

Amtrak's Experiences with the Pollutant Minimization Plan Requirements

***Low-Level PCB Trackdown and
Minimization Within the Storm
Sewer System at the Amtrak Penn
Coach Yard***

Presented to:

**NJWEA and DRBC
PCB Pollutant Minimization Plan
Workshop**

Presented by:

**William Silverstein, P.E.
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PENN COACH YARD PCB TRACKDOWN

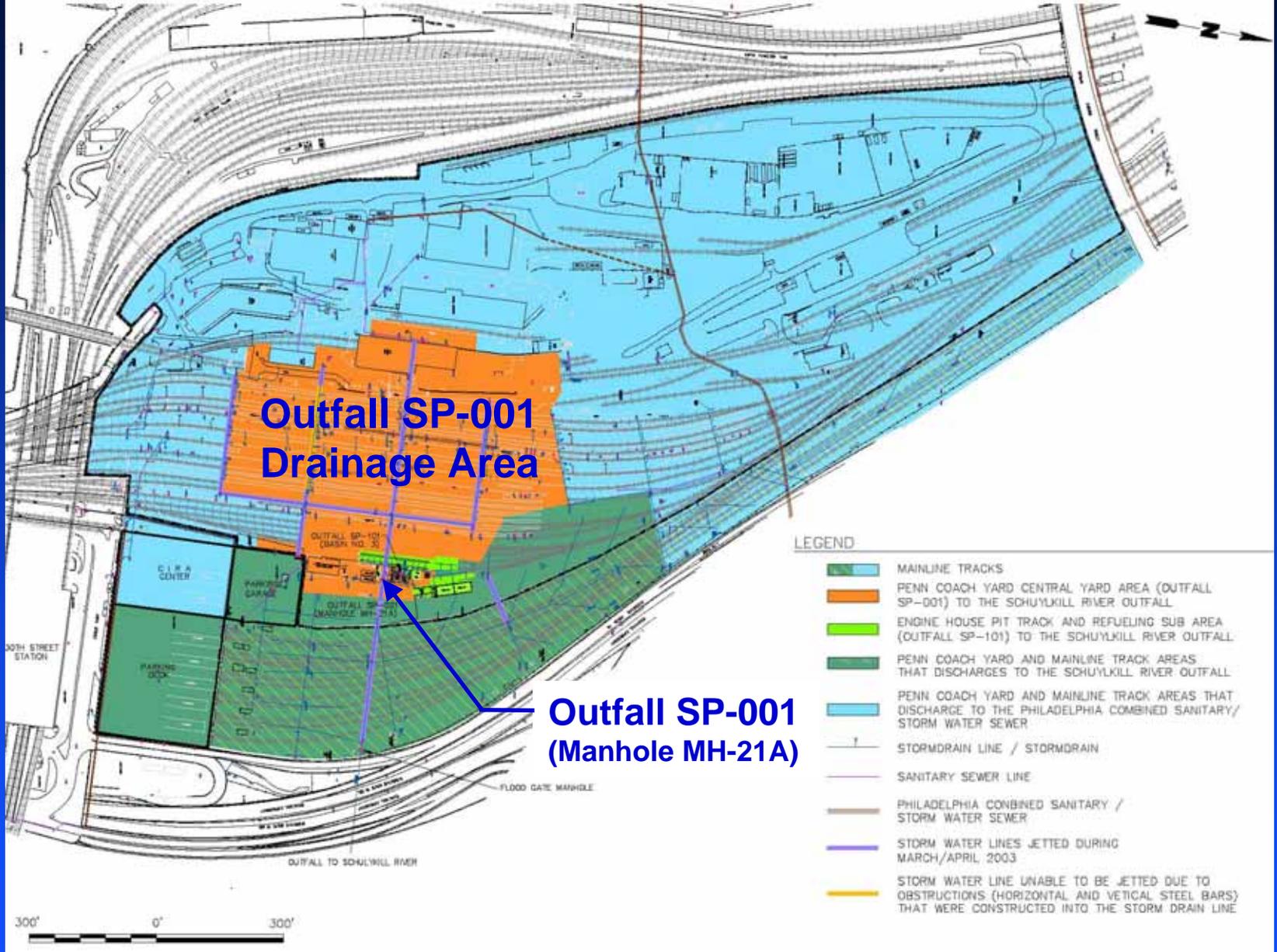
- **Introduction and Background Information**
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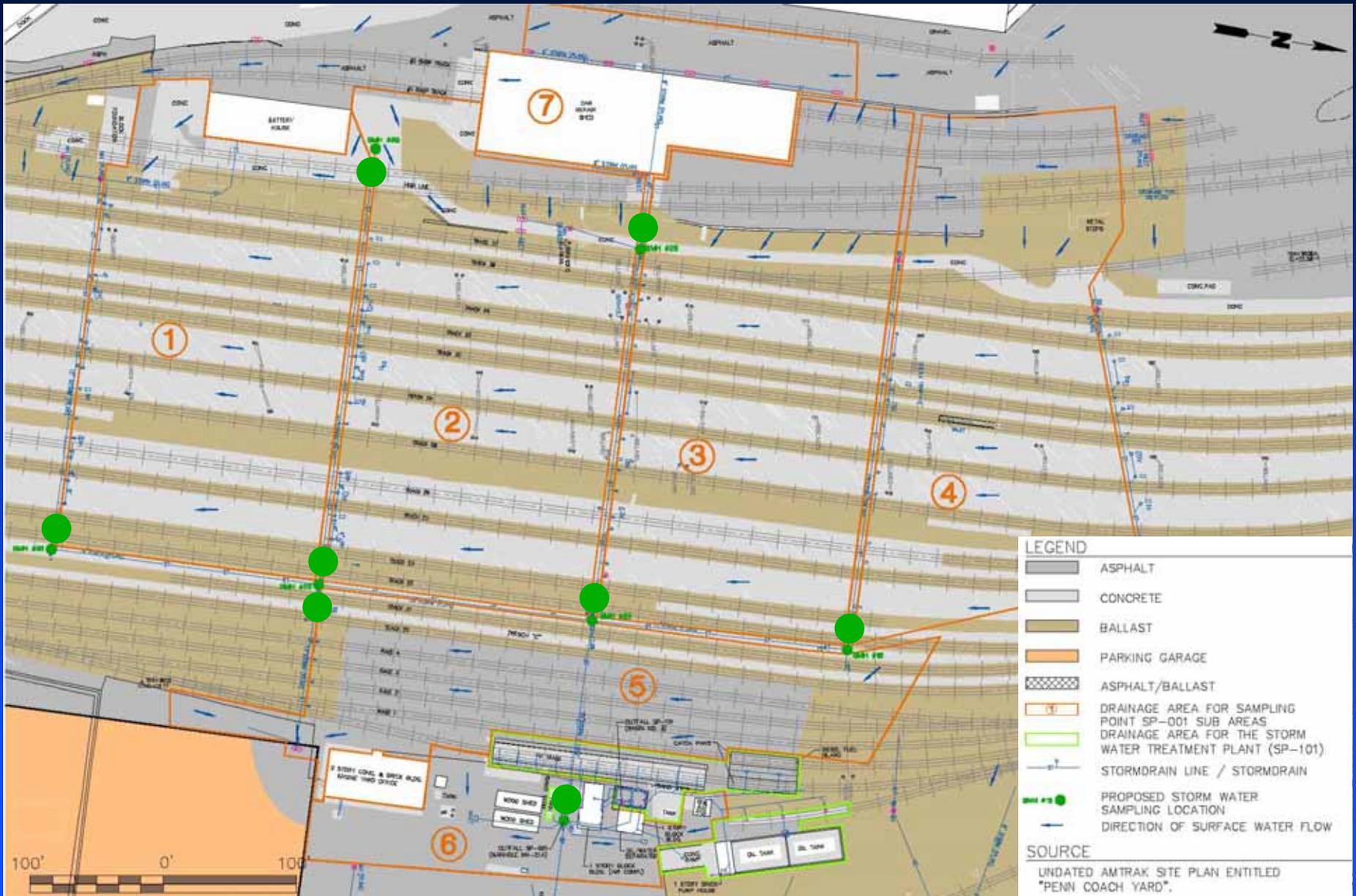
Introduction and Background Information

