

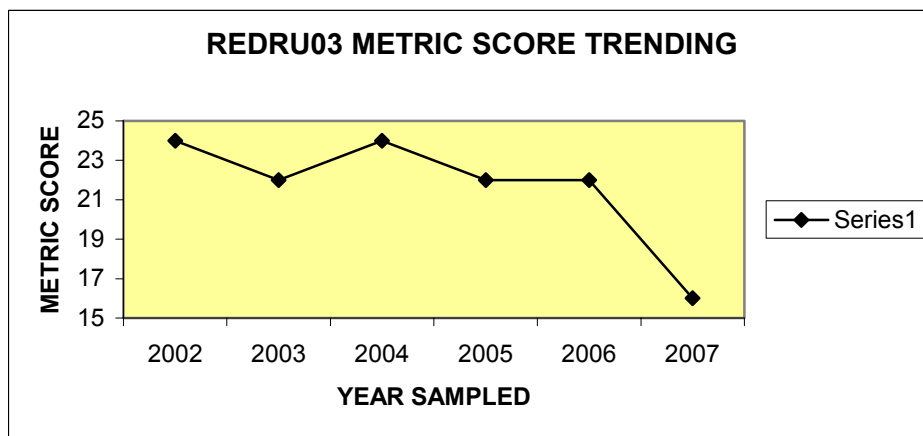
DISCUSSION

This year there were 52 sites tested with two replicate samples: 22 (40.74%) sites ranked as optimal, 22 (40.74%) ranked as slightly impaired, 6 (11.11%) ranked as moderately impaired and 4 (7.41%) sites ranked as severely impaired.

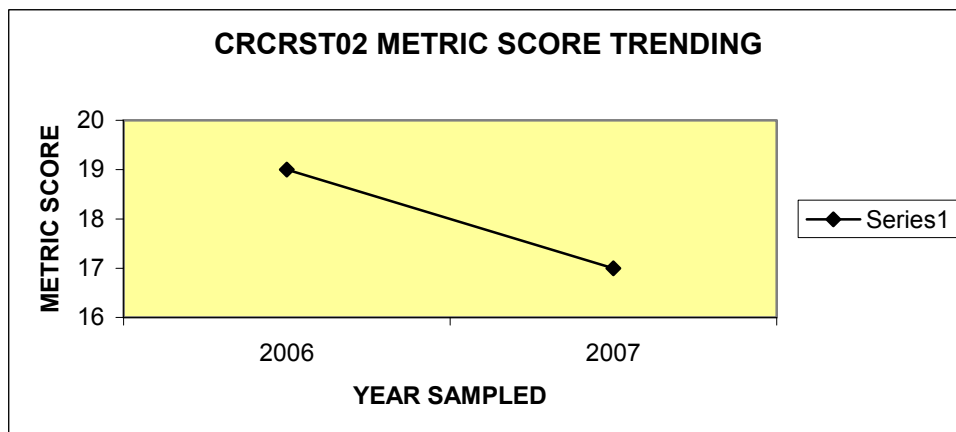
The Rapid Bioassessment Protocols have begun to indicate impairments at several locations in the County. These impairments are indicated by low or decreasing biological assessment scores. The potentially impaired sites and probable cause of impairment are as follows:

Red Run (**REDRU03**) - Approximately 100 yards upstream of Industrial Park Drive.

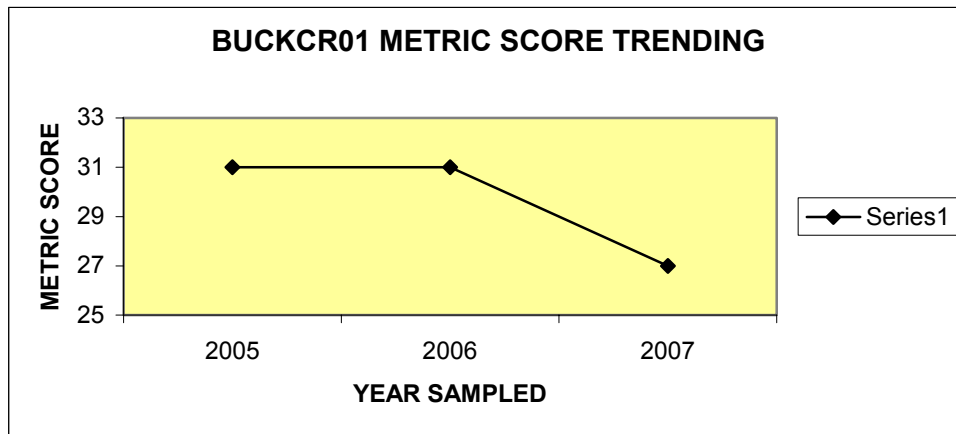
Red Run has begun to show serious impairment with a decrease of 6 points in its biological assessment score. This may be due to low flow conditions.



