

Monitoring Needs to Update Assessments for Dioxin, PCBs and Bacteria

Technical Committee
Agenda Item 3b
June 7–8, 2016



Background

- ▶ ORSANCO 305b Assessments
 - Completed every 2 years
 - Assessments typically consider data from the most recent 5-year period
 - 2016 assessment included data from 2010–2014
 - Data sets for dioxin, PCBs, and the bacteria have become dated
- ▶ Technical Committee directed staff to develop work plans and budgets to update data sets
 - Proposed work plans not included in Commission budget



Dioxin and PCBs

- ▶ Conducted over 200 sampling events from 1997–2003
 - 34 Ohio River sites
 - 25 major tributaries
 - 3 rounds of data at most sites
 - Targeted different flow conditions
- ▶ Concentrations ranged from one to two orders of magnitude above the WQS
- ▶ Entire Ohio River listed as impaired
 - ▶ Data now 13 to 19 years old



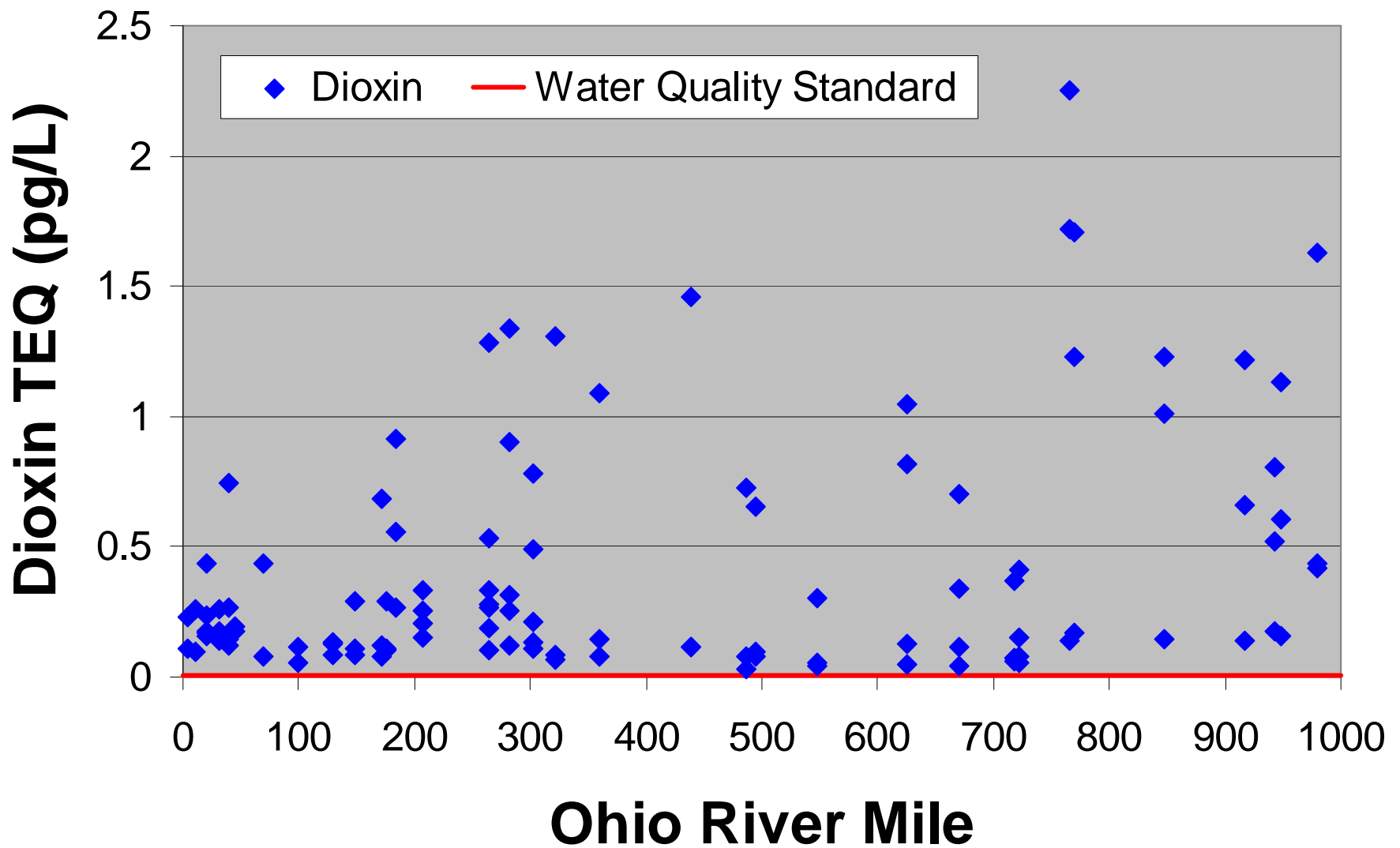
High-Volume Water Sampling

- ▶ Filter 1000 liters over 8–12 hrs
- ▶ Concentrates sample to quantify ultra low-levels (fg/L)
- ▶ 1 micron filters and XAD resin columns
- ▶ Quantifies dissolved and particulate concentrations



