Small Watershed Sampling and Analysis:
Notes on the Chesapeake Bay Nontidal Network in a Post-Expansion Era

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Overview

- The Monitoring Realignment Action Team (MRAT) advocated an expansion of the network to small watersheds with specific land uses and physical settings.
- Many “small” watersheds were added to the network as the result of MRAT recommendations
- No “official” changes were made to sampling or proposed data analysis protocols for small watersheds.
- Some Ad-Hoc adjustments have been made for several sites to accommodate the challenges in assessing loads and trends.
- We (the NT workgroup) should consider a systematic way to document variations in the current protocol and recommendations for long-term approaches for small watersheds.

Problem

- The 12 monthly/8 storms annual sampling approach was designed around the medium-large river sampling network close to the office.
- This approach is likely to be highly inadequate for characterizing nutrient and sediment flux from small watersheds as stormflow responses are often a very short timescale.

Current Solutions

- Additional Storm flow sampling
  - Increase from 8 to ?12-30?
  - Higher cost, high level of effort
- Automatic samplers
  - Better define hydrograph (with more samples)
  - Get samples where timing is difficult
  - Improved loads
  - Manpower intensive to properly implement
  - Severe trend bias issue!
- Continuous Surrogates: Turbidity, Conductance
  - Higher cost, calibration and maintenance
  - Wall-to-wall data
  - High-precision loads
  - Trend methods not developed yet.
- Continuous direct measures: Nitrate probes, wetlabs (DE)
  - direct measure of constituents of interest

What next

- Describe what we have in the network now.
- See if there are general recommendations available from literature etc.
- Engage other programs in establishing some guidelines.
- your thoughts?