228th Technical Committee Meeting

Scott Mandirola, Chair
Presiding
February 8-9, 2022

The meeting will begin at 1:00 P.M. (Eastern). Below are a few tips to effectively navigate the meeting:

- ***Confirm that your first and last name is entered correctly in the GoToMeeting software.***
- ***Mute your microphone at all times unless speaking.***
- ***Disable your camera unless you are a Technical Committee member.***
- ***The presenter will prompt participants for verbal questions, or use the Chat feature.***
- ***Detailed GoToMeeting instructions and important information can be found in the previously emailed document, "ORSANCO Virtual Technical Committee and Commission Meeting Instructions."***
- ***If you need assistance during the meeting, please call our office at 513-231-7719 ext. 100.***

Chair’s Welcome & Roll Call

Scott Mandirola

Chair, Technical Committee

TEC Members Roll Call

- IL – Scott Twait *
- IN – Brad Gavin *
- KY – Katie McKone *
- NY – Melanie Stein *
- OH – Audrey Rush *
- PA – Kevin Halloran *
- VA – Melanie Davenport*
- WV – Scott Mandirola
- USACE – Erich Emery*
- USCG – Josh Miller *
- USEPA – David Pfeifer *
- USGS – Jeff Frey *
- CIAC – Vacant
- PIAC – Cheri Budzynski
- PIACO – Betsy Bialosky
- POTW – Alex Novak
- WOAC – Angie Rosser
- WUAC – Chris Bobay
- Chair – Scott Mandirola *
- Executive Director – Richard Harrison *

* Voting member

Agenda for the 228th Meeting of the Technical Committee

CHAIRMAN'S WELCOME AND ROLL CALL (1:00 P.M.)

ACTION ITEMS AND REPORTS

1. Action on Minutes of 227th Technical Committee Meeting * – Chair Mandirola
2. Chief Engineer's Report – Director Harrison
3. 2022 Biennial Assessment of Ohio River Water Quality Conditions (305b) * – Ryan Argo
4. National Weather Service Ohio River Forecast Center Climate Change Analysis for the Ohio River Basin: An Update on the Ohio River Basin Climate Change Hydrology Project 2022 – Jim Noel, NOAA/National Weather Service
5. TEC Member Roundtable Reports

ADJOURN/RECONVENE WEDNESDAY AT 8:30 A.M.

6. Status Update for the Source Water Contamination Threat Inventory on the Ohio and Allegheny Rivers – Steve Allgeier, USEPA
7. Source Water Protection Program Update – Sam Dinkins
8. Biological Programs Update – Ryan Argo, Daniel Cleves
9. Preliminary Results of Ohio River Ambient PFAS Survey – Sam Dinkins, Jason Heath

OTHER BUSINESS

- Comments by Guests
- Announcement of Upcoming Meetings

ADJOURNMENT (NOON)

Agenda Item 1:

Request for action on minutes of the 227th Technical Committee Meeting

Chair Mandirola

The minutes were emailed with the agenda package on January 20, 2022

Agenda Item 2:
Chief Engineer's Report

Executive Director Harrison

OHIO RIVER VALLEY WATER SANITATION COMMISSION

Chief Engineer's Report

ORSANCO TEC Meeting

February 8, 2022

Today's Overview

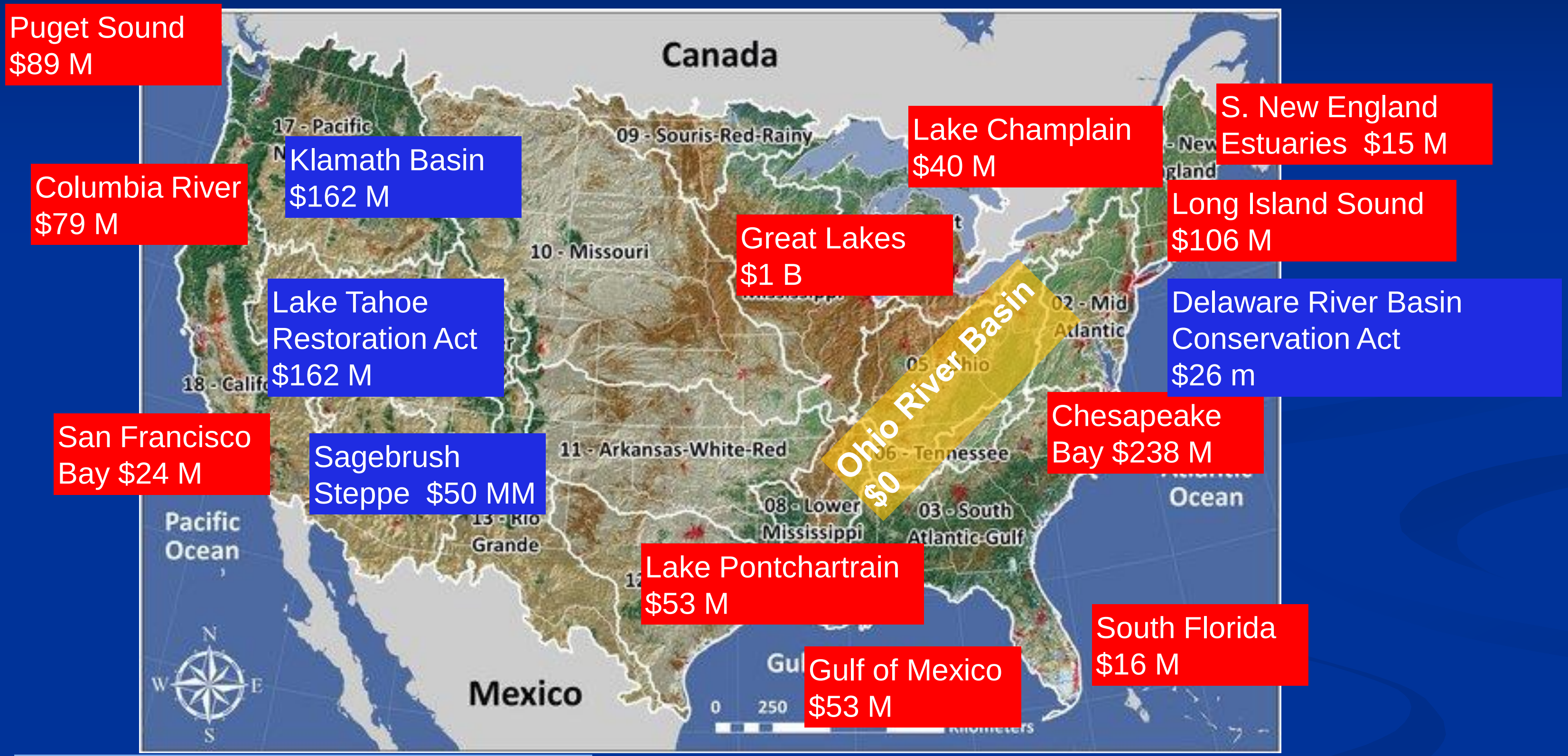
- Ohio River Basin Plan Terminology
- Ohio River Restoration Plan Status
- Upcoming Program & Finance Meeting

Where is the Ohio River Basin?

DEPARTMENT OF THE INTERIOR, ENVIRONMENT, AND RELATED AGENCIES APPROPRIATIONS BILL, 2020
USEPA Geographic Program Funding Levels:

Great Lakes Restoration Initiative	- $320 M
Chesapeake Bay	- $ 85 M
Puget Sound	- $ 33 M
Long Island Sound	- $ 21 M
Gulf of Mexico	- $ 17.55 M
Lake Champlain	- $ 13.39 M
Southern New England Estuaries	- $ 5.4 M
San Francisco Bay	- $ 5.019 M
South Florida	- $ 3.504 M
Columbia River Basin	- $ 1.1 M

Geographic Ecological Restoration Funding in Infrastructure Investment and Jobs Act



USEPA funding – red boxes
USFWS funding –blue boxes

Estimated Distribution of Funds from *Infrastructure Investment and Jobs Act* for Abandoned Mine Lands

These estimates were created by Appalachian Citizen's Law Center and are presented as a best guess to aid advocates in understanding the potential impacts of this proposal, but not reflective of actual decided upon amounts. As the Infrastructure Investment and Jobs Act is currently written, funds will be distributed based on historic coal mined, versus current unfunded inventory.

State/Tribe	**Current Unfunded Inventory** *(excluding non coal projects in certified states)*	**Estimated Annual Allocation** under the Infrastructure Investment and Jobs Act (based on historic coal tonnage)	**Allocation over 15 years** under the Infrastructure Investment and Jobs Act (based on historic coal tonnage)	**Difference Between Allocation and Unfunded Inventory**	**Does a program recieve more funding than is currently needed according to the inventory?**
AL	$555,360,422	$21,159,052	$317,385,781	-$237,974,642	Receiving Less
AK	$39,181,303	$1,333,333	$20,000,000	-$19,181,303	Receiving Less
AR	$18,888,343	$1,759,258	$26,388,874	$7,500,531	Yes
CO	$74,860,433	$10,312,041	$154,680,613	$79,820,179	Yes
IL	$146,852,973	$78,387,395	$1,175,810,920	$1,028,957,946	Yes
IN	$174,038,263	$25,520,484	$382,807,262	$208,768,999	Yes
IA	$82,759,895	$6,195,616	$92,934,243	$10,174,348	Yes
KS	$802,204,212	$5,023,027	$75,345,406	-$726,858,806	Receiving Less
KY	$934,616,787	$76,824,442	$1,152,366,630	$217,749,843	Yes
LA	$14,078,338	$938,556	$14,078,338	$0	
MD	$69,675,053	$4,978,072	$74,671,074	$4,996,021	Yes
MS	$48,410	$3,227	$48,410	$0	
MO	$124,234,024	$6,064,496	$90,967,440	-$33,266,584	Receiving Less
MT	$225,537,813	$4,760,037	$71,400,562	-$154,137,251	Receiving Less
NM	$41,512,046	$2,507,018	$37,605,270	-$3,906,776	Receiving Less
ND	$35,677,286	$3,209,073	$48,136,094	$12,458,808	Yes
OH	$510,251,711	$48,052,177	$720,782,658	$210,530,948	Yes
OK	$128,422,725	$3,612,923	$54,193,847	-$74,228,878	Receiving Less
PA	$5,045,275,281	$253,386,392	$3,800,795,873	-$1,244,479,408	Receiving Less
TN	$46,513,725	$8,875,713	$133,135,693	$86,621,968	Yes
TX	$9,006,938	$1,020,490	$15,307,345	$6,300,407	Yes
UT	$8,672,245	$5,968,591	$89,528,864	$80,856,619	Yes
VA	$425,095,976	$23,579,905	$353,698,580	-$71,397,396	Receiving Less
WV	$1,781,631,554	$145,626,576	$2,184,398,644	$402,767,091	Yes
WY	$44,234,764	$10,033,317	$150,499,752	$106,264,988	Yes
Crow	$0	$238,264	$3,573,962	$3,573,962	Yes
Hopi	$0	$217,285	$3,259,273	$3,259,273	Yes
Navajo	$1,839,221	$1,719,548	$25,793,214	$23,953,993	Yes
Total		$751,306,308	$11,269,594,621	$11,269,594,621	

Clarify Plan for Ohio River Basin versus Ohio River Basin Restoration Plan/Initiative

- Plan for Ohio River Basin is a multi-goal area broad Plan for the Ohio River Basin
- Developed by USACE, ORBA and ORSANCO
- Very Broad Goals with multiple funding streams and varied timing for implementation
- The restoration plan, once delivered to the U.S. Congress, will set the stage for a future **Ohio River Restoration Initiative** that will provide federal funding and resources to implement the plan, similar to other federal geographic funding initiatives, e.g. Great Lakes, Chesapeake Bay, Florida Everglades, etc.
- Ohio River Basin Restoration Plan/Initiative is a single project-priority that is currently the Abundant Clean Water and Healthy and Productive Ecosystems Work Group number one priority out of many different projects
- Several Abundant Clean Water Work Group strategic priorities will not be funded or advanced through this effort

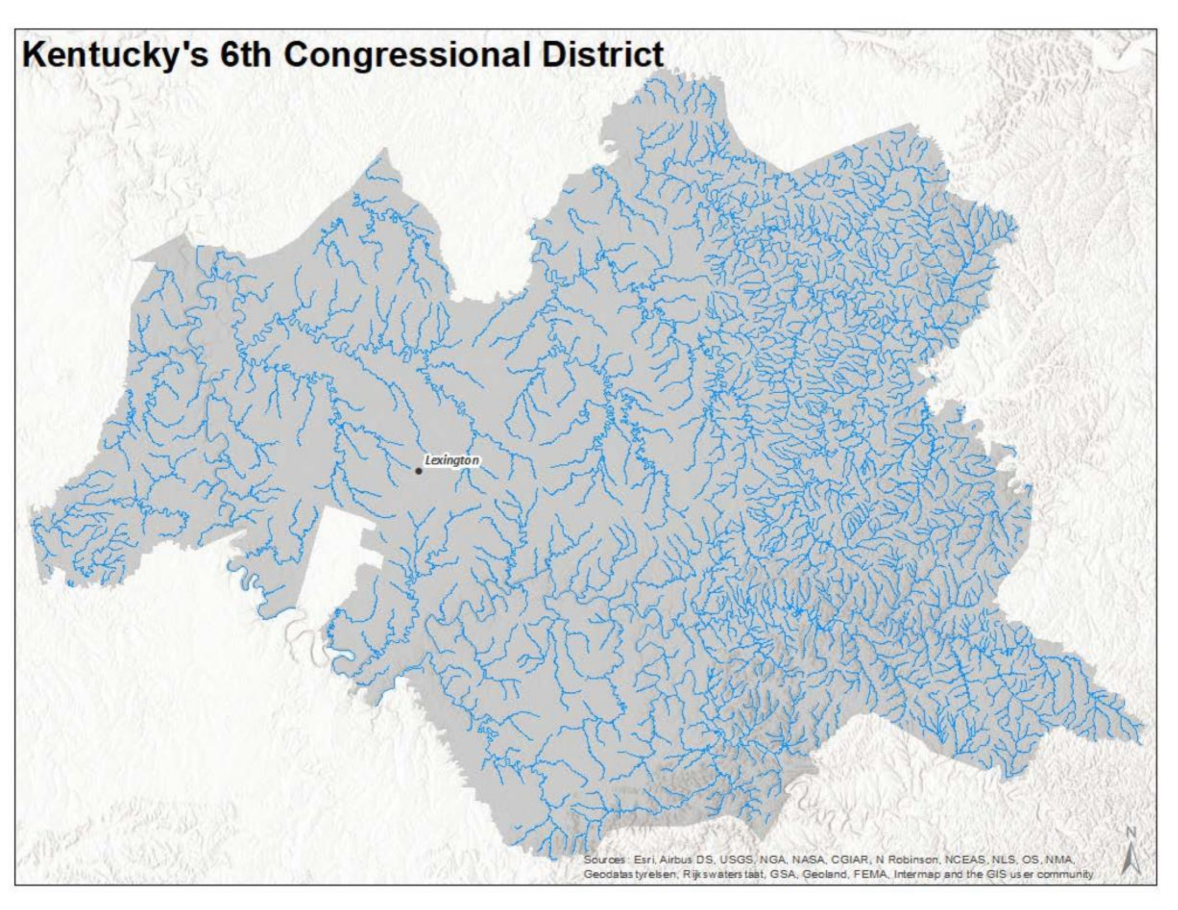
Discuss Collaboration between Abundant Clean Water and Healthy and Productive Ecosystems Work Groups

- Acid mine drainage
- Nonpoint Source (NPS) pollution (nutrient management, HAB’s, nutrient trading)
- Toxics
- Water infrastructure (drinking water and wastewater)
- Habitats and Species
- Invasive Species
- Environmental Justice

Plan for the Ohio River Basin

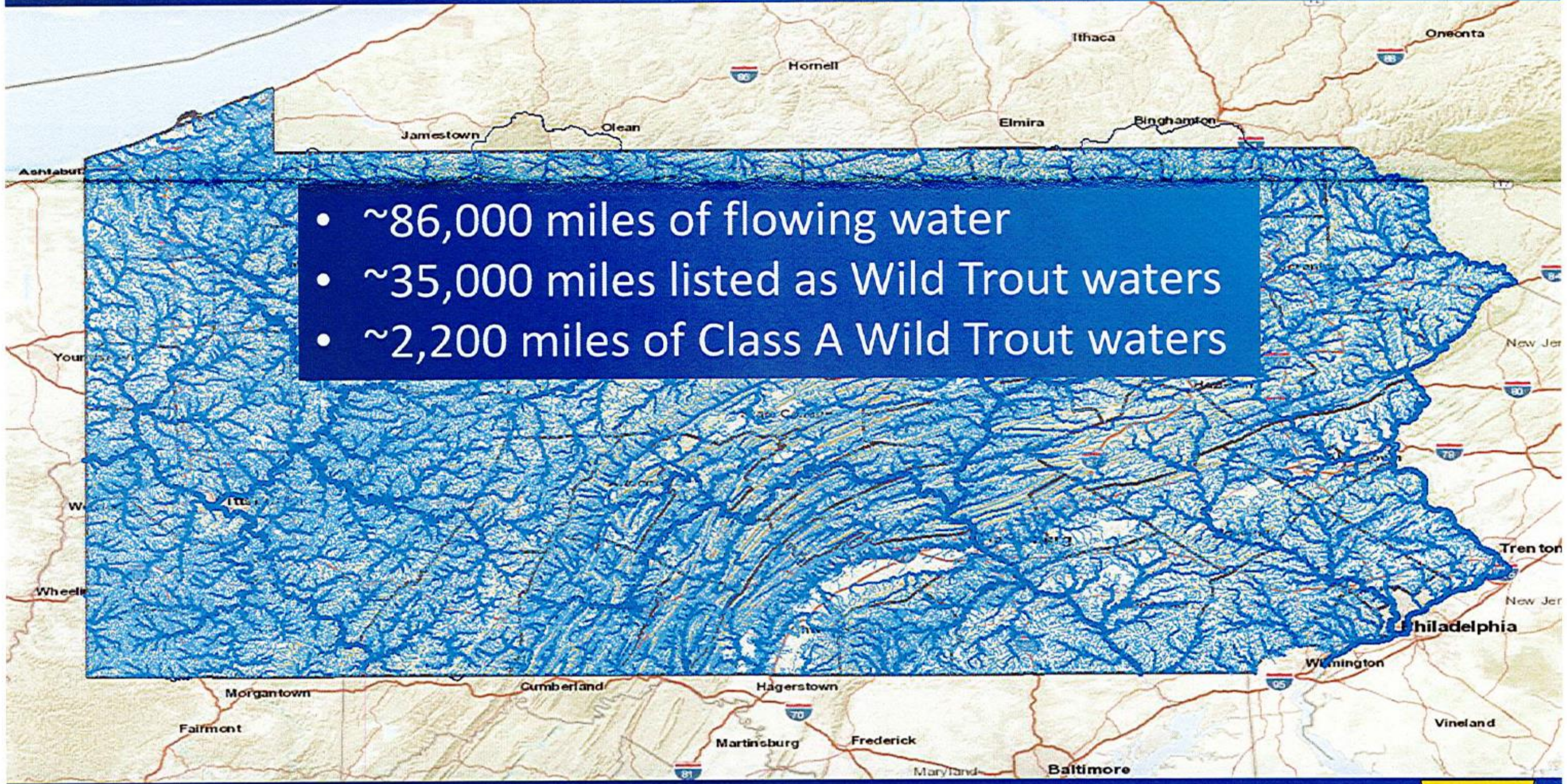
Water-Rich Districts

- The *Plan for the Ohio River Basin* includes the waters of YOUR district
- We can provide you a map of your district's waterways
- Let's discuss how we can help support the *Plan*
- Without your engagement and support we will limit what resources can be brought to our region



PA stream network

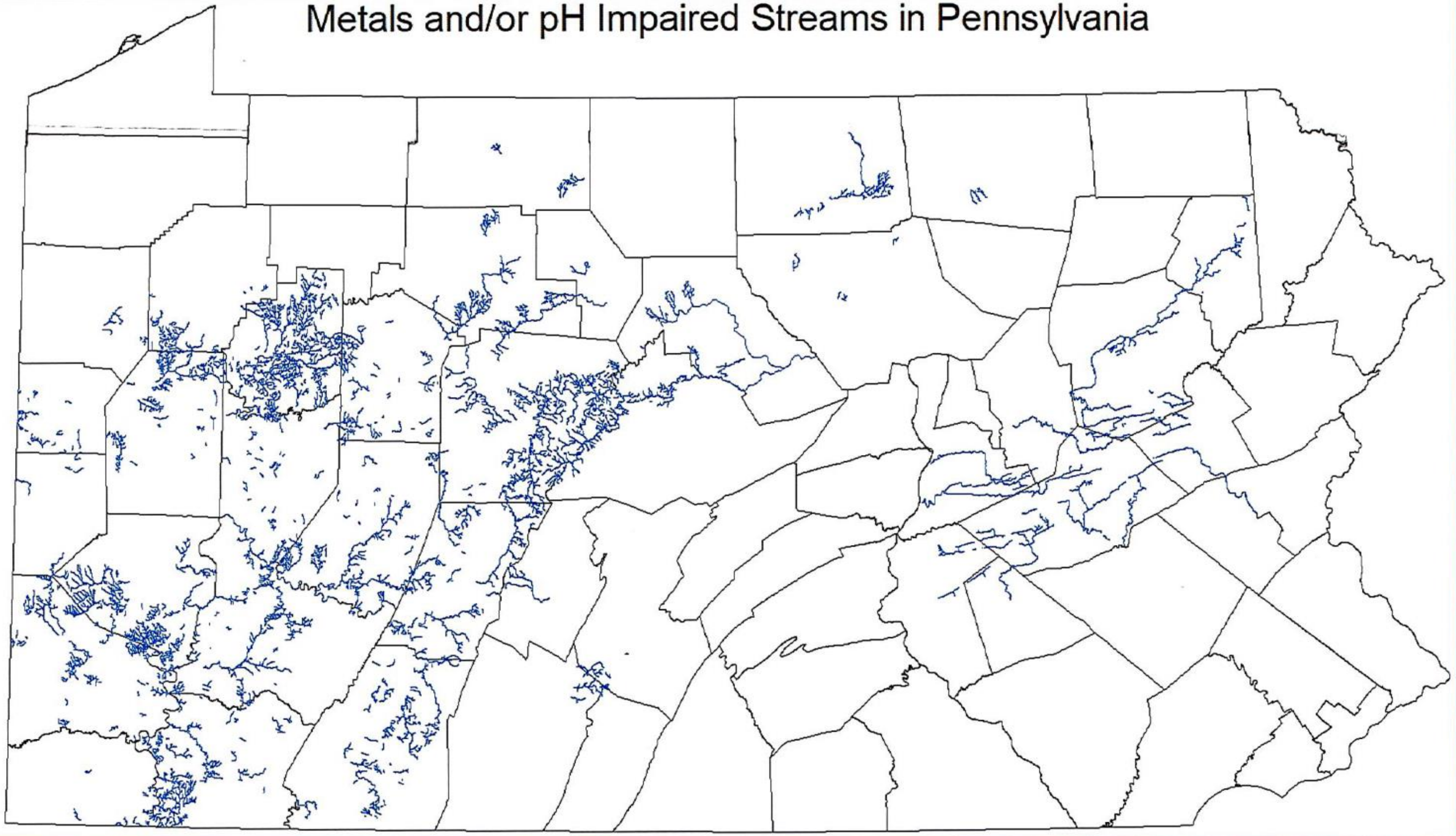
- ~86,000 miles of flowing water
- ~35,000 miles listed as Wild Trout waters
- ~2,200 miles of Class A Wild Trout waters



PENNSYLVANIA FISH & BOAT COMMISSION

Miles of Stream Impairment - AMD

Metals and/or pH Impaired Streams in Pennsylvania



AMD Stream Impairment

All 303(d) stream impairments in Commonwealth (25,468 mi)

AMD impairments to aquatic life (5,559 mi)

AMD impairments to aquatic life by metals and/or pH (5,166 mi)

2022 Program & Finance Committee Meeting

Unbudgeted High Priority Program Needs

Data Management Systems Upgrade – Total Project Cost = $750,000? + $25,000 annual support and maintenance

This project proposes to migrate all of ORSANCO's existing and future data into an integrated data base management system that would also automate migration of our data to the WQX and provide a system that would facilitate better public use and presentation of our data. This would also include all special project data that may not be in any data base currently. ORSANCO currently utilizes Microsoft ACCESS data base which will be discontinued in 2025. Data is also stored in Excel files for some special projects and in minimal cases is in hard copy format.

