#2834

CHESAPEAKE BAY FOUNDATION

Saving a National Treasure

June 8, 2010

RE: Clarks Creek, et al Stream Redesignation Package; Summary of CBF comments

Dear Environmental Quality Board:

The following is a one-page summary of the detailed comments submitted by the Chesapeake Bay Foundation regarding the Hammer Creek redesignation from High Quality Cold Water Fishery (HQ-CWF) to Cold Water Fishery (CWF). In summary, we believe:

- The legal threshold for petitions to downgrade designated uses of streams states, in essence, that a petitioner must provide evidence in the manner of a structured scientific assessment that the stream can *never* be restored sufficiently to meet its designated use. 25 Pa. Code §§ 93.4(b); 93.4(c); *see also* 40 C.F.R. §§ 131.10(d), (g), (j). We do not believe DEP has met this legal threshold for downgrade.
- Hammer Creek currently meets the HQ biological macroinvertebrate criteria in its forested headwaters. In fact, recent surveys indicate dramatic improvement in all water quality parameters (biological, chemical, and physical/habitat) overtime--to the degree that the Creek will be able to achieve Exceptional Value (EV) status in at least one location.
- We believe the model employed by DEP was not appropriately calibrated. Published literature has indicated the calibration approach used by DEP can lead to large errors in results.
- DEP's analysis only included three agricultural BMPs and one modified BMP for forested buffers. Such a limited suite severely limits the type and mixture of BMPs that are available to farmers in real-world conditions.
- No suburban BMPs or on-site septic system BMPs appear to be included in DEP's analysis.
- The model fails to account for reductions of groundwater inputs of nitrogen and phosphorus over time. These high nutrient inputs in groundwater are reasonably expected to be reduced as agricultural BMPs are implemented.
- DEP did not account for improvements in in-stream habitat and stream shading that will result from restoration, primarily forested riparian buffers. Extensive research efforts have pointed to the importance of forested buffers in improving the physical in-stream habitat and shade from the tree canopy that is vitally supportive of macroinvertebrate and fish populations.
- 40% of the Hammer Creek's land use was classified as "other" and was not considered for any BMP implementation.
- DEP's own analysis indicates Hammer Creek pollutant loads are within an acceptable level of error when compared to a reference watershed, indicating that BMP loads can be reduced to be very similar to a nearby special protection stream, although not necessarily exact.

We largely support the Clarks Creek, et al Stream Redesignation Package. Based on the considerations highlighted above, we urge the EQB to reject the proposed rulemaking to downgrade Hammer Creek.

Regards,

H.L. Campbell, Senior Scientist

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#2834

CHESAPEAKE BAY FOUNDATION

Saving a National Treasure

June 8, 2010

RE: Clarks Creek, et al Stream Redesignation Package; Hammer Creek

Dear Environmental Quality Board:

We write to you to explain why we object to the recommended Hammer Creek "downgrade" for segments of the headwaters from High Quality Cold Water Fishery (HQ-CWF) to Cold Water Fishery (CWF) designated use as part of the Department of Environmental Protection (DEP)'s Clarks Creek, et al Stream Redesignation Package.

Our concerns aside, we appreciate and support the DEP's efforts to move these proposals to completion. Many of these streams have been awaiting decisions regarding redesignation for lengthy periods of time. By moving these proposals through the redesignation process, the biological integrity of numerous streams in the Commonwealth will preserved.

As the package pertains to Hammer Creek, upon a lengthy and exhaustive review of the proposal, we have many outstanding questions. However, CBF appreciates DEP's willingness to discuss our inquiries on Hammer Creek.

Above all, we do not believe this recommendation is warranted. We urge you not to adopt a proposed rulemaking to downgrade the stream. Our concerns are summarized below.

Legal

The legal threshold for petitions to downgrade designated uses of streams is extremely stringent. In essence, the petitioner must provide evidence in the manner of a structured scientific assessment that the stream can *never* be restored sufficiently to meet its designated use. 25 Pa. Code §§ 93.4(b); 93.4(c); *see also* 40 C.F.R. §§ 131.10(d), (g), (j).

