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Systematic PCB Source Characterization: Achieving A Major PMP Goal

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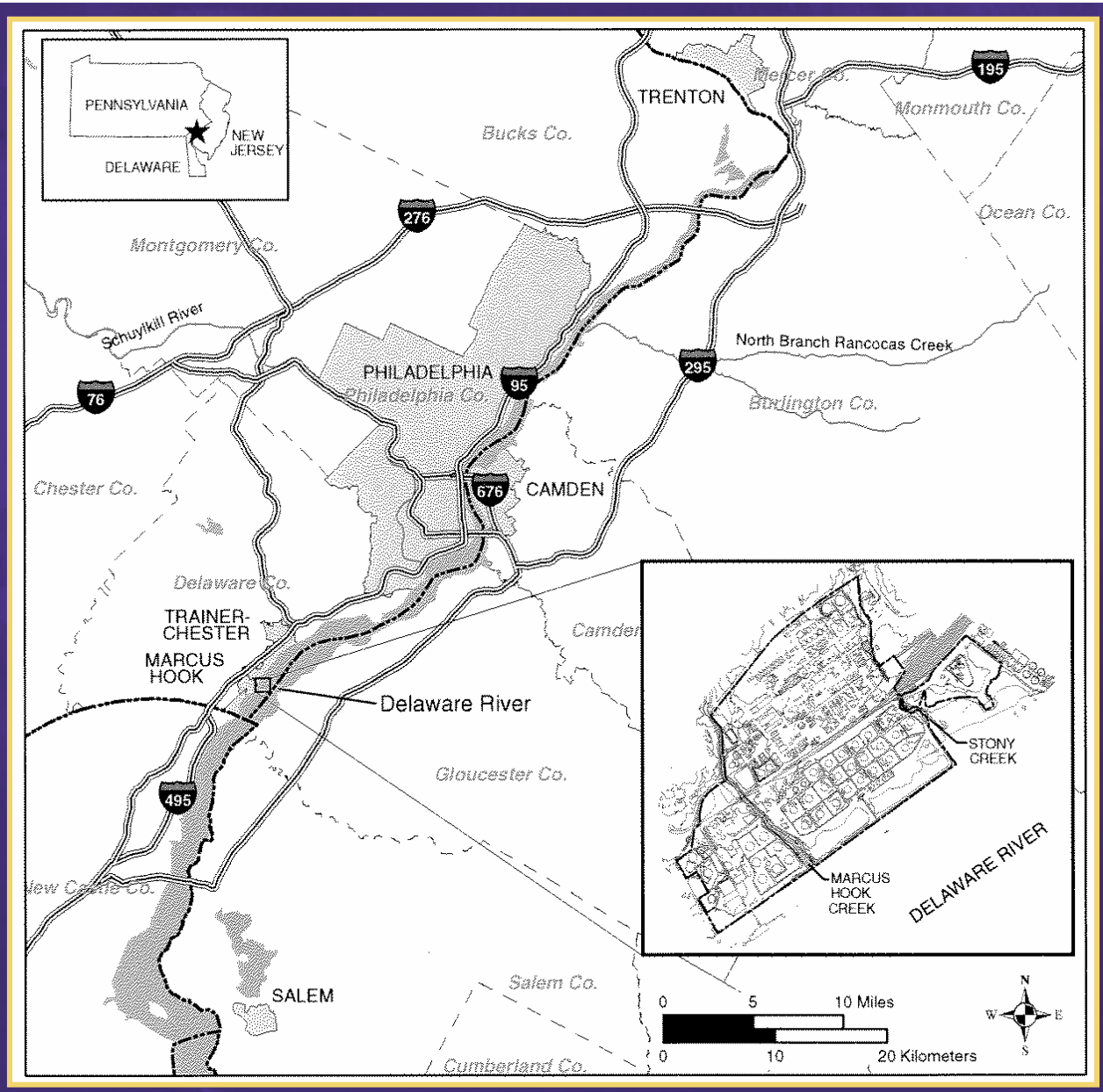

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Pollutant Minimization Characterization Strategy

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Pollutant Minimization Characterization Strategy