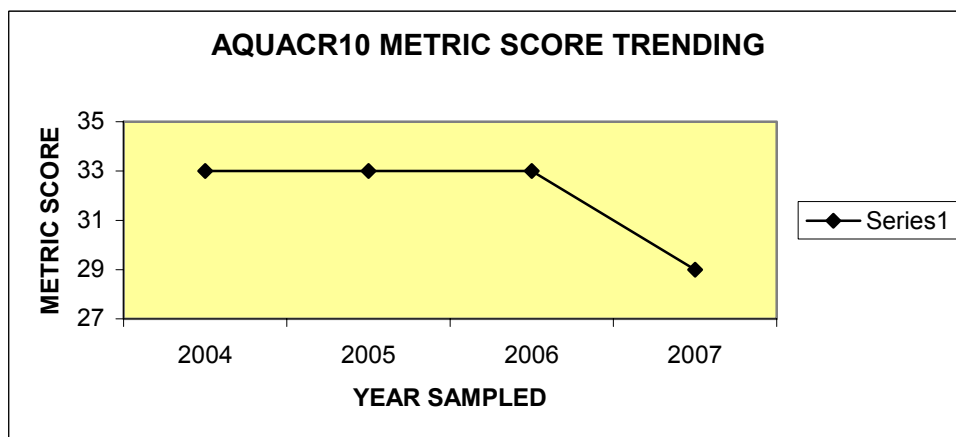
Cranberry Creek (**CRCRST02**) - Hallet Road below Penn Estates @ private bridge on Griffen Property. This site continues to exhibit serious impairment; nitrogen (nitrate + nitrite) exceeded the maximum acceptable limit which is 10 mg/l and the result was 15.3 mg/l. The metric score decreased by 2 points. This unnamed tributary to the Brodhead Creek is listed on PADEP's 303d list of impaired waters not meeting existing uses.



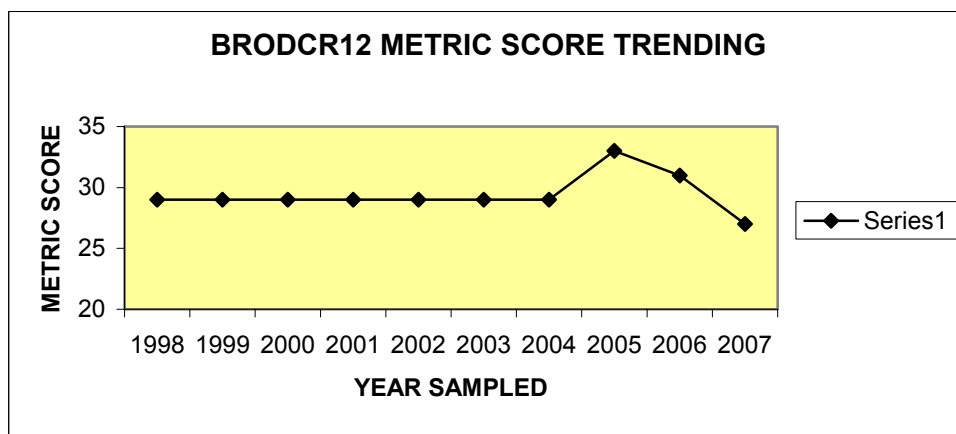
Buckwha Creek (**BUCKCR01**) - Approximately 200 yards downstream of stone bridge in Kunkletown. This site dropped 4 points in the biological assessment which may be due to low flow and warmer water temperatures.



Aquashicola Creek (**AQUACR10**) - At the Kunkletown Rod and Gun Club, immediately downstream of bridge on the private drive. This site merits continued monitoring based on a decrease of 4 points in the biological assessment score, which may be attributed to the lack of shredders that were identified in the sample.