Specifically, State and federal regulations require heightened standards for changing designated uses of streams to less protective uses. These regulations provide that, in order to downgrade a stream's HQ designated use, DEP must demonstrate (or the petitioner must demonstrate and DEP must find) that:

- The stream has not at any point in time on or after November 28, 1975 to present attained HQ existing uses;

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- HQ existing uses cannot be attained through implementing effluent limits under the Clean Water Act or cost-effective reasonable best management practices (BMPs) to control nonpoint sources of pollution; *and*
- Human caused sources of pollution prevent attainment and cannot be remedied.[1]

25 Pa. Code §§ 93.4(b); 93.4(c); *see also* 40 C.F.R. §§ 131.10(d), (g).

Also, federal regulations require that the demonstration that the use cannot be attained must be made through a "structured scientific assessment" known as a use attainability analysis (UAA). 40 C.F.R. §§ 131.3(g), 131.10(j). We do not believe the modeling process undertaken by DEP meets the criteria of UAA legally or scientifically (see technical issues below).

Finally, federal regulations create a rebuttable presumption in favor of established fishable/swimmable designated uses. *Kansas Natural Resource Council, Inc. v. Whitman*, 255 F. Supp. 2d 1208, 1209, 1213 (D. Kans. 2003); *Idaho Mining Assoc., Inc. v. Browner*, 90 F. Supp. 2d 1078, 1087-92 (D. Idaho 2000). Accordingly, a petitioner seeking to lower an established designated use must rebut this presumption with clear scientific evidence presented in a UAA. *Id.*

DEP did not demonstrate that the designated use is more restrictive than existing uses.
"Existing uses" are defined as "uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards." 25 Pa. Code § 93.1. Thus analysis of whether a designated use is more restrictive than existing uses involves not only an assessment of present water quality and uses, but an assessment of historic water quality and uses.

DEP's analysis of the historic data for Hammer Creek cannot support the conclusion that the designated use is more restrictive than the existing use. The regulations require a "demonstration" that the designated use is more restrictive than the existing use. Because of the expansive definition of existing use, this means that there must be a clear showing that High Quality uses have never been met since November 28, 1975. The historic data is simply insufficient to meet this demonstration.

In the June 2007 Stream Evaluation Report, DEP admits that "no long-term water quality data were available from either Hammer Creek or Speedwell Forge Lake that would allow for a direct comparison to water quality criteria." Furthermore, where water quality data for High Quality parameters does exist and allows criteria calculations to be made (such as pH, Dissolved Oxygen, and Iron) all of the data reported indicated that water quality criteria *are* met. (Stream Evaluation Report (June 2007), Tables 2, 4, 7, 8, 10). The *absence* of water quality data does not prove the *failure to meet* water quality criteria. Rather, the law requires actual data showing that water quality criteria were not met. Relying upon the absence of data to meet an affirmative burden of proof is not a "demonstration" within any logical use of the term.

[1] Any one of five other conditions in Section 93.4(b) may be demonstrated in place of the "human causes cannot be remedied" factor, but this is the one factor that seems most appropriate for the causes of the pollution affecting Hammer Creek—human-induced agricultural impacts.

There is also an inappropriate use of historic macroinvertebrate data. Much of the marcoinvertebrate data analyzed was collected in response to discrete pollution events. As such, the macroinvertebrate data represents event specific conditions. Such data says nothing about the status of the biological community prior to the pollution events or long term after the events, once populations have had a chance to likely rebound. Without such data, there is no basis to make a conclusion as to whether HQ existing uses were historically attained in the headwaters of Hammer Creek.

DEP's most recent stream evaluation study of Hammer Creek in 2003 and 2004 is not sufficient basis on which to conclude that the HQ designated use is not currently met, for several reasons. First, the stream study is now over three years old and does not necessarily reflect present water quality. Second, the 2003-04 study was undertaken shortly after dam removals occurred that resulted in significant sediment releases to the stream, adversely impacting benthos. Third, issues exist concerning the chosen reference streams. Segloch Run is one of the premier Exceptional Value (EV) freestone streams in Pennsylvania. Other EV freestone streams may be more appropriate in terms of setting a reasonable bar that is achievable yet still protects the integrity of the special protection waters program. Elk Creek, the chosen limestone-influenced reference stream, is not located in the same physiographic province and we do not believe the stream order of the chosen sampling point correlates to the headwater stretches of Hammer Creek. A more comparable limestone-influenced reference stream may be more appropriate.

