

SUMMARY OF COG'S REGIONAL WATER QUALITY WORKSHOP-November 13, 2014 *Accomplishments and Challenges in the Potomac and Local Waters*

2007–2012 Results from Fairfax County Monitoring Project -John Jastram, USGS

- Fairfax County, Virginia and the U.S. Geological Survey launched a cooperative monitoring effort in 2007 to assess the condition of county streams and document watershed-scale response to the implementation of urban stormwater BMPs.
- The USGS recently published a report of monitoring results from the first 5 years of the study and provided a brief overview during the workshop.
- The study focused on characterizing the hydrologic and ecological condition of 14 monitored streams.
- Hydrologically, the monitored streams were found to be flashy, with flashiness positively related to road cover in the watershed.
- Dissolved oxygen conditions were typically within the range required to support healthy biological communities, although occasional departures during summer months at some sites fell below the impairment threshold for streams in Virginia.
- Nitrogen and phosphorus concentration patterns were largely consistent across the network, with a few exceptions. Further work is ongoing to address the causes of the higher-than-average concentrations.
- **Members agreed that water quality monitoring programs like this are vital to understanding water quality conditions and the effectiveness of Chesapeake Bay restoration efforts.**
- **COG and OWML staff will investigate how the Fairfax County data fits with other data used by the Bay Program to estimate nutrient and sediment loads.**
- Also note that the workshop members would like to evaluate how data from this study compares to the Sparrow data used Bay wide.

Water Quality Trend Analysis on Data collected at Chain Bridge -Adil Godrej and Saurav Kumar, OWML

- Since 1982, COG has funded the Occoquan Watershed Monitoring Laboratory (OWML) to monitor water quality at Chain Bridge on the Potomac River, employing a dense sampling strategy that includes flow-weighted composite sampling of almost all major storms.
- This method differs from the sampling strategy used by USGS to estimate loads at the fall line monitoring stations in the Chesapeake Bay watershed.
- A recent draft OWML report that compares the flow-adjusted pollutant loads and load trends estimated by the USGS with those estimated by OWML.
- Overall statistical testing of the 31 years of annual loads suggests that there are differences in load estimates between the two methods, but they largely agree on the direction of water quality trends.
- COG and OWML staff are working to integrate this data into the Chesapeake Bay Program's evaluation of monitoring data in the Potomac basin.
- A brief tutorial of an online web-based portal that can be used to quickly analyze the OWML Chain Bridge data set was also provided.

Updates to COG's Water Quality Fact Sheet – Wastewater Plant Case Studies – Karl Berger (COG) and Dr. Chris Jones (GMU)

- COG staff, using research data supplied by Dr. Jones at George Mason University and Dr. Walt Boynton of the University of Maryland Center for Environmental Science, prepared a draft fact sheet for review
- It documents the impact of nutrient reductions from wastewater discharges on water quality in two Potomac River estuary embayments: Gunston Cove and Mattawoman Creek.
- These embayments have been extensively studied – their shallow waters are separated from the main channel of the Potomac River and both embayments have major wastewater treatment plants located just upstream.
- The water quality response is remarkably similar in the two embayments
- SAV significantly improved in both embayments between 2001 and 2005 – chlorophyll-A levels declined dramatically indicating a major reduction in algal populations – and water clarity improved.
- Members provided input into the draft fact sheet, which COG staff will revise and present to the Chesapeake Bay and Water Resources Policy Committee at a future meeting

Potomac River Water Quality - Current Status and Trends - Tom Parham, MD DNR

- Mr. Parham provided an overview of the summer algal bloom season in the Chesapeake Bay as a whole and the Potomac River estuary in particular.
- He reviewed how well predictions of summer chlorophyll-A and dissolved oxygen levels matched actual conditions
- **Prediction:** NOAA, USGS and University of Maryland predicted larger than average “dead zone” due to higher than average spring flows and Nitrogen loading
- **Actual Conditions:** Dissolved Oxygen - Chesapeake Bay “Dead zone” was about average in 2014.
- He noted that some water quality trends are improving and some are declining in the tidal portion of the Potomac River
- There was a blue-green algae bloom in the river near Charles County, MD, in September 2014, for which Charles County Health Department issued a water advisory