Brodhead Creek (**BRODCR12**) - Approximately 100 yards downstream of the bridge on Route 191, near its intersection with Route 447. This site exhibited a decrease of 4 points, likely due to the large non-insect community identified. Furthermore, the lack of canopy, abundant gastropods (snails) and algae instream indicates a source of enrichment.



Improvement in Biological Assessment Scores

The following sites showed improvement in the Biological Assessment Score:

Brodhead Creek (**BRODCR13**) approximately 200 yards upstream of its mouth where it meets the Delaware River (DWGNRA boundary control point). This site has continued to exhibit a downward trend until this year when an increase of 2 points was recorded.

Marshalls Creek (**MARSCR08**) approximately 50 yards upstream of bridge on Route 209, near Jay Park Plaza, had an increase of 6 points.

Marshalls Creek (**MARSCR09**) approximately 25 yards upstream of bridge on County Bridge Road exhibited an increase of 4 points.

Paradise Creek (**PARACR01**) approximately 50 yards upstream of Lower Swiftwater Road had an increase of 4 points.

Paradise Creek (**PARACR03**) approximately 150 yards upstream of the old railroad bridge over Route 191, (a replicate sample was taken here) had an increase of 6 points.

Pocono Creek (**POCOCR17**) approximately 50 yards downstream of Sullivan Trail, exhibited an increase of 8 points.

Scotrun Creek (**SCOTCR04**) approximately 100 yards upstream of bridge at the Crossings Factory Stores overflow parking area, had an increase of 5 points.

Tobyhanna Creek (**TOBYCR01**), downstream of the bridge on Route 423 in State Game Lands 127 registered an increase of 4 points.

There is no apparent reason why these sites have had an improvement in the biological assessment score, and they will continue to be monitored to determine if the improvement is the start of a trend or an isolated occurrence.

RECOMMENDATIONS

The following sites are recommended to be referred to PADEP for further investigation:

BRODCR13 - Brodhead Creek, approximately 200 yards upstream of its mouth where it meets the Delaware River. (DWGNRA boundary control point). Although this site has rebounded a small amount from last year's assessment, this site should continue to be monitored for any additional changes.

CRCRST02 - Cranberry Creek, Hallet Road below Penn Estates @ private bridge on Griffen Property. This site continues to exhibit serious impairment. Due to the presence of nutrient levels identified this site merits additional testing to identify the source of the pollutants.

Due to requests for upgrades and evaluations, the county's annual water quality study will be altering current procedures through the adoption of PADEP'S current Instream Comprehensive Evaluations (ICE) protocols. These new evaluations and protocols provide a more in-depth level of identification for the macroinvertebrate communities. Currently, the macroinvertebrates are identified to the family level; the goal is to extend the level of identification to the genus level. This conversion is necessary and essential to protect streams by conforming to state regulatory standards. This new level of identification will assist the DEP with stream evaluations, classifications, and establishing total maximum daily loads (TMDLs) for nutrient levels for watercourses.

The Planning Commission and Conservation District should continue to partner with the four watershed organizations in the county to refine the study while making the greatest and most effective use of resources in conducting the study.

The study should continue to focus on monitoring sites developed for long term trending associated with detailed watershed assessments in the Pocono Creek and Paradise Creek watersheds and add additional trending sites in the future as detailed assessments are conducted in other watersheds.

Additional monitoring sites should be selected in consultation with the four watershed organizations in the county with priority given to sites that have shown either constant impairment or a downward trend. Continued monitoring at these sites should be geared toward determining the extent and possible causes of the impairment. Making these determinations will give the County and the watershed organizations the information they need to address potential mitigation and restoration activities.

PROJECT PARTICIPANTS

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Pennsylvania Dept. of Environmental Protection - Bureau of Water Quality
Management
United States Environmental Protection Agency

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ACKNOWLEDGMENTS

Monroe County has conducted an annual water quality study for the past twenty one years. Through the years the program has evolved and the annual report has been refined to provide a comprehensive analysis of the County's streams.

There are a number of people and organizations to be recognized for their efforts in this year's study:

- The continued professional support from Prosser Labs.
- The County would like to thank the Brodhead Watershed Association for its continued support and financial assistance by sponsoring several sites in this year's study.
- The County would like to extend sincerest thanks to all the volunteers who gave many hours to assure that accuracy was maintained while collecting field data.
- Without the permission of private property owners, the number of sampling sites would be greatly reduced. The County thanks them for allowing access to their property.

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