DEP's conclusion that High Quality uses are not attainable is not supported by any evidence and has not met the appropriate standards set forth in 25 Pa. Code § 93.4(b) and 40 C.F.R. § 131.10(g), (j).

In the June 2007 Stream Evaluation Report, DEP concludes that "while BMPs installed to date have led to some water quality improvement and additional BMPs could result in further improvements, it is unlikely that those improvements would be significant enough to result in HQ-CWF use attainment." As discussed below, documentation found in the file supports the opposite conclusion—that HQ-CWF uses *are* attainable with implementation of additional BMPs, and the analysis presented in the revised Stream Evaluation Report (June 2008) has many technical concerns associated with it.

Federal law requires that, in order to downgrade a designated use, a UAA must be undertaken. A UAA is defined by federal law as a "*structured scientific assessment* of the factors affecting the attainment of the use which may include physical, chemical, biological, and economic factors . . . ." 40 C.F.R. § 131.3(g) (emphasis added). Under the most common understanding of what constitutes a scientific study, a "structured scientific assessment" must include the testing of hypotheses through the gathering of appropriate data and information and analysis of that data to form conclusions. While DEP did perform a modeling analysis of Hammer Creek, we believe there are several concerns which render the modeled results inconclusive (see technical discussion below).

Furthermore, Pennsylvania's water quality standards require that, in order to downgrade a designated use, it must be "*demonstrated* that . . . the use cannot be attained by *implementing cost-effective and reasonable BMPs* for nonpoint source control, and . . . [h]uman caused conditions or sources of pollution prevent the attainment of the use and *cannot be remedied*." 25 Pa. Code § 93.4(b) (emphasis added). We contend that the above State and Federal regulatory

requirements have not been met, and therefore do not legally justify the downgrading of Hammer Creek.

Technical

Hammer Creek should be listed as an Impaired HQ stream

Hammer Creek currently meets the HQ biological macroinvertebrate criteria in its forested headwaters[2]. After passing through an agricultural and low density residential valley where forested riparian buffers are largely absent, the creek's biological condition becomes understandably impaired. However, upon reentering a forested condition, recent surveys indicate dramatic improvement in all water quality parameters (biological, chemical, and physical/habitat). According to the 2008 EcoAnalysts, Inc., report, *this improvement in the downstream forested sections is of such magnitude to render the Creek able to achieve Exceptional Value (EV) status compared to reference.*

Clearly, in its unimpaired state, this is a stream that is deserving of HQ status. Its impaired middle stretch should not be downgraded, but rather *should be listed as an impaired HQ-CWF, with impairments caused by habitat modification, sedimentation, and possibly excess phosphorus loadings.*

The model calibration approach by DEP was faulty

In an attempt to determine whether the agricultural section of Hammer Creek could achieve HQ status, DEP used the AVGWLF (ArcView Generalized Watershed Loading Function) model and PRedDICT modeling tool to model sediment, phosphorus, and nitrogen loads of Hammer Creek versus a reference stream, in this case Hay Creek. DEP staff input various default best management practice (BMP) scenarios available in the PRedICT model in an attempt to determine whether equivalent or lower loads in Hammer Creek versus Hay Creek could be achieved via BMP implementation. This is based on the assumption that nutrient and sediment loads inversely correlate directly with macroinvertebrate conditions. Therefore, according to DEPs hypothesis, pollutant loads equal to or lower than Hay Creek's, would result in Hammer Creek's biological condition improving to HQ status.

All models require some level of calibration. Calibration refers to the adjustment or fine-tuning of modeling parameters to reproduce observations of known, real-world conditions. Hydrologic calibration precedes water quality calibration because runoff is the transport mechanism by which nonpoint pollution occurs. The AVGWLF model operates most accurately and precisely upon hydrologic calibration (stream responses to precipitation and snow melt) over several, ideally more than 10, years.

Hydrologic calibration is typically done with USGS gage stations within the watershed in question or nearby downstream. An example is presented below.[3]

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[2] Bilger, Michael. 2008. *Collection and Taxonomic Identification and Enumeration of Aquatic Macroinvertebrates in the Hammer Creek Watershed (Lebanon and Lancaster Counties), PA and Appropriate Reference Locations October—November 2007.* EcoAnalysts, Inc. , Selinsgrove, PA.

[3] Framework Water Quality Restoration Plan and Total Maximum Daily Loads (TMDLs) for the Lake Helena Watershed Planning Area: Volume II. U.S. Environmental Protection Agency, Montana Operations Office, December 16, 2005.

