

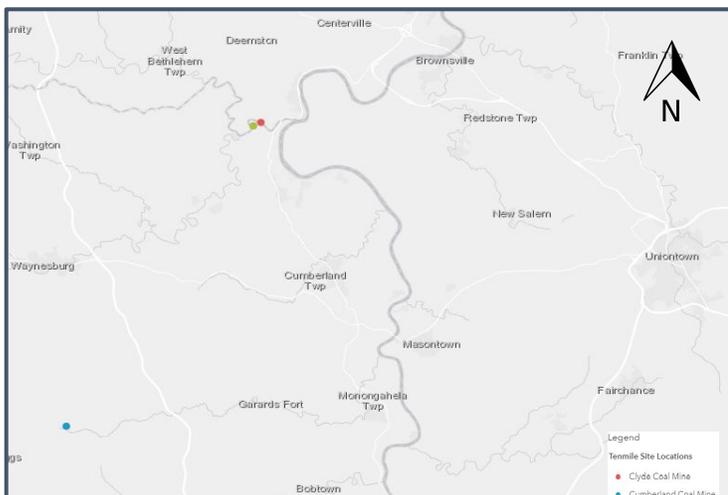
## Monongahela: Tenmile Creek

### Project Description :

The Izaak Walton League of Greene County expressed concern over radiological reports provided by the Pennsylvania Department of Environmental Protection (DEP) regarding their April 2014 sampling of discharges to Tenmile Creek. The DEP's results indicated high levels of radium in discharges to Tenmile Creek from the abandoned Clyde Mine and coal refuse piles further upstream near Waynesburg as well as at the Cumberland Mine on Whiteley Creek. Locals were concerned that the high radiologicals may have indicated that fracking wastewater was being dumped into the abandoned mines. In response, the 3RQ program performed a targeted study to help monitor the water quality of this 40 mile tributary. This study aimed to help provide reliable information to the communities surrounding Tenmile Creek who were concerned about the quality of their streams and their health.

### Findings :

3RQ's initial water testing found that the levels of radiation were low and fell well below the drinking water limit. To help concrete these findings, 3RQ sampled Tenmile Creek and at the discharge sites of the Cumberland and Clyde mines six times over a two week period from late July to early August 2015. The samples were analyzed at a state-certified radiochemistry lab utilizing EPA approved...



**Figure 1.** Map of southwestern Pennsylvania showing the sampling locations. Tenmile is the primary watershed within Greene County Pennsylvania, passing through Waynesburg before joining the Monongahela River in Clarksville, Pennsylvania.

...methods. These results supported the initial sampling findings of low radiation. In addition to low radiation, there were low levels of barium and strontium.

### Results :

The drinking water limits for radionuclides include the combined radium 226/228 limit of 5 picocuries per liter (pCi/L) and gross alpha particle limit of 15 pCi/L. Pennsylvania DEP reported radium reaching levels in the range of 102 and 301 pCi/L. 3RQ sampled several sites along Tenmile Creek and had a maximum reading of 2.95 pCi/L for radium. The average values reported were 0.74 pCi/L. Both the average and maximum fell below the drinking water standard. The only parameter near the drinking water limit from 3RQ's sampling was the gross alpha radiation reading of 13.4 pCi/L. PADEP subsequently has repeated their sampling and also concluded that radiologicals were not a concern. It is believed that the initial high levels reported by the DEP were due to method and reporting errors. 3RQ's water quality expert Dr. Paul Ziemkiewicz commented on this site saying, "The radium numbers were high but not consistent with the much lower gross alpha radiation readings. Radium is an alpha emitter and the gross alpha reading should be the sum of all of the alpha emitters."



**Figure 2.** Image of Tenmile Creek near the town of Fredericktown, PA showing iron buildup from acid mine drainage Credit: Observer Reporter Aug 31, 2015.