Abstracts

Tuesday, April 29

Session C1: Innovative Condition Assessments

8:00 – 9:30 am | Room 263

Anti-degradation Protection of Water Quality for the Delaware River Basin: Expansion of the Control Point Approach to Monitoring and Assessment

Robert Limbeck and Eric Wentz
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Abstract
The Scenic Rivers Monitoring Program (SRMP) is a partnership between the Delaware River Basin Commission (DRBC) and the National Park Service (NPS). The primary mission of the SRMP is to implement the Special Protection Waters (SPW) regulations that provide anti-degradation protection to water quality of the interstate Delaware River. The first SPW regulations were approved in 1992, and almost immediately some problems were recognized concerning assessment of the reach-wide water quality targets established at that time. Since 2001, the SRMP has established baseline Existing Water Quality (EWQ) at Delaware River and near-confluence tributary sites along 210 miles of high-quality interstate river draining 6780 square miles of watershed. The non-tidal portion of the Delaware River is composed of three major segments: the Upper Delaware (UPDE), Middle Delaware (DEWA), and Lower Delaware (LDEL). Site-specific baseline EWQ targets for 24 locations were completed for the Lower Delaware in 2005, and were the subject of a previous presentation at this conference. Since that time, the 3-year first round of assessment of Lower Delaware measurable change to EWQ has been completed (2009-2011). Results are discussed here. Also, an additional 50 site-specific EWQ targets have been defined for the Upper and Middle Delaware River (2006-2011), and results are shown here. Advantages of site-specific over reach-wide water quality targets are discussed, as is a method for site-specific and longitudinal statistical assessment of measurable changes to water quality over time and under the full range of hydrologic conditions.

Data for Healthy Watershed Assessments

David M. Paradies[1], Karen R. Worcester[2] and John W. Hunt[3]
[1]California Central Coast Ambient Monitoring Program, Los Osos, Calif., [2]Central Coast Regional Water Quality Control Board, San Luis Obispo, Calif., [3]University of California, Davis, Calif.

Abstract
Since 2001, the California Central Coast Water Board's Ambient Monitoring Program (CCAMP) has been collecting monthly trend data at our bottom of watershed "coastal confluence" monitoring sites. We have recently undertaken a comprehensive evaluation of status, trend and change in concentration and loading to support a "Healthy Watersheds" assessment of our Region. At some sites we see linear trends, where change is more or less continuous in a single direction. At other sites we see abrupt change, often in response to a management action, a land use change, or a natural event (fire, flood). We have employed both non-parametric trend analysis and Bayesian change point analysis to our time series to assess these changes, and have examined upstream land use characteristics to support our findings. Assessment tools are directly tied to our database to allow direct updating of website displays (www.ccamp. org) in innovative formats that support periodic staff site assessments and updates.

The Development and Application of a Temperature Assessment Methodology for Coldwater Streams in Maryland

Matthew Stover[1], Nicholai Francis-Lau[1], Anthony Prochaska[2] and Michael Kashiwagi[2]
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Abstract
Maryland has a limited number of coldwater streams capable of supporting coldwater obligates such as brook trout (*Salvelinus fontinalis*) and certain stoneflies like *Tallaperla* sp. and *Sweltsa* sp. MDE and DNR partnered to develop a stepwise assessment process that evaluates stream temperature and biological assemblages to determine if the applicable stream temperature standards are being met. Though Maryland has a numeric stream temperature criterion, it also uses qualitative conditions to determine if the coldwater designated use is being supported. This method appears to be a balanced and reasonable approach to assessing whether warm temperatures are an impairing stressor to Maryland's class III coldwater streams. It has also revealed some of the more vexing assessment scenarios that Maryland has yet to address. Maryland will be using this assessment methodology in its 2014 Integrated Report (303(d) List) to report new temperature impairment listings and it will ultimately serve as the basis for future TMDL development and implementation activities.

Extending Trophic State Assessments Using Volunteer- Collected Water Quality Data

Anthony Thorpe, Daniel Obrecht and John Jones
University of Missouri, Columbia, Mo.

Abstract
The University of Missouri has monitored reservoirs for the past 20 years via two projects. One project uses field staff while the other recruits volunteers to collect and process samples. Samples from both projects are analyzed in the same laboratory by university staff. We examine the reliability of data resulting from samples collected and processed by volunteers to data resulting from samples handled entirely by university staff. To evaluate volunteers' ability to process samples with precision, we examine chlorophyll filter duplicates from both projects. Long-term data show that paired filters from each project differ by less than 5%, on average. Additionally, we examine trophic state assessments of reservoirs in Missouri using chlorophyll, total phosphorus and total nitrogen data from both projects. In 220 cases a reservoir was sampled by both projects during the same year, though not necessarily on the same day. At 38 reservoir sites we have at least 4 years of data from each project, though not necessarily from the same years. Data compare between the projects, especially when long-term means are used (r2 = 0.72 to 0.94). Using citizen volunteers is an effective way to enhance existing monitoring programs. Including volunteer-collected data increases the number of Missouri reservoir sites with long-term data by nearly 50%.