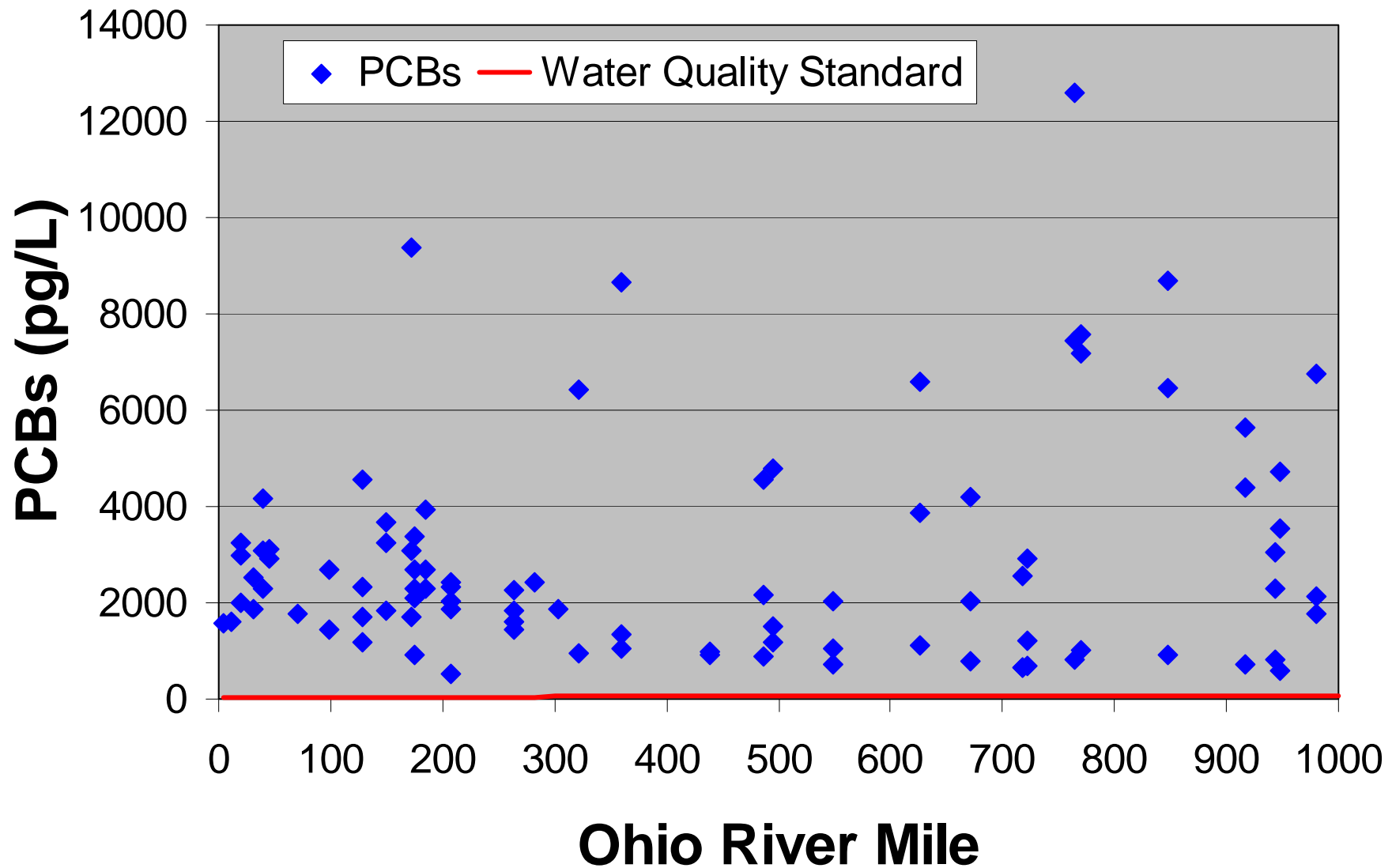
Dioxin Levels in the Ohio River

1997 - 2004



PCB Levels in the Ohio River

1997-2004



Proposed Work Plan and Budget

- ▶ Collect 10 hi-vol water samples
 - 5 sites (approx. every 200 miles)
 - 2 rounds of sampling (low and high flow)
- ▶ Congener analysis for dissolved and particulate phases
 - Dioxin – EPA Method 1613b
 - PCBs – EPA Method 1668a
- ▶ Budget

◦ Travel	\$ 5,000
◦ Supplies	\$ 2,000
◦ Analytical	\$68,000
◦ TOTAL	\$75,000
- ▶ Requires 7 weeks of staff time to complete