- **Historic Maintenance of PCB-Containing Electric Locomotives**
 - *Historic maintenance of PCB transformers and electric rail equipment, primarily at Pit Track, adjacent Race Street tracks and Battery House*
 - *No current use or maintenance of PCB equipment*
- **Recent Regulatory Focus Related to PCB TMDL Program**
 - *Phase I PCB Total Maximum Daily Load (TMDL) established for the Delaware Estuary*
 - *Phase I implementation and planning for Phase II TMDL presently underway*

Introduction and Background Information

- Penn Coach Yard Stormwater System
 - *Central Yard area outfall to the Schuylkill River, NPDES Outfall SP-001*
 - *Engine House pit track and refueling sub area, NPDES Outfall SP-101*
 - *Portion of the main line tracks to the east of the Central Yard (and now the new parking garage) shares the SP-001 outfall pipe to the Schuylkill River*
 - *The surrounding areas of the Penn Coach Yard and 30th Street Station discharge to the City of Philadelphia combined sanitary/stormwater sewer system*





Introduction and Background Information

- Engine House Stormwater Treatment Plant (Outfall SP-101)
 - *Concrete Basin No. 1 – Equalization with oil skimmer*
 - *Concrete Basin No. 2 – Holding/pumping sump*
 - *PACE Coalescing Filter*
 - *PACE Ultrafiltration Membranes*
 - *Basin No. 3 – Concrete discharge basin (SP-101 location)*