PMP Characterization Requirements

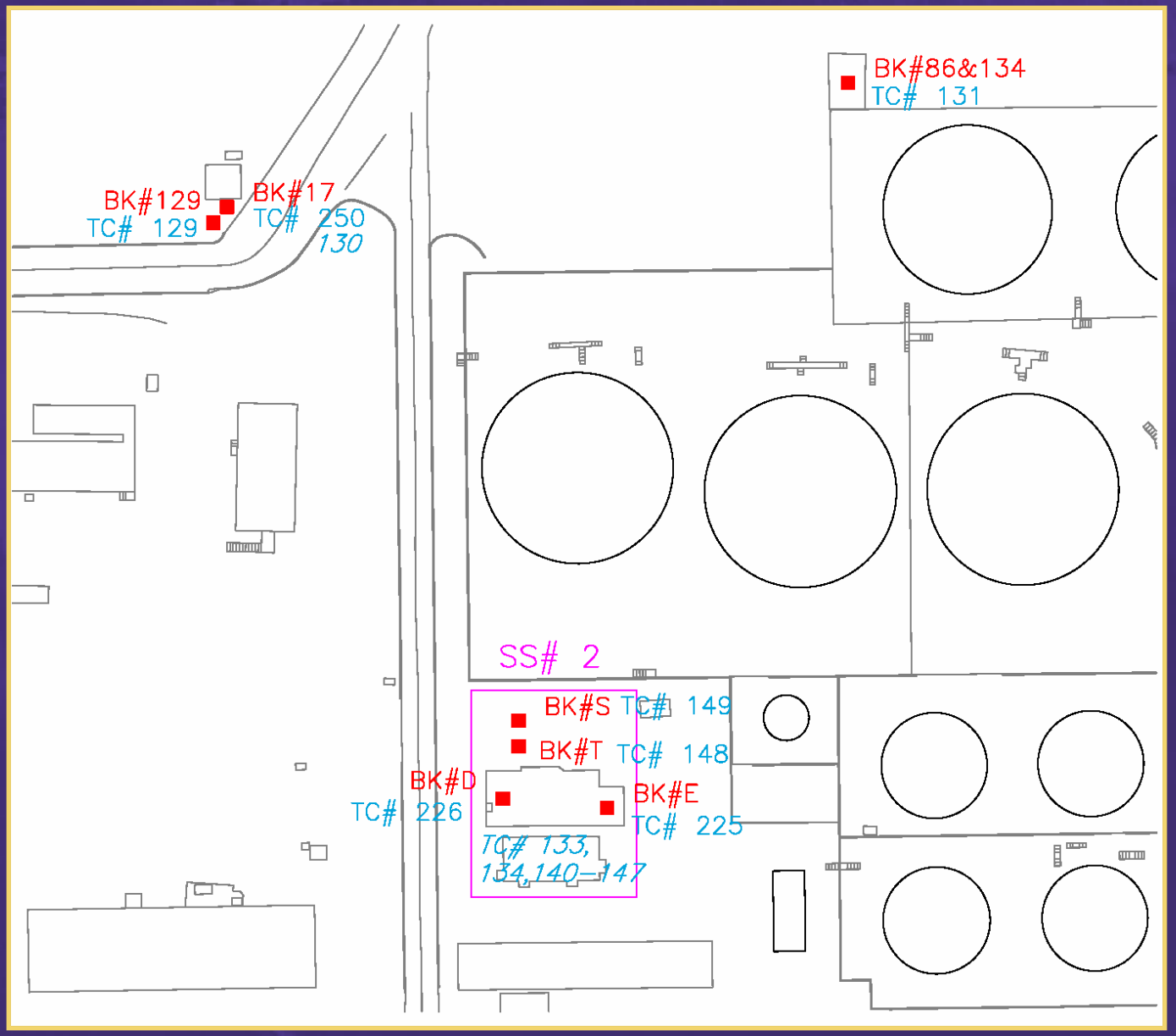
- Identify Facility Known or Probable PCB Sources
- Identification of Unknown PCB Sources
- Quantify Extent and Magnitude of Impact

A 5-Step Technical Approach

1. Locate All Existing and Former Transformers
2. Map the NPDES Outfall Watersheds
3. Determine Most Likely Areas of Impact in Each Watershed
4. Decide on the Most Appropriate Analytical Suite
5. Conduct Characterization Sampling

1. Locate All Existing and Former Transformers

- Reviewed Available Facility Maps (1890-Present)
- Conducted Intensive Site Walkover to Locate Existing Equipment
- Interviewed Electrical Engineers
- Reviewed Prior PCB Oil Sampling Reports



