

Final

January 20, 2009

To: The Rivanna River Basin Commission
From: The RRBC Technical Advisory Committee
Subject: TAC January 12, 2009 meeting summary

Changes in TAC composition.

Sam Austin, Chair, opened the meeting with a discussion of the changes in the TAC resulting from Ridge Schuyler's leaving The Nature Conservancy following soon after Diane Frisbee's change in position at TNC. Sam (and later Sally Thomas) said that discussions were underway with TNC about future representation and involvement. Todd Scanlon from UVA's Environmental Sciences Program was welcomed as a new member of the TAC.

Update from RRBC.

Sally Thomas, who arrived shortly thereafter, said that the RRBC Executive Committee is in discussion about how to staff the RRBC. Follow-up is required on the status of the letters to localities, invitation to L. Preston Bryant to attend the RRBC, and the status of the NFWF proposal. The next full RRBC meeting is January 22, and she expects this issue to be under consideration at that meeting.

New Stormwater Regulations.

Jeff Sitler reported that he had just attended a meeting of the Homebuilders Association of Virginia where he learned that many developers are very aware of and have concerns the new stormwater regulations that are being developed, especially that they may result in cost increases for builders. Jeff reported that one of the state budget cuts being proposed is to transfer E/S plan review of state agency and government projects from DCR to local government – and this possibility gives UVA Foundation some concern. Alyson Sappington reported that homebuilders were represented on the Stormwater Technical Advisory Committee (to DCR) but were not uniformly present. Joanne Curran, who is active with the local chapter of American Society of Civil Engineers (ASCE), reported that ASCE plans to comment during the upcoming public comment period (expected April 2009). Also, ASCE will be providing training charettes to help engineers better understand the regulations.

The TAC discussed the possibility that developers are perhaps not getting the full story about the necessity for the new regulations (the current regulations are simply not protecting our streams) and the cost impacts (though BMPs do not necessarily increase costs; see CWP, EPA, and other documentation).

The TAC discussed the possibility that this is an opportunity for the RRBC to offer workshops top local builders, engineers, and developers so that they are better informed going in to the comment period on the new regulations.

Monitoring Subcommittee.

Tamara Ambler chairs the Monitoring Subcommittee, which is comprised of Joanna Curran, Christine May, Jeff Sitler, Dan Ratzlaff, John Murphy, and Kristel Riddervold. The Committee met for the first time on December 16, 2008 and started by discussing expectations for the group. These included:

- identification of monitoring practices that address altered hydrology;
- inventory existing monitoring data collected by others/develop a working understanding of what monitoring has already been done;
- follow-up on the implementation of specific BMPs that might be recommended by the Technical Advisory Committee;
- identify monitoring points along streams and perform hands-on monitoring;
- participate in data collection;
- use data collection to better understand the sources of nutrients and sediments.

Tamara reported that the group agreed that the questions “What are we trying to answer?” and “What would we monitor for?” must be clearly resolved. The distinction between monitoring at the site specific scale versus the overall watershed scale was noted, and the group discussed the need to develop data that can translate to useful information and guidance for decision makers and elected officials.

Tamara also reported on a table created by John Murphy that compiles information on monitoring efforts within the Rivanna watershed (who monitored, when, kind of data or information, number and frequency of sampling events). John Murphy has posted this table on the TRRBC/TAC web log <https://charlottesville-ccoes.grouphub.com/login>, and TAC and RRBC members are encouraged to review this document and add information so that it will be comprehensive and up-to-date.

Tamara reported that the Subcommittee discussed possible courses of action:

- (1) Develop some quantifiable results from implementing best management practices intended to address *altered hydrology* due to development and resulting increases in imperviousness (though pre-development data are usually not available making before/after comparisons difficult). Specific construction projects could be identified and direct measurements of the BMP performance made to determine if the quantity and quality of runoff from the development are substantially affected by the BMP on a project-level scale.
- (2) Establish a baseline for several water quality and stream health parameters at the sub-watershed level, as described by Ken Hyer (USGS) in his presentation to the TAC on July 2, 2008. This would be a long-term project involving installation of infrastructure to collect basic watershed data to identify any long-term trends in a particular watershed. Once baseline data is collected, land use changes and best management practices could be reviewed and then correlated to changes in watershed hydrology and stream health to draw specific conclusions about how altered hydrology is impacting watershed health and how it may be managed.