Introduction and Background Information

- **Baseline PCB Monitoring Plan**

- *Per agreement between Amtrak and the PADEP*
- *SP-001*
 - Quarterly PCB composite samples for 4 quarters
 - 124 PCB Congeners by Draft EPA Method 1668A
- *SP-101*
 - Quarterly PCB composite samples for 4 quarters
 - 124 PCB Congeners by Draft EPA Method 1668A
- *The 4th quarter of PCB monitoring was completed in March 2004*
- *Data was presented to PADEP and DRBC June 2004*

Elements of the PCB Minimization Plan

- PCB Minimization Plan Submitted to PADEP August 31, 2004
- Plan Contents:
 - *Introduction*
 - *Facility Description*
 - *Administration of the PCB Minimization Plan*
 - *Known or Probable Sources of PCBs Potentially in Stormwater*
 - *Identification/Trackdown of Potential Sources of PCBs to Storm Water*
 - *PCB Minimization Activities Completed*
 - *Proposed Actions to Reduce PCB Loadings to the Storm Sewer*
 - *Measuring and Reporting Progress*
- Evaluate Data and Progress at end of First Year of Plan Implementation

Pre-Sampling PCB Minimization Activities

- Pre-Sampling Activities

- *The stormwater drain lines in the central portion of the Penn Coach Yard were jetted with potable water*
 - All water/sediment was collected
 - Decanted/filtered water discharged to combined sewer under PWD approval
 - Sediment/debris and one load of water from holding tank cleanout disposed off-site
- *The stormwater drain lines were jetted prior to the collection of the first PCB composite sample from SP-001*
- *Challenges were encountered in sewer line cleaning due to system construction as well as sediment/water collection*

Pre-Sampling Activities

- Photos of the stormwater Drain Line Cleaning Activities



(Jetter/Vac Truck)

(92 feet upstream of SP-001)



Quarterly Stormwater Sampling Events

- **Four Quarterly Baseline Sampling Events Completed**
 - *24-Hour Composite Samples Collected at SP-001 and SP-101*
 - *During the 1st and 2nd sampling events the SP-001 and SP-101 PCB composite samples were collected concurrently*
 - *During the 3rd and 4th sampling events the SP-101 sample was collected at the conclusion of the storm event so that the SP-001 sample could be collected independently from the SP-101 sample*

Quarterly Stormwater Sampling Events

- 1st Stormwater Sampling Event (photos of manhole MH-21A (SP-001) and sampling equipment)



Quarterly Stormwater Sampling Events

- **1st Stormwater Sampling Event**
 - *Completed between May 16 and 17, 2003*
 - Activities prior to the 1st sample event
 - March 2003 – Jet/Vac storm sewer lines

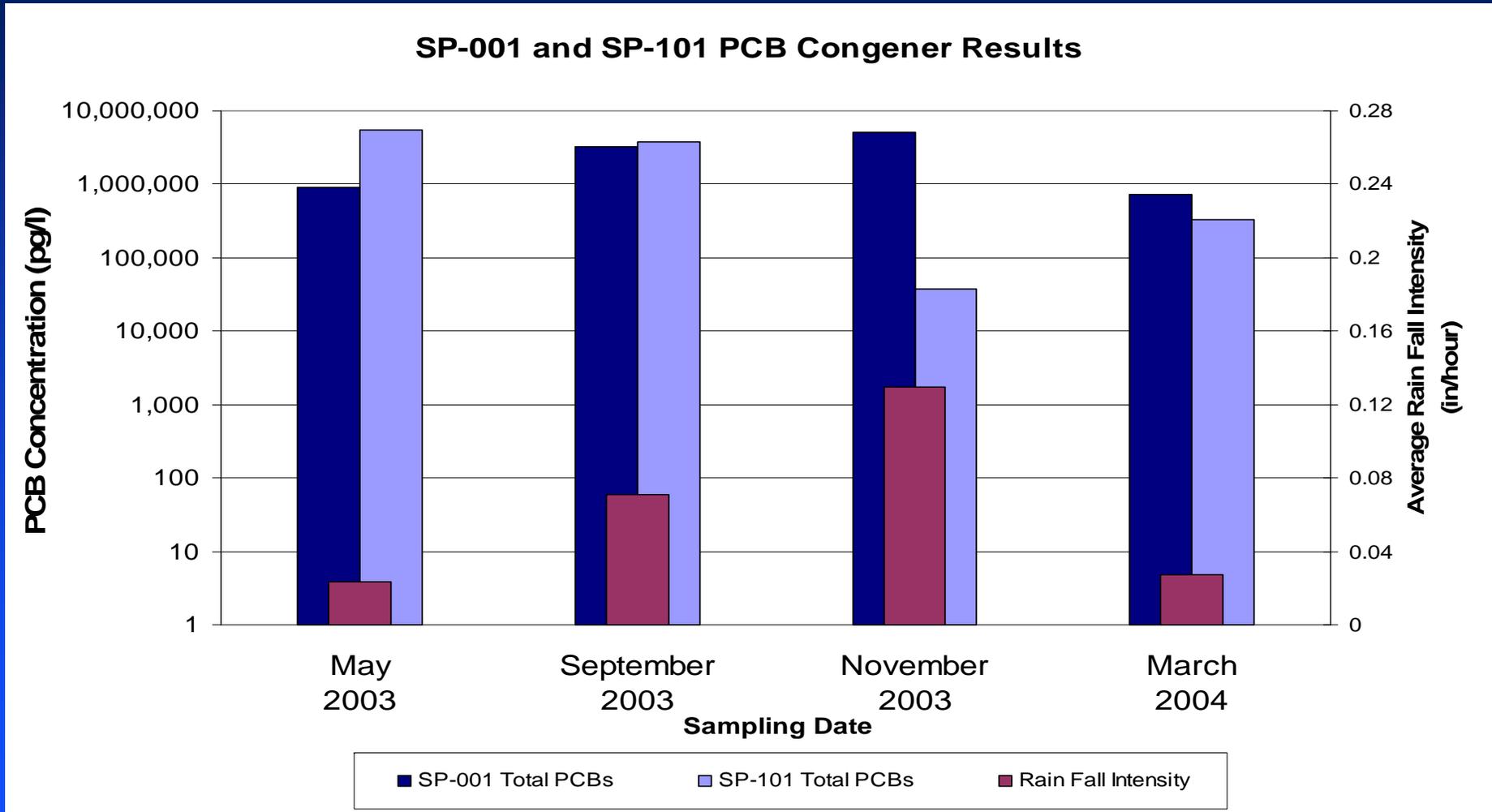
- **2nd Stormwater Sampling Event**
 - *Completed between September 18 and 19, 2003*
 - Activities prior to the 2nd sample event
 - June 23, 2003 - Power wash and vacuum Basin No. 1
 - July 25, 2003 - Power wash and vacuum Basins No. 1, 2 & 3
 - August 2003 - Replacement of ultrafiltration membranes