Broadscan Survey of Unmonitored Parameters – Total Project Cost = $33,150
Complete two rounds of high volume sampling at 10 locations. Presumes no additional staffing costs.

Update PCBs & Dioxin High Volume Data for 305b Assessments – Total Project Cost = $ 317,320
Complete two rounds of high volume sampling at 10 locations. Presumes no additional staffing costs.

Update River-wide Bacteria Data for 305b Assessments– Total Project Cost = $50,000/yr for 5 Yrs
There are multiple options for updating this data, all of which would be heavily influenced by precipitation events. We will need to work with the 305b and/or Monitoring Strategy workgroups to develop an optimized survey approach. As a placeholder, presume $50,000 per year for 5 years.

Facilities Equipment Purchase of Ventless Hood and Blower, Water Deionizer, and Autoclave – Total Project Cost = $27,000.

Survey to Evaluate Effects of Submerged Aquatic Vegetation on Biological Surveys – Total Project Cost = $35,000.

Survey of PFASs in Fish Tissue – Total Project Cost = $15,000 per pool.

In-Season Electrofishing Revisit of One Pool – Total Project Cost = $12,000 per Pool

Microplastics Survey of Water Column, Sediment & Fish at 18 Fixed Biological Stations – Total Project Cost = $30,000.

Mussel Surveys to Generate Baseline Conditions for Future Biological Pool Assessments – Total Project Cost = $40,000 per Pool.

HAB App Continuation – Total Project Cost - $24,000 (one-time cost); $5,000 annual maintenance
Contractor support to incorporate Pike Island and Meldahl continuous monitoring stations into HAB App; switch to SQL database; and incorporate a number of improvements identified since the initial roll-out of the App.

ODS Detection Alert System – Total Project Cost - $20,000
Contractor support to develop automated ODS detection alert system to notify ORSANCO and ODS host water utilities.

ODS Data Management System – Total Project Cost – $20,000
Contractor support to build centralized data management system for ODS network. This would be completed in close coordination with our overall data management efforts.

Spill/HAB Data Management System – Total Project Cost - $30,000
Contractor support to develop data management system to streamline spill reporting and create platform to enhance information sharing among response agencies and water systems during spill/HAB events.

Portable GC/MS Unit for Enhanced Spill Response – Total Cost $175,000
Purchase portable GC/MS unit to provide enhanced analytical services during spill events to inform water utilities not part of the ODS network and spill response agencies.

Questions?

Agenda Item 3:
2022 Biennial Assessment of Ohio River Water Quality Conditions

Report of the 305(b) Workgroup

Ryan Argo

rargo@orsanco.org

*Actionable Item

Weight of Evidence Approach

- Recommended by the Technical Committee and approved by the Commission, October 2011.

- WOE applied in the following 2020 assessments
  - aquatic life use (again this cycle)
  - mercury fish consumption (again this cycle)
  - Public water supply (again this cycle)

Aquatic Life Use Assessment Methodology

Fully Supporting

- Conventional - <10% criteria exceedance for any one
- **Toxic - No exceedances or 1 exceedance**

and/or

- Biota - *m*ORFIn and ORMIn scores are greater than or equal to 20.0
  - (i.e. a condition rating of 'Fair', 'Good', 'Very Good', or 'Excellent')

Partially Supporting - Impaired

- Conventional - >10% and <25% criteria exceedance for any one
- **Toxic - >1 exceedance, AND ≤10% of samples**

and/or

- Biota - one of the indices scores 'Fair' or better (>20.0)

  and, the other index scores 'Poor' (10.0 - 19.9)

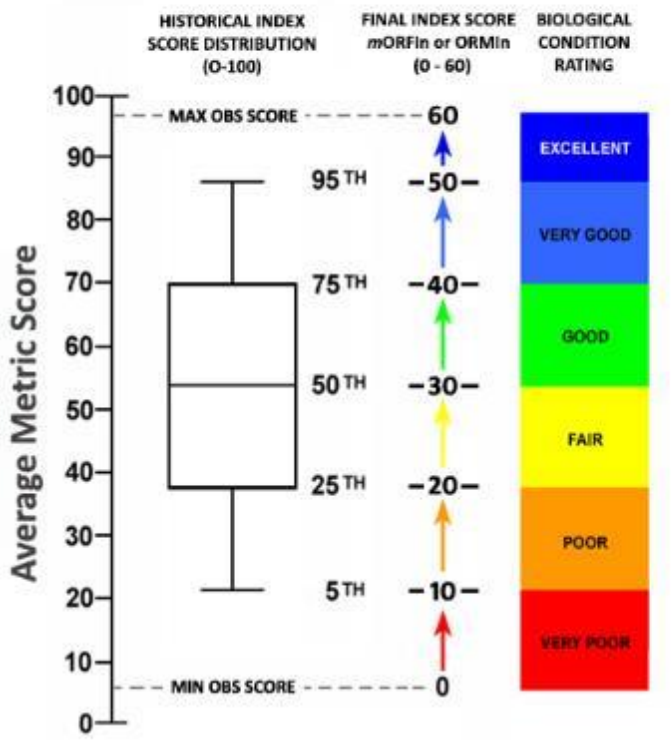
Not Supporting - Impaired

- Conventional - >25% criteria exceedance for any one
- **Toxic - >1 exceedance AND >10% of samples**

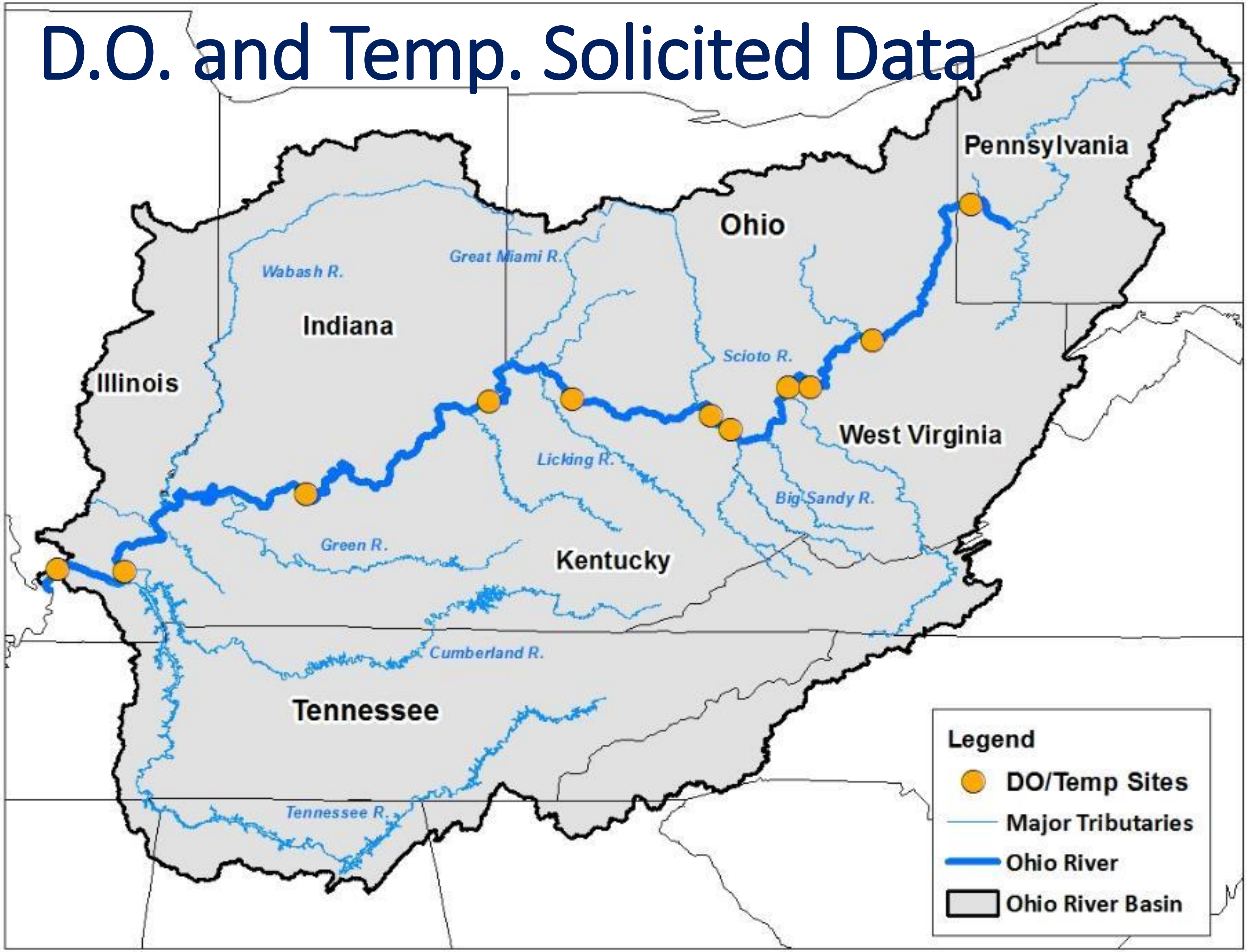
and/or

- Biota - pool in which both indices score 'Poor' (<20.0)

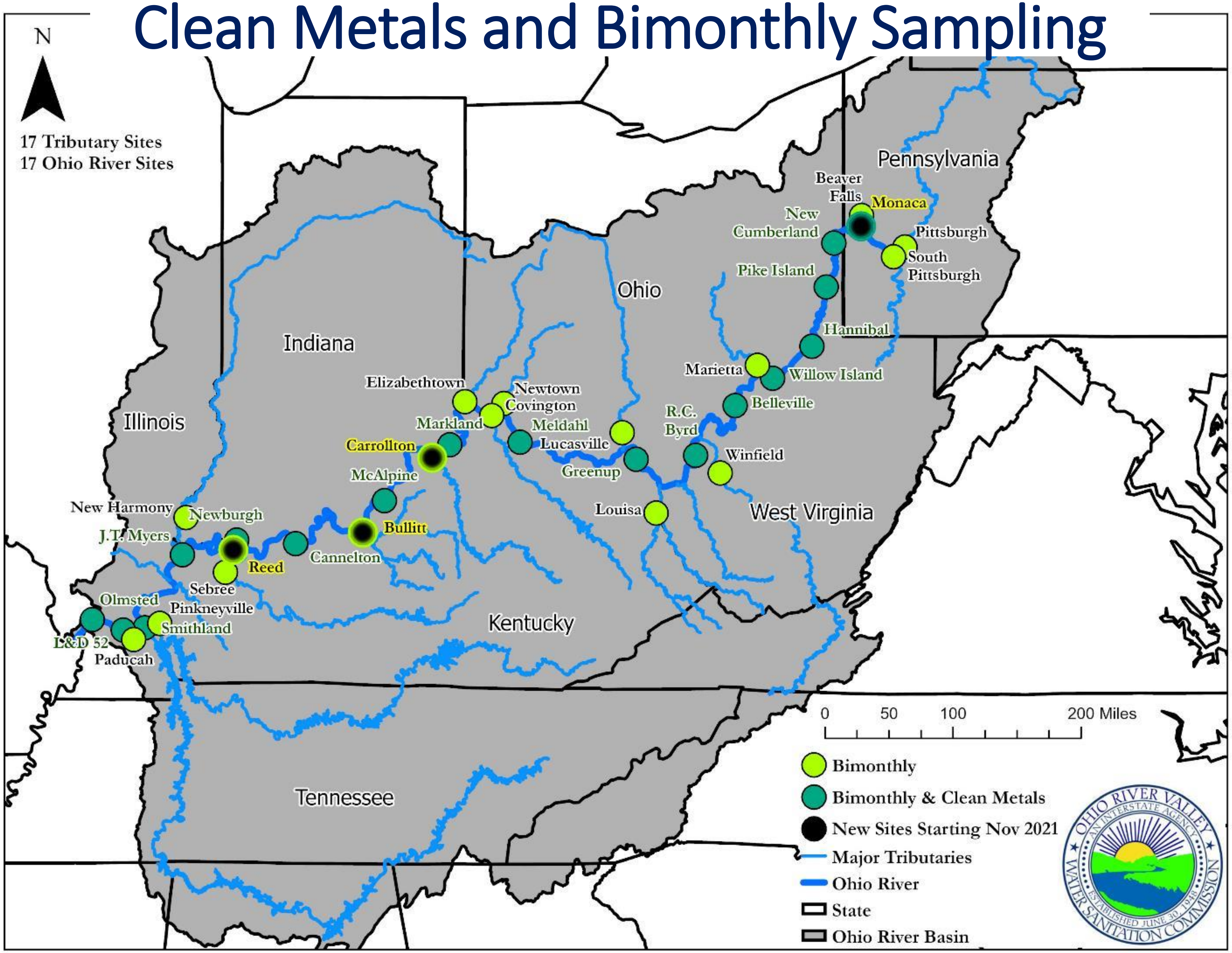
  or, in which either index scores 'Very Poor' (<10.0)



D.O. and Temp. Solicited Data



Clean Metals and Bimonthly Sampling



Metals and Bimonthly Program Parameters

Clean Metals Parameters	Water Pollutant
Aluminum	Conventional
Antimony	Toxic
Arsenic	Toxic
Barium	Conventional
Beryllium	Toxic
Cadmium	Toxic
Calcium	Conventional
Chromium	Toxic
Chromium(VI)	Toxic
Copper	Toxic
Fixed Suspended Solids	Conventional
Hardness, Ca, Mg	Conventional
Iron	Conventional
Lead	Toxic
Magnesium	Conventional
Manganese	Conventional
Mercury	Toxic
Methylmercury(1+)	Toxic
Nickel	Conventional
Organic carbon	Conventional
Potassium	Conventional
Selenium	Toxic
Silver	Conventional
Sodium	Conventional
Strontium	Conventional
Thallium	Toxic
Total suspended solids	Conventional
Volatile Suspended solids	Conventional
Zinc	Toxic

Bimonthly Parameters	Water Pollutant
Ammonia Nitrogen	Conventional
Bromide	Conventional
Chloride	Conventional
Cyanide	Conventional
Hardness	Conventional
Nitrate-Nitrite Nitrogen	Conventional
Phenolics, Total Recoverable	Toxic
Sulfate	Conventional
Total Dissolved Solids	Conventional
Total Kjeldahl Nitrogen	Conventional
Total Nitrogen	Conventional
Total Organic Carbon	Conventional
Total Phosphorus	Conventional
Total Suspended Solids	Conventional
Field Parameters	
Dissolved Oxygen	Conventional
pH	Conventional
Specific Conductance	Conventional
Temperature	Conventional
Turbidity	Conventional
Parameters Starting Nov 2021	
Dissolved Organic Carbon	Conventional
Orthophosphate	Conventional
Biochemical Oxygen Demand	Conventional

Bimonthly/Metals Criteria Exceedances – Fe (µg/L)

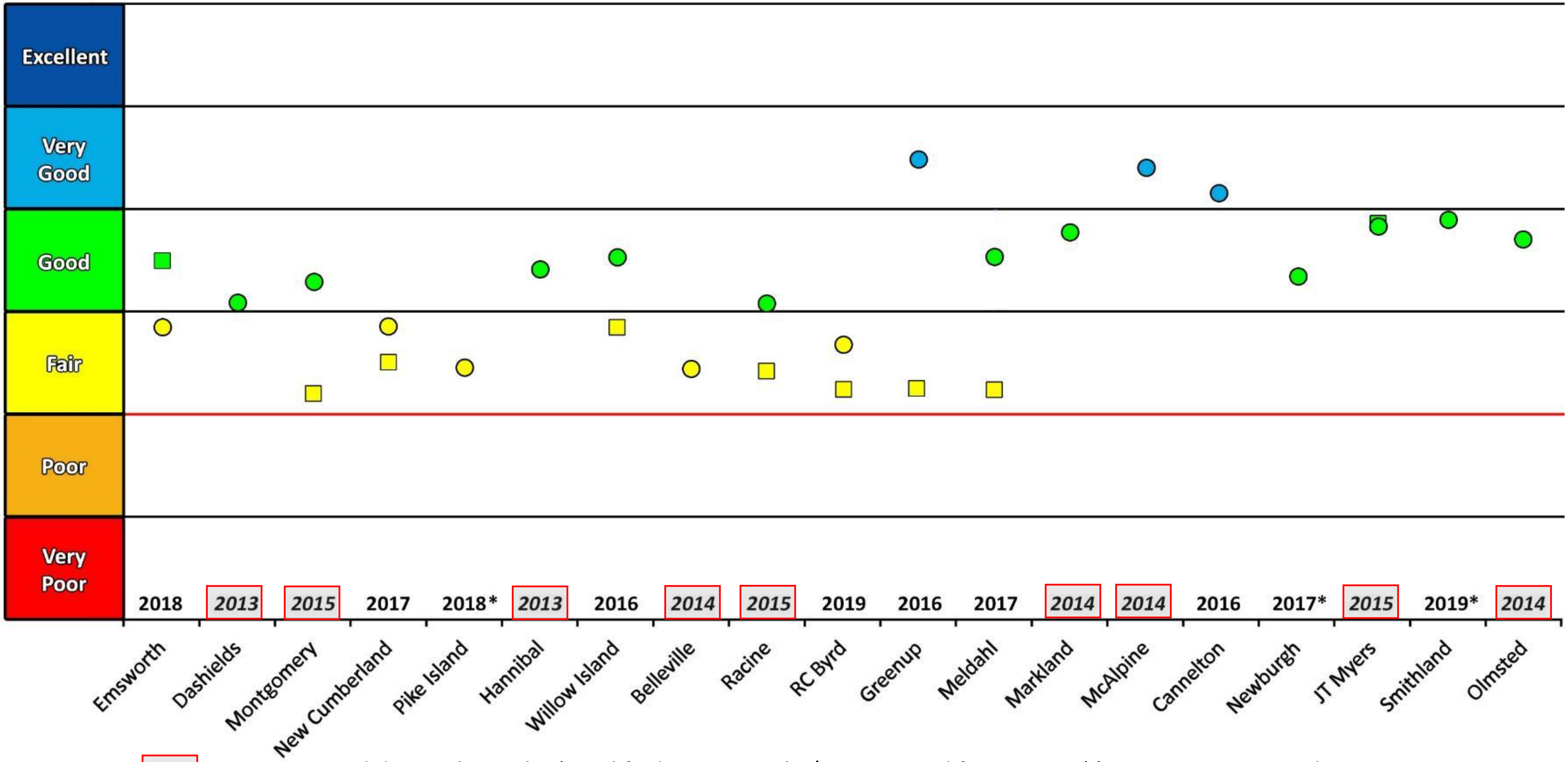
January 2016 – December 2020

River Mile	Site Name	Criteria (ug/L)	Max Result (ug/L)	Total Samples	WQC Exceedances	% Exceedances	305b ALU Assessment
54.4	New Cumberland	WV (1500)	2110	28	3	11%	Partially Supporting
84.2	Pike Island	WV (1500)	2240	30	3	10%	Partially Supporting
126.4	Hannibal	WV (1500)	2330	30	3	10%	Partially Supporting
161.8	Willow Island	WV (1500)	3480	30	6	20%	Partially Supporting
203.9	Belleville	WV (1500)	4410	28	6	21%	Partially Supporting
279.2	R.C. Byrd	WV (1500)	11200	30	9	30%	Not Supporting
341	Greenup	KY (3500)	5930	29	2	7%	Fully Supporting
436.2	Meldahl	KY (3500)	4860	29	3	10%	Partially Supporting
531.5	Markland	KY (3500)	5290	30	3	10%	Partially Supporting
606.8	McAlpine	KY (1000)	4870	28	17	61%	Not Supporting
720.7	Cannelton	KY (3500)	11400	30	4	13%	Partially Supporting
776	Newburgh	KY (1000)	4890	30	19	63%	Not Supporting
846	J.T. Myers	KY (1000)	9720	28	20	71%	Not Supporting
918.5	Smithland	KY (1000)	6140	28	17	61%	Not Supporting
938.9	L&D 52	KY (3500)	11200	18	4	22%	Partially Supporting
964.6	Olmsted	KY (3500)	2870	11	0	0%	Fully Supporting

2016 - 2020 Biological Data

○ = Fish Condition

□ = Macro Condition**



= Not surveyed during this cycle, *Qualified macro results/not assessed for macros, **Macros not assessed prior to 2015

Aquatic Life Use Assessment

- “Weight-of-Evidence Approach” relies on biological assessments including fish and macroinvertebrate indices
- Aquatic life criteria exceeded for:
  - Total iron (states’ criteria)
  - Mercury
- Biotic Indices indicate full support river-wide.