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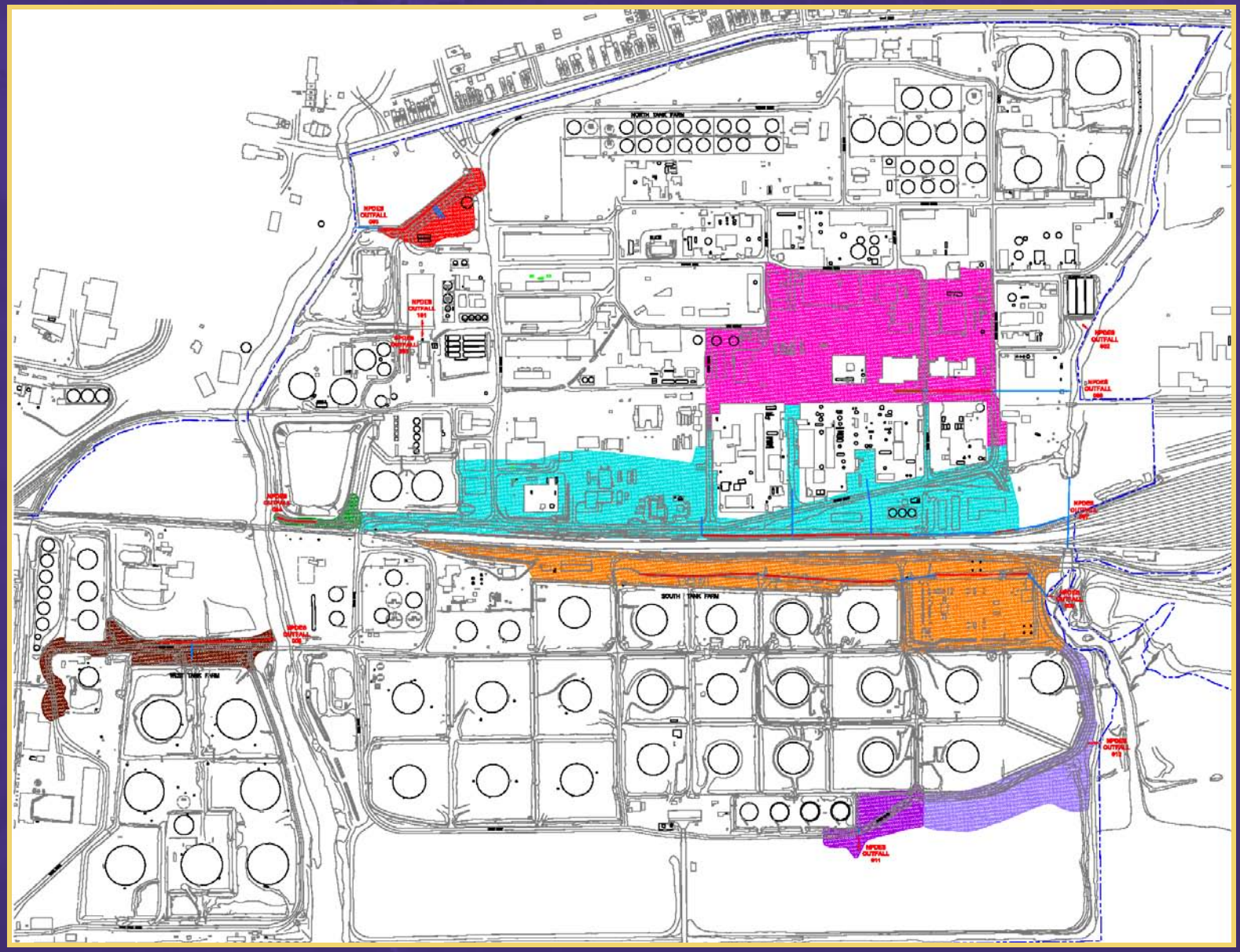
2. Map the Watersheds

- Utilized Aerial Survey Topographic Map (0.1 foot Vertical Resolution)
- Observed Surface Water Flows During Storm Events
- Excluded WWTP/Process Sewer Drainage Areas



