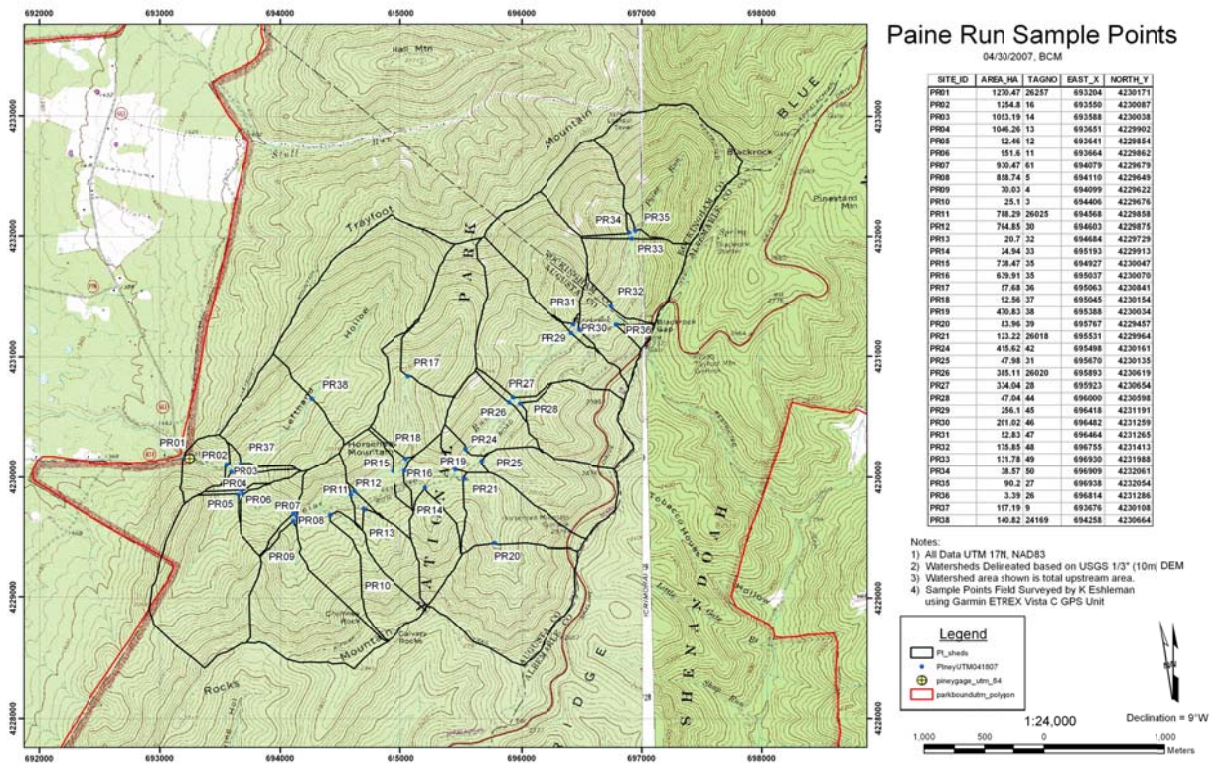


Fig. 2. Stream sampling locations and subwatersheds in the Paine Run watershed.

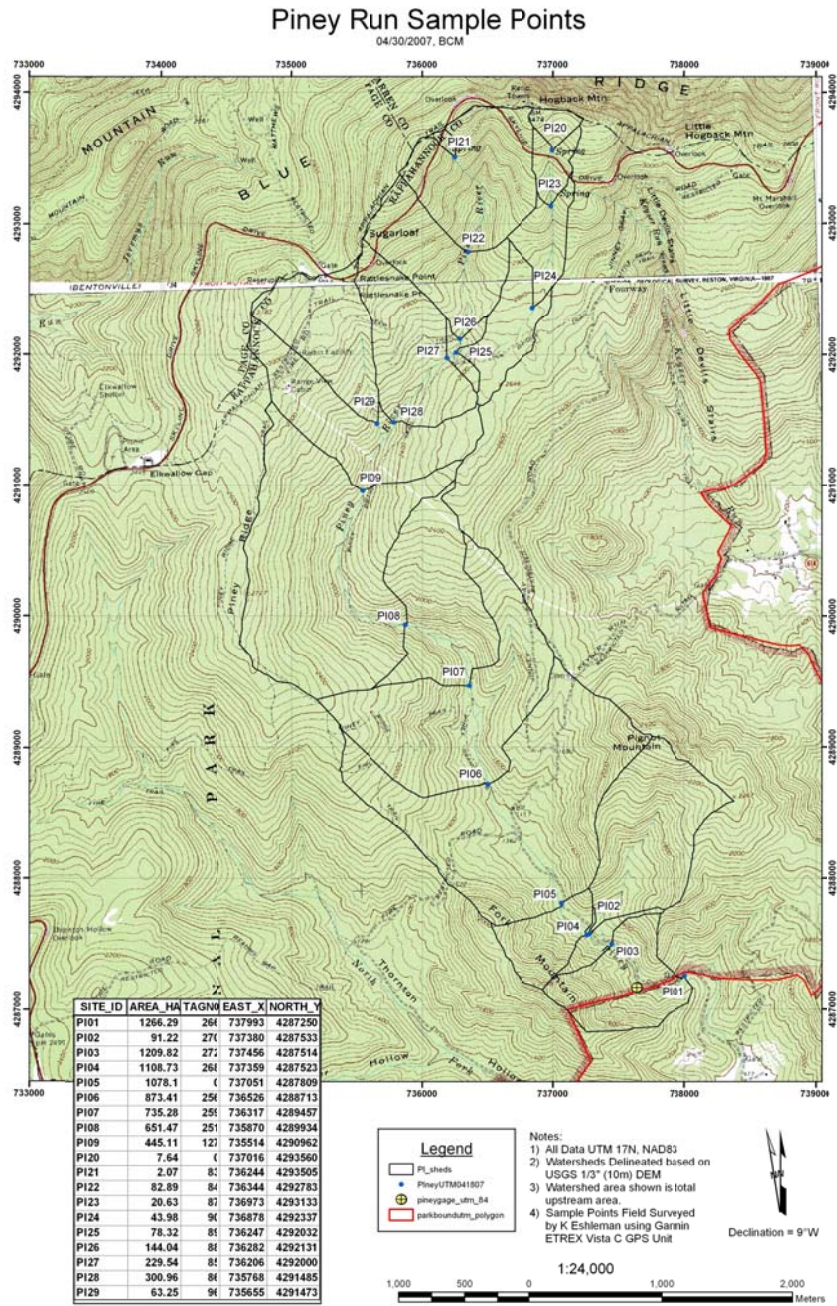


Fig. 3. Stream sampling locations and subwatersheds in the Piney River watershed.