Contact Recreation Use Assessment

- Vast majority of the Contact Rec Assessment uses historical data from longitudinal survey
  - 2003-2008, *305(b) workgroup supports updating these data as soon as practicable*
- The six largest CSO communities along the Ohio R. are sampled from April-October each year
  - assess based on monthly geometric means
- ORSANCO's criteria of 130 colonies/100mL is less stringent than some states, most stringent state criterion is applied

State	River Mile	Criterion used to Assess
PA	0 - 40.2	EC GM 130 CFU/100mL
OH	40.2 - 491.3	EC GM 126 CFU/100mL
WV	40.2 - 317.1	EC GM 130 CFU/100mL
KY	317.1 - 981.0	EC GM 130 CFU/100mL
IN	491.3 - 848.0	EC GM 126 CFU/100mL
IL	848.0 - 981.0	EC GM 130 CFU/100mL

Contact Rec. Use Assessment Methodology

Fully Supporting

- Water - ≤10% criteria exceedance

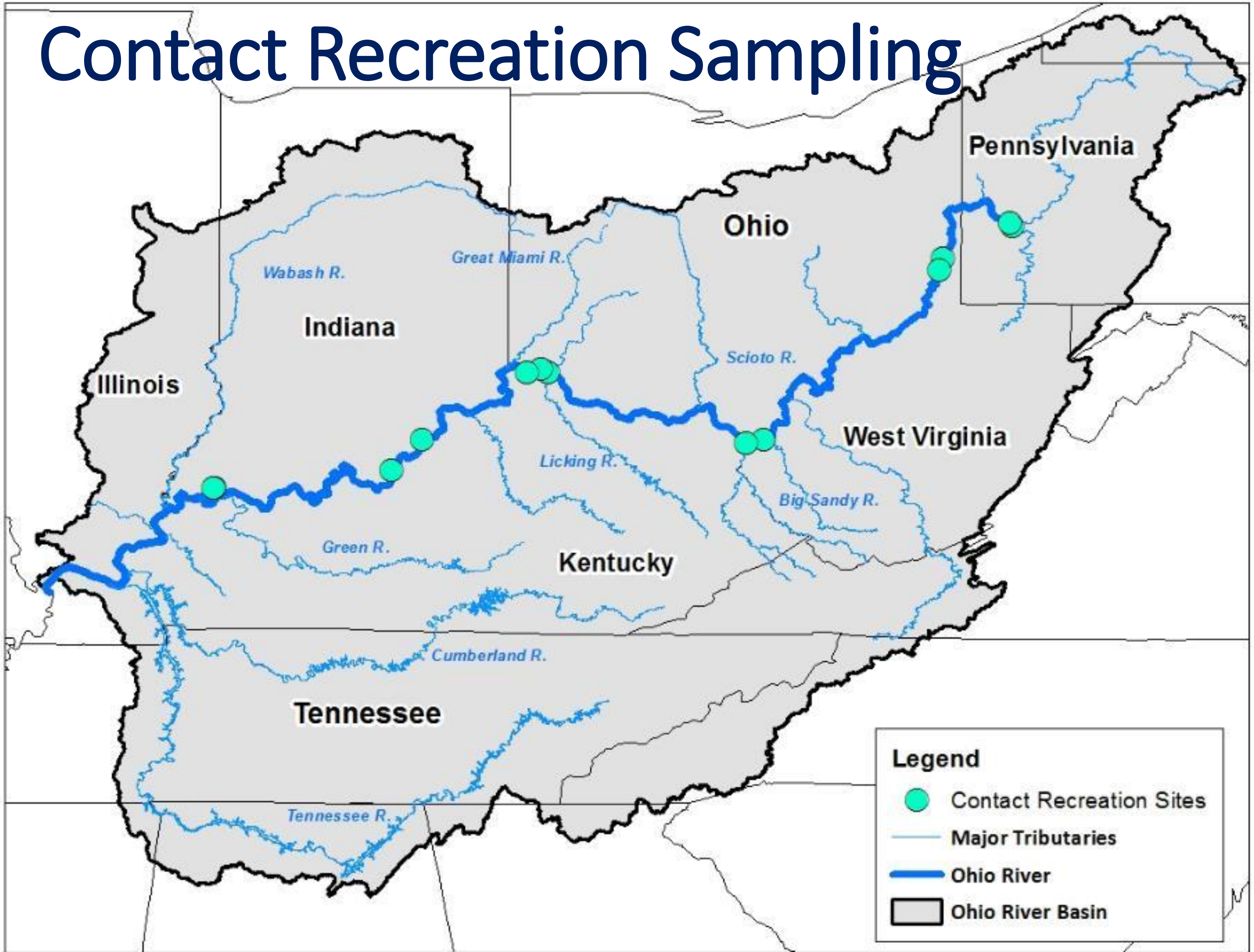
Partially Supporting - Impaired

- Water - >10% and ≤25% criteria exceedance

Not Supporting - Impaired

- Water - >25% criteria exceedance

Contact Recreation Sampling



Contact Recreation Use Assessment - Changes

Site	Assessment 2020 (2014-2018)	Assessment 2022 (2016-2020)	River Mile*
86.8	Not Supporting	Partial Support	85.6-86.8 = 1.2 miles
477.5	Partial Support	Not Supporting	475.1- 477.6 = 2.5 miles
791.5	Partial Support	Not Supporting	789.3-792.1 = 2.8 miles

*overall, impaired river miles did not change between 2020 and 2022 assessments

Public Water Supply Use Assessment Methodology

<u>Fully Supporting</u>

- Conventional - <10% criteria exceedance for any one conventional pollutant
- **Toxic - No exceedances or 1 exceedance**
- Survey/USEPA DB - and there are no finished water MCL violations caused by Ohio River water quality

<u>Partially Supporting - Impaired</u>

- Conventional - >10% and <25% criteria exceedance for any one pollutant (toxic or conventional), and there was a corresponding finished water MCL violation caused by Ohio River water quality, OR
- **Toxic - >1 exceedance, but ≤10% of samples, OR**
- Survey - Frequent intake closures due to elevated levels of pollutants are necessary to protect water supplies and comply with provisions of the Safe Drinking Water Act (meet MCLs), OR
- Survey - Frequent "non-routine" additional treatment was necessary to protect water supplies and comply with provisions of the Safe Drinking Water Act (meet MCLs)

<u>Not Supporting - Impaired</u>

- Conventional - >25% criteria exceedance for any one pollutant, AND
- **Toxic - >1 exceedance AND >10% of samples, AND**
- Survey - There was a corresponding finished water MCL violation caused by Ohio River water quality

PWS Results 2016-2020

Facility	Contaminant*	Days with Violations	305(b) PWS Assessment
Russel Water Works	Total Haloacetic Acid (HAA%)	5%	Supporting
Midland	TTHM	30%	Not Supporting
Steubenville Water	TTHM	5%	Supporting
Weirton Water Works	TTHM	25%	Not Supporting

*All Human Health related MCL violations in SDWIS for Ohio River Drinking utilities were byproducts of drinking water disinfection

- Not source water related issues

PWS Drinking Water Utility Survey

- Solicited response from 32 utilities that have Ohio River source water

From January 2016 – December 2020…

1) Did you close your intake as a result of Ohio River water quality conditions in order to avoid MCL violations?
2) Did your plant have any MCL violations caused in whole or part by Ohio River water quality conditions?
3) Was “nonroutine” or extraordinary treatment necessary to comply with SDWA MCLs as a result of Ohio River water quality conditions?

- As of 1/31/22 – Six of 32 have responded
  - Only one “Yes” response concerning precautionary shutdown due to upstream fire – fear of PFAS and other related compounds

Public Water Supply Use Assessment

- Entire river assessed as fully supporting public water supply use

- No Human health criteria violations in > 10% of samples relative to source water conditions.
    - i.e. Attributed to treatment issues, not Ohio River water quality.

- No chronic issues associated with source water indicated in survey responses

Fish Consumption Use Assessment Methodology

Fully Supporting

- **Water** - **No exceedances or 1 exceedance** (PCBs and Hg)

  or

- Fish Tissue - The average consumption-weighted MeHg conc. for a pool ≤ 0.3 ppm

Partially Supporting - Impaired

- **Water** - **>1 exceedance, but ≤10% of samples**(PCBs and Hg)

Not Supporting - Impaired

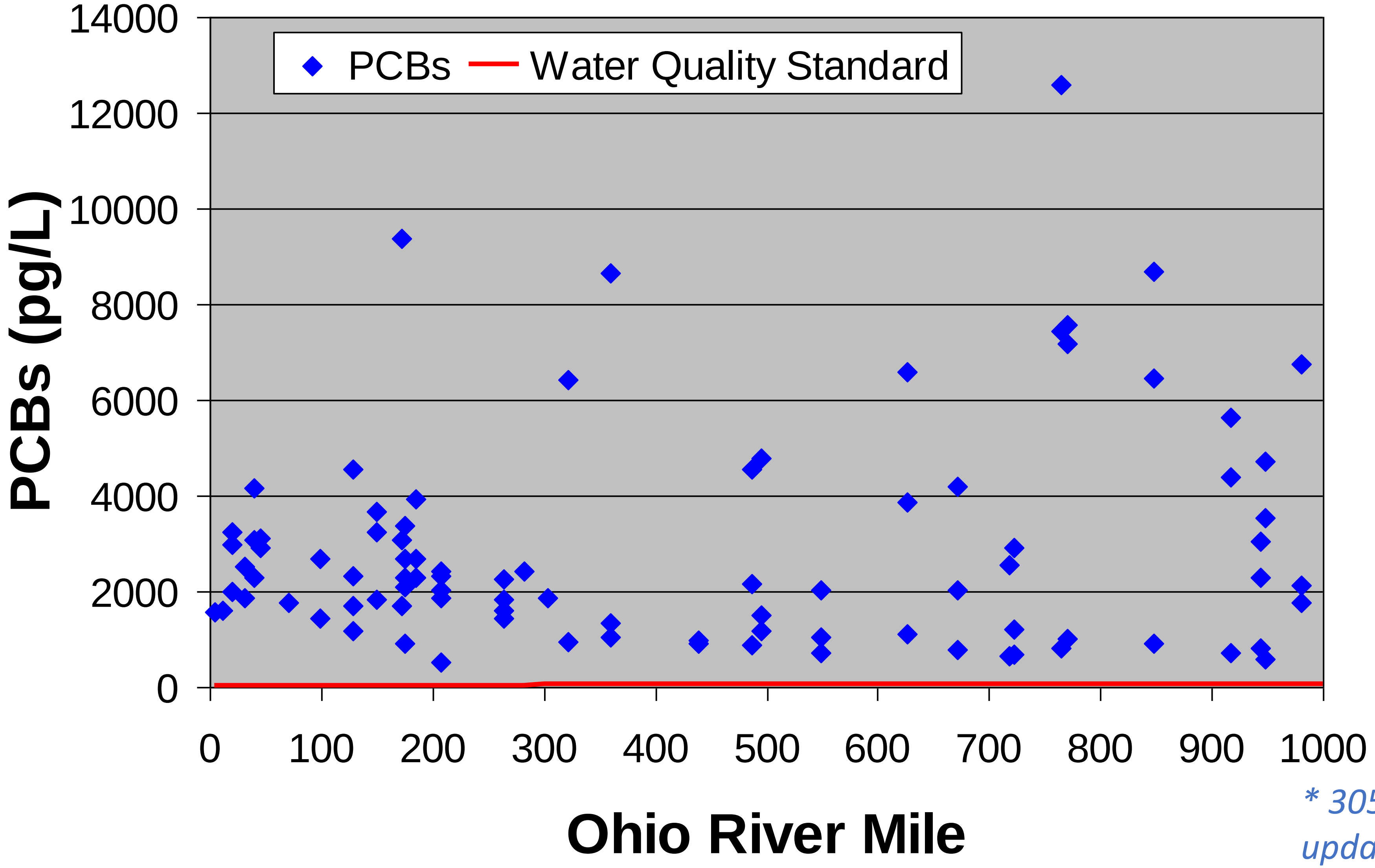
- **Water** - **>1 exceedance AND >10% of samples**(PCBs and Hg)

  or

- Fish Tissue - The average consumption-weighted MeHg conc. for a pool > 0.3 ppm

PCB Levels in the Ohio River

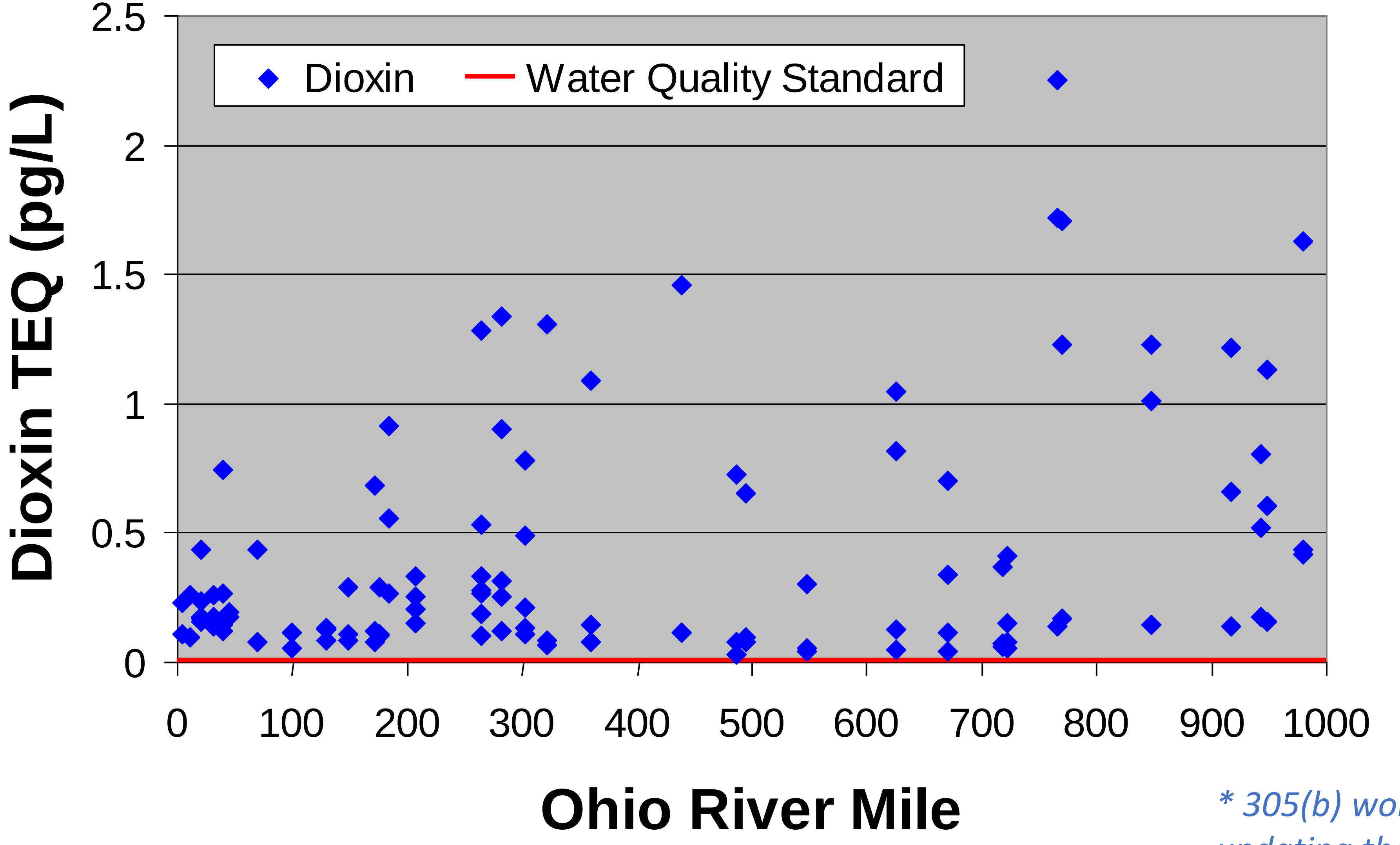
1997-2004



** 305(b) workgroup supports updating these data as soon as practicable*

Dioxin Levels in the Ohio River

1997 - 2004



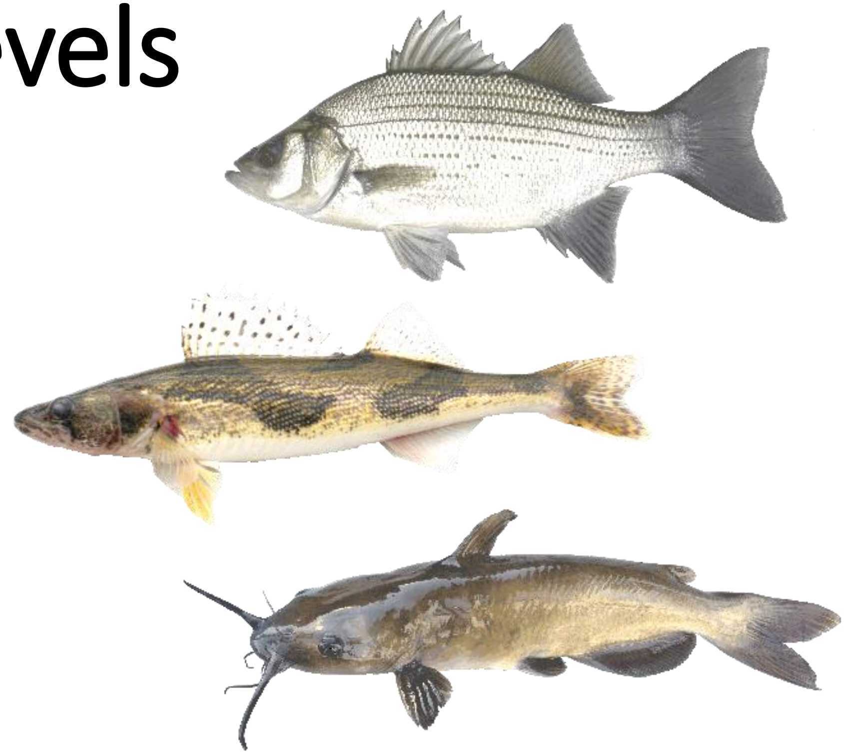
** 305(b) workgroup supports updating these data as soon as practicable*

Bimonthly/Metals Criteria Exceedances– Total Hg (12 ng/L)

January 2016 – December 2020

River Mile	Site Name	Criteria (ng/L)	Max Result (ng/L)	Total Samples	WQC Exceedances	% Exceedances	305b ALU Assessment
54.4	New Cumberland	12	7.8	28	0	0%	Fully Supporting
84.2	Pike Island	12	8.8	30	0	0%	Fully Supporting
126.4	Hannibal	12	8.2	30	0	0%	Fully Supporting
161.8	Willow Island	12	14.8	30	1	3%	Partially Supporting
203.9	Belleville	12	11.6	28	0	0%	Fully Supporting
279.2	R.C. Byrd	12	35.7	30	2	7%	Partially Supporting
341	Greenup	12	22.6	29	3	10%	Not Supporting
436.2	Meldahl	12	13.9	29	1	3%	Partially Supporting
531.5	Markland	12	10.1	30	0	0%	Fully Supporting
606.8	McAlpine	12	13.7	28	1	4%	Partially Supporting
720.7	Cannelton	12	19	30	3	10%	Not Supporting
776	Newburgh	12	23.1	30	3	10%	Not Supporting
846	J.T. Myers	12	33.3	28	5	18%	Not Supporting
918.5	Smithland	12	19	28	3	11%	Not Supporting
938.9	L&D 52	12	33.1	18	3	17%	Not Supporting
964.6	Olmsted	12	12.6	11	1	9%	Partially Supporting

Averaging Data Across Trophic Levels



$$C_{avg} = \frac{8.0 * C_3 + 5.7 * C_4}{(8.0 + 5.7)}$$

Where:

C_3 = average mercury concentration for trophic level 3
C_4 = average mercury concentration for trophic level 4

**Calculation is based on apportioning the 13.7 grams/day national default consumption rate for freshwater fish by trophic level (TL 3 & TL 4)

5.7 grams/day of TL 4 fish
8.0 grams/day of TL 3 fish

Guidance for Implementing the January 2001 Methylmercury Water Quality Criterion – US EPA

Pool	# Samples	Max. MeHg Conc. (ppm)	N > 0.30 ppm	MeHg Consumption-Weighted Avg. Conc. (ppm) 2014-2018	MeHg Consumption-Weighted Avg. Conc. (ppm) 2016-2020*
Emsworth	9	0.223	0	0.085	**0.083**
Dashields	6	0.306	1	0.179	**0.109**
Montgomery	5	0.292	0	0.072	**0.192**
New Cumberland	6	0.299	0	0.136	**0.119**
Pike Island	8	0.259	0	0.009	**0.165**
Hannibal	7	0.226	0	0.052	**0.114**
Willow Island	10	0.308	1	0.158	**0.149**
Belleville	4	0.338	1	0.141	**0.223**
Racine	11	0.345	2	0.150	**0.141**
RC Byrd	9	0.261	0	0.179	**0.118**
Greenup	9	0.436	1	0.176	**0.190**
Meldahl	13	0.325	1	0.031	**0.113**
Markland	13	0.699	5	0.193	**0.166**
McAlpine	9	0.233	0	0.136	**0.111**
Cannelton	5	0.377	2	0.230	**0.253**
Newburgh	11	0.321	1	0.119	**0.136**
JT Myers	10	0.612	5	0.180	**0.206**
Smithland	14	0.595	2	0.208	**0.151**
Olmsted	6	0.399	1	0.202	**0.236**
Open Water	3	0.141	0	0.100	**0.070**

*No Pool Avg >0.30 ppm,   **No significant difference between cycles – Wilcoxon Matched Pairs Test, $p>0.422$, $\alpha=0.05$

Fish Consumption Use Assessment

- The entire Ohio River is designated as Partially Supporting for PCBs and Dioxin.
- ORSANCO directed by TEC to use US EPA’s approach for determining impairment based on methylmercury fish tissue data.
- Fish Tissue data indicate no impairment
- Using “WOE Approach”, entire river Full Support for fish consumption based on methylmercury.

2016-2020 Assessment Summary

		Number Miles Use is Impaired				
	States	Aquatic Life	Contact Recreation	Public Water Supply	Fish Consumption for PCBs & Dioxin	Fish Consumption for Mercury
PA	0.0-40.2	0	40.2	0	40.2	0
OH-WV	40.2-317.1	0	245.1	0	276.9	0
OH-KY	317.1-491.3	0	67.1	0	174.2	0
IN-KY	491.3-848.0	0	243.6	0	356.7	0
IL-KY	848.0-981.0	0	40.6	0	133.0	0
TOTAL	981.0	0	631.6	0	981.0	0

305b Workgroup Recommendations (Action Needed)

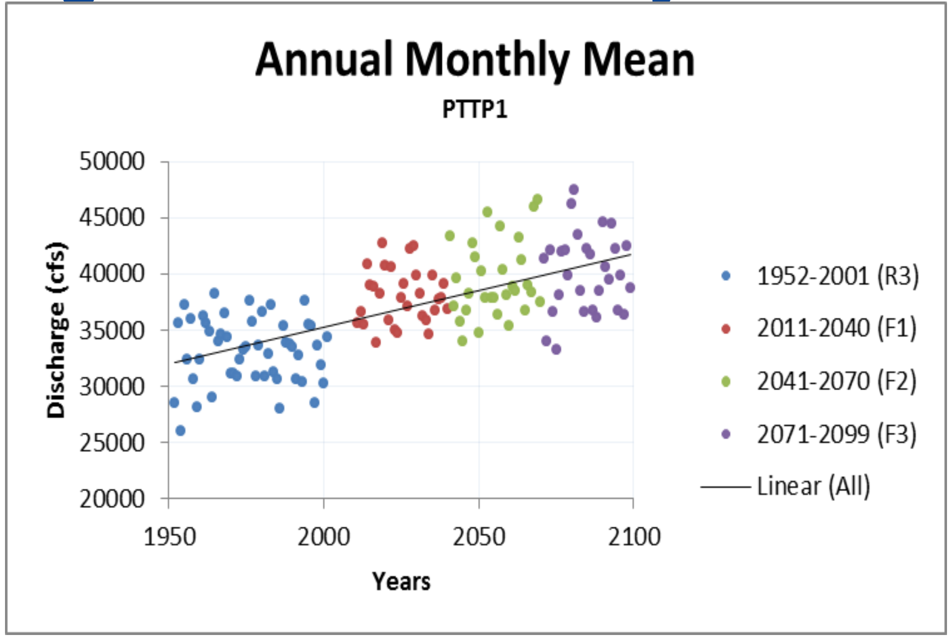
1. Update Longitudinal Bacteria (*E. coli*) Dataset to extent practicable
   - Establish a workgroup to assist in the development of a monitoring design and propose to TEC
2. Update the aqueous PCB and Dioxin datasets (1997-2004)
   - Less priority than Bacteria Monitoring
3. Postpone development of a HAB assessment methodology
   - ORSANCO possesses limited algal bloom data
     - 4 monitoring stations (D.O, pH, conductivity, temperature, chlorophyll, phycocyanin)
     - Data used along with USEPA HAB Risk Tool in the application of the ORSANCO HAB Plan
   - Most mainstem states are not in development of HAB assessment methodologies
   - <u>Recommend</u>: Continue to detail ORSANCO's HAB Management Plan and any HAB occurrence in future 305b reports
4. Accept 2022 use assessments, continue 305(b) Report preparation

Agenda Item 4:

National Weather Service Ohio River Forecast Center Climate Change Analysis for the Ohio River Basin: An Update on the Ohio River Basin Climate Change Hydrology Project 2022.