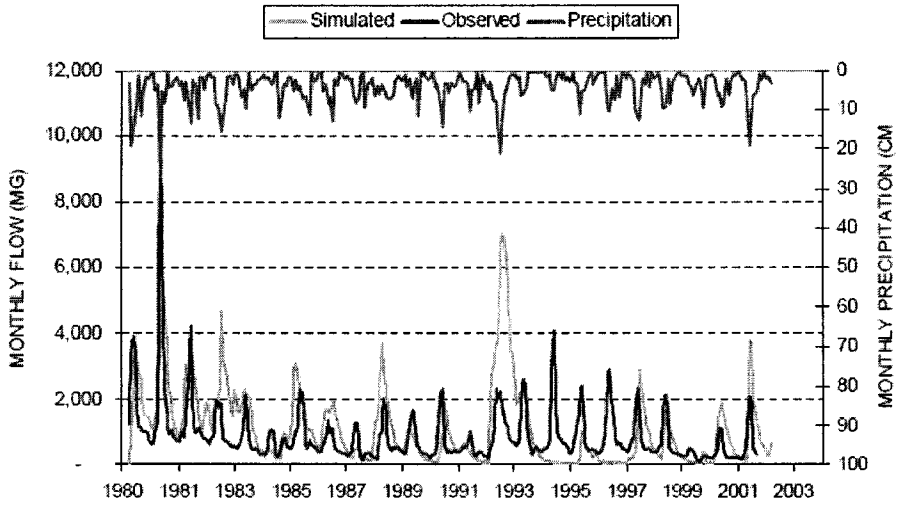

Figure 12. Comparison of Simulated and Observed Monthly Flow Volumes at USGS Gage 06061500, along with monthly precipitation at the Helena Airport.

DEP did not perform a hydrologic calibration of the model. Rather, DEP used the reference watershed approach in which no hydrologic calibration is performed. Although often referenced as an option, it is not considered a precise and accurate methodology in all cases. For this effort, Hay Creek, an EV stream in Berks County, was employed as the reference watershed. If successful, the reference watershed calibration approach will result in similar stream responses to precipitation events, as in the example above. However, while soils and geology are similar amongst each watershed, the land use is notably different and AVGWLF PRedICTed a total annual runoff from surface land in Hammer Creek that is twice that of Hay Creek. In fact, the model PRedICTed that the 20 year average amount of runoff entering Hammer Creek was 3.13 inches. Hay Creek was determined to have a 20 year average amount of runoff 1.5 inches.

At a minimum, DEP's calibration approach should model the gauged Hay Creek to a theoretical Hammer Creek watershed that had precisely the same land use as Hay Creek watershed. If total annual runoff was similar in this situation, one could contend the model was properly calibrated. From our analysis, it appears DEP did not perform such a calibration procedure. And because questions remain regarding the calibration of the model, the nutrient load results and BMP scenarios are subsequently questionable to CBF.

In addition, the area of Hammer Creek area under investigation is 14.5 square miles (9280 acres). AVGWLF was developed and calibrated for use in Pennsylvania watersheds using watersheds that ranged from 29,549 to 630,630 acres.[4] Because all watershed models lose precision and accuracy as one analyzes increasingly refined spatial areas and because AVGWLF was tested and calibrated with watersheds over three times the size of Hammer Creek, it is reasonable to

[4] Evans, B.M., D.W. Lehning, K.J. Corradini, G.W. Petersen, E. Nizeyimana, J.M. Hamlett, P.D. Robillard, and R.L. Day. 2002. A Comprehensive GIS-Based Modeling Approach for Predicting Nutrient Loads in Watersheds. J. Spatial Hydrology, Vol. 2, No. 2., (www.spatialhydrology.com).

conclude that the model does not result in PRedICTable and reproducible precision and accuracy for sufficient watershed comparison and BMP scenario analysis.