The Subcommittee will be reviewing the documents from the Chesapeake Bay Program and EPA posted on the web log and continuing to consider what kind of data are needed to evaluate the effects of altered hydrology.

John Martin asked whether the Subcommittee considered monitoring the application of biosolids, referring to a December 30, 2008 public meeting in Albemarle County about application of Class B biosolids on 5,400 acres. Tamara said that this was not considered and

offered her knowledge of land application in Albemarle County. Currently, there are 199 fields on which sludge is applied by two different companies, Synegro and Recycle Systems, each of which holds a permit by DEQ (though it used to be VDH). Tamara said that under new regulations, nutrient management will go through DCR, who will hold on file a nutrient management plan for each site/permit that must be written by a DCR-certified permit writer. The state has funding to reimburse localities for the cost of a local biosolids monitor.

Currently, there is no G.I.S. information or map layer available that indicates where land application is taking place in the watershed, which could be helpful to the RRBC and to the Land Use Effects study being undertaken by StreamWatch.

Rainwater Harvesting Subcommittee.

Kristel Riddervold agreed to permanently chair this subcommittee, whose participants include Alyson Sappington, Ridge Schuyler, Holly Edwards, and Leslie Middleton. Kristel reported on the Virginia State Health Commissioner's letter encouraging clarity in VDH regulations regarding the use of water from rainwater harvesting systems. This letter is concurrent with Ridge Schuyler's efforts on behalf of the RRBC to host a meeting in the Charlottesville area of the principles involved at the state level: representatives from DCR, DEQ, VDH, Building Inspections, etc. to help clarify which uses are regulated by which agency (ies).

The concern is that VDH has included rainwater in its graywater regulations, resulting in confusion on the part of the public, and concern about liability on the local site plan review level. Kristel reported that Charlottesville has several site plan that include rainwater harvesting and is reluctant to approve them without clear regulatory guidance from the state. Ultimately, though the rainwater collected in these harvesting systems is the very same as the rainwater that falls into our rivers and reservoir, there is concern about liability when this water is used in public spaces (even though it may be non-potable).

Kristel described a matrix that the Subcommittee has developed to serve as a gap analysis for identifying responsibility and regulatory oversight of the main possible uses of harvested rainwater. Kristel has assumed communication with Dwayne Roadcap of VDH, with the goal of setting up a meeting that could take place after the legislative session concludes.

Modeling Subcommittee.

Greg Harper reported that the Modeling Subcommittee has not met recently. However, he posed a hypothetical question to the group: If we manage runoff from developed properties perfectly, will our streams become pristine? Most would agree that the answer is "no" because the stream will also reflect other nearby land uses.

Greg suggested that it will be the work of this Subcommittee to grapple with the question of the relative impact on streams of various land uses that will help us better understand where and how to put our resources toward corrective measures.

Member of this Subcommittee are Joanna Curran, Todd Scanlon, John Murphy, Sam Austin, Rochelle Garwood, Dave Hirschman, Gregor Patsch.

Workshop Subcommittee.

This subcommittee has not yet met. Leslie Middleton agreed to chair the Subcommittee, which consists of Greg Harper, Tamara Ambler, Louise Finger, Dan Ratzlaff, Missy Creasy, John Murphy, Alyson Sappington, Stephanie Golon, Darren Coffey, and Dave Hirschman (Leslie will confirm this with Dave).

John Murphy reported that his involvement in this Subcommittee is based on the fact that StreamWatch has received grant money to for the Land Use Effects study specifically for conducting workshops with planners in the various localities to help them access and make use of StreamWatch data (likely in the fall of 2009).

Alyson Sappington reported on the Rainwater Harvesting meeting hosted by DCR and the Potomac River Conservancy. She reported that she has had discussions with DCR about the possibility of the RRBC hosting a follow-up to that meeting.

In addition, there is the need for providing good information to builders and developers about the new stormwater regulations. Joanna Curren agreed to be the interface with the local ASCE.

The Workshop Subcommittee will convene shortly to develop and plan of work.

South Fork Rivanna Reservoir (SFRR) Task Force.