Jim Noel, NOAA, National Weather Service Ohio River Forecast Center

NATIONAL WEATHER SERVICE
Building a Weather-Ready Nation



Jim Noel
Service Coordination Hydrologist
NOAA/NWS/OHRFC

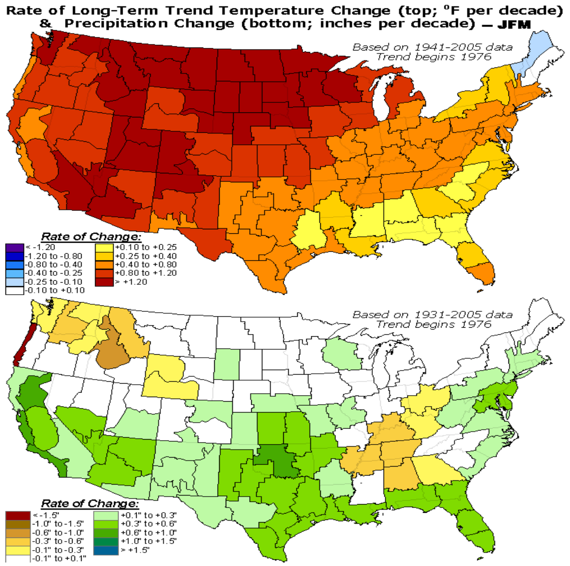
Feb. 8, 2022

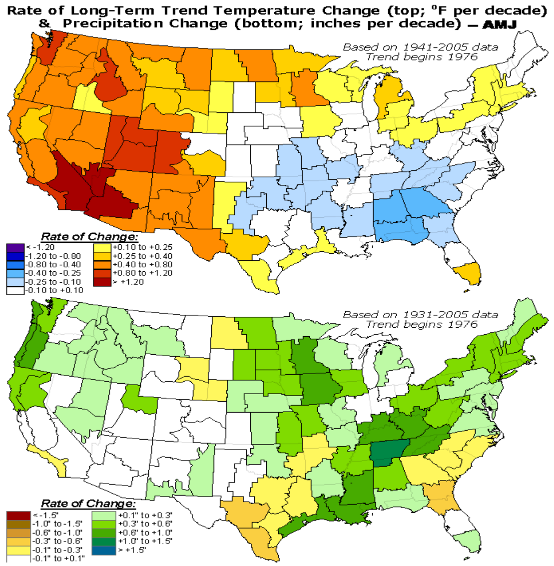
Ohio River Basin Climate Change (ORBCC)

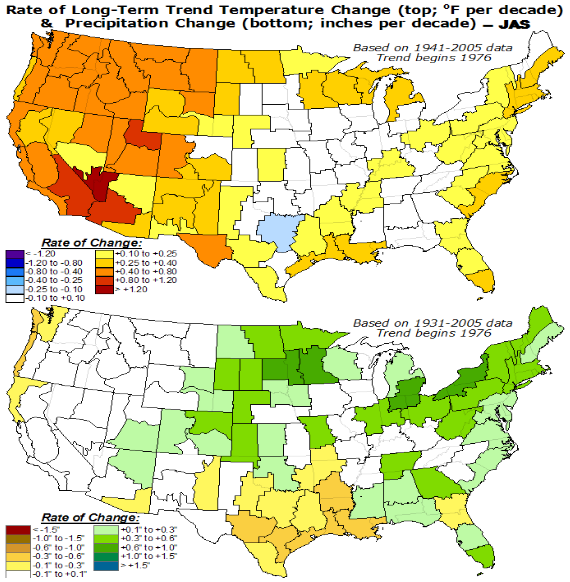
https://www.lrh.usace.army.mil/Missions/Civil-Works/ORBA/Climate-Change-Data/

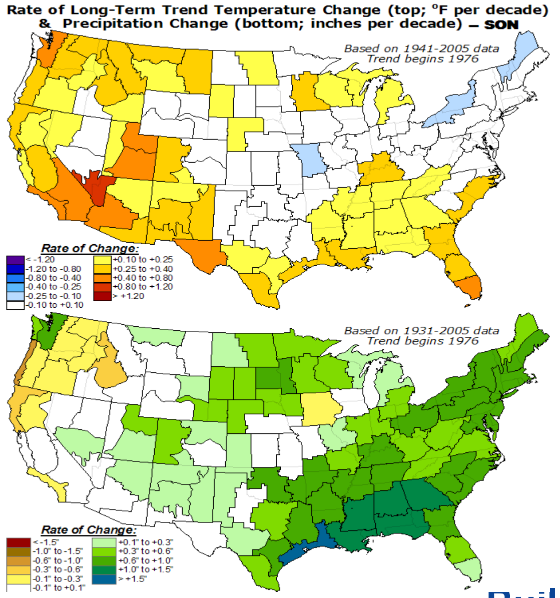
https://www.lrh.usace.army.mil/Portals/38/docs/orba/USACE%20Ohio%20River%20Basin%20CC%20Report_MAY%202017.pdf

Observed Trend Changes Since 1976

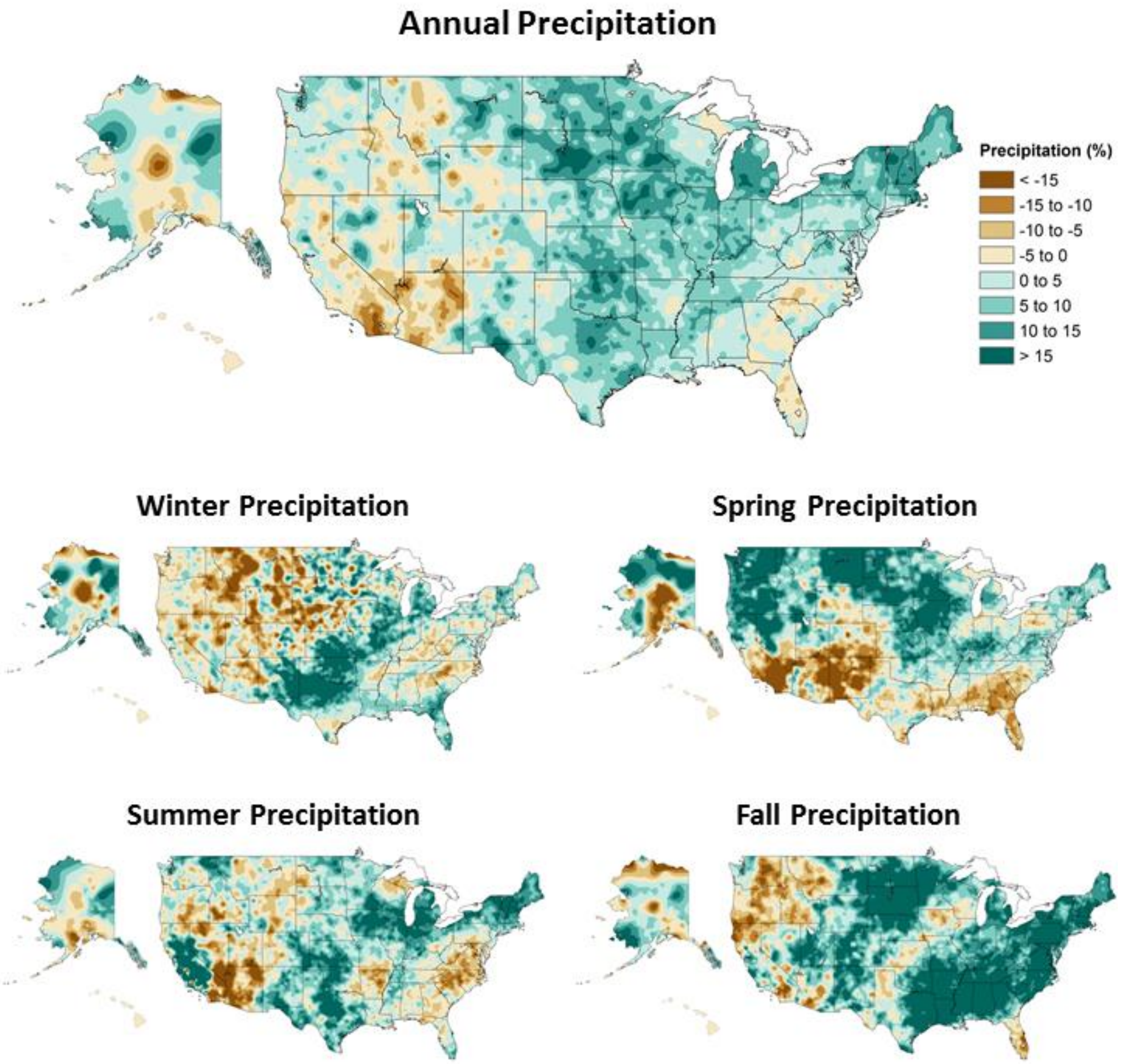








Hi-resolution Observed Trend Changes



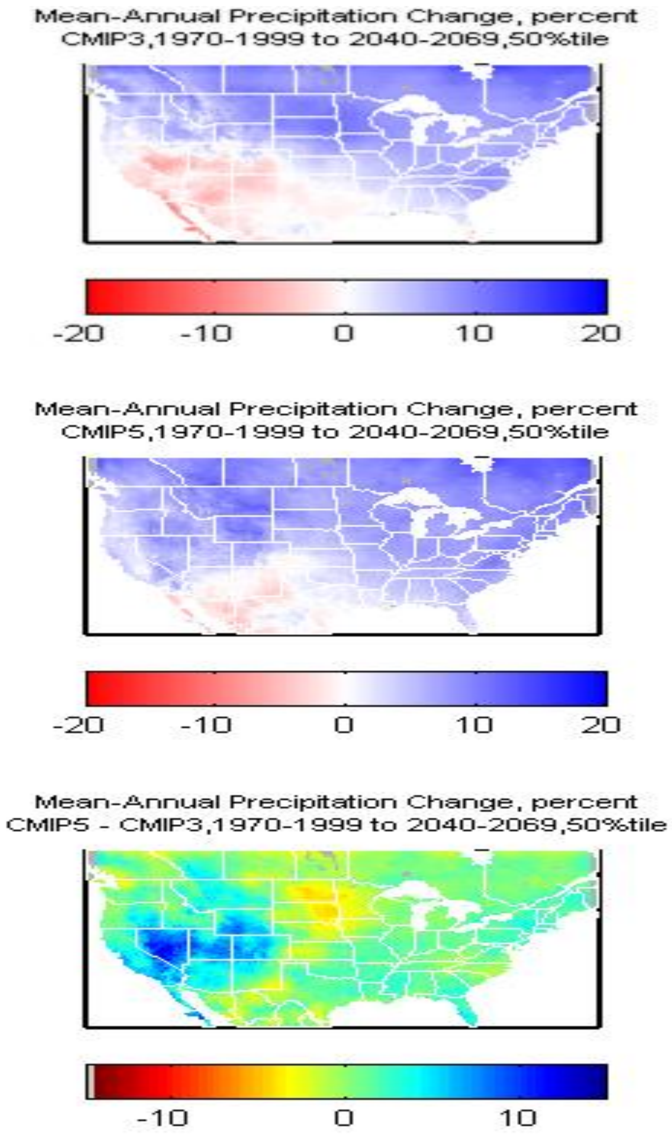
IPCC CMIP Review

- IPCC = Intergovernmental Panel on Climate Change
- CMIP = Coupled Model Intercomparison Project
- CMIP version 3 used for the Ohio River Basin Climate Change (ORBCC) Project

IPCC CMIPS Review

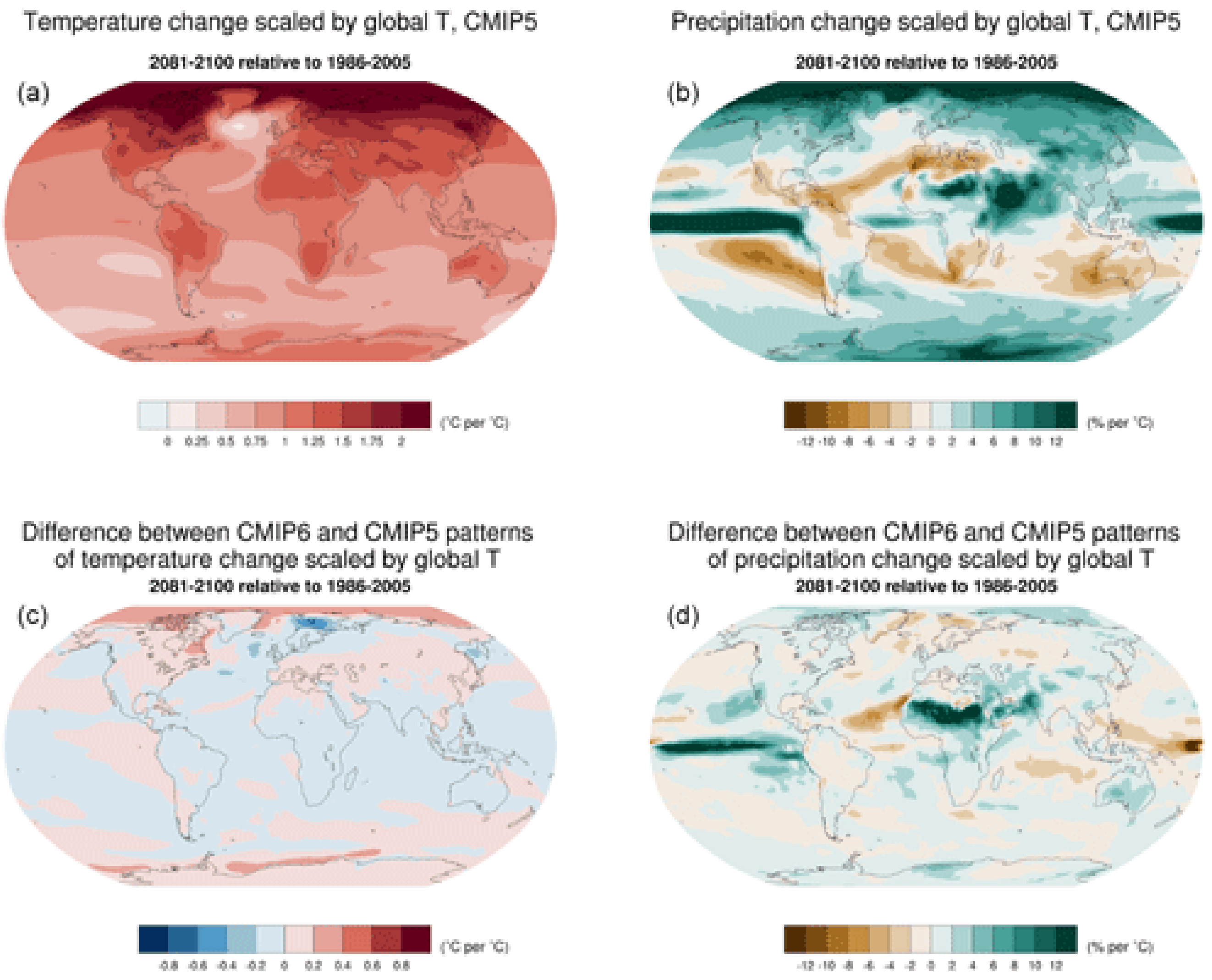
Does CMIP3 still work for the Ohio Valley?

IPCC CMIP 5 versus CMIP3



Minimal Differences in Ohio Valley between CMIP3 and CMIP5

IPCC CMIP6 versus CMIP5



Minimal Differences in Ohio Valley between CMIP5 and CMIP6

IPCC CMIPS Review

Does CMIP3 still work for the Ohio Valley?

YES – Little reason to re-run hydrology in Ohio Valley with CMIP6

Results still valid!

Overview - IWR

- USACE Institute of Water Resources (IWR) used over 75 Global Circulation Models (GCMs) for temperatures and rainfall
- This data was vetted with USACE, NOAA and USGS.
- Clustered GCM output for time periods of 2011-2040, 2041-2070 and 2071-2099
- Used data output from 9 ensembles most representative of those clusters

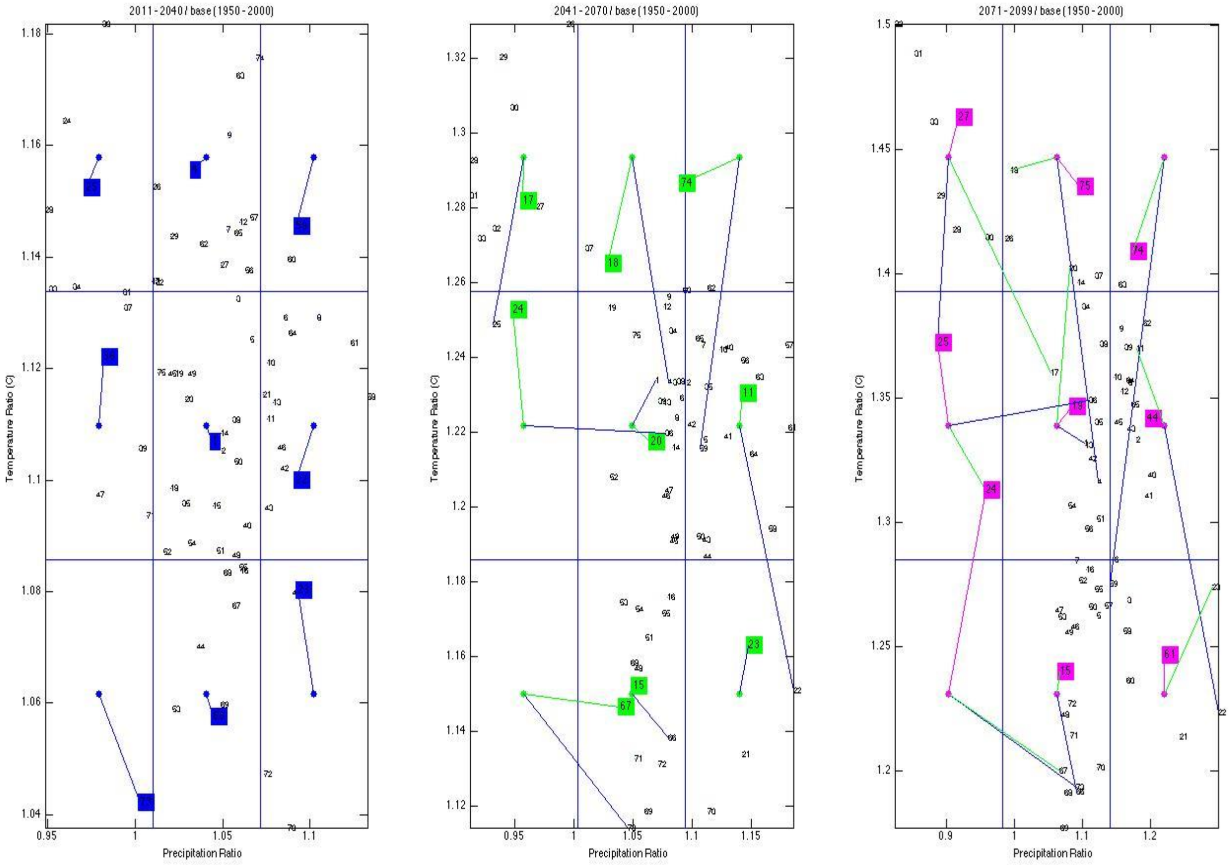
Overview - IWR

- This yielded 9 ensembles for each future period for a total of 27 members covering 2011-2099.

- A retrospective period for each ensemble was run from 1952-2001 as well for a total of 27 retrospective members.

Overview - IWR

- How 9 ensembles were chosen for each future period. Rainfall increase 5%, then another 5% then another 5-10% by the last period.



Overview - OHRFC

- OHRFC used the Sacramento Soil Moisture Accounting Hydrologic Model (SAC-SMA) to generate the output

- OHRFC actually has output streamflow, temperatures, precipitation and snow water equivalent.

- OHRFC ran the hydrologic model and output the bottom end of the tributaries as well as the Ohio River.

Datasets

- SHRP1 (Sharpsburg, PA --- lower Allegheny)
- BDDP1 (Braddock, PA --- lower Monongahela)
- BEAP1 (Beaver Falls, PA --- Beaver)
- MCCO1 (McConnellsville, OH --- Muskingum)
- ATHO1 (Athens, OH --- Muskingum)
- ELZW2 (Elizabeth, WV --- Little Kanawha)
- CRSW2 (Charleston, WV --- Kanawha)
- FLRK2 (Fuller Station, KY --- Sandy)
- PKTO1 (Piketon, OH --- Scioto)
- HAMO1 (Hamilton, OH --- Great Miami)
- FFTK2 (Frankfort, KT --- Kentucky)
- INDI3 (Indianapolis, IN --- White)
- PTRI3 (Petersburg, IN --- White/East Fork of White)
- NHRI3 (New Harmony, IN --- Wabash)
- CALK2 (Calhoun, KY --- Green)
- CARI2 (Carmi, IL --- Little Wabash)
- WTVO1 (Waterville, OH --- Maumee)
- NAST1 (Nashville, TN --- Cumberland)

- PTTP1 (Pittsburgh, PA --- Upper Ohio)
- HNTW2 (Huntington, WV --- Upper Ohio)
- CCNO1 (Cincinnati, OH --- Mid Ohio)
- MLPK2 (McAlpine, KY --- Mid Ohio)
- EVVI3 (Evansville, IN --- Lower Ohio)
- GOLI2 (Golconda, IL --- Lower Ohio)
- COLO1 (Columbus, OH --- Upper Scioto)

Datasets

- F1 = 2011-2040
- F2 = 2041-2070
- F3 = 2071-2099
- R1 = Restrospective models used for 2011-2040 run back in time from 1952-2001.
- R2 = Restrospective models used for 2041-2070 run back in time from 1952-2001.
- R3 = Restrospective models used for 2071-2099 run back in time from 1952-2001.

Retrospective vs. Observed

For Pittsburgh:

Time	March Mean (cfs)	October Mean (cfs)	Annual Mean (cfs)
Historical	55,000	17,000	33,000
Retrospective	50,000	13,000	33,000

Annual is within 0%.

