

Implementing Complex TMDLs for PCBs in the Delaware River Estuary

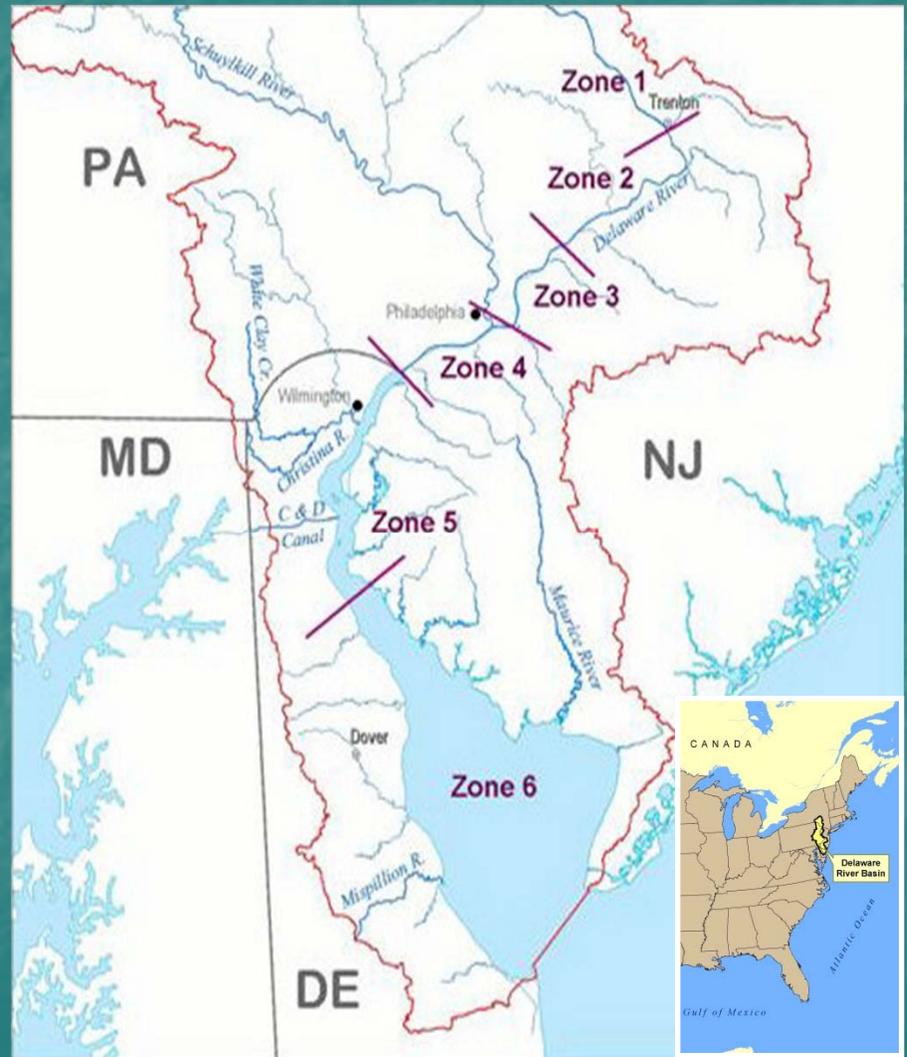
Thomas J. Fikslin, Ph.D., Manager
Modeling, Monitoring and Assessment Branch

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TMDL History

- The estuary consists of 5 water quality management units called Zones.
- EPA Regions II & III establish Stage 1 PCB TMDLs for Zones 2 – 5 in December 2003.
- EPA Regions II & III establish Stage 1 PCB TMDL for Zone 6 in December 2006.



TMDL History (cont.)

- These TMDLs were complicated for several reasons:
 - 1) Legal deadlines.
 - 2) The current human health criteria of both the states and the DRBC at that time needed updating.
 - 3) Point and non-point sources were not well characterized.
 - 4) A new PCB water quality model was needed to develop the TMDLs.
 - 5) A wasteload allocation procedure was needed.
 - 6) An implementation strategy was needed to address the concerns of stakeholders.
 - 7) Lead to staged approach for TMDLs.