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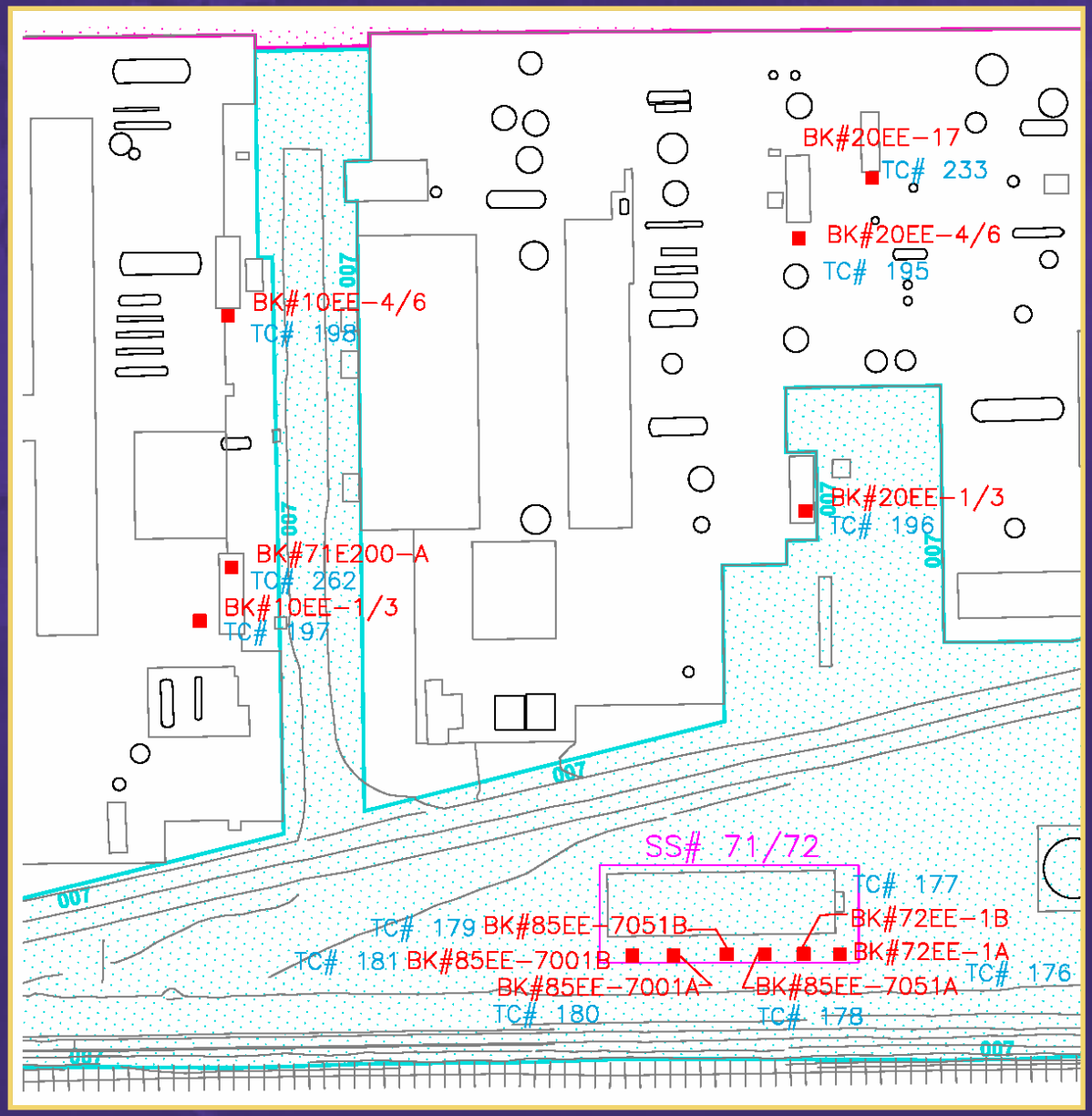
3. Determine Most Likely Areas of Impact

- Assessed the Locations of all Transformers within Each Watershed
- Most Transformers Posed No Risk to Surface Water
- Identified Sediment in Ditches as Primary Source of PCBs
- Identified a Few Transformers in Close Proximity to Drainage Ditches



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Analytical Suite Option: 1668A Congeners

- 1668A: 209 Congeners w/ Coelutions
  - PRO: Congener-specific
  - CON: ~$1,000-$1,100/sample

Analytical Suite Option: 8082 Aroclors

- 8082: Aroclors
  - PRO: Inexpensive (~$60/sample)
  - CONS: High Detection Limits (6-13 ug/kg) & Not Congener-specific

