Summary of Trends at River Input Monitoring Stations
Data period Oct 1985-Sept 2013

A Briefing to the Water Quality Goal Implementation Team
12/08/2014
Scope and Plans

• Results focus on 9 River Input Stations (RIM)
  – Flow-Adjusted trend in concentration
  – Results published on NT web site
    • http://cbrim.er.usgs.gov/
    • Summary Documents
    • Map Downloads
    • Interactive Map
    • Data downloads
  – Results published on Chesapeake Bay Indicators
    • http://www.chesapeakebay.net/trackprogress/river

• Future Reporting Strategy:
  – Trend in load
  – Annual reporting of RIM
    • 2014 results spring 2015)
  – Nontidal network results on a 2-year cycle
    • (2014 results in fall 2015)
## Summary of Flow-Adjusted Trends in Concentration

<table>
<thead>
<tr>
<th>Monitoring Station</th>
<th>Total Nitrogen</th>
<th>Total Phosphorus</th>
<th>Suspended Sediment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Long Term</td>
<td>Short Term</td>
<td>Long Term</td>
</tr>
<tr>
<td>SUSQUEHANNA RIVER AT CONOWINGO, MD</td>
<td>Decreasing</td>
<td>Decreasing</td>
<td>Not Sig.</td>
</tr>
<tr>
<td>POTOMAC RIVER AT WASHINGTON, DC</td>
<td>Decreasing</td>
<td>Decreasing</td>
<td>Decreasing</td>
</tr>
<tr>
<td>JAMES RIVER AT CARTERSVILLE, VA</td>
<td>Decreasing</td>
<td>Not Sig.</td>
<td>Decreasing</td>
</tr>
<tr>
<td>RAPPAHANNOCK RIVER NR. FREDERICKSBURG, VA</td>
<td>Decreasing</td>
<td>Not Sig.</td>
<td>Not Sig.</td>
</tr>
<tr>
<td>APPOMATTOX RIVER AT MATOACA, VA</td>
<td>Not Sig.</td>
<td>Not Sig.</td>
<td>Increasing</td>
</tr>
<tr>
<td>PAMUNKEY RIVER NEAR HANOVER, VA</td>
<td>Increasing</td>
<td>Not Sig.</td>
<td>Increasing</td>
</tr>
<tr>
<td>MATTAPONI RIVER NEAR BEULAHVILLE, VA</td>
<td>Not Sig.</td>
<td>Not Sig.</td>
<td>Not Sig.</td>
</tr>
<tr>
<td>PATUXENT RIVER AT BOWIE, MD</td>
<td>Decreasing</td>
<td>Decreasing</td>
<td>Decreasing</td>
</tr>
<tr>
<td>CHOPTANK RIVER NEAR GREENSBORO, MD.</td>
<td>Increasing</td>
<td>Increasing</td>
<td>Increasing</td>
</tr>
</tbody>
</table>

- **Increasing:** degrading conditions
- **Decreasing:** Improving conditions
- **Not Sig.:** No trend observed using 95 percent confidence
Summary Findings
As published on USGS and CBP web pages

Total Nitrogen
• Long-term trends in total Nitrogen concentration are improving at five of nine sites including the three largest tributaries—The Susquehanna, Potomac and James Rivers. Degrading conditions are observed at two sites since 1985.
• Recent short-term trends in total nitrogen show only three sites with improving conditions and one site with degrading conditions. Changes at other monitoring sites were not detectable using standard methods.

Total Phosphorus
• Long-term trends in total phosphorus concentration are improving at three sites and degrading at three sites. The Susquehanna River showed no detectable change over the 29-year period.
• Two of the nine monitoring sites showed degrading conditions over the more recent short-term period for total phosphorus. Data from all other sites indicated no significant change.

Suspended Sediment
• Long-term trends in suspended sediment concentration are improving at three sites and degrading at two sites. The Susquehanna River showed no detectable change over the 29-year period.
• Degrading conditions for suspended sediment were observed at four of nine sites over the recent short-term period. All other sites showed no significant change.
Total Nitrogen

Long Term

Long-Term Trend in Flow-Adjusted Total Nitrogen Concentration, 1985-2013
- Not Significant
- Improving, Decrease
- Degrading, Increase

Short Term

Short-Term Trend in Flow-Adjusted Total Nitrogen Concentration, 2004-2013
- Not Significant
- Improving, Decrease
- Degrading, Increase
Total Phosphorus

Long Term

Long-Term Trend in Flow-Adjusted Total Phosphorus Concentration, 1985-2013

- Not Significant
- Improving, Decrease
- Degrading, Increase

Susquehanna
Eastern Shore
Western Shore
Patuxent
Potomac
Rappahannock
York
James

Short Term

Short-Term Trend in Flow-Adjusted Total Phosphorus Concentration, 2004-2013

- Not Significant
- Improving, Decrease
- Degrading, Increase

Susquehanna
Eastern Shore
Western Shore
Potomac
Rappahannock
York
James
Suspended Sediment

**Long Term**

**Short Term**
Short-Term Trend in Flow-Adjusted Sediment Concentration, 2004-2013

Prepared on 10/30/14

USGS: Science for a Changing World
Chesapeake Bay Program
A Watershed Partnership
Elements of STAR Mid-Point Assessment Workplan

1. Measure progress
   • Trends of nitrogen, phosphorus and sediment in the watershed.
   • Trends of water quality in the estuary

2. Explain water-quality changes
   • Response to management practices

3. Enhance CBP models

4. Inform management strategies
   • WIPs
   • Water-quality benefits