Stage 2 TMDLs

- Stage 2 TMDLs are needed to:
 - ✓ Update the TMDLs using a uniform revised WQ criterion,
 - ✓ Utilize a new, more equitable wasteload allocation procedure agreed upon by stakeholders,
 - ✓ Utilize an improved PCB water quality model.
 - ✓ Include an implementation strategy for point and non-point sources as an Appendix to the Stage 2 TMDL report.
 - ✓ Provide certainty to this process.

Presentation Outline

Implementation Strategy

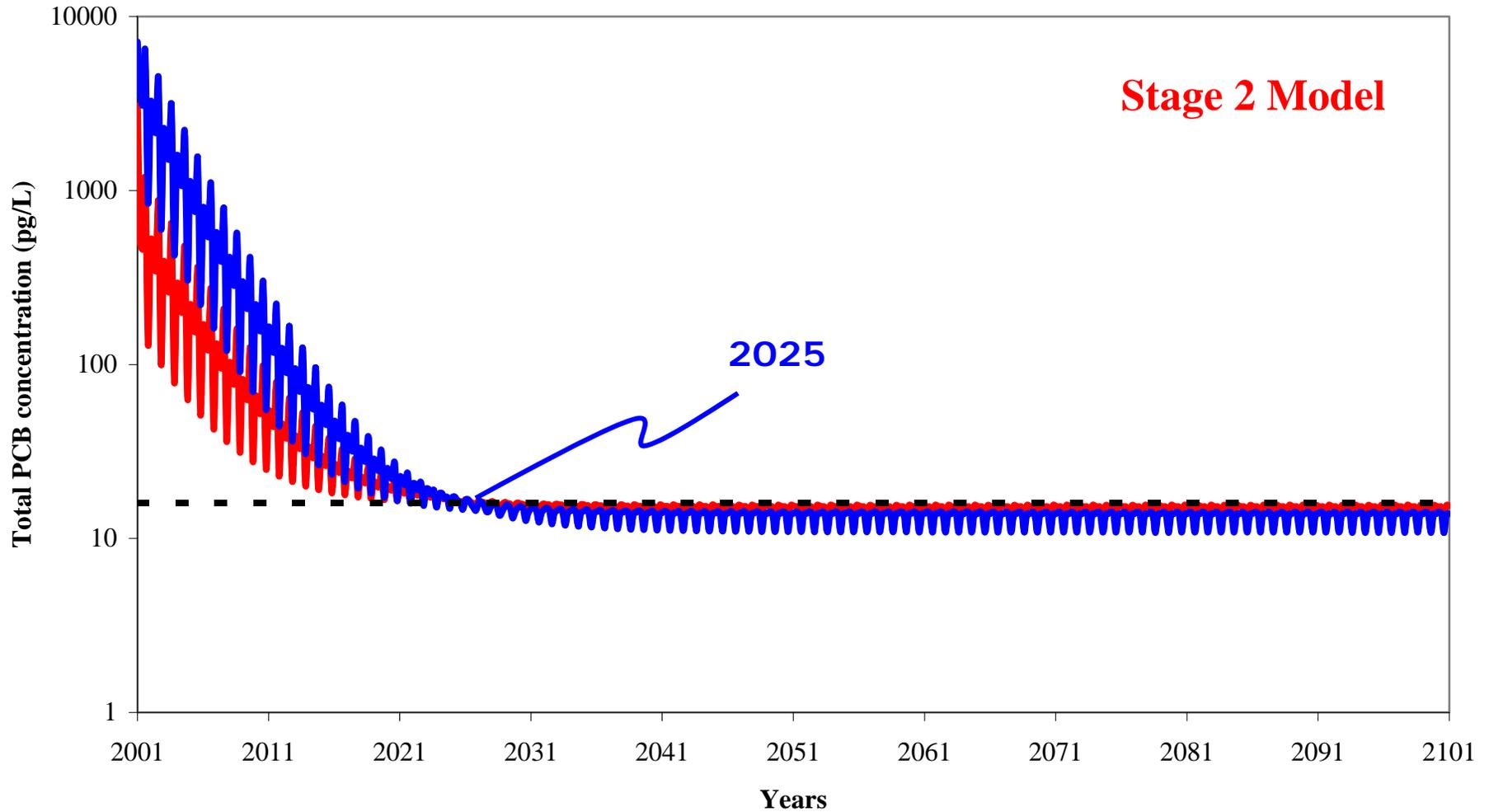
- ✓ Initial Implementation Requirements for Stage 1 TMDLs
- ✓ Stage 2 Implementation Requirements
- ✓ Incremental Progress