For Cincinnati:

Time	March Mean (cfs)	October Mean (cfs)	Annual Mean (cfs)
Historical	183,000	36,000	104,000
Retrospective	181,000	34,000	106,000

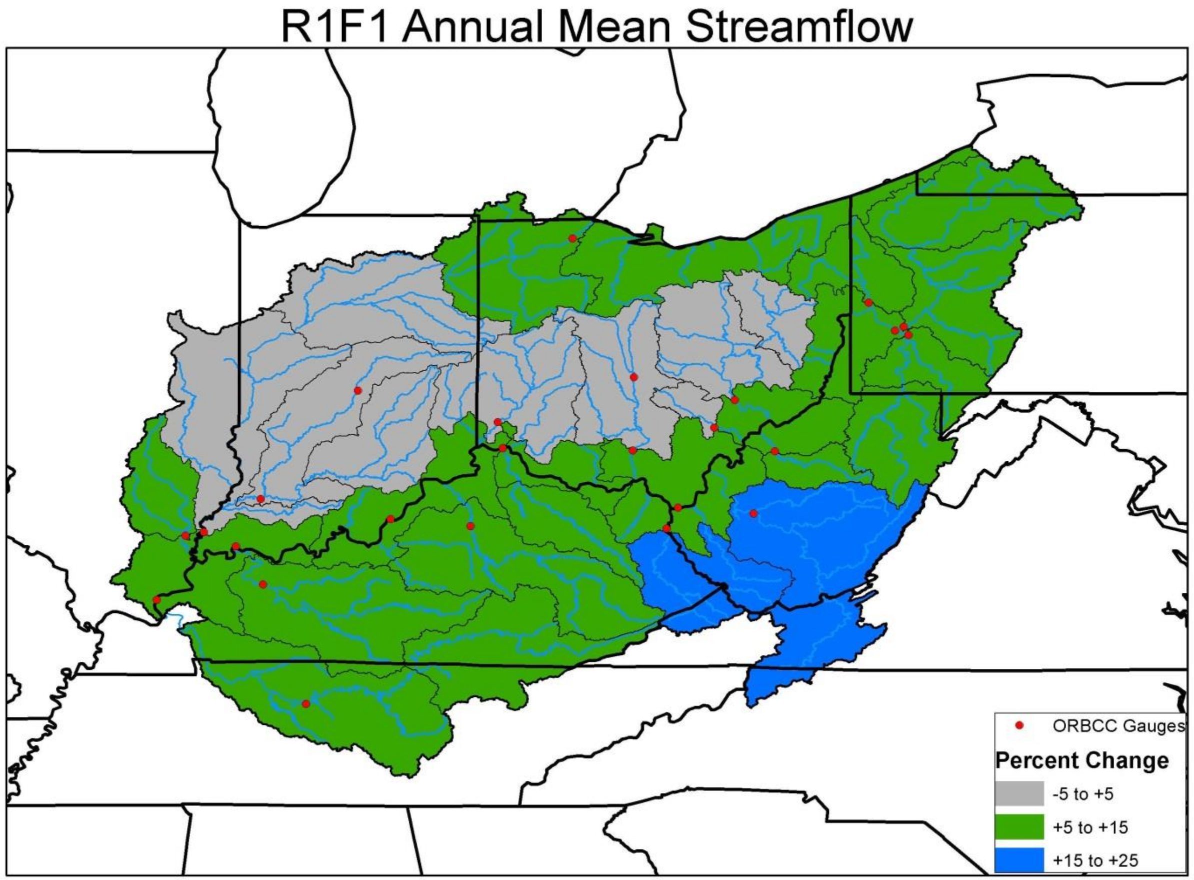
Annual is within 2%.

For Golconda/Smithland:

Time	March Mean (cfs)	October Mean (cfs)	Annual Mean (cfs)
Historical	340,000	75,000	185,000
Retrospective	310,000	53,000	182,000
2011_2040 sim	334,000	65,000	196,000

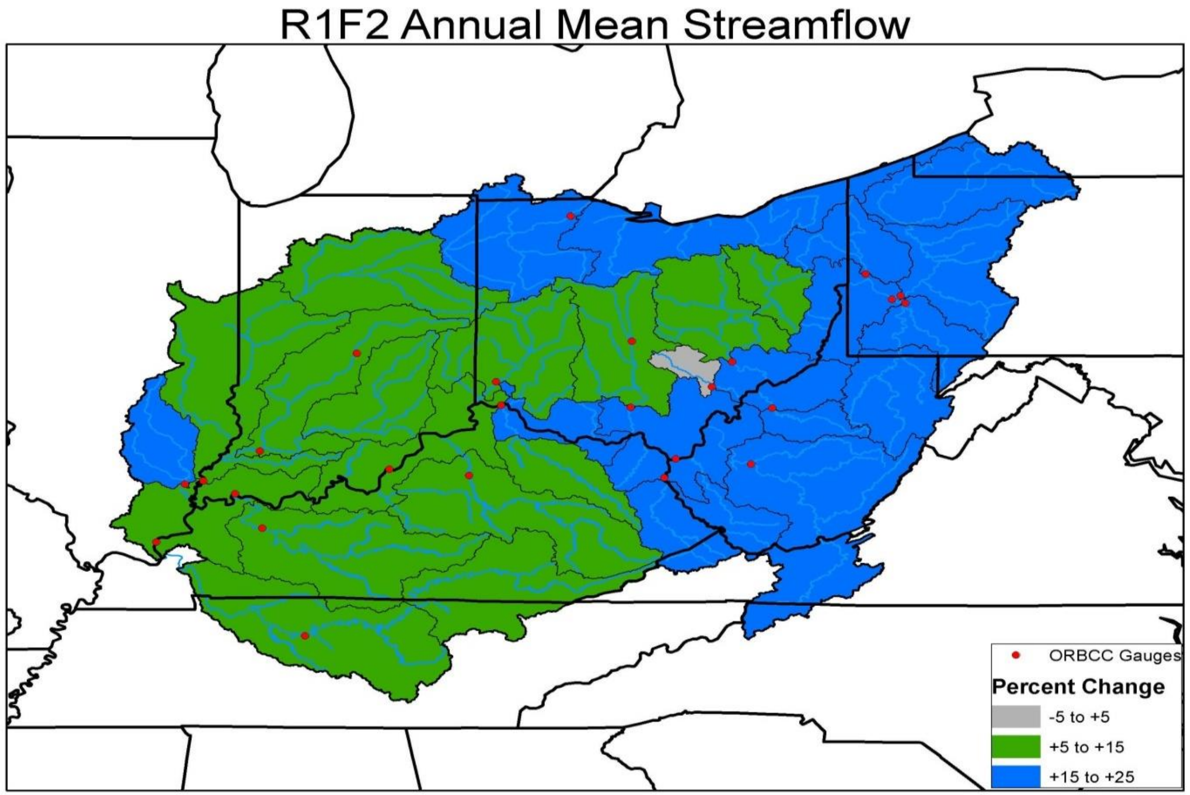
Annual is within 1.7%

2011-2040 Annual % Change Mean



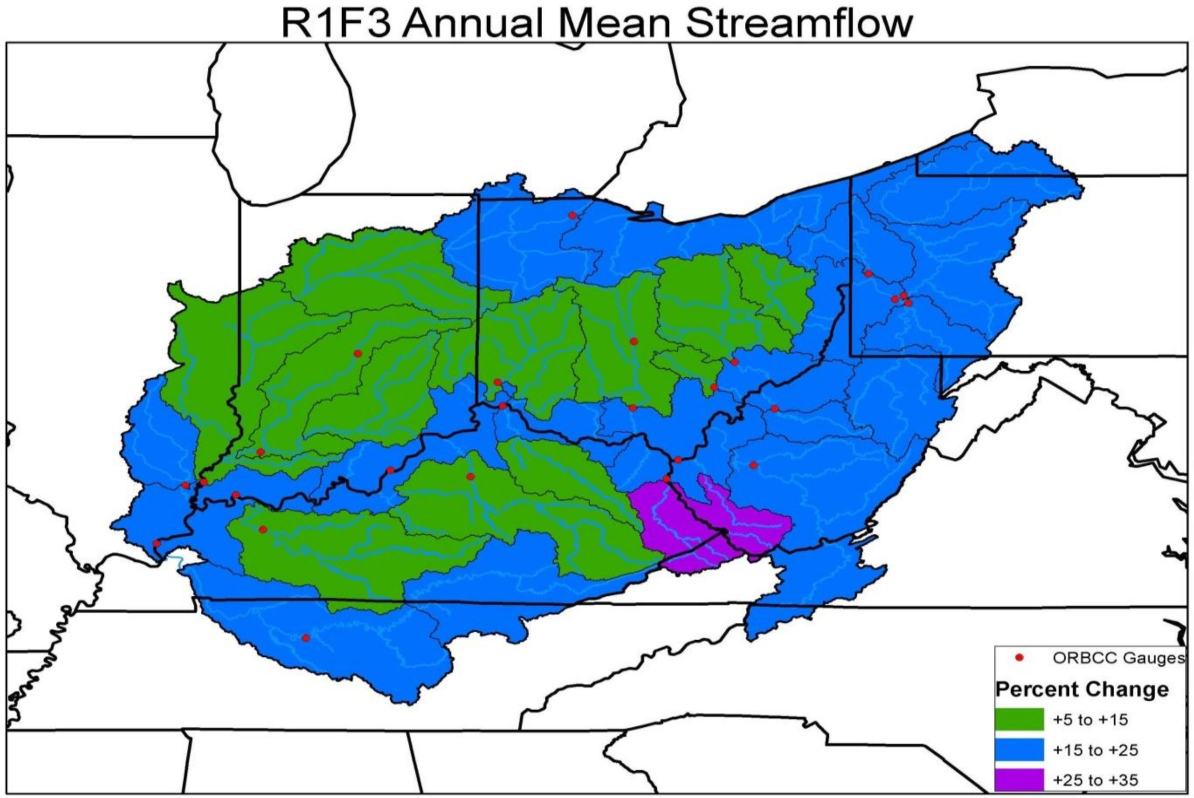
Insignificant changes to slight wetting across most of the basin compared to 1952-2001

2041-2070 Annual % Change Mean



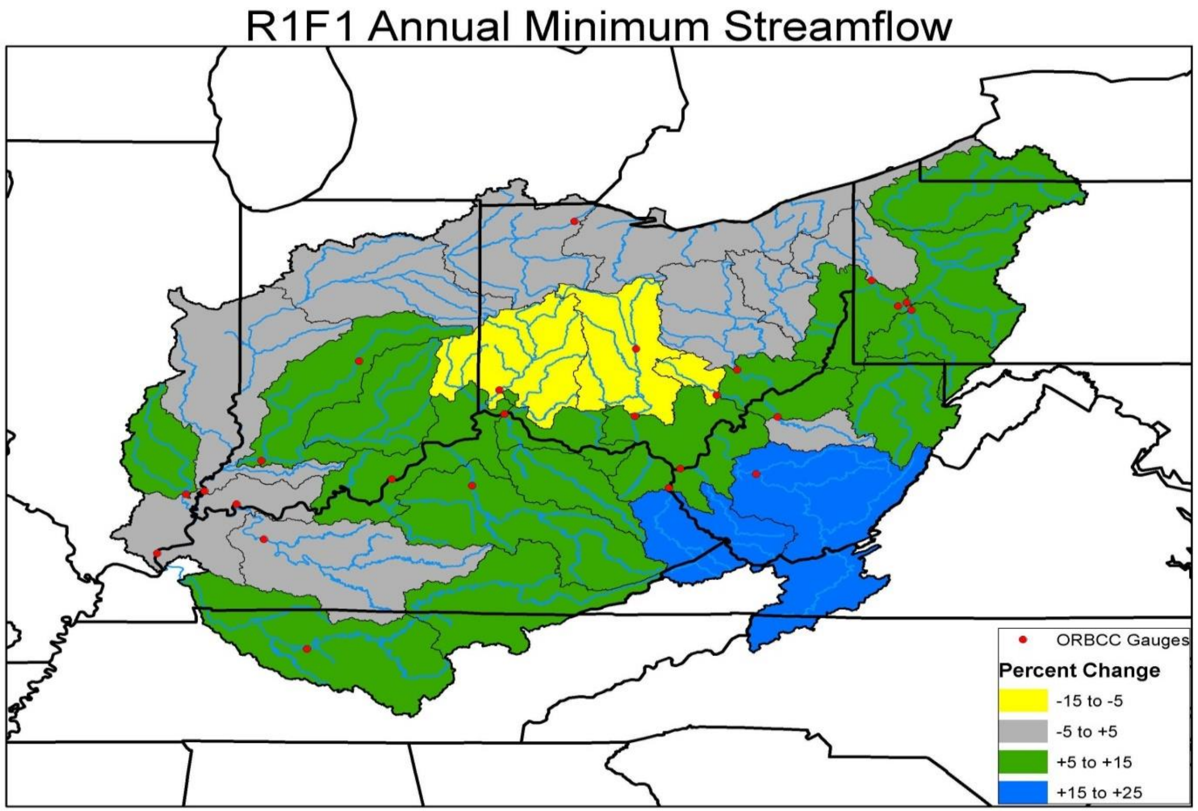
Some wetting across Ohio Valley with biggest increases in eastern basin compared to 1952-2001

2071-2099 Annual % Change Mean



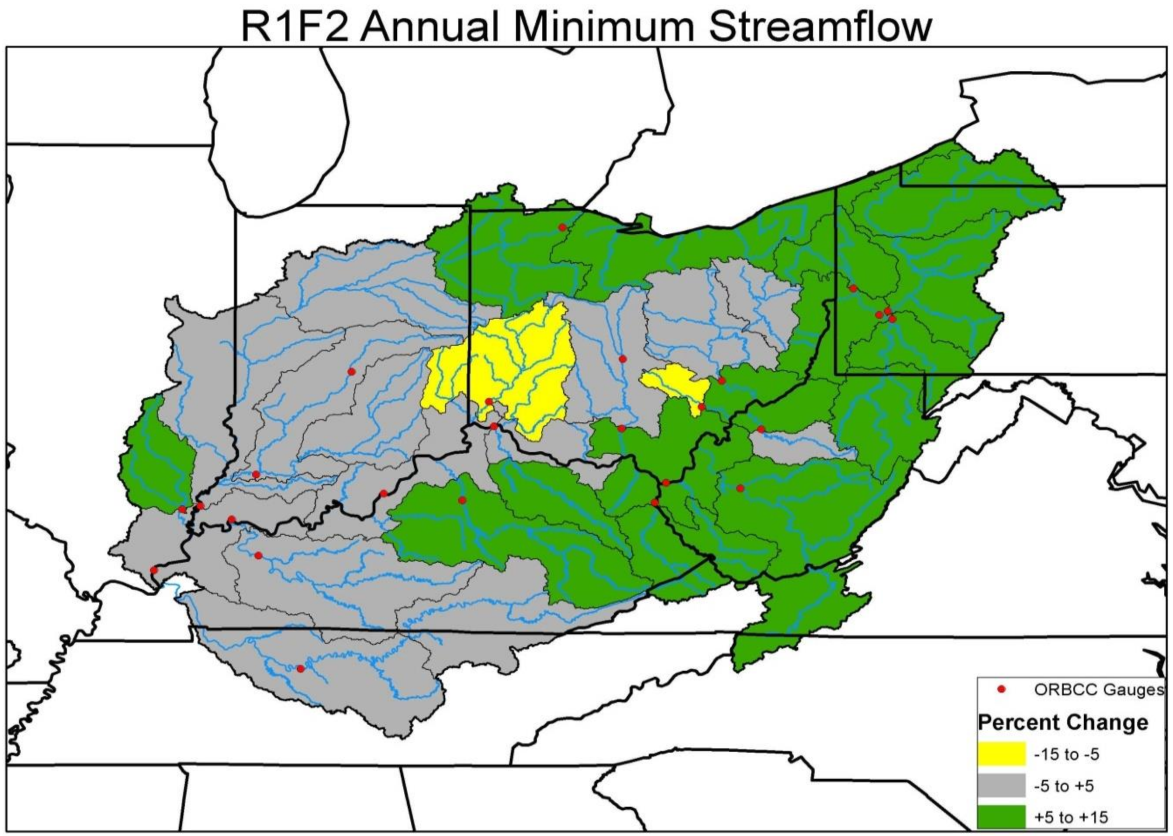
Wetting continues with biggest increases in mean flow in eastern Ohio Valley compared to 1952-2001

2011-2040 Annual % Change Min



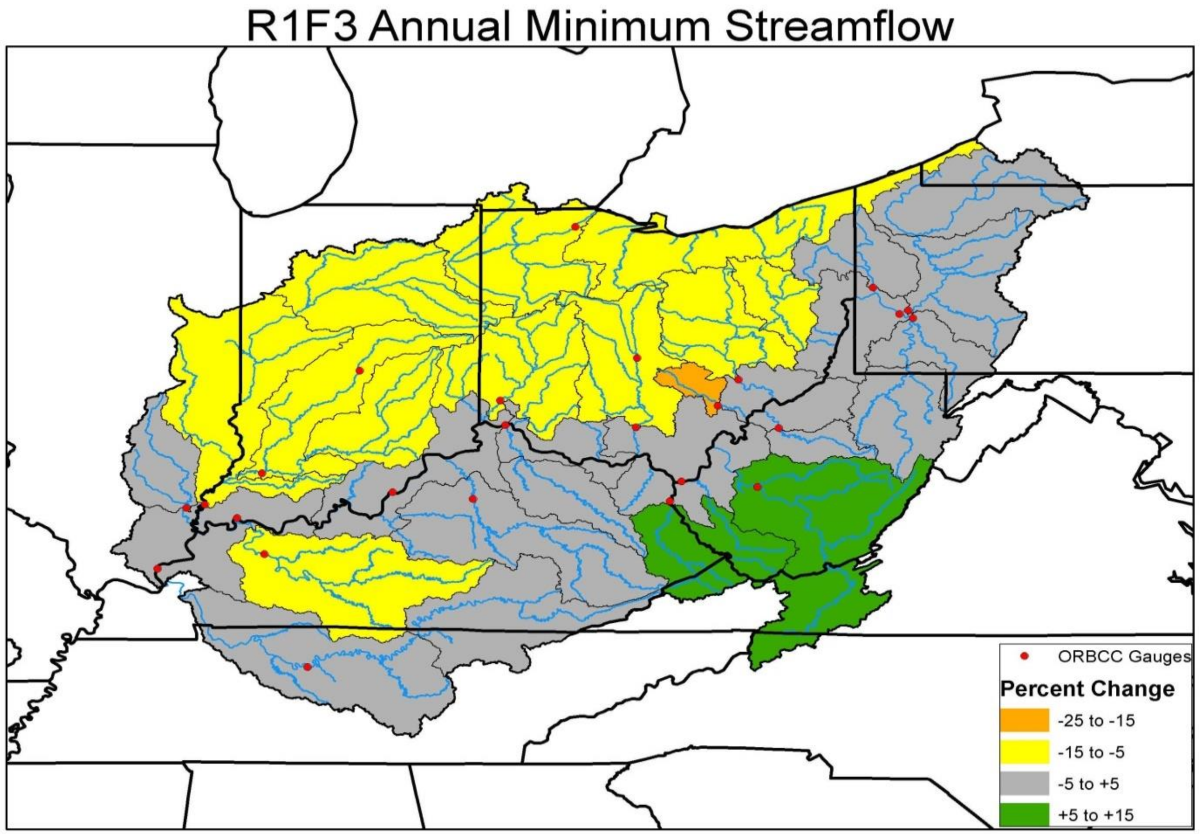
Little change across most of the Ohio Valley compared to 1952-2001

2041-2070 Annual % Change Min



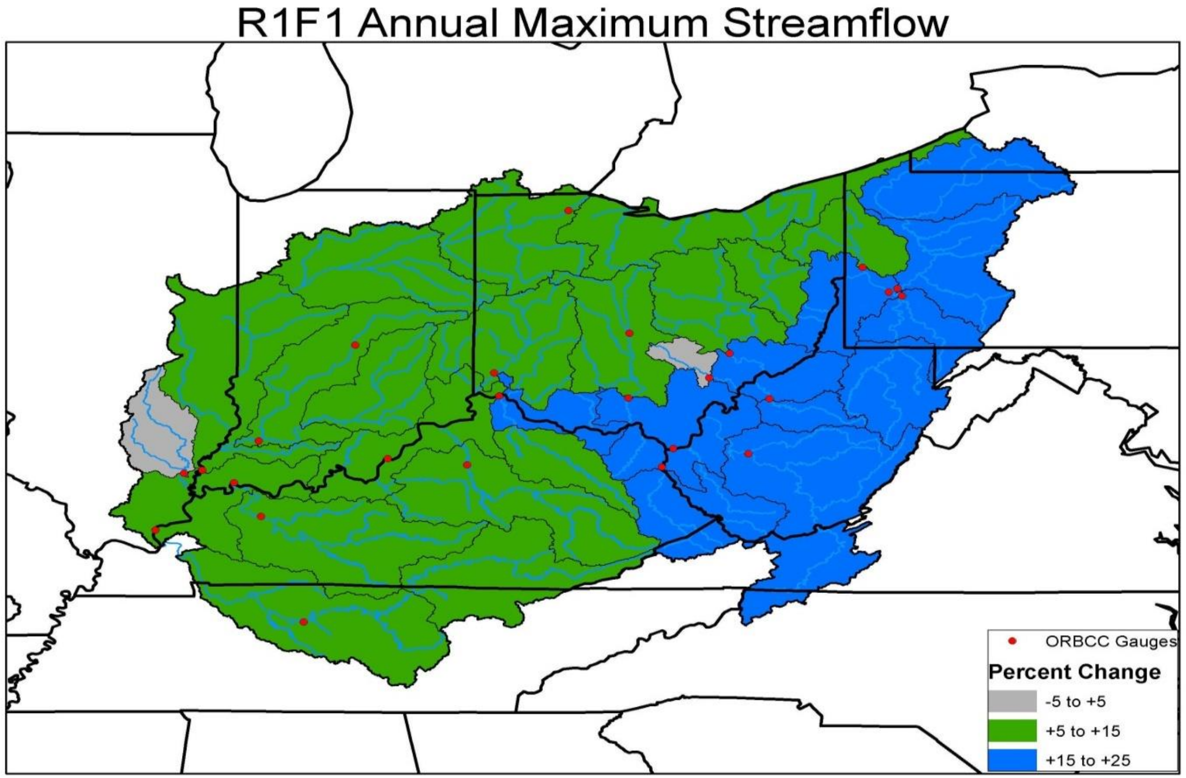
Little change across most of the Ohio Valley compared to 1952-2001