Analytical Suite Option: 8082 Congeners

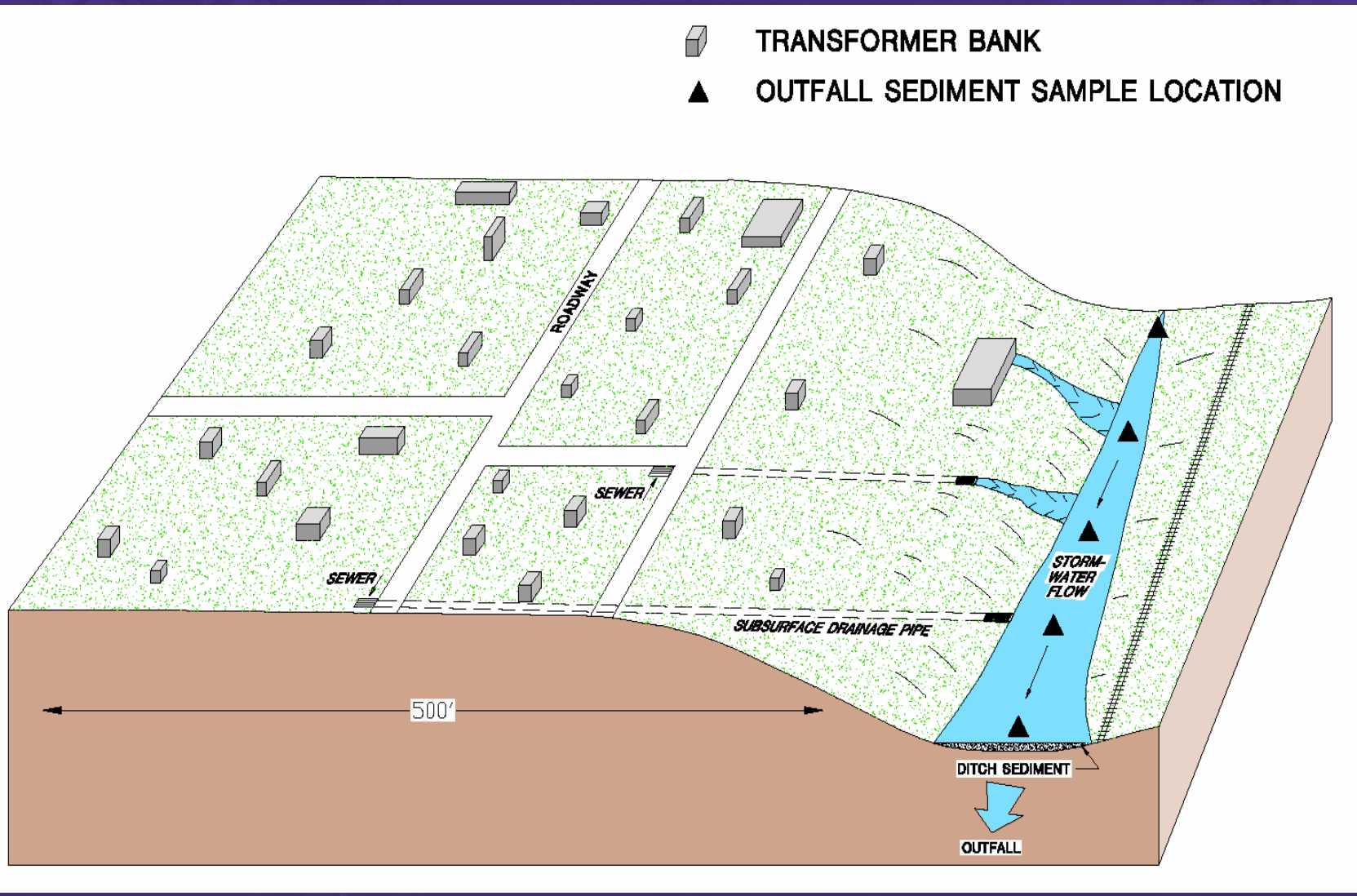
- 8082: 56-65 Congeners
  - PRO: Relatively Inexpensive (~$300/sample)
  - CON: Higher Detection Limits than 1668A (0.09 - 3 ug/kg)

4. Select Analytical Suite: 8082 Congeners

- 8082: 56-65 Congeners
  - Relatively Inexpensive Congener Screening
  - Sufficient to Characterize Substantial PCB Impacts
  - Useful for Determining the Presence and General Range of Congeners

5. Conduct Characterization Sampling

- Targeted Confluence Points in Drainage Ditch
- Targeted Locations Downslope of Adjacent Transformers
- Sampled Sediment Along Entire Length of Ditch



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Characterization Results

- Presence of Congeners in Ditch Sediments
- General Increasing Trend of Number of Congeners Toward Outfall
- No Discernable Trend of Increasing Concentrations Further Downstream

The Next Step: Minimization

- The Unknowns are Now Known
  - Spatial Distribution of Congeners
  - Approximate Volume of Impacted Sediment
  - Confirmed Pathways of Migration
- Now Able to Focus Potential Minimization Actions

Questions?