Recent advances in optimizing watershed model calibration have focused mainly on incorporating multiple objective measures of model performance and improving optimization algorithm with averaging across multiple calibration sites. A recent study employed such an approach for multiple calibration sites within a watershed and calculated from the PRedICT margin of error at that site.[5] The calibration framework was applied to estimate 16 hydrological and nutrient parameters of the GWLF watershed model[6] at the Rhode River basin, in Maryland. In comparison to the single-site calibrations, as performed by DEP, the multi-site weighted average approach along with multi-objective optimization reduced the relative cumulative error of PRedICTions in validation watersheds by 3.5–7.4% for monthly streamflow, 3.2–6.3% for monthly nitrogen loads, and 4.3–5.9% for monthly phosphorus loads, respectively. In other words, this study reported that single-site calibration processes produced a range of errors when compared to observed data. Because DEP used a similar calibration approach, one could reasonably conclude that a similar range of errors were part of the Hammer Creek analysis.

In another study, which specifically analyzed the ungauged calibration approach, GWLF was used to estimate nutrient loads from ungauged areas of a coastal plain catchment of the Choptank River basin[7]. Comparison of the PRedICTed loads from six selected subbasins with observed monitoring load data showed that application of GWLF employed with an ungauged approach had a nitrogen error (versus observed monitoring data) of 43% for nitrogen and 92% for phosphorus. Adjustments reduced model errors of nitrogen loads from 43% to 27%. The authors conclude that the data supported the hypothesis that *significant spatial variations in nitrogen and phosphorus yields introduce large errors when extrapolating from a calibration approach using a USGS gauge to one using ungauged watersheds. As noted, DEP employed an ungauged watershed calibration approach.*

According to Evans, et al (2002), AVGWLF ..." may not be sufficiently "sensitive" to adequately capture the temporal variability of nutrient loads exhibited within individual watersheds in some cases. That is not to say that GWLF cannot be used to simulate such loads given adequate calibration." As detailed above, we question whether DEP's calibration process was adequately robust.

BMP Scenario analysis tool too limited to reflect real-world options
Assuming, for a moment, that the model results are accurate, we have questions regarding the applicability of the PRedICT scenario analysis tool as part of AVGWLF.

First, based on the information provided to us, it appears DEP only considered three BMPs in their scenario analysis--vegetative buffers, streambank fencing, and streambank stabilization.

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[5] Xuyong Lia, Donald E. Wellerb and Thomas E. Jordanb. 2010. Watershed model calibration using multi-objective optimization and multi-site averaging. Journal of Hydrology, Vol. 380, Isssues 3-4, 30 January 2010, Pages 277-288.

[6] GWLF is the same model as AVGWLF only it does not have the ArcView GIS mapping component.

[7] Kuang-Yao Lee, Thomas R. Fisher and Emma Rochelle-Newall. 2001. Modeling the hydrochemistry of the Choptank River basin using GWLF and Arc/Info: 2. Model Validation and Application. Biogeochemistry, Vol. 56, No. 3. p. 311-348.

Eventually, a modified stream forested buffer BMP was included (see discussion below). The precise amount in linear feet or acres of these BMPs (or combinations thereof) assumed to be employed in their analysis is not apparent. What has been presented to us is a suite of "implementation levels", e.g., 75%, and various 100% BMP implementation scenarios, without specifics regarding the complete suite BMPs in each of scenario. Without such information, it is impossible to fully assess whether the best possible recipe of BMPs for reducing nutrient and sediment loads were considered.

Secondly, numerous other BMPs exist that were not considered by DEP. For instance, according to Evans, et al (2003), PRedICT is able to "directly estimate nutrient loads associated with farm animal populations along with reductions based on management scenarios such as animal waste management systems for livestock, animal waste management systems for poultry, runoff control in confined feeding areas, and phytase feed for poultry." It appears DEP did not consider this.

Unfortunately, it also appears that *DEP did not consider including in their analysis any of PRedICT's suburban BMPs* other than a modified version of a forested buffer BMP. PRedICT allows for a limited suite of such BMPs, including basins, constructed wetlands, and bioretention. Yet, while there is limited development in the area, notable opportunities exist for the placement of new and the retrofitting of existing BMPs in this sector. Again, it appears DEP did not consider these BMPs as an option in their scenario analysis.

Wastewater discharges considered by PRedICT include on-lot septic systems, along with BMPs to reduce associated loads. All sources of sewage treatment within the Hammer Creek watershed rely on on-lot systems. It appears DEP did not consider this as an option either.