2071-2099 Annual % Change Min



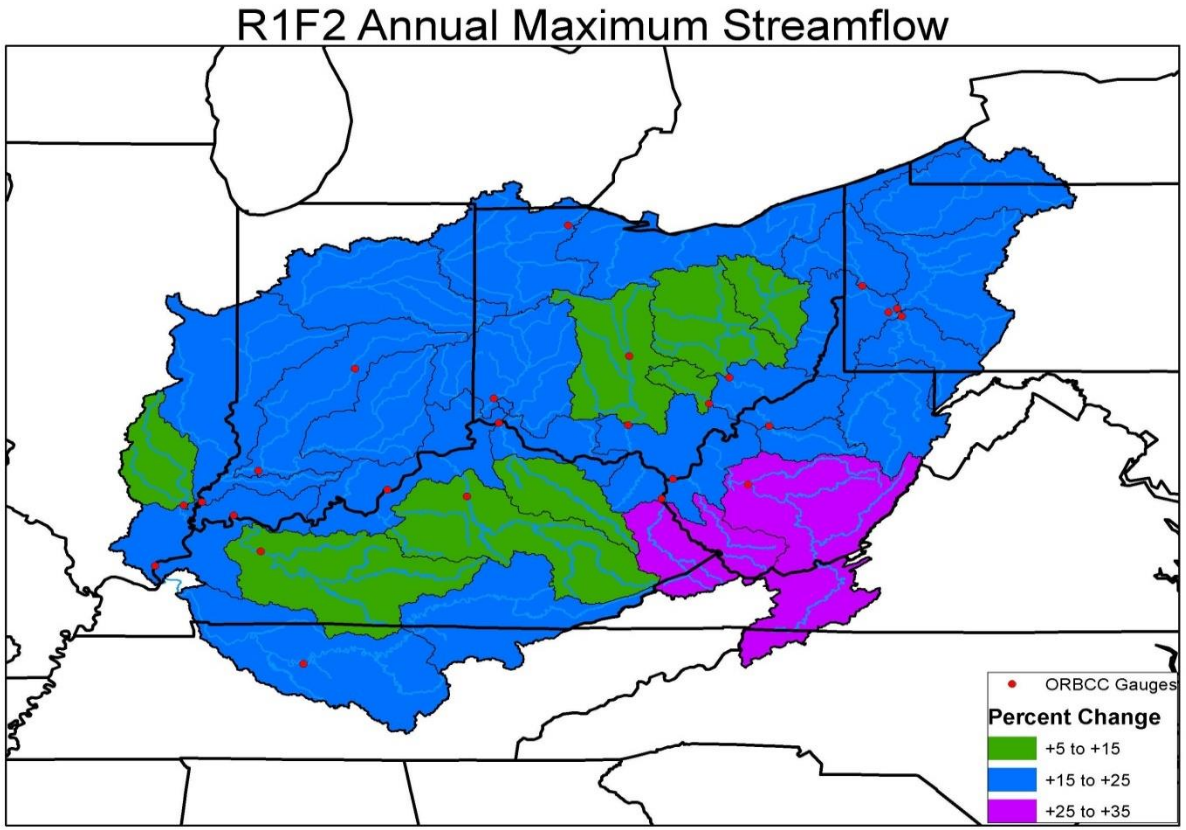
Drying occurs in minimum annual flows mainly in the northern Ohio Valley compared to 1952-2001

2011-2040 Annual % Change Max



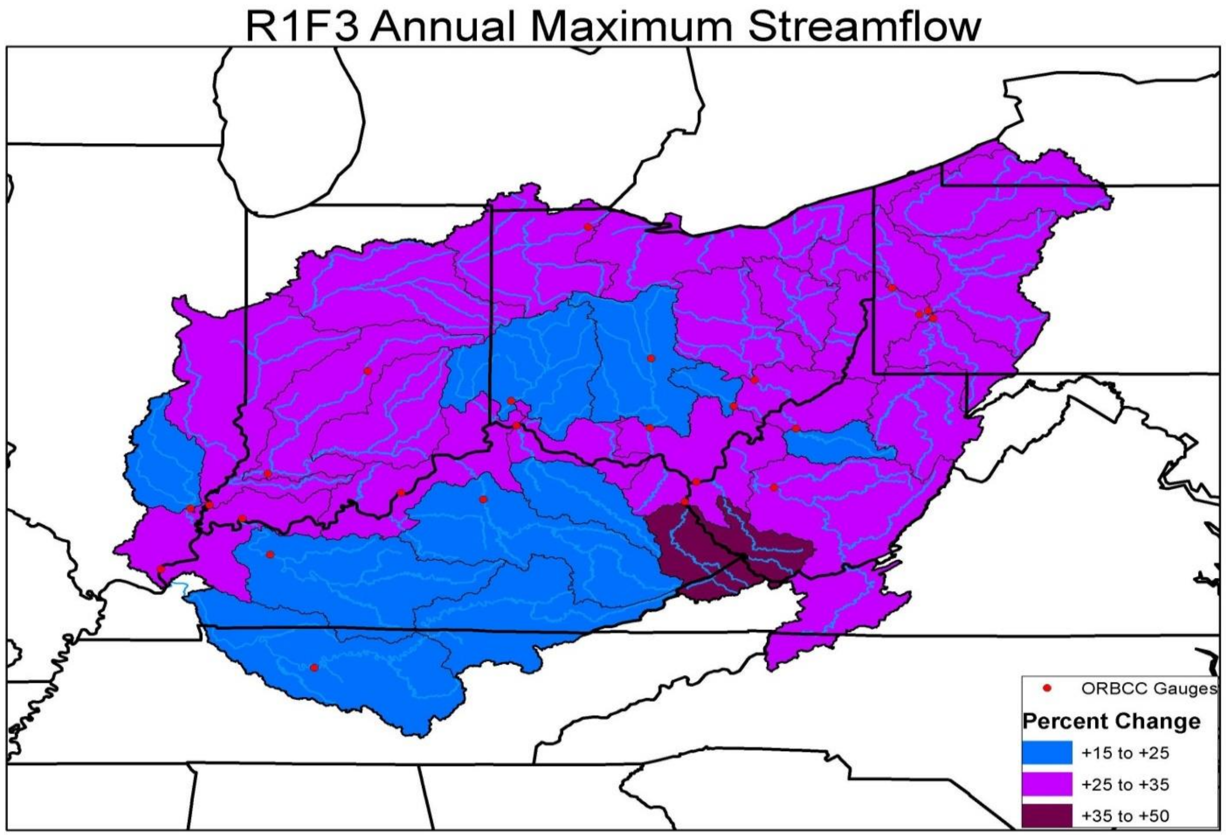
Some wetting in maximum monthly flows annually compared to 1952-2001especially in the east

2041-2070 Annual % Change Max



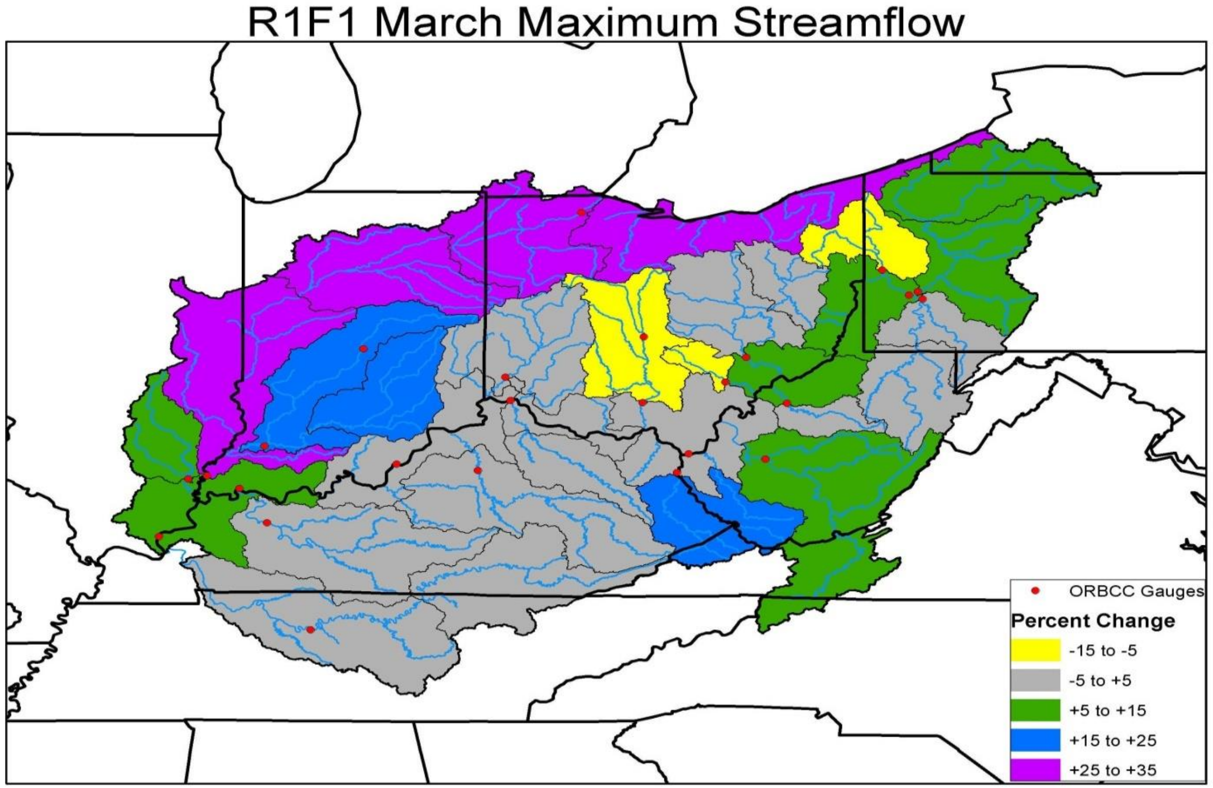
Wetting increases compared to 1952-2001

2071-2099 Annual % Change Max



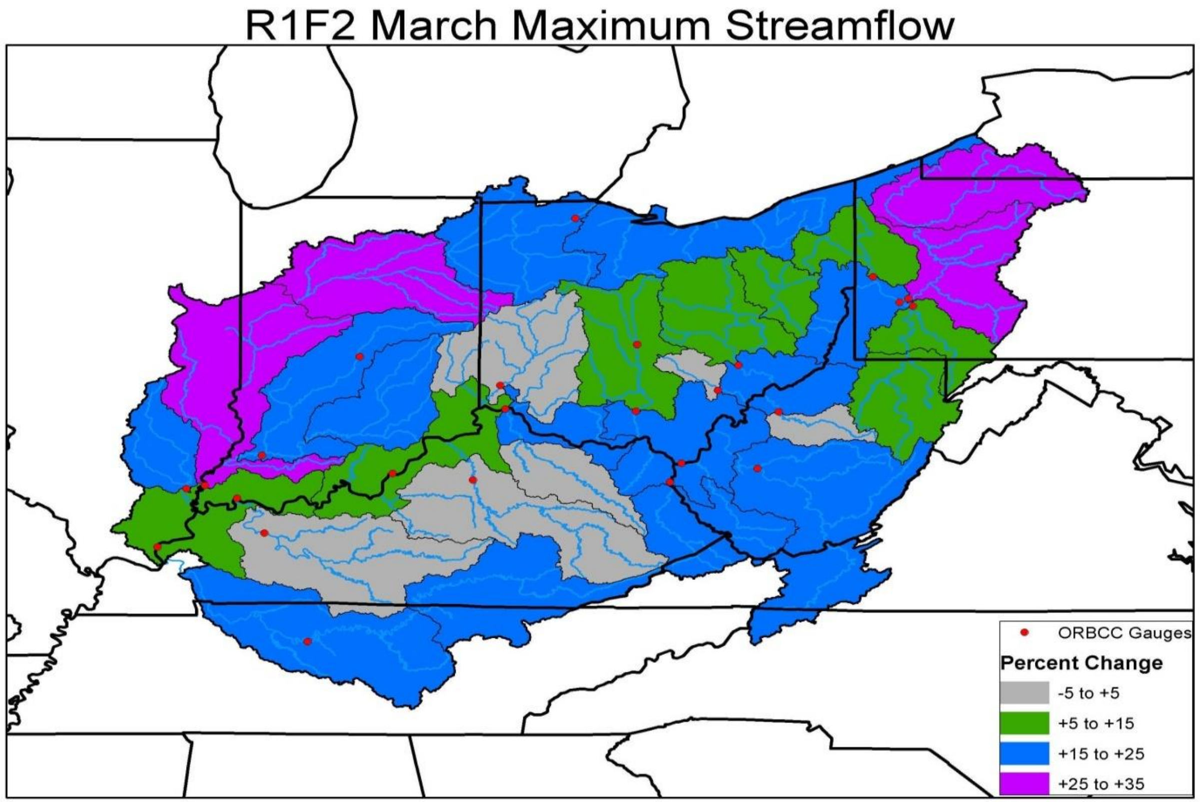
Substantial wetting occurs for the maximum monthly flow compared to 1952-2001

2011-2040 March % Change Max



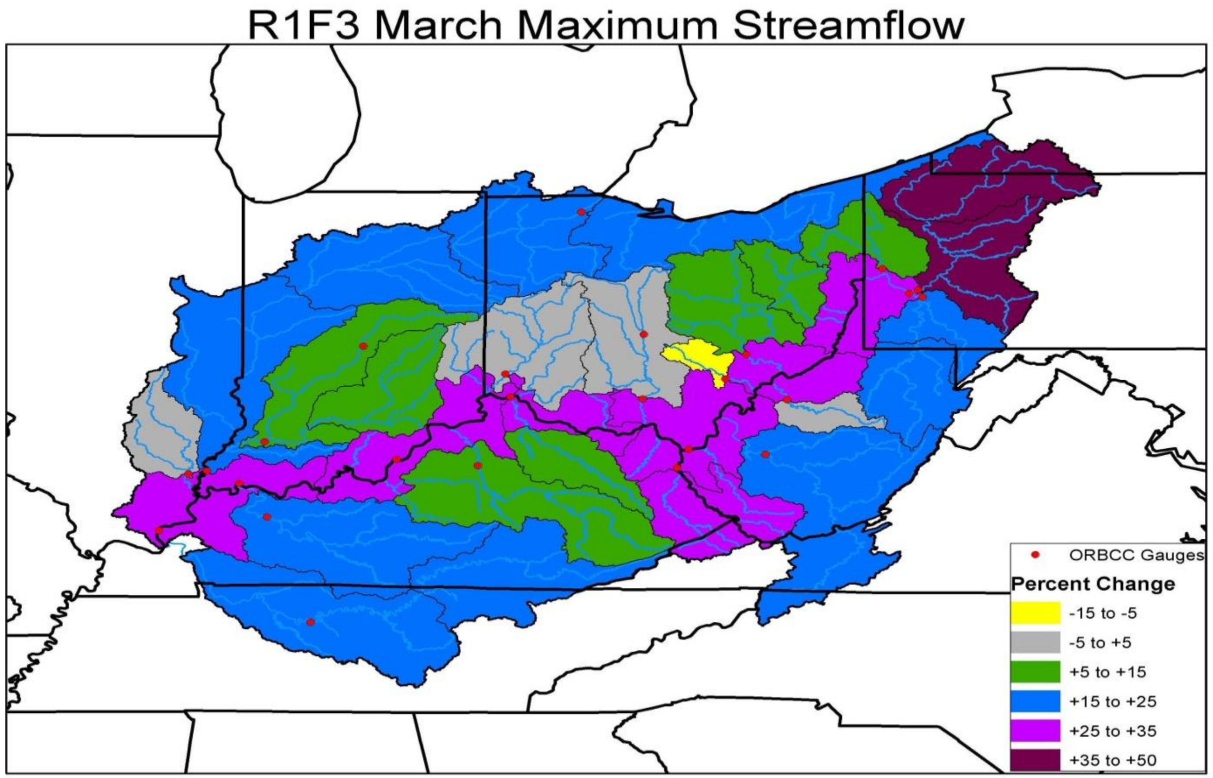
Little change compared to 1952-2001 across most of the Ohio Valley except wetting Wabash/Lake Erie Drainage

2041-2070 March % Change Max



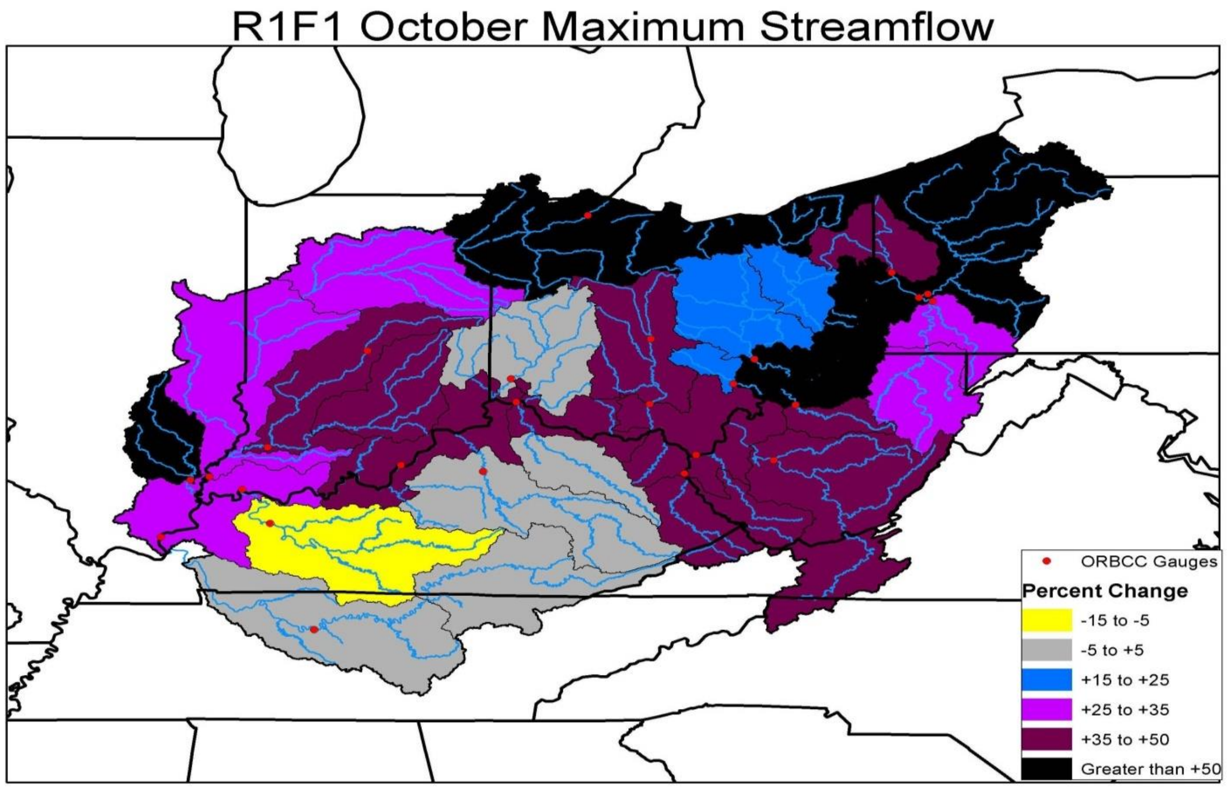
Wetting increases across much of the basin compared to 1952-2001

2071-2099 March % Change Max



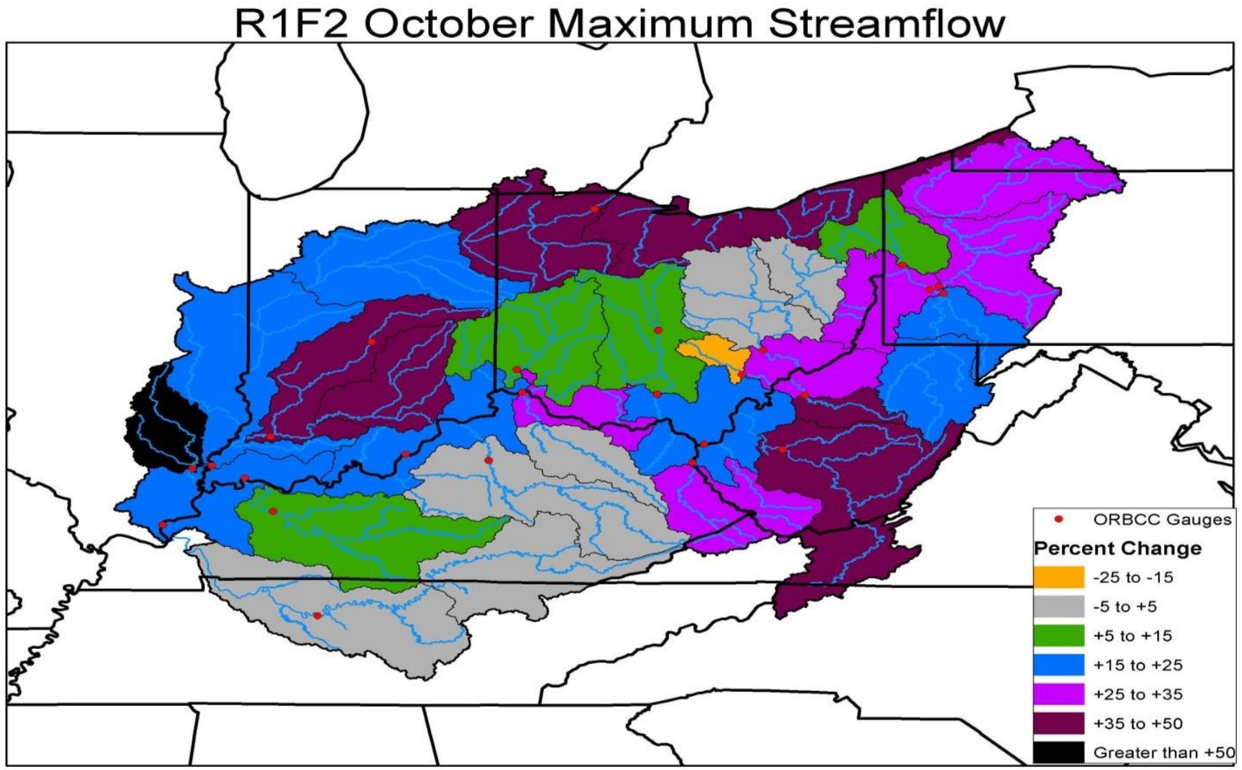
Biggest increases in maximum flows occurs in the 3rd period for the March period compared to 1952-2001

2011-2040 October % Change Max



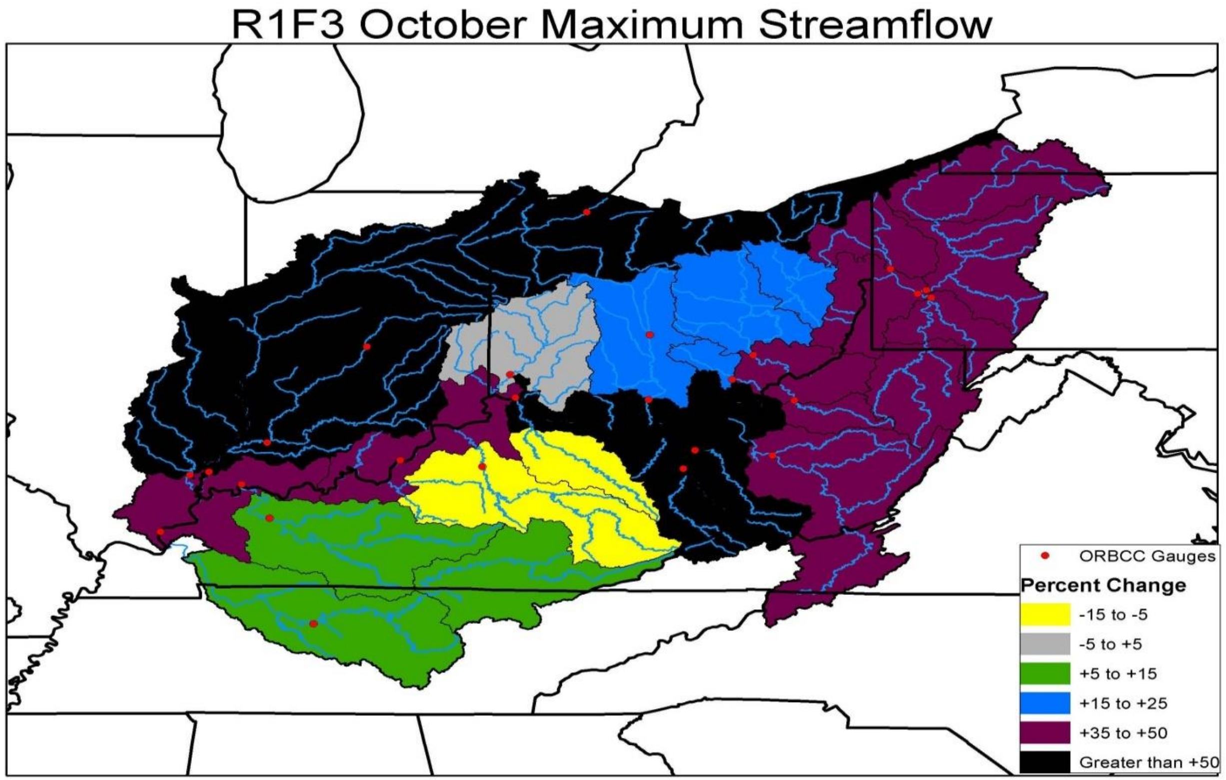
Large maximum increases occur mainly north of Ohio River and eastern basin, low flows allow for bigger percentage changes