John Martin (RRBC) reported on the work of the Task Force, which is to answer the question: What should be done to maintain the SFRR given that 96% of the source water for the approved Water Supply Plan will come from the Reservoir (which is fast silting in)? And what are the other beneficial uses of the Reservoir? John reported that the draft report specifically mentions the work of the RRBC and the collaboration that the RRBC is fostering and urges further support for the RRBC. Leslie Middleton said that the work of this Task Force has elevated the visibility of the problem on sedimentation in our streams and that the RRBC can use build on that increased awareness. Also, the Task Force has identified the presence of the aquatic invasive, *Hydrilla verticillata*, in the Reservoir and elsewhere in the watershed.

The report from this Task Force will be given to the four chairs: Mayor of Charlottesville, Chairs of the Albemarle Board of Supervisors, RWSA and Albemarle County Service Authority.

Presentation by Alan Gellis, PhD, USGS

Alan Gellis, Research Geomorphologist, MD-DE-DC Water Science Center of the USGS, gave a presentation on Watershed Sediment Sources: Scales and Approaches.

In Virginia, as across the US, sediment is one of the major pollutants on the 303d lists, (in 2004 there were 18% -- or 94 water bodies – listed as impaired by sediment.) Thus, to solve the problem, basic questions have to be answered? What are sediment sources? Where are the sediment sources? And how much is being transported at what rate? Researchers generally believe that, in the Piedmont regions of the Chesapeake Bay watershed, 80 to 90 % of the sediment lost to early colonial erosion is still in storage.

Though it can be helpful at the watershed management scale and smaller scales, modeling is most useful at the large/medium scale (Alan mentioned SPARROW, the Bay Model, GWLF, SWMM, USLE). It is also useful to obtain real data from sediment stations (at all scales), though USGS has a decreasing number of stations that obtain sediment throughout the Bay watershed. However, these stations reflect a strong trend of the Piedmont physiographic region yielding the most sediment (49%) to the Bay (while the University of VT has confirmed that geologic erosion rates are minimal in this region).

Alan emphasized that in management scale watersheds (less than 250 km²), a common sense approach can be used that starts with identifying the major sources of sediment (upland versus channel corridor). Then mitigate the problem (channel restoration, soil conservation,

erosion control – and we might add stormwater management) and monitor for changes in suspended sediment, channel morphology, and habitat.

The main tools for identifying sediment sources are sediment fingerprinting and sediment budgets. Sediment fingerprinting involves characterizing potential sediment sources using physical and chemical properties and comparing these with samples from suspended sediment from the stream. Fingerprinting can utilize a number of geochemical sampling of elements and compounds, as well as utilizing magnetic properties and radioactive properties of sediment. Alan showed how this has been used in the Pocomoke River basin (a highly ditched, agricultural environment) to point to agricultural activity as the main source; and in the Little Conestoga Creek 109.5 km² watershed (mixed land use) where fingerprinting pointed to the majority of sediment coming from bank erosion.

Because fingerprinting helps describe only how sediment is delivered from the watershed, sediment budgets are needed to target the actual sources of the sediment (e.g. the variety of hill, slope and channel sources). The sediment budget provides a framework used to determine the sources, storage areas, and natural and anthropogenic causes of sediment transport in a watershed. Tools include field measurements (using pins, etc.), geomorphic assessments (walking the watershed), and using Cesium-137 as a tracer for establishing mass balance of sediment transport over time. Indirect tools include remote sensing, GUS, statistical methods, and some models.

Alan said that it would take approximately \$20 to 30k to set up sediment sampling stations suitable for the Rivanna.

There was some discussion after Alan's presentation about how these techniques might be utilized in the Rivanna watershed. Alan suggested that the project would have these general steps: break the watershed up into sub-basins; prioritize these sub-basins for analysis; conduct finger-pointing and establish sediment budgets; use aerials and other techniques as available. Investigate whether LIDAR has been flown for the Rivanna area. (LIDAR = Light Detection and Ranging, a remote sensing system used to collect topographic data.)

TAC members recalled that earlier, there was a proposal from VA Tech (Tess Winn, et al) to do sediment fingerprinting. It was agreed that this proposal should be reviewed. Tamara Ambler expressed the feeling that ultimately the RRBC will need this type of data in order to substantiate our recommendations for targeting different areas and BMPs with the goal of sediment reduction.

The next meeting will be on Tuesday, March 17, 2009, from 9 a.m. to 12 p.m. location TBD.

Compiled by Leslie Middleton and respectfully submitted by Samuel H. Austin, TAC Chair.

Attachments:

A. Alan Gellis presentation 09Jan12