Distressingly, because PRedICT has no option to included a forested buffer BMP, DEP modified the "agricultural land to forest land conversion" option to equate a forested buffer BMP. First, such the forest buffer BMP is very spatially specific and conversion may not represent the true impact of the BMP adjacent to the stream. Second, this modified BMP ignores the in-stream removal processes forested buffers provide. For instance, according to Sweeney, et al, forested buffers provide 2 to 8 times the nitrogen pollution processing/attenuation of non-forested streams, increased large wood debris, increased streambed habitat for macroinvertebrates, and lower water temperatures, among other clear and quantifiable benefits.[8]

DEP fails to account for the impacts of shade resulting from restoration of forest riparian buffers on phosphorus-related impairments. While we believe the model shows that phosphorus loads will be reduced sufficient to meet HQ status, the impairment caused by excess phosphorus is related directly to eutrophication, particularly excessive algae growth. The amount of algae growth is not only directly correlated to phosphorus, but also to the amount of sunlight on the stream system. Research has shown that forest buffers can provide enough shade to significantly reduce algae growth and prevent impairment even in phosphorus-enriched stream environments.[9]

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[8] Sweeney, Bernard, T.L. Bott, J.K. Jackson, L. A. Kaplan, J.D. Newbold, L.J. Standley,W.C. Hession, and R.J. Horwitz. Riparian deforestation, stream narrowing, and loss of stream ecosystem services. PNAS, September 2004; 101: 14132–14137

[9] Bothwell, ML. 1988. Growth rate responses of lotic periphytic diatoms to experimental phosphorus enrichment: The influence of temperature and light. Canadian Journal of Fisheries and Aquatic Sciences, Vol. 45, no. 2, pp. 261-270. 1988.

And, TMDL implementation plans have been developed and implemented around abating the impacts of thermal and nutrient pollution problems with forested stream buffers, such as the Willamette River Basin in Oregon.

Interestingly, a body of literature exists which reports that in-stream habitat may play a more fundamental role, in some cases, the abundance and diversity of stream macroinvertebrates than does nutrient pollution, particularly nitrogen, in free flowing lotic systems. For instance, in one study in Virginia, the authors report decreases in substrate quality were associated with the most severe decreases in biological condition. Three less severe stressors were substrate quality, riparian quality, and, lastly, increased concentrations of nitrogen pollution.[10] In another study, which looked at the macroinvertebrate response to stream restoration techniques, the authors found a relatively rapid recovery of habitat structure and macroinvertebrate communities in restored streams which they concluded is encouraging.[11] *The analysis performed by DEP did not explicitly include considerations of in-stream habitat and its potential to improve stream macroinvertebrate populations.*

Regardless, the information on pollutant reduction efficiencies that are available in PRedICT and employed by DEP has been drawn primarily from four different sources: Dillaha, Yagow and Pease (2000), Ritter and Shirmohammadi (2001), Susquehanna River Basin Commission (1998), and U.S. EPA (1990)[12]. These studies range from 9 to 20 years in age. And while the results may have been appropriate at the time, a body of more recent research has been established regarding the limited suite of BMPs available in PRedICT, along with numerous other BMPs that cannot be modeled by the tool.

Land use data set too vague to reflect existing and potential practices

We are also concerned that much of the land use data employed by DEP in their analysis is non-specific and can result in inaccurate representations of current conditions and practices. For instance, according to DEP there are 2,792 acres of cropland within the subject study area. We do not know how that value was determined or when. If that number is indeed current and correct, a further breakdown of the type of management schemes and existing BMPs, if any, are necessary. It appears DEP's cropland data does not include such consideration. For example, 2,792 acres traditional tillage lacking any sort of recognizable BMP practice on that acreage has a far different nutrient and sediment load than an agricultural community which has largely employed conservation tillage practices completed with nutrient management on those same 2,792.3-acres. From the provided information, we have no idea of how those 2,792 acres (sub-divided among multiple farmers and fields) are currently managed. Similarly, DEP classified residential development as simply high density (9.9 acres) and low density (780.9 acres). If existing management conditions are not properly accounted for, then the existing modeled loading condition is inaccurate.

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[10] Lester L. Yuan and Susan B. Norton. 2004. Assessing the Relative Severity of Stressors at a Watershed Scale Environmental Monitoring and Assessment Volume 98, Numbers 1-3 / November, 2004. p 323-349.