2041-2070 October % Change Max



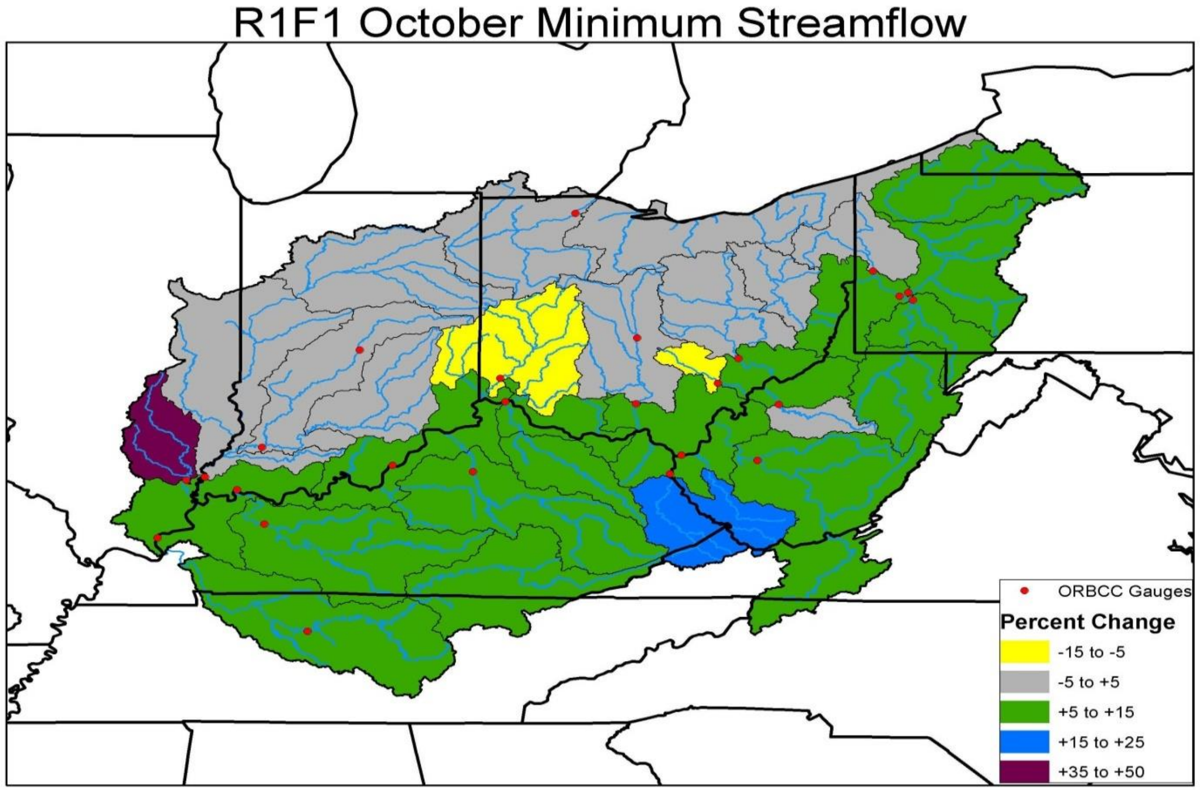
Wetter conditions relax some compared to 1952-2001, especially in central basin

2071-2099 October % Change Max



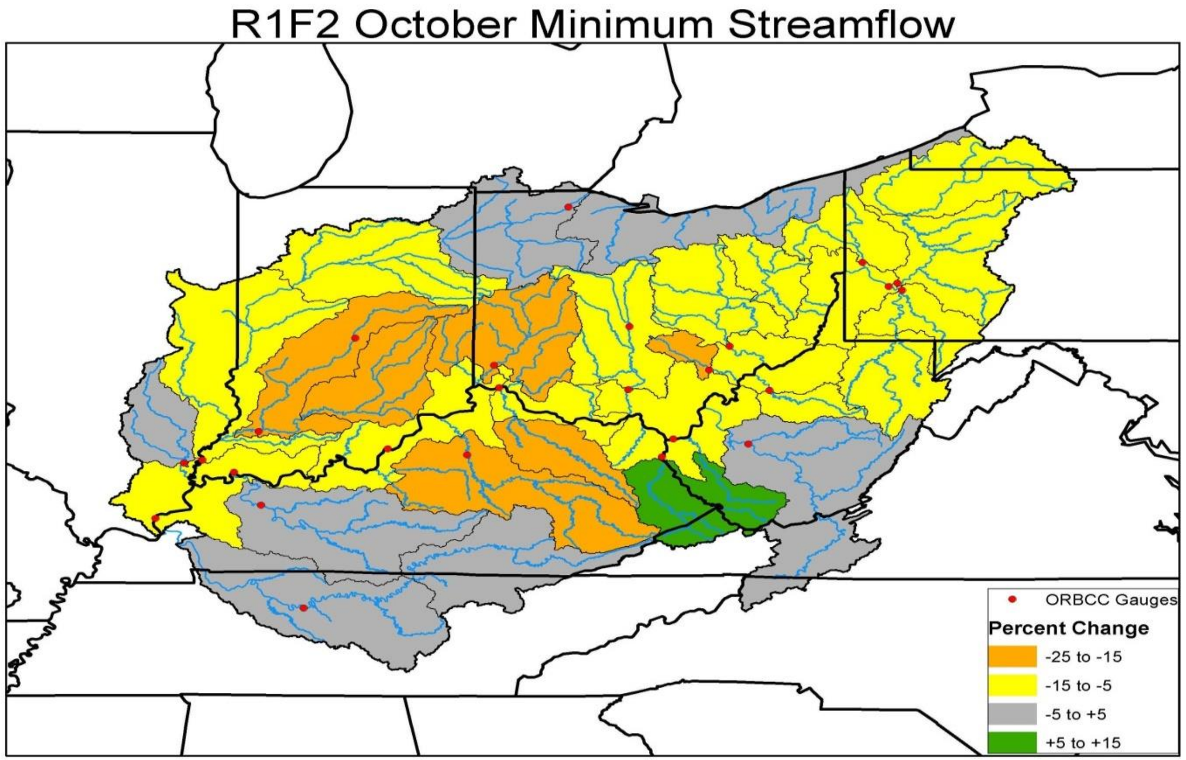
Wetter conditions roar back with least in central basin compared to 1952-2001

2011-2040 October % Change Min



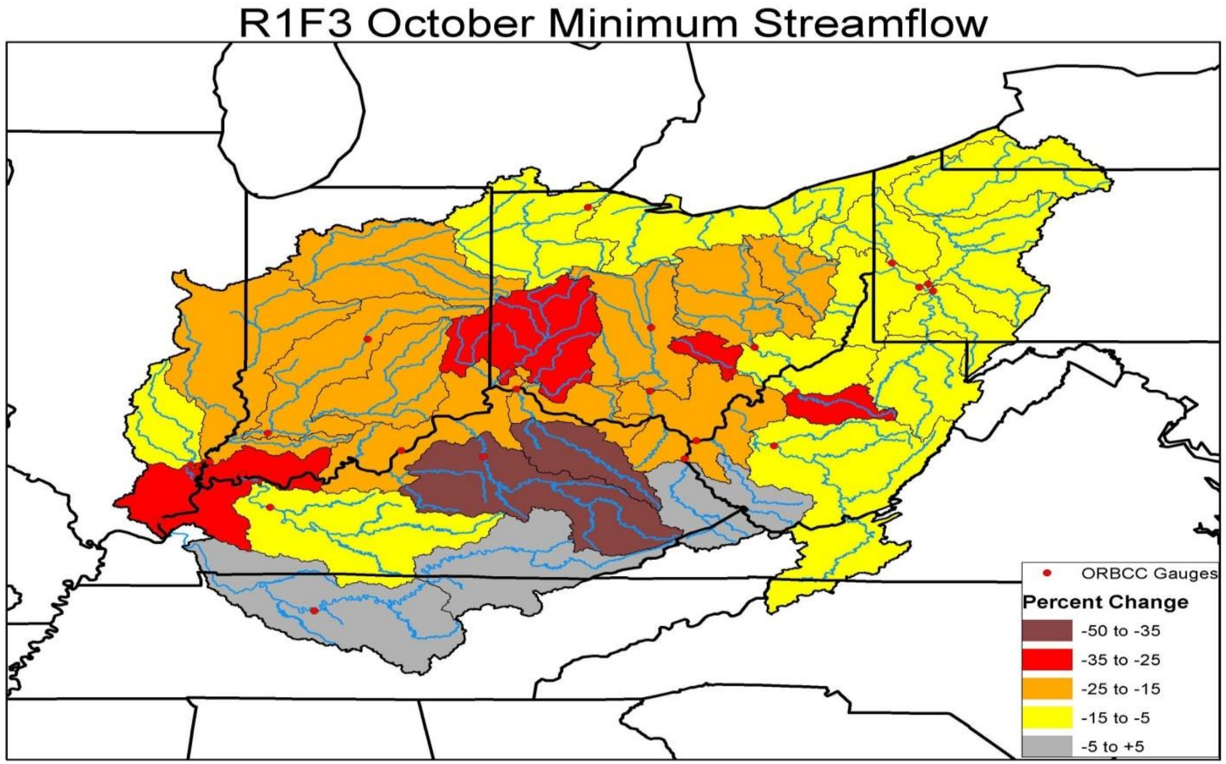
Little or no change north of the Ohio River to some increase to the south compared to 1952-2001

2041-2070 October % Change Min



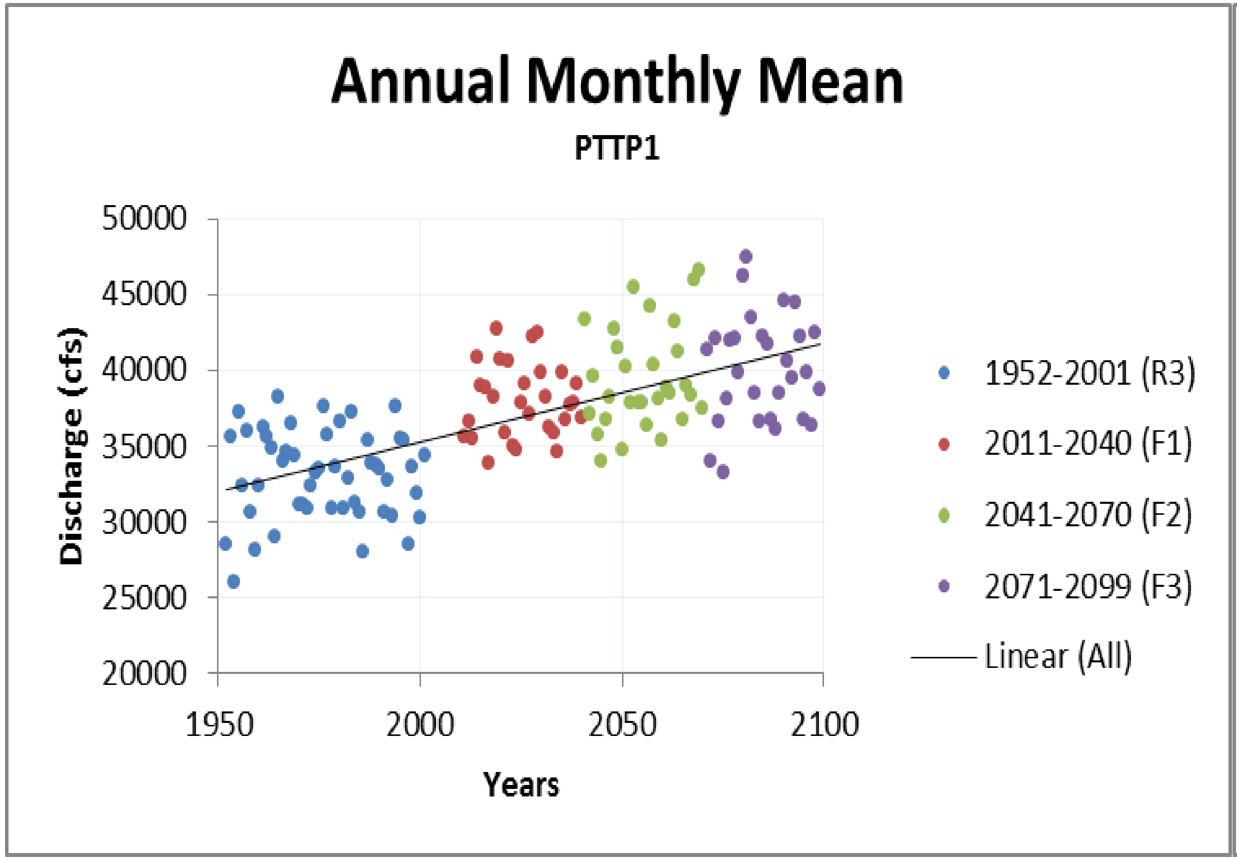
Drier minimum autumn flows compared to 1952-2001 across much of the region

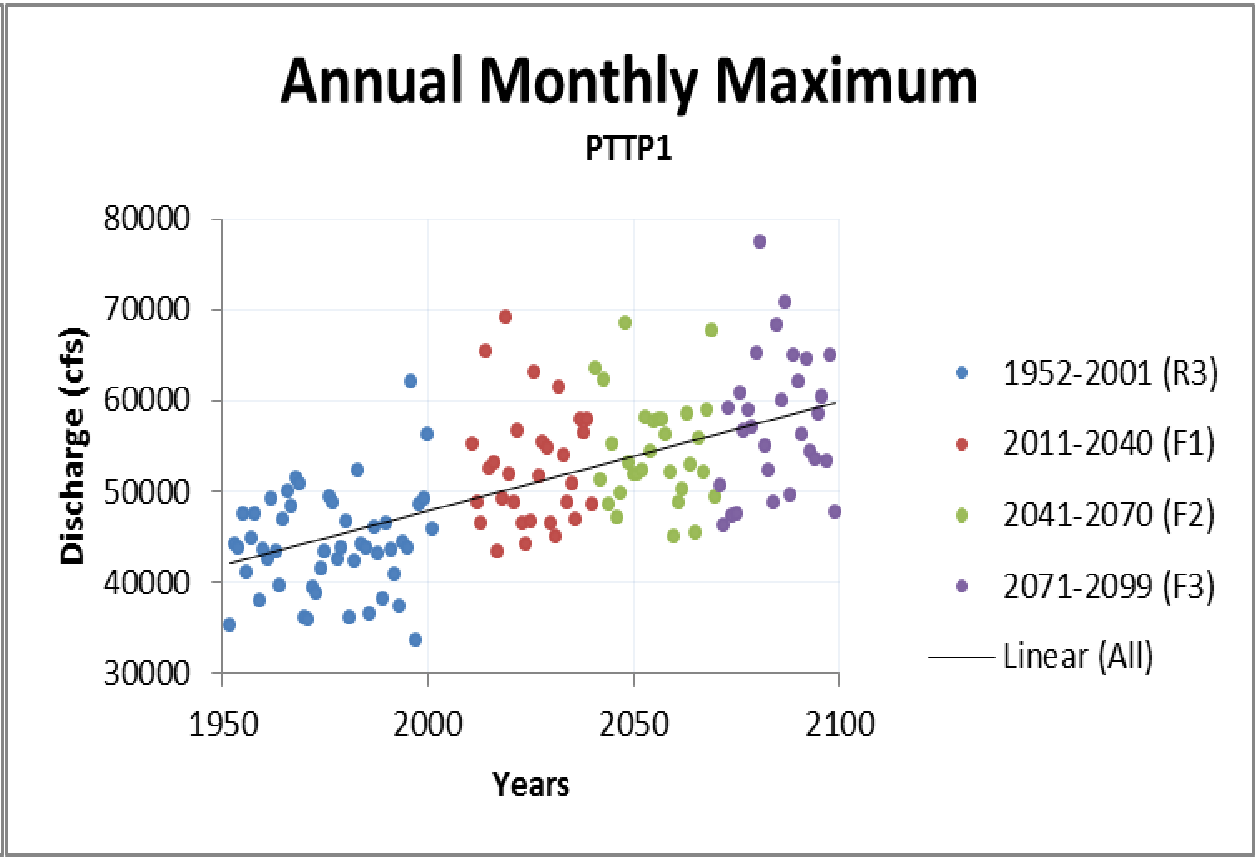
2071-2099 October % Change Min



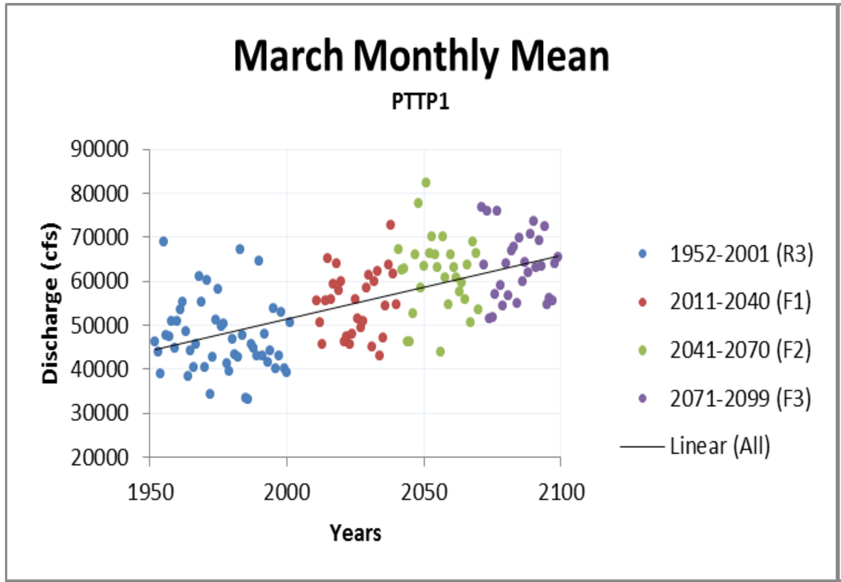
More extremes and drying really sets in for minimum flows across most of basin