The Problem

- The nature of PCBs requires a long-term strategy for permitting point source discharges and addressing non-point sources.
- Such a strategy is needed to gain acceptance by stakeholders and ensure continued progress in reducing PCBs.
- In view of the uncertainty in data on PCB concentrations in point source discharges, need for additional PCB model refinements, and uncertainty in treatment technologies, adaptive implementation of the PCB TMDLs was proposed.

**Projected, averaged Total PCB concentrations for Zones 2 & 3
Boundaries @ 16pg/L; current sediment condition; 99.97% all load reduction**

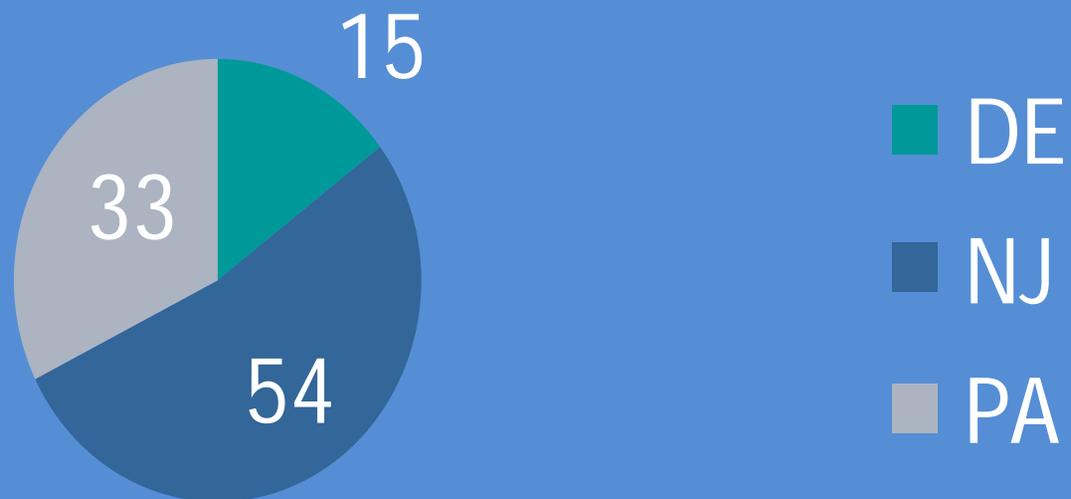
Stage 2 Model



— Zone 2 — Zone 3 - - Proposed Criteria (16 pg/L)

NPDES Dischargers included in PCB TMDLs

Number of Dischargers



Total number of permittees = 102

Stage 1 Implementation Requirements

- Required monitoring for 209 PCB congeners using Method 1668A.
 - Developed specific data quality objectives:
<http://www.state.nj.us/drbc/quality/toxics/pcbs/monitoring.html>
- Required development, approval and implementation of a Pollutant Minimization Plan for PCBs (PMPs).
<http://www.state.nj.us/drbc/programs/quality/pmp.html>

Presentation Outline

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- ✓ Stage 2 Implementation Requirements
- ✓ Incremental Progress