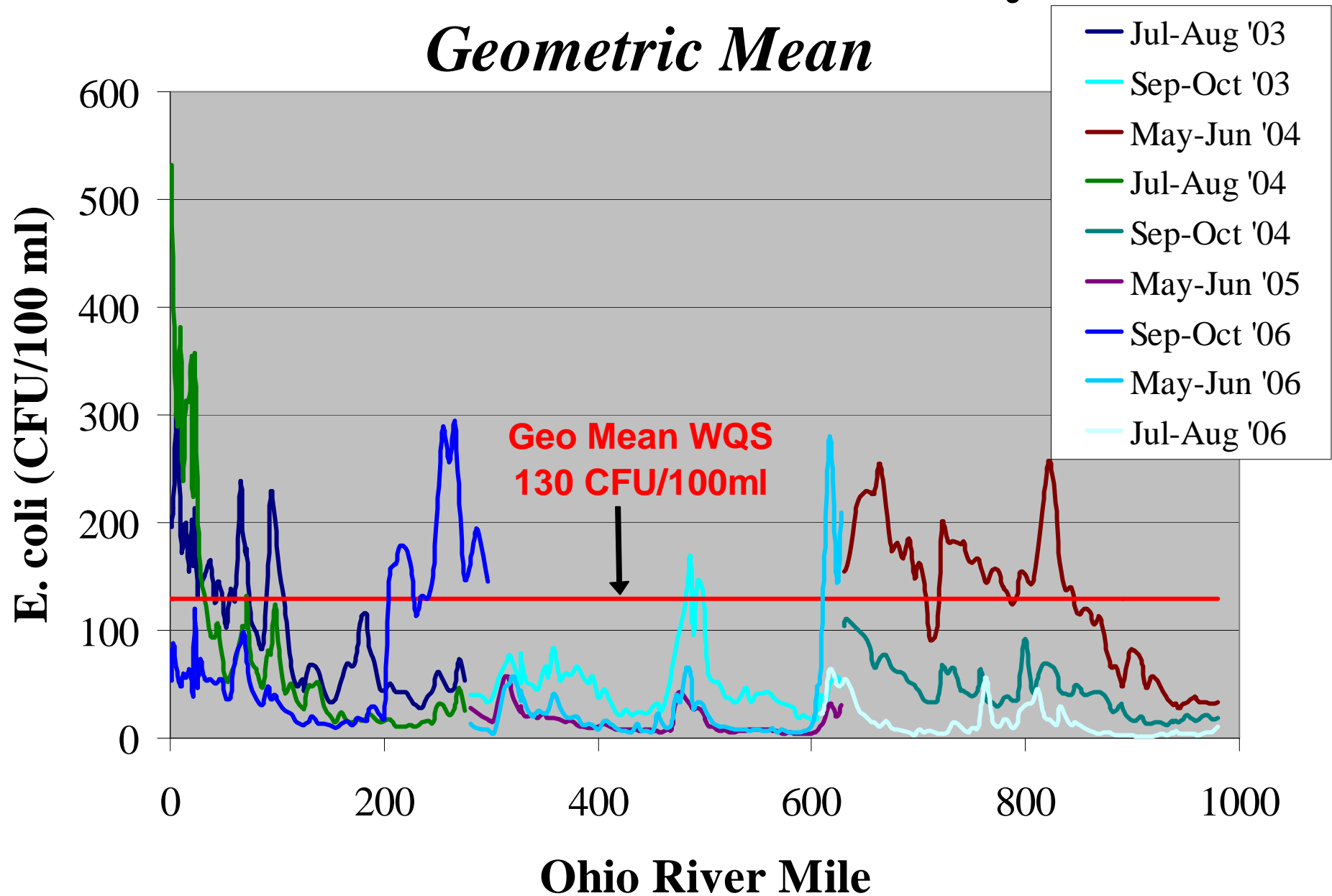
Bacteria

- ▶ Two primary data sets:
 1. Contact Recreation Program monitoring – weekly sampling in six largest CSO communities
 - Current routine monitoring program
 2. Longitudinal bacteria surveys – intensive sampling every 5 miles (2003–2008)
- ▶ 640 Ohio River miles impaired in 2016 assessment
- ▶ US EPA Ohio River TMDL for entire length
- ▶ Longitudinal data has become outdated



Ohio River Bacteria Survey

Geometric Mean



Why New Bacteria Data are Needed?

- ▶ 305b assessment continues to be based on “historic” assessment for areas not included in Contact Recreation Program
- ▶ Without longitudinal data, assessment limited to less than 20% of stream miles
- ▶ Significant efforts ongoing to reduce bacteria loadings from sanitary sewers
 - Municipalities investing \$billions to implement Long-term Control Plans and Consent Decrees



Proposed Work Plan and Budget

▶ Challenges

- Concentrations highly variable
- Requires many rounds of samples

▶ Study Design

- Sample 200 mile segment each year
- 20 sites (approx. every 10 miles)
- Conduct 10 rounds of sampling
- Rounds evenly spread over recreation season (every 3 weeks)
- Samples analyzed for *E. coli* using mobile lab
- Repeat process for 5 years to cover entire river

▶ Budget

- | | |
|---------------------|------------------|
| ◦ Travel | \$ 22,000 |
| ◦ Supplies/Analysis | \$ 8,000 |
| ◦ TOTAL | \$ 30,000 / Year |
| ◦ 5-Year TOTAL | \$150,000 |

- ▶ Requires 20 weeks of staff time/year to complete



Questions?

