

# Cooperative Study by the U.S. Geological Survey and ORSANCO

Methylmercury at Selected Sites on  
the Ohio River

# Methylmercury Investigation Goals

## Primary Goals

- Develop relationships between total & methyl Hg in water column and total & methyl Hg in fish tissue.
- Look at explanatory variables in the methylation process
  - Flow
  - Suspended sediments
- Transfer of knowledge from USGS Equal Discharge Increment (EDI) sampling methods to ORSANCO
- Compare USGS method to ORSANCO grab samples.
- Develop additional information pertinent to potential future variance requests.

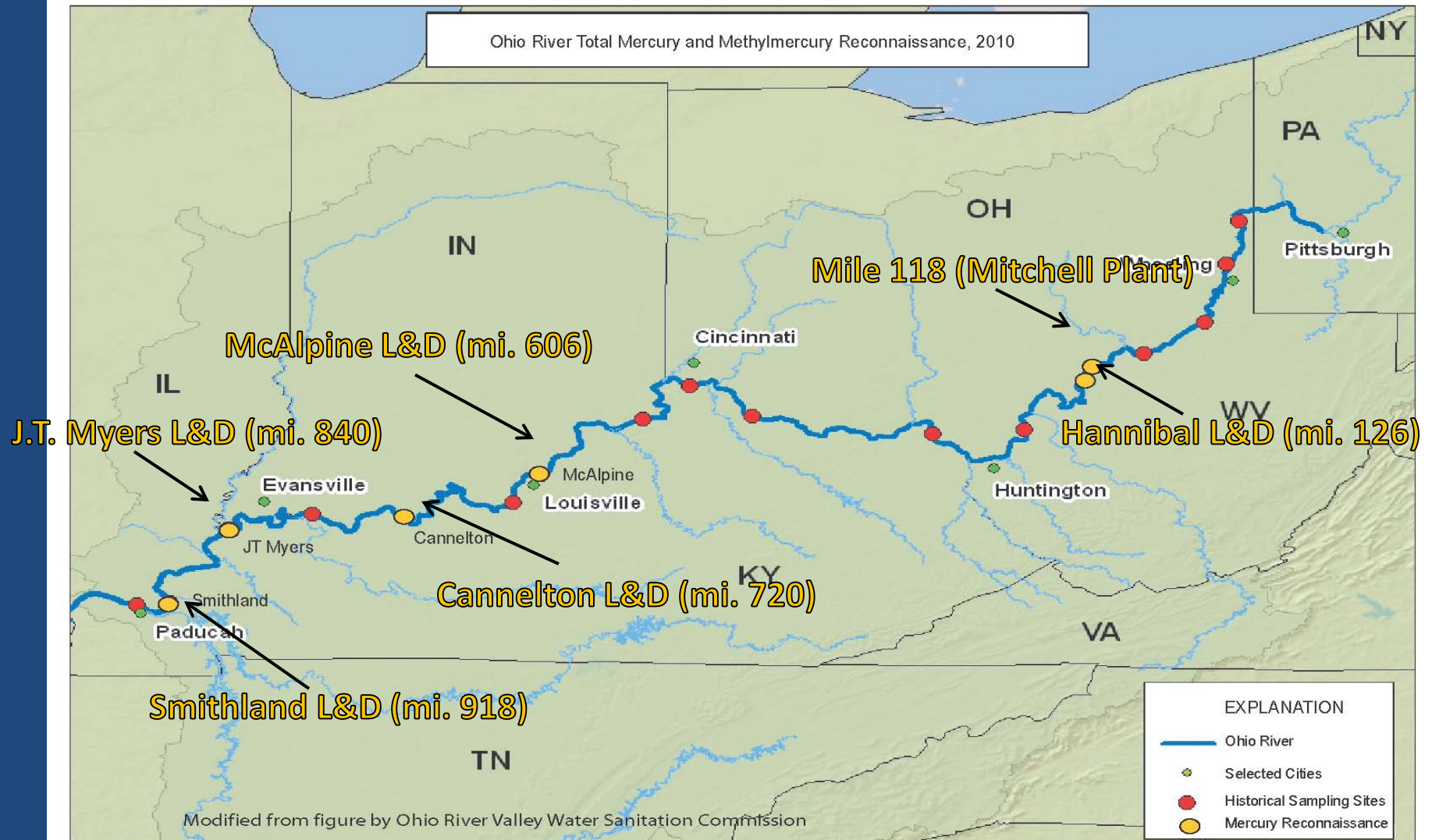
# Joint Project Funding

- ORSANCO Supplemental 106 Monitoring Funds: \$52,650
- ORSANCO In-kind Services Applied: \$15,000
- USGS Match: \$67,650
- **Project Total** **\$135,300**
- **Working with Marty Risch from the IN District of USGS.**
- **Marty is an expert in environmental issues pertaining to Methyl Mercury.**

# Monitoring Plan

- Six Ohio River Locations
  - Ohio River Mile 118
  - Mile 126 Hannibal L&D
  - Mile 606 McAlpine L&D
  - Mile 720 Cannelton L&D
  - Mile 840 J.T. Myers L&D
  - Mile 918 Smithland L&D
- 3 Events per site: May, July, and September 2010
- Additional lockwall grab samples from ORSANCO Bimonthly stations where fish tissue samples are also being collected.

# Methylmercury Study Locations



# Methylmercury and Supplemental Constituents

- Dissolved total mercury
- Particulate total mercury
- Dissolved methylmercury
- Particulate methylmercury

## Methylation Process Explanatory Variables

- Dissolved organic carbon
- Dissolved sulfate
- Suspended sediment
- Total particulate carbon
- Particulate inorganic carbon
- Particulate organic carbon
- Total particulate nitrogen
- Chlorophyll-a
- Flow

# Sampling Methods

- Primary objectives to be met with USGS Equal Discharge Increment (EDI) Isokinetic Sampling Methods





# Sampling Methods





# July Events

- One EDI sample at each of the 6 project locations
- ORSANCO will collect discrete depth grab samples from associated Bimonthly Sampling locations
  - Evaluation of photodegradation of methyl mercury in surface grab samples.