Quarterly Stormwater Sampling Events

- **3rd Stormwater Sampling Event**
 - *Completed between November 19 and 21, 2003*

- **4th Stormwater Sampling Event**
 - *Completed between March 16 and 18, 2004*
 - **Activities prior to collection of the SP-001 and SP-101 samples**
 - **February 29, 2004 - Power wash and vacuum Basins No. 1, 2 and 3, cleaned out discharge pipe from Basin No. 3 to manhole MH-21A**

Summary of PCB Data



PCB Reduction Progress to Date

- **Outfall SP-101 (Pit Track Treatment System)**

- *PCB minimization activities were conducted prior to 3 of 4 sample events (including first event)*
- *Overall order of magnitude (90%) PCB reduction sustained between 1st and 4th event*
- *Greater reduction (2 orders of magnitude) shown in 3rd event*
- *Further overall reduction anticipated via PWD connection*

- **Outfall 001 (Stormwater Sewer System)**

- *Key PCB minimization activity (sewer cleaning) was conducted prior to first baseline sample*
- *Therefore, no significant reduction observed in data to date*
- *Trackdown and other future actions are focused on SP-001*

Additional PCB Reduction Activities

- Belt Skimmer
 - *Replacement of existing oil skimmer in Basin No. 1 with a belt skimmer (photo of new belt skimmer, May 2004)*