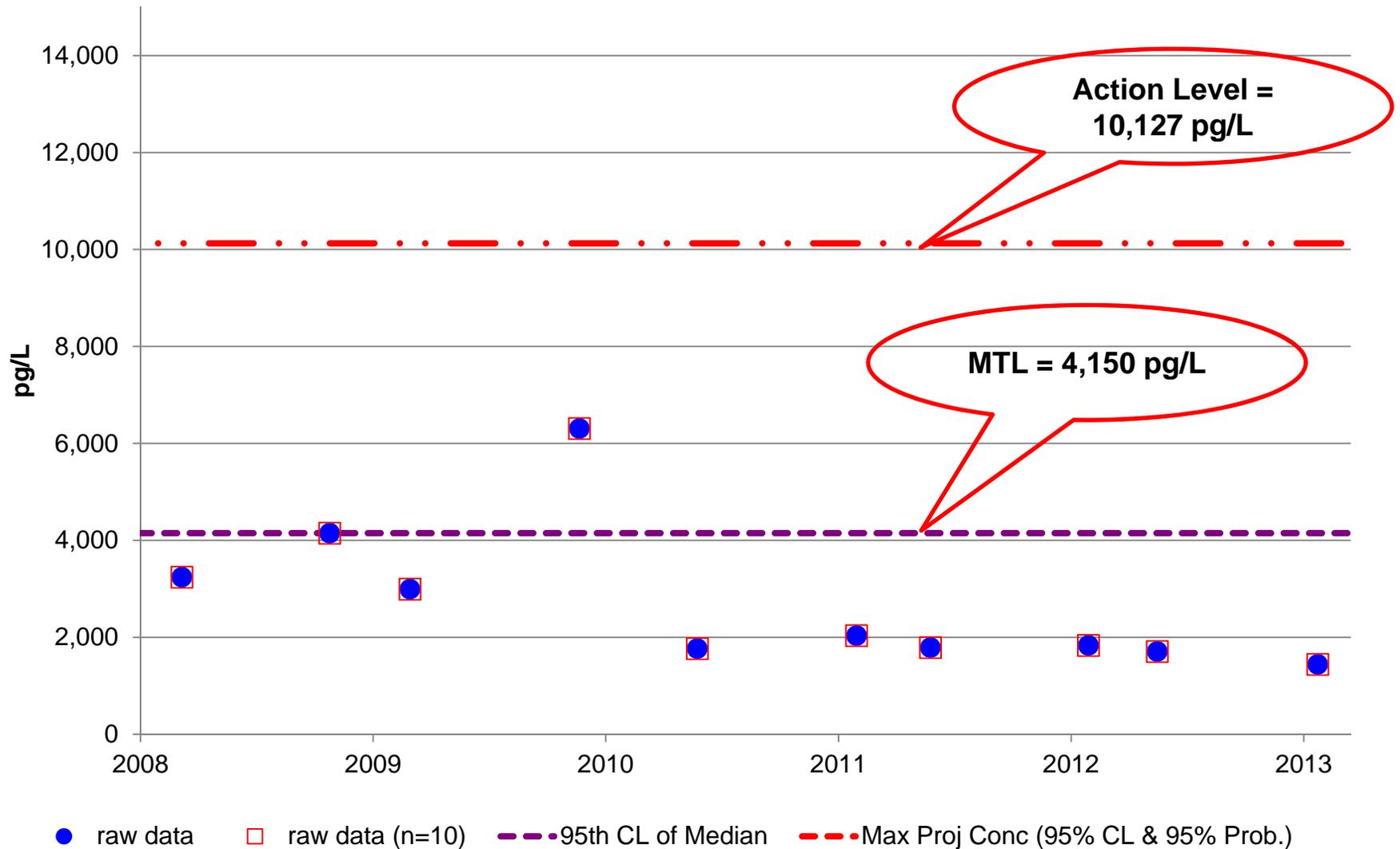
Stage 2 Implementation Requirements

- Build upon the monitoring and PMP requirements of Stage 1 TMDLs.
- Incorporate the concept of an **Action Level**.
 - Purpose - to elicit a prompt response to elevated PCB concentrations above those achieved.
 - Establish duration and magnitude of elevated concentrations.
 - Document actions taken and return to PCB concentrations previously observed, or proposed actions to be included in a revised PMP.

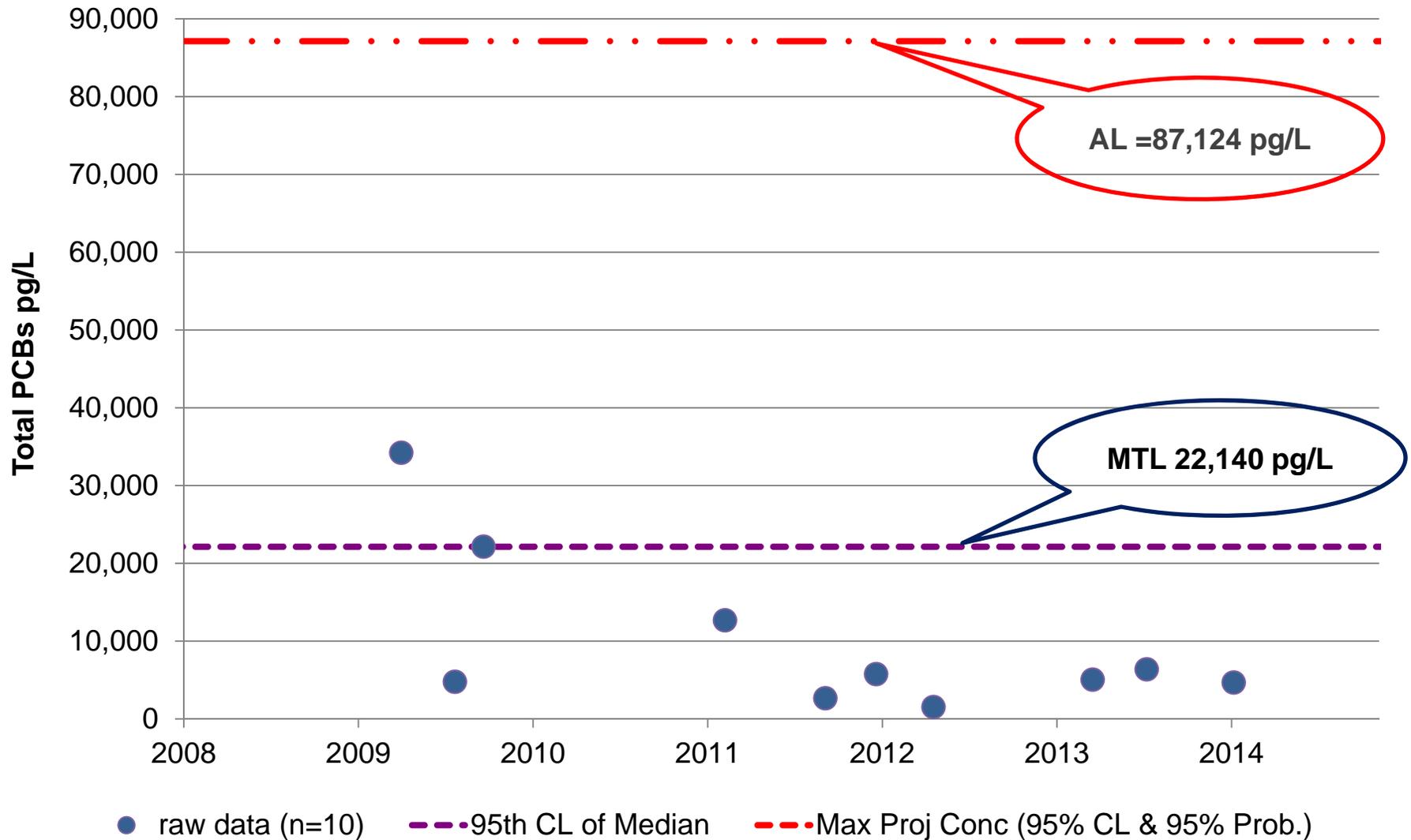
NPDES Permitting Strategy

- Two Response Levels Approach
 - Based upon the last 10 data points collected under normal operating conditions.
 - **Monitoring Trigger Level** (MTL) - based upon 95th confidence interval of the *median*.
 - Objective is to obtain additional monitoring data given the low frequency of permit monitoring required.
 - Permittee has primary responsibility – Reporting to DRBC required.
 - **Action Level** - based upon maximum projected effluent concentration.
 - Objective is to require monitoring and submittal of a report.
 - Permittee and DRBC/State permitting agency share responsibility.