[11] Muotka, Timo, R. Paavolaa, A. Haapalaa, M. Novikmecb and P. Laasonena. 2002. Long-term recovery of stream habitat structure and benthic invertebrate communities from in-stream restoration. Biological Conservation, Volume 105, Issue 2, June 2002. pp. 243-253

[12] Evans, B.M., D. W. Lehning, T. Borisova, K. J. Corradini, and S. A. Sheeder. PRedICT--Users Guide for the Pollutant Reduction Impact Comparison Tool. Pennsylvania State University, University Park, PA. June 2003.

Importantly, over 3,600 acres was classified vaguely as "other"; this represents 40% of the watershed and is the largest land use category in the entire study area. The land use category offers absolutely no information about existing conditions or the potential for BMP implementation. *It is extremely problematic that DEP simply ignored the largest land use category in the watershed.*

PRedICT also fails to account for reductions of groundwater inputs of nitrogen and phosphorus over time. According to the model, approximately 50% of the current nitrogen loads and 25% of the current phosphorus loads in Hammer Creek are from groundwater inputs. Groundwater high in soluble nitrogen and phosphorus in south-central Pennsylvania is generally the result of historic agricultural practices. These high nutrient inputs in groundwater are reasonably expected to be reduced over time as agricultural BMPs are implemented.

Nitrogen loads are largely irrelevant in this watershed as nitrogen does not generally result in degradation of freshwater streams. A long-term water chemistry study by the Smithsonian Institution indicates that Hammer Creek has a nitrogen:phosphorus ratio that indicates the Creek is most affected by phosphorus, not nitrogen. In other words, Hammer Creek is predominantly impacted by phosphorus loads. *This is important in that one of DEP's PRedICT scenarios showed that the phosphorus load would be very similar to the current load in Hay Creek (Gary Walters, DEP, personal communication, 20 January and 2 February, 2010). The same PRedICT scenario showed that, on a per acre basis, the sediment load in Hammer Creek would actually be less than the current sediment load in Hay Creek with the implementation of BMPs.*

Regardless, all numerical results from all models contain an error or variability around the final result. *DEP did not report any margins of error around each of the final load results for either the AVGWLF or PRedICT model runs.* As noted above, studies have found that AVGWLF can PRedICT significantly different pollutant loads unless it is properly calibrated, which we are believe was not properly calibrated in this case. Nonetheless, when one considers that sediment and phosphorus loads were similar or at least within a reasonable margin of error, it is reasonable to conclude that Hammer Creek and Hay Creek may have phosphorus loads under DEP's scenarios that are not statistically different.

Conclusion

Downgrading a stream impacted by historic and current agricultural practices has serious precedent-setting implications for numerous DEP policies and programs designed to restore the Commonwealth's impacted waters. These policies and programs are designed to achieve an overarching goal on which the federal Clean Water Act and the Pennsylvania Clean Streams Law is premised, and which CBF firmly believes is achievable—restore polluted waters to full health. As shown by the actual stream monitoring data, Hammer Creek has been shown to quickly restore itself to HQ and even EV status downstream of the impaired sections. This demonstrates that with increased BMP implementation among all land uses, it is reasonable to expect that the Creek will achieve HQ status throughout the section in question and that downgrading is inappropriate.

Based on the considerations highlighted above, we urge the EQB to reject the proposed rulemaking to downgrade Hammer Creek. We urge EQB, however, to approve the remainder of the Clarks Creek, et al Stream Redesignation Package.

Sincerely,

H. L. Campbell, Senior Scientist

#2834

From: Harry Campbell [HCampbell@cbf.org]
Sent: Tuesday, June 08, 2010 4:14 PM
To: EP, RegComments
Cc: Matt Ehrhart - ext. 202; Amy McDonnell - ext.2153; Kelly Donaldson
Subject: Clarks Creek, et al.; Stream Redesignations
Attachments: Hammer Creek Letter to EQB_onepagesummary_finaldraft.pdf; Hammer Creek Letter to EQB_finaldraft.pdf

Importance: High

To whom it may concern:

Please accept the attached comments to the Clarks Creek, et al.; Stream Redesignations package currently under consideration by the Environmental Quality Board. Accompanying this email are two documents: a one page summary for inclusion in the Board members packets and our detailed comments.

If you have any questions or concerns, please feel free to contact me.

Kind Regards,

Harry Campbell

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Help make the Chesapeake Bay a national model for clean water.
http://www.cbf.org/biggestfight