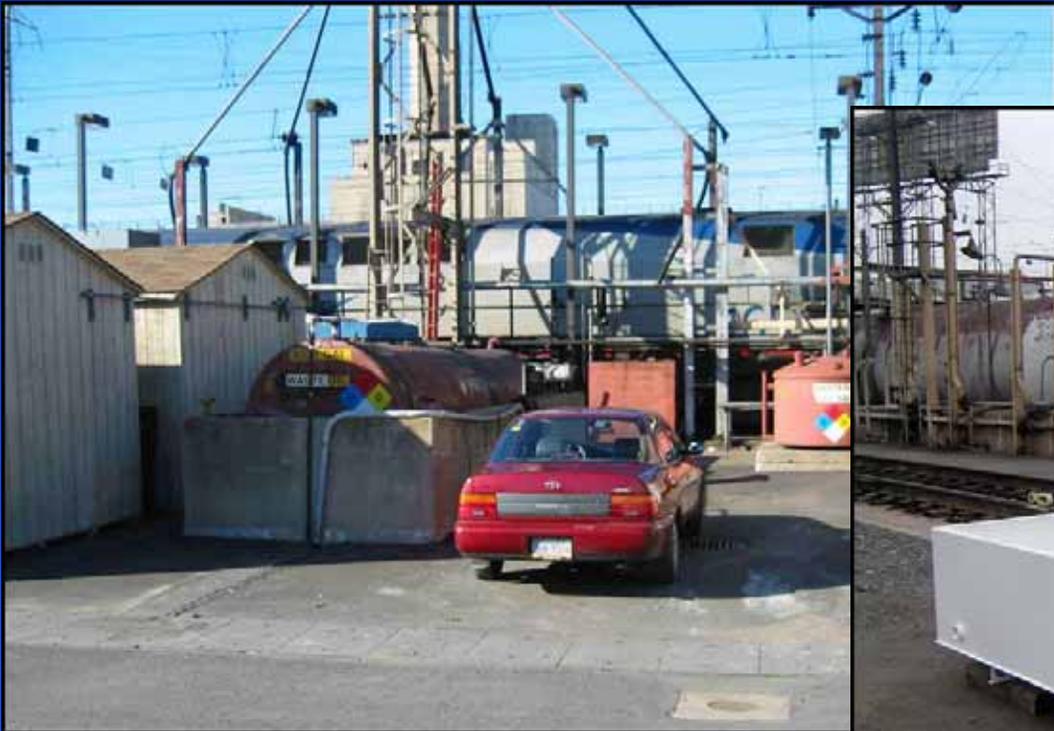
Additional PCB Reduction Activities

- Concrete Around the Basins No. 1, 2 and 3
 - *Removal of dirt and stone from around Basins 1,2 and 3 and installation of concrete (photo of new concrete on 6/17/04)*



Additional PCB Reduction Activities

- Replacement of Waste Oil AST
 - *Allows improved oil removal from treatment system*



(AST removed on 5/17/04)

(AST delivered on 6/17/04)



Additional PCB Reduction Activities

- Maintenance Track 1 Bed Restoration
 - *Replace legacy rail bed sand/soil with clean gravel*



Removal of historic/oily sand/gravel/soil

Placement of clean gravel



In Progress PCB Reduction Activities

- **Semi-Annual Power Wash and Vacuum of Basins No. 1, 2 & 3**
- **Connection of the SP-101 Outfall to the Philadelphia Combined Sewer System. PWD Initial Approval on May 12, 2004. Construction is complete. Draft Permit Issued.**
- **Enhanced Maintenance of the Treatment Plant**

Progress and Trackdown Sampling

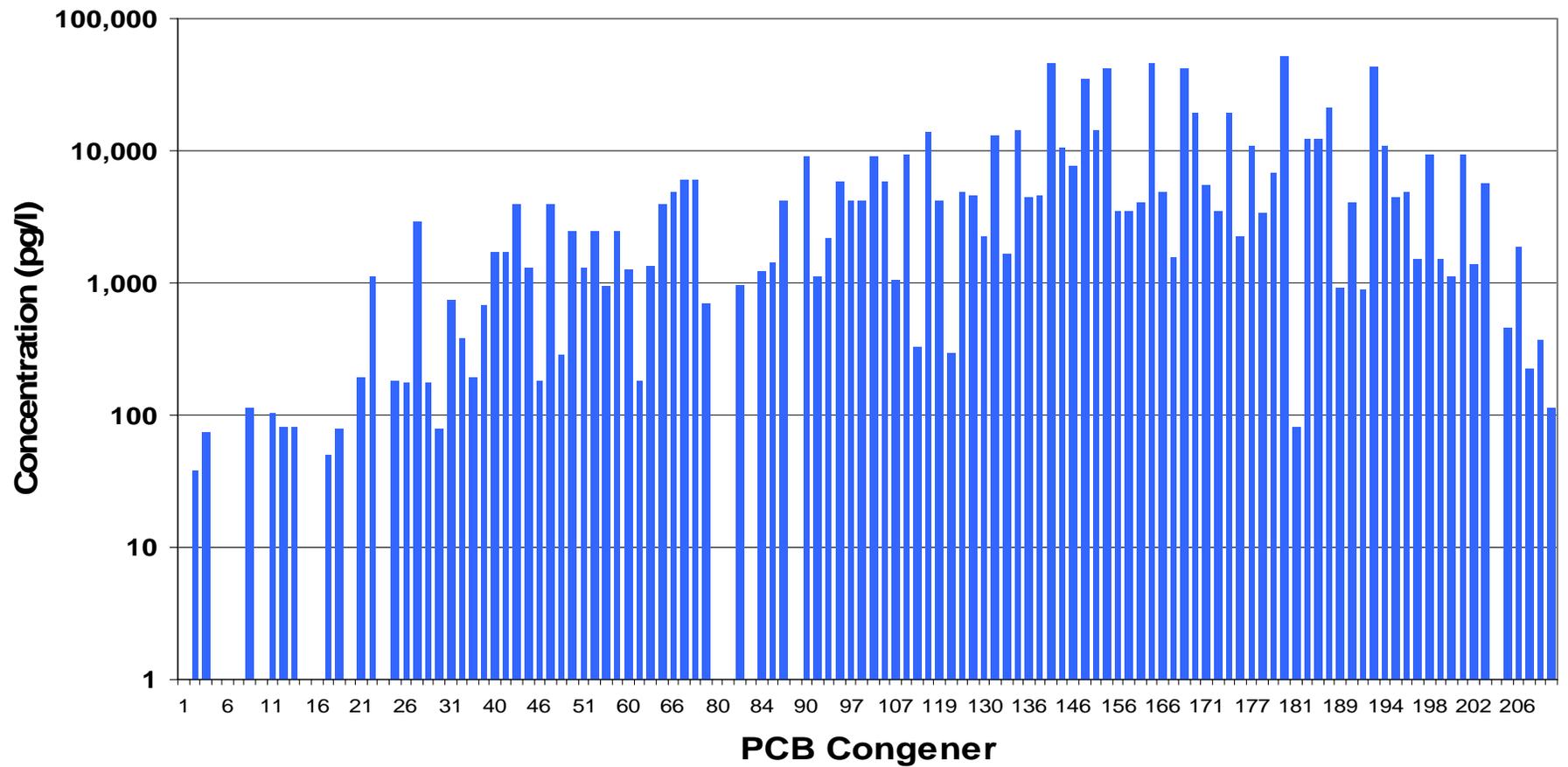
- Three outfall sampling events are to be conducted in 2005
 - *Outfall SP-001 only (when SP-101 sewer connection is complete)*
 - *New DRBC sampling requirements call for grab sample and use of modified method 1668A to achieve 5 pg/l detection limit for 209 PCB congeners*
- Upstream Trackdown Sampling to be coordinated with second effluent sampling event
- Trackdown program includes detailed site history review

PCB Trackdown Sampling

- **Proposed Trackdown Sampling and Methods**
 - *Sample each of 6 primary drainage subareas*
 - Collect filtered and unfiltered samples for 56 congeners
 - Also analyze TOC and TSS
 - *Sample sediment in manhole near battery house (SMH #28)*
 - *Modified Method 8082A selected as an alternative to Modified Draft Method 1668A*
 - More cost-effective
 - *\$300-\$400 for 8082A vs. \$1,000 to \$1,200 for 1668A*
 - Sensitive enough for trackdown at this site based on effluent results
 - *Anticipate approximately 42 congeners will be detected by Modified 8082A*

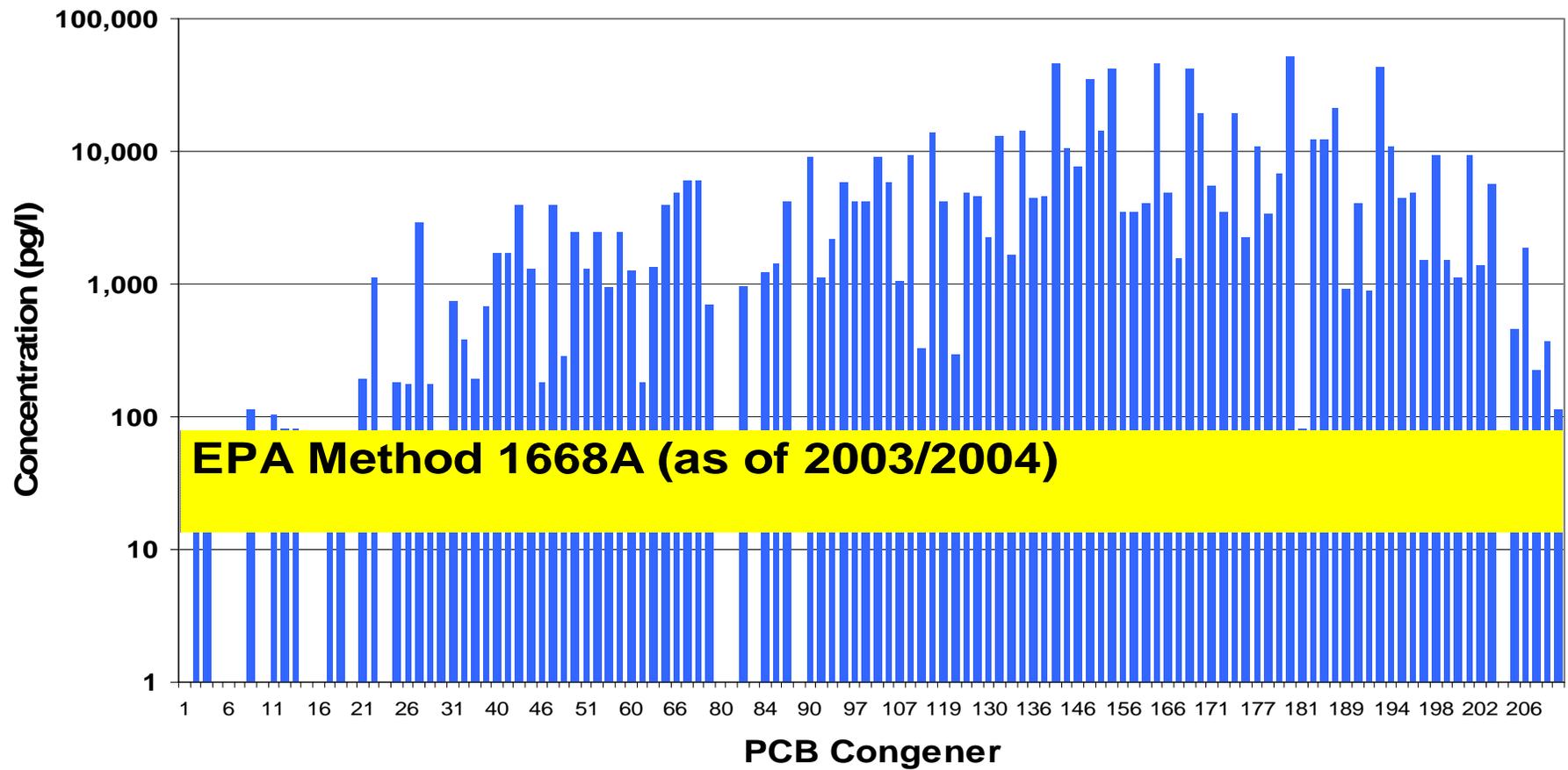
Range of Detection Limits

SP-001 PCB Congener Results (March 2004)



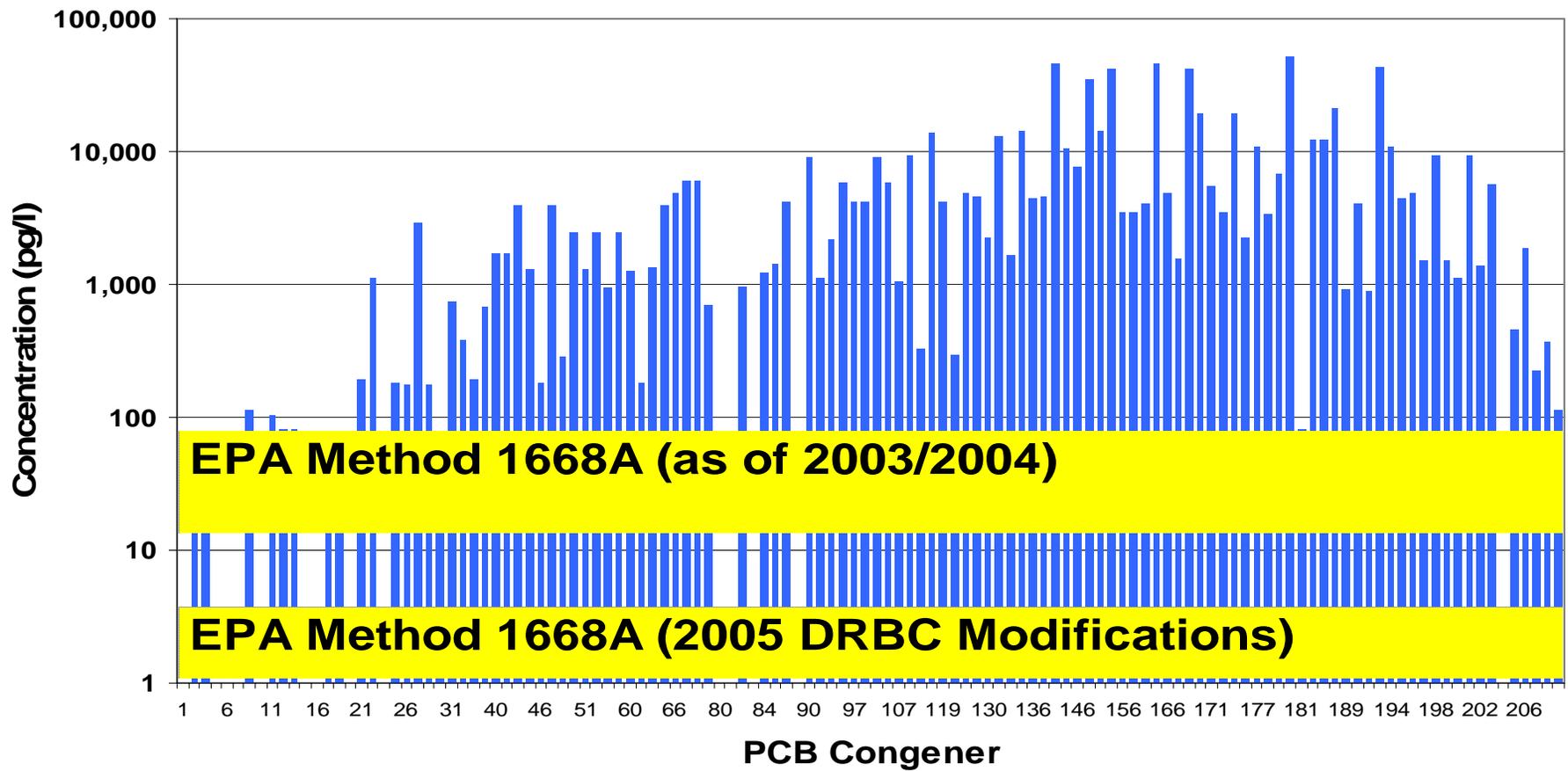
Range of Detection Limits

SP-001 PCB Congener Results (March 2004)