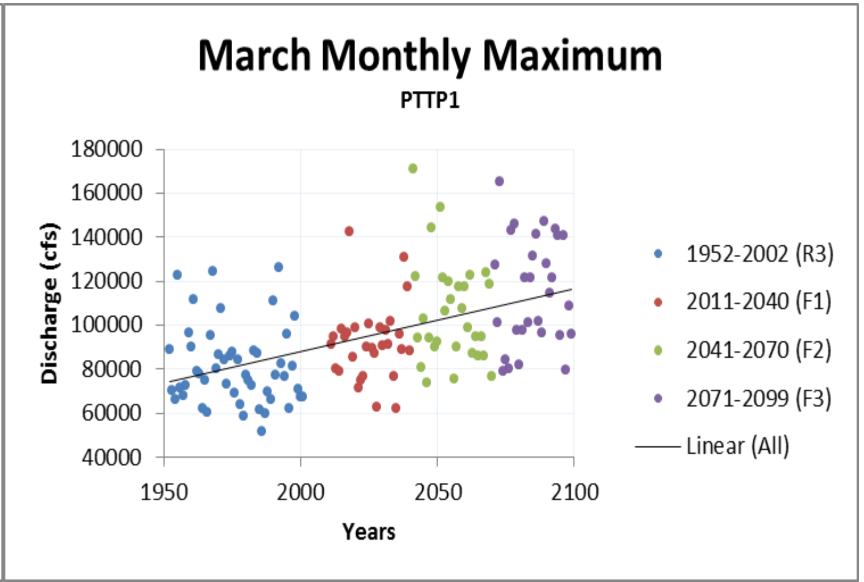
Pittsburgh Annual Projections

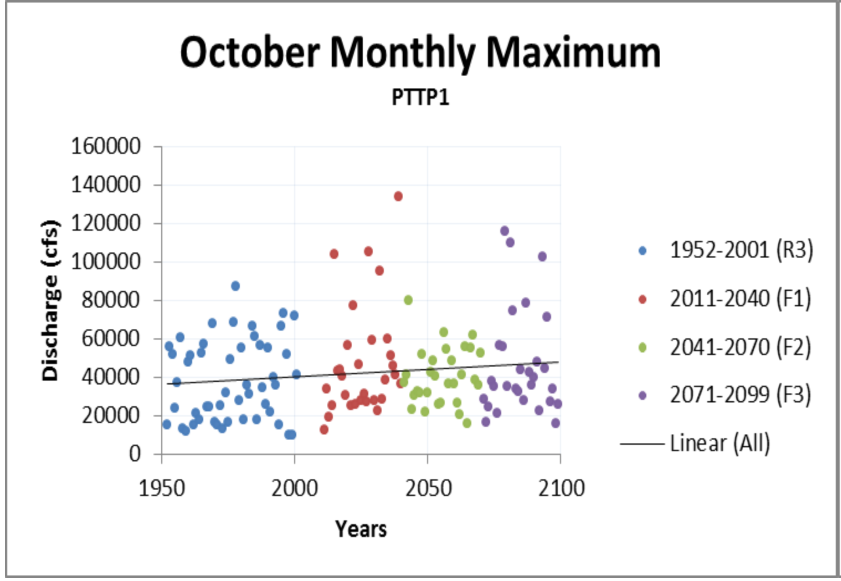


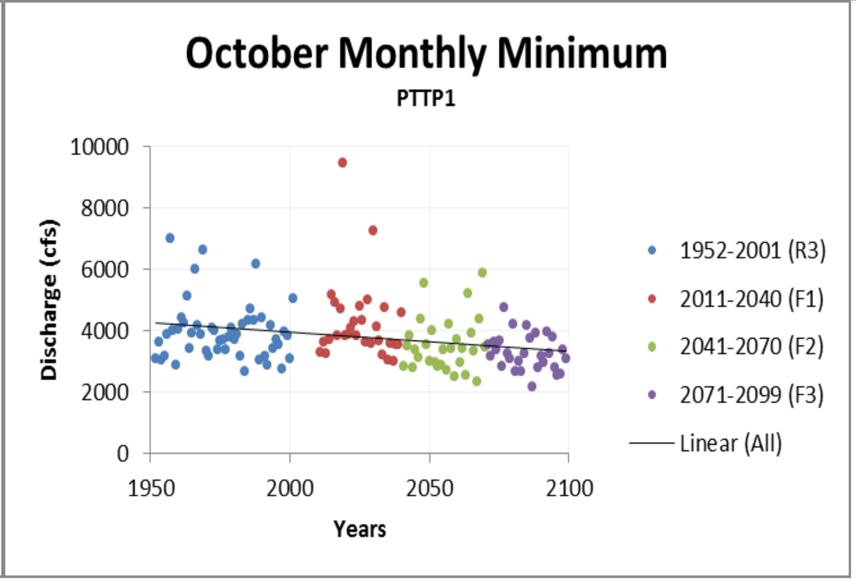


Pittsburgh Spring and Autumn Projections

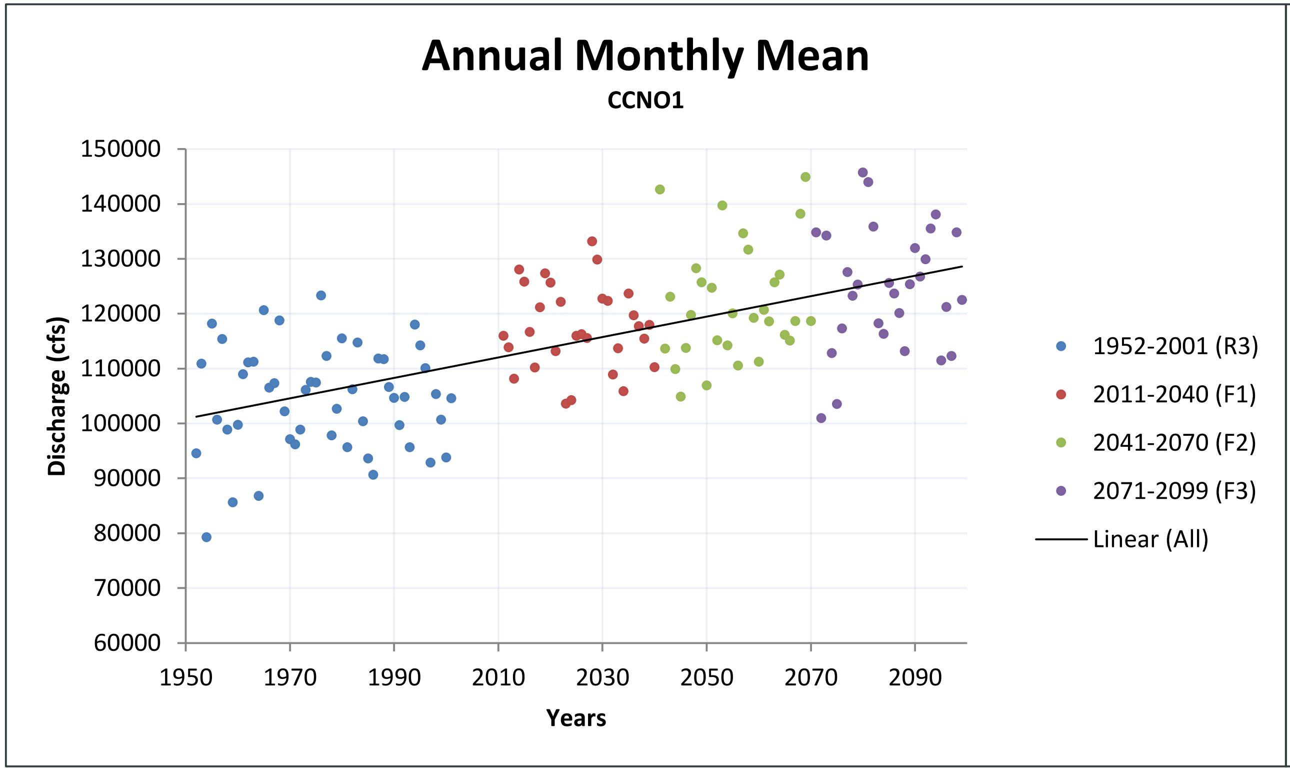


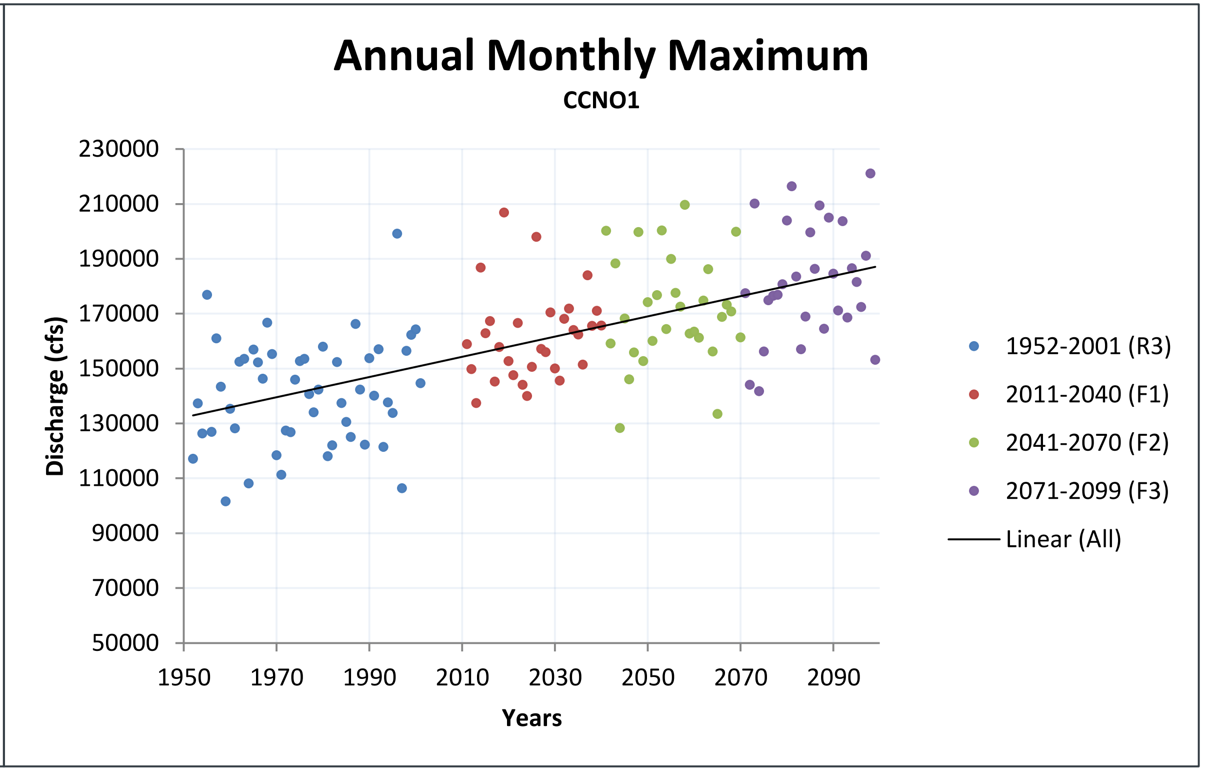




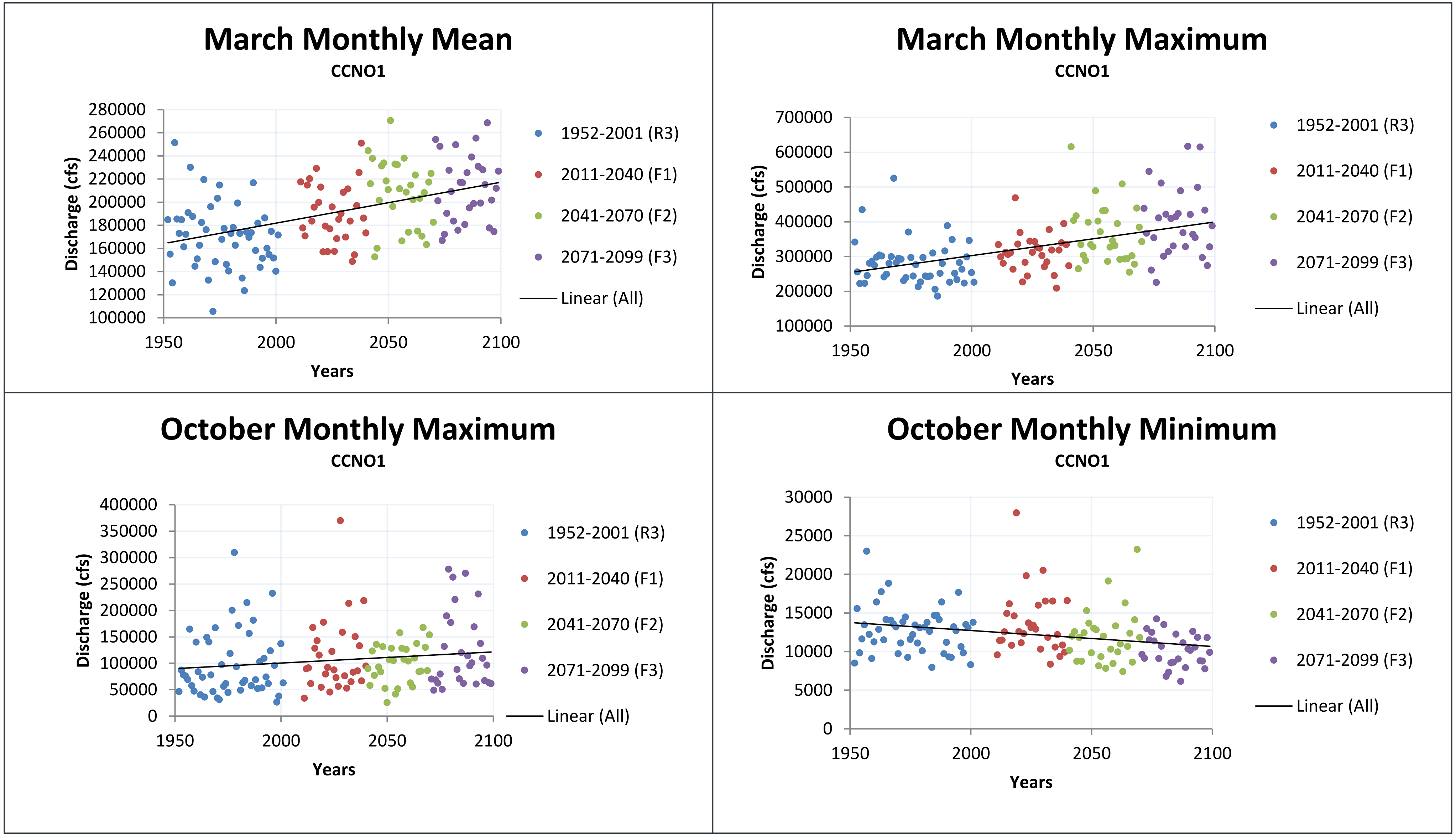


Cincinnati Annual Projections

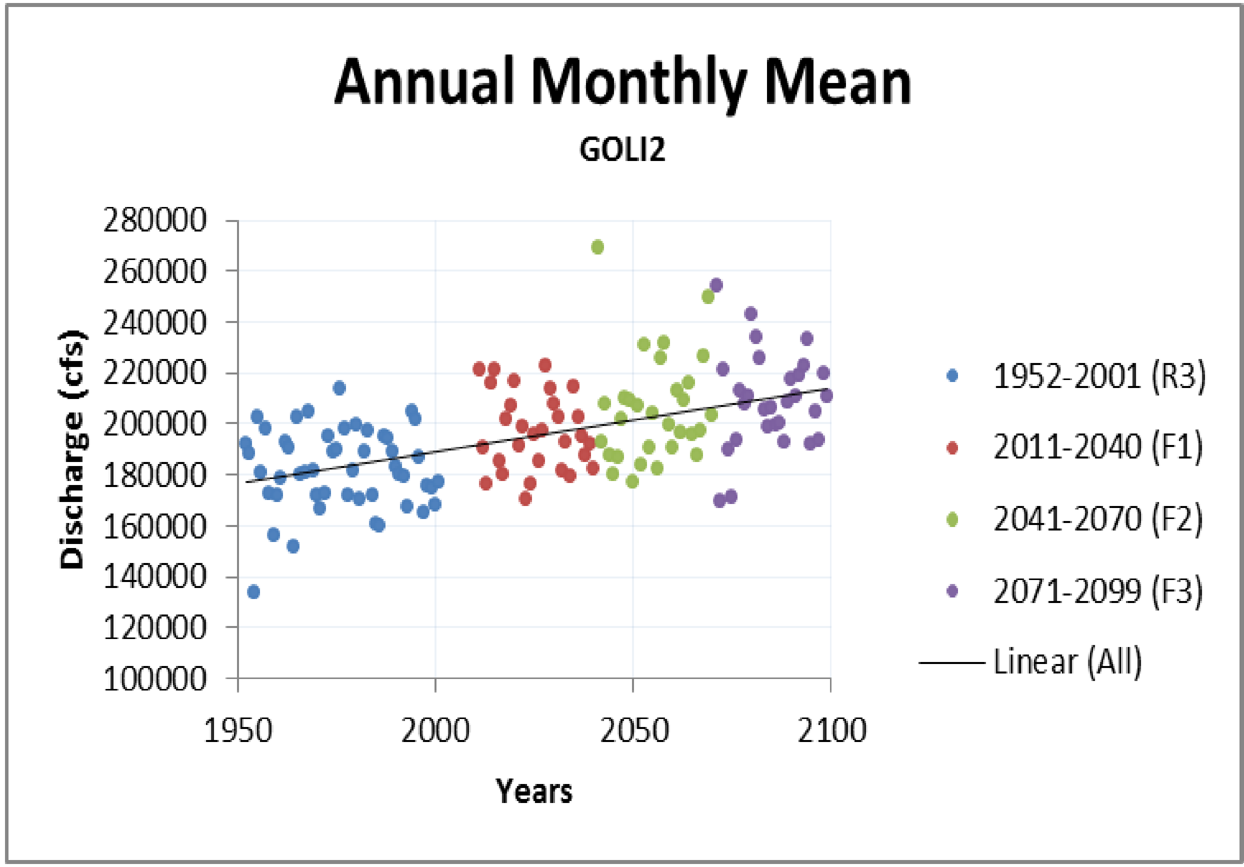


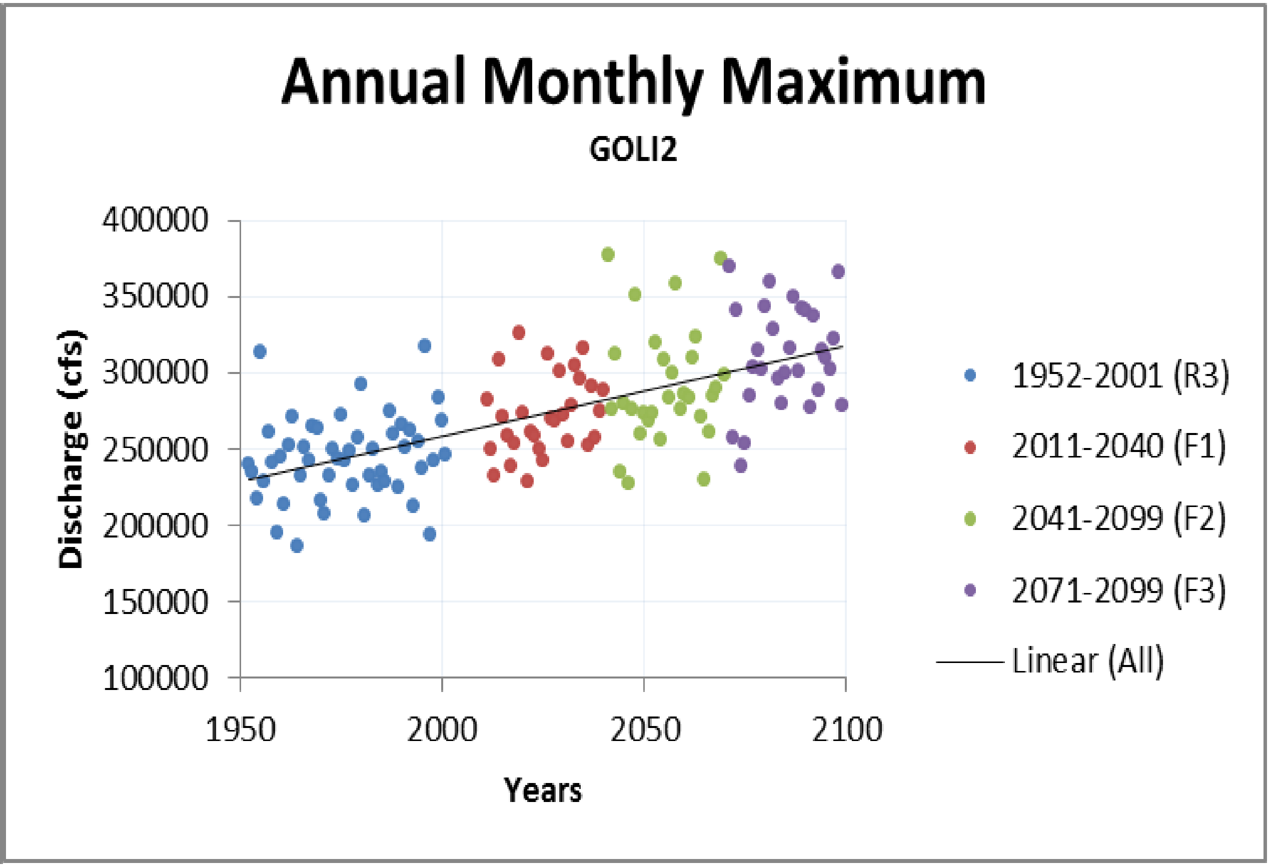


Cincinnati Spring and Autumn Projections

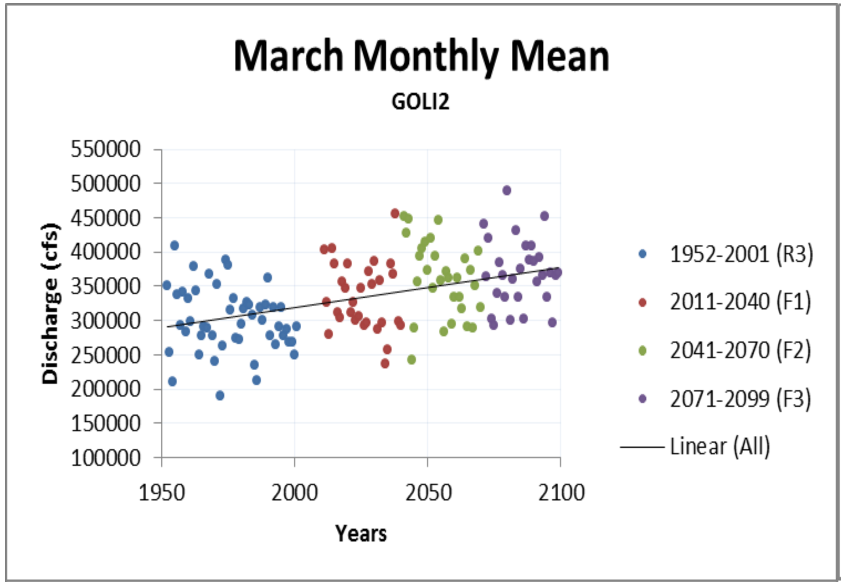


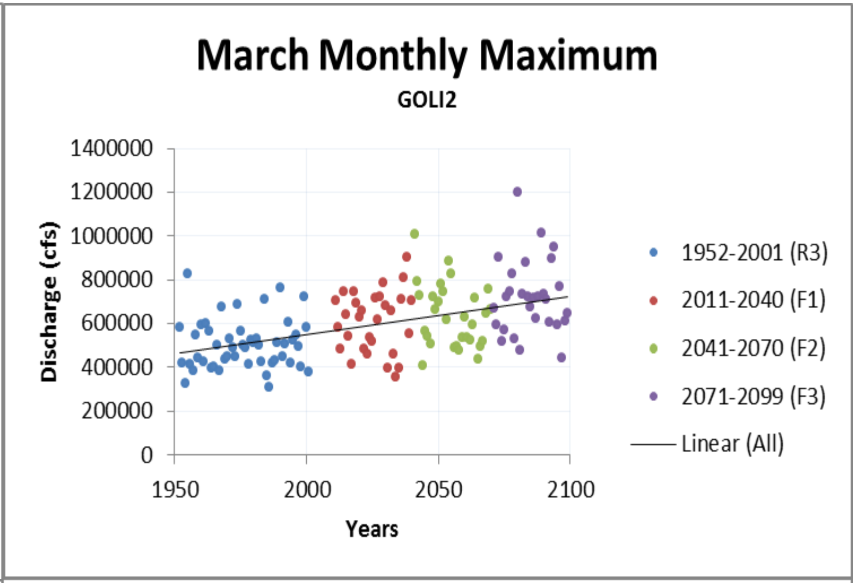
Golconda Annual Projections

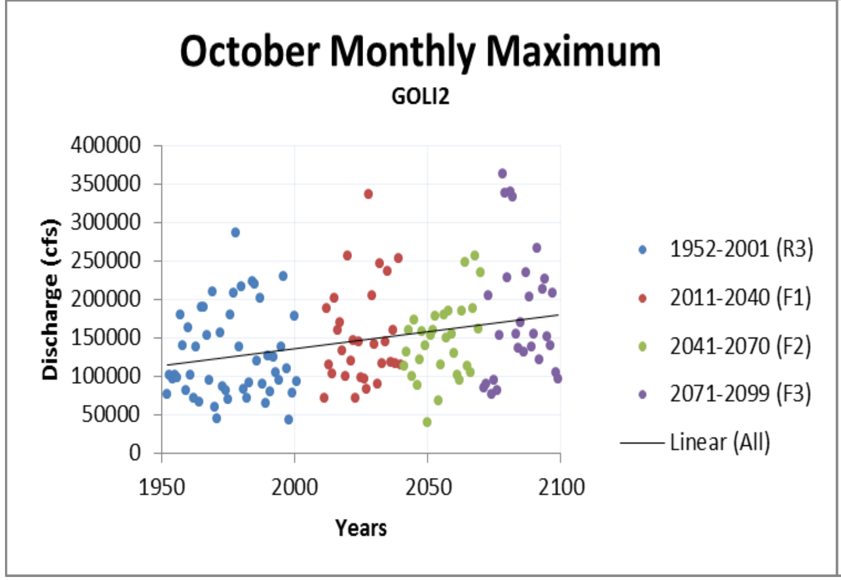


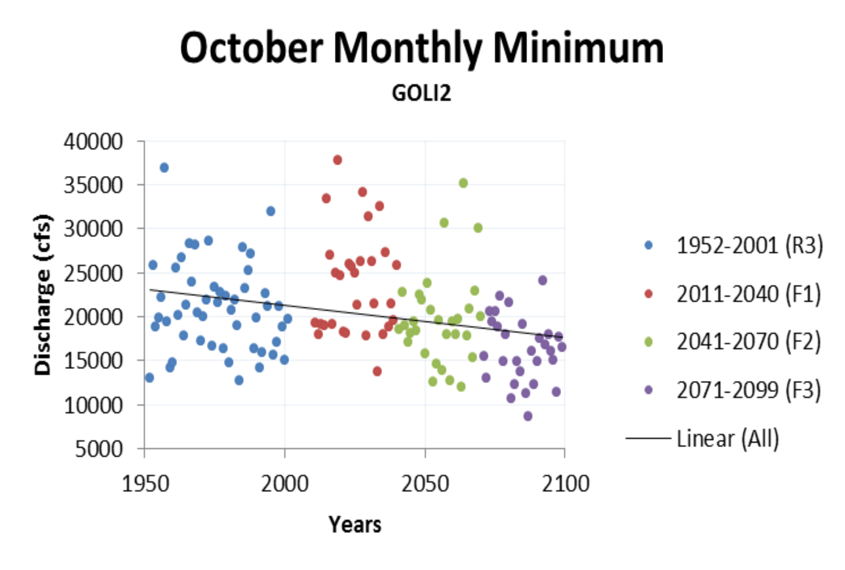


Golconda Spring and Autumn Projections