Calculation of MTL and AL: Major Municipal STP - Dry Weather



Calculation of MTL and AL: Industrial WWTP - Dry Weather

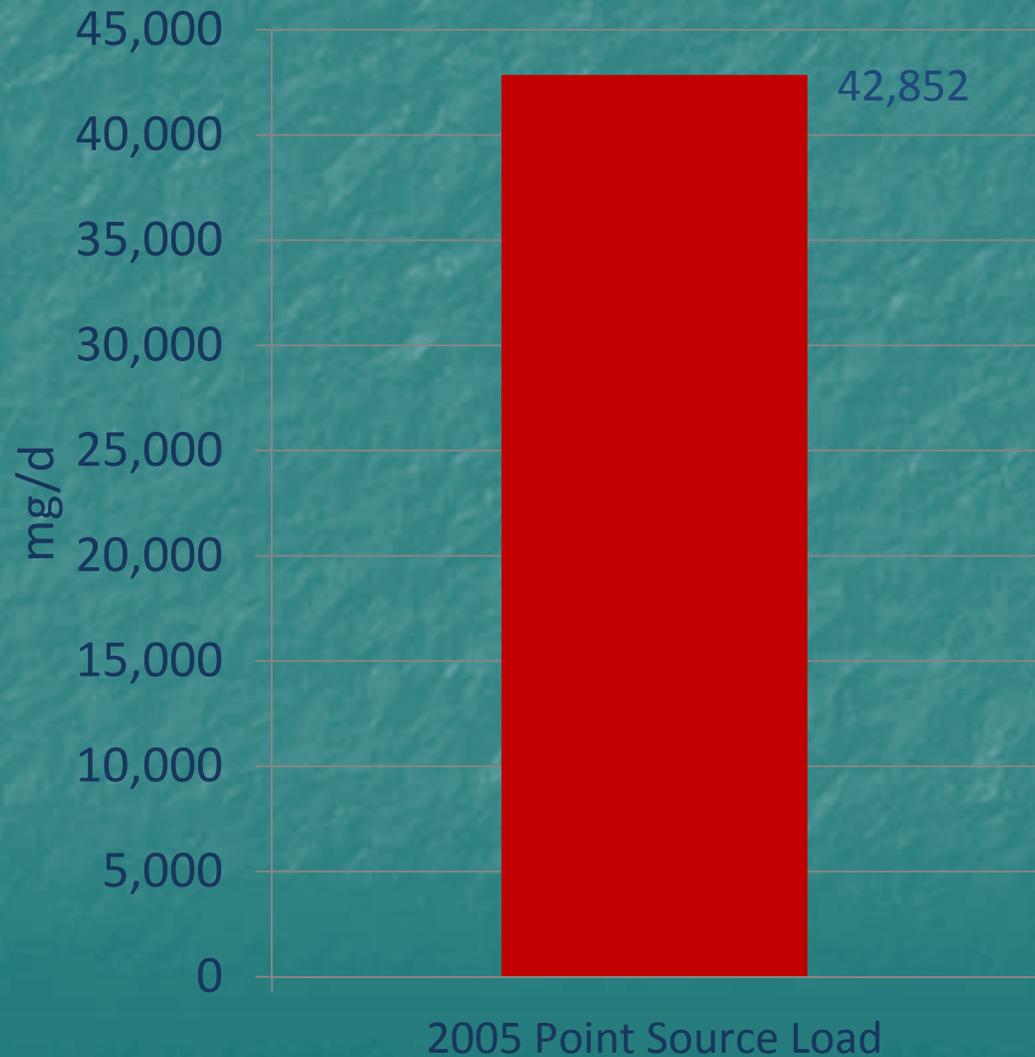


Presentation Outline

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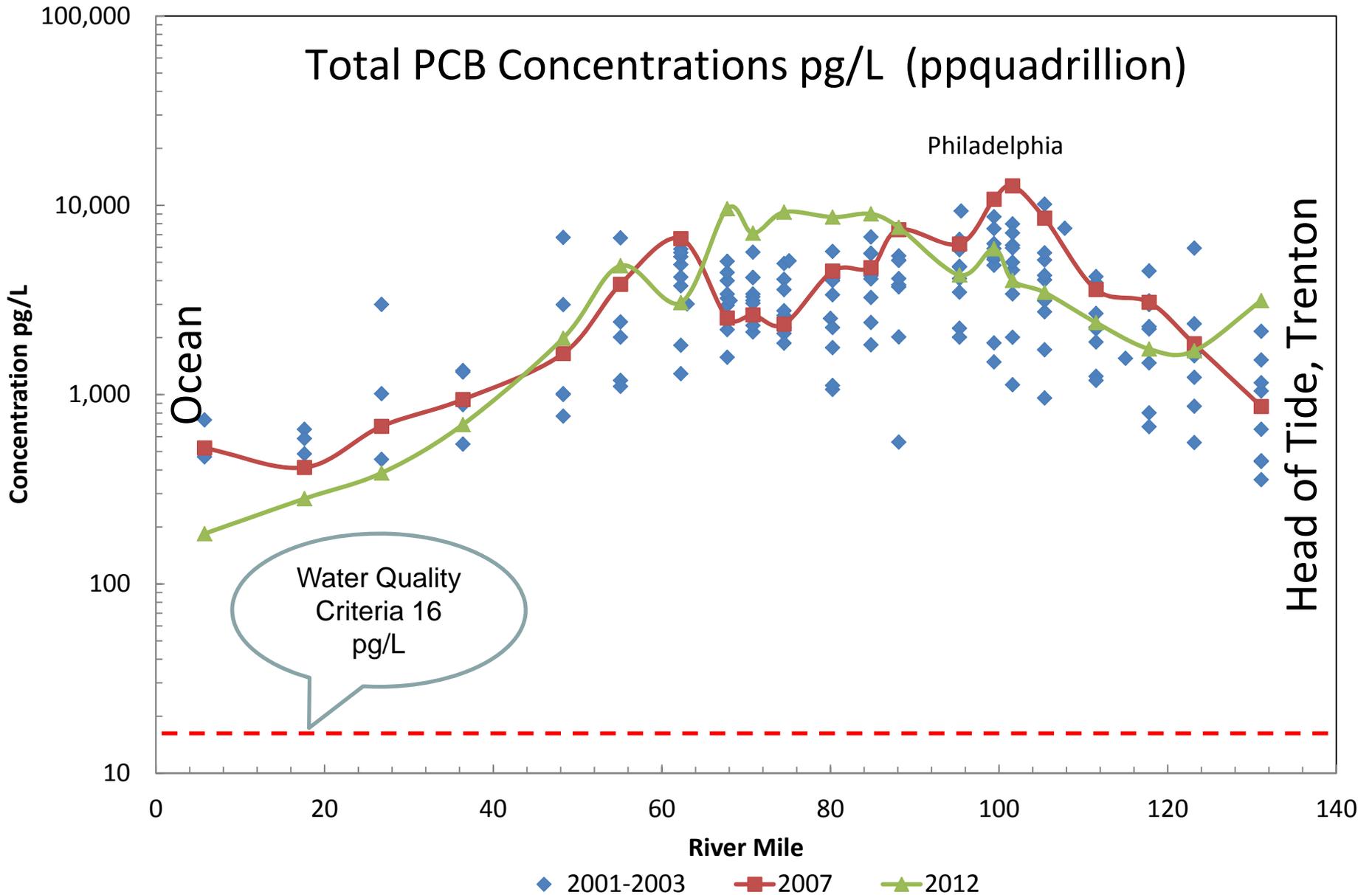
10 Dischargers Representing 90% of Point Source PCB Loadings in the Estuary



Incremental Progress

- Reductions in Loadings from Non-Point Sources
 - ✓ Removal of ~40,000 lbs. of PCBs from tidally-influenced wetland adjacent to tributary creek.
 - ✓ Removal of ~8,000 lbs. from NPL industrial site.
 - ✓ Inventory of Superfund sites - DelTriP
<http://www.state.nj.us/drbc/about/public/publications/deltrip.html>
- In 2013, DE and NJ relaxed fish consumption advisories to 1 meal per year in Zone 5.
- Ambient water concentrations did not change significantly as expected.

Ambient Water Concentrations



Summary and Conclusions

- TMDLs for certain parameters (like PCBs) will require alternative approaches since they will require long-term strategies to achieve.
- An adaptive management approach was developed for the PCB TMDLs for the Delaware River Estuary.
- This approach has achieved a 46% reduction in loadings from NPDES sources, and significant loading reductions from non-point sources.
- Development of an implementation strategy provides a degree of certainty for permittees.

Contact Information:

thomas.fikslin@drbc.state.nj.us
(609) 477-7253

Information on the TMDLs, model development, sampling and analytical information, and PMP requirements and resources are available on the DRBC website at:

[http://www.state.nj.us/drbc/
quality/toxics/pcbs/](http://www.state.nj.us/drbc/quality/toxics/pcbs/)