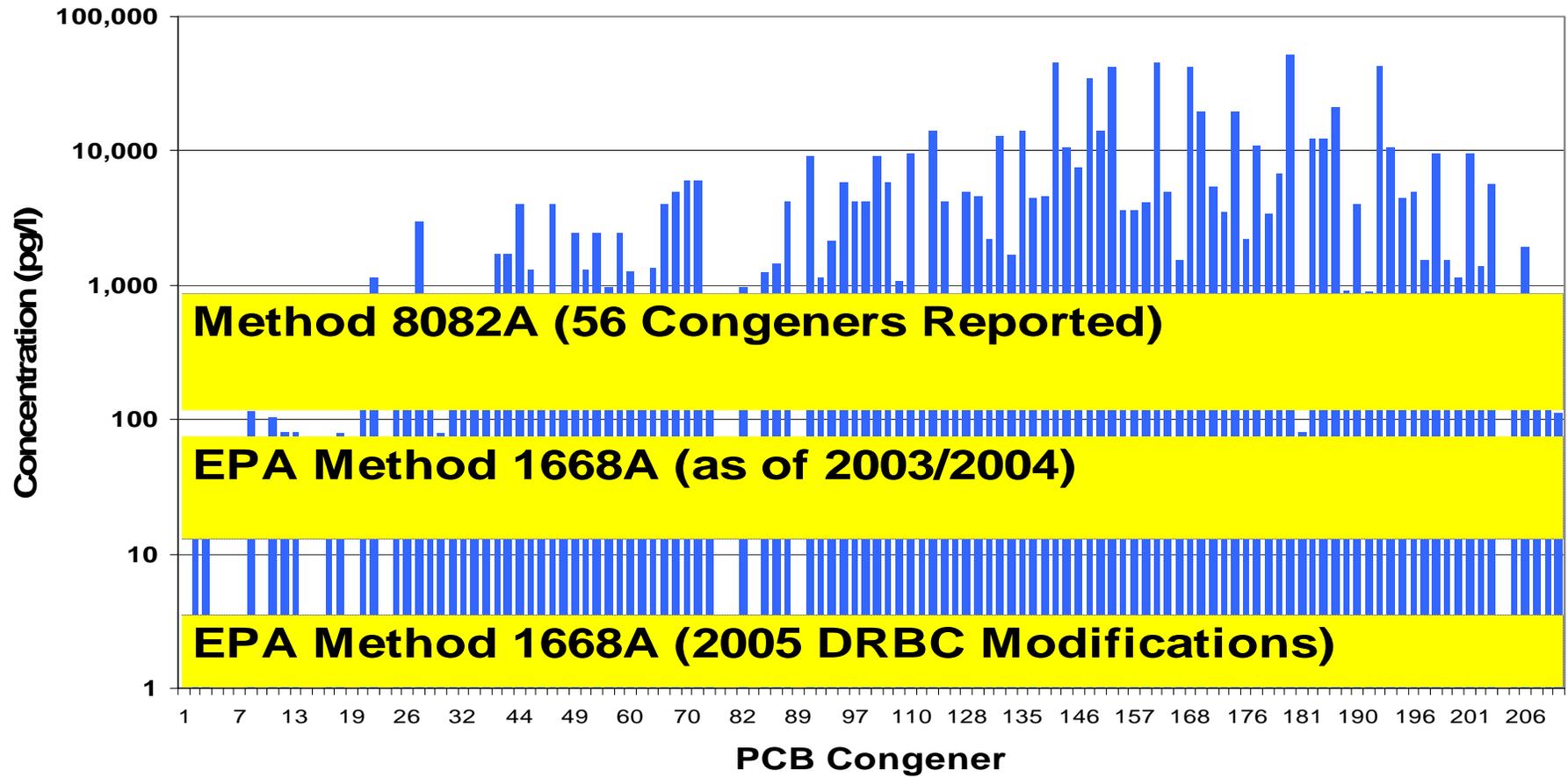
Range of Detection Limits

SP-001 PCB Congener Results (March 2004)



Range of Detection Limits

SP-001 PCB Congener Results (March 2004)



Proposed PCB Minimization Activities

- Complete SP-101 Sewer Connection
- Complete Site History Review
- Review Results of PCB Trackdown Sampling (when completed)
- Implement Identified Storm Inlet Repairs
 - *Raise inlet grate at Manhole No. 32*
 - *Consider regrading or raising inlet at Manhole No. 16*

Proposed PCB Minimization Activities

- **Other Sewer Repairs subject to Trackdown Results**
 - *Further cleaning or abandonment of line between SMH #28 and SMH #29 (significant legacy sediment could not be jetted due to physical construction)*
 - *Grouting of drain line from former Battery House floor drains to SMH #29*
 - *Further cleaning/grouting of other unnecessary/abandoned lines in any areas determined to contribute PCBs*
- **Annual Review of PCB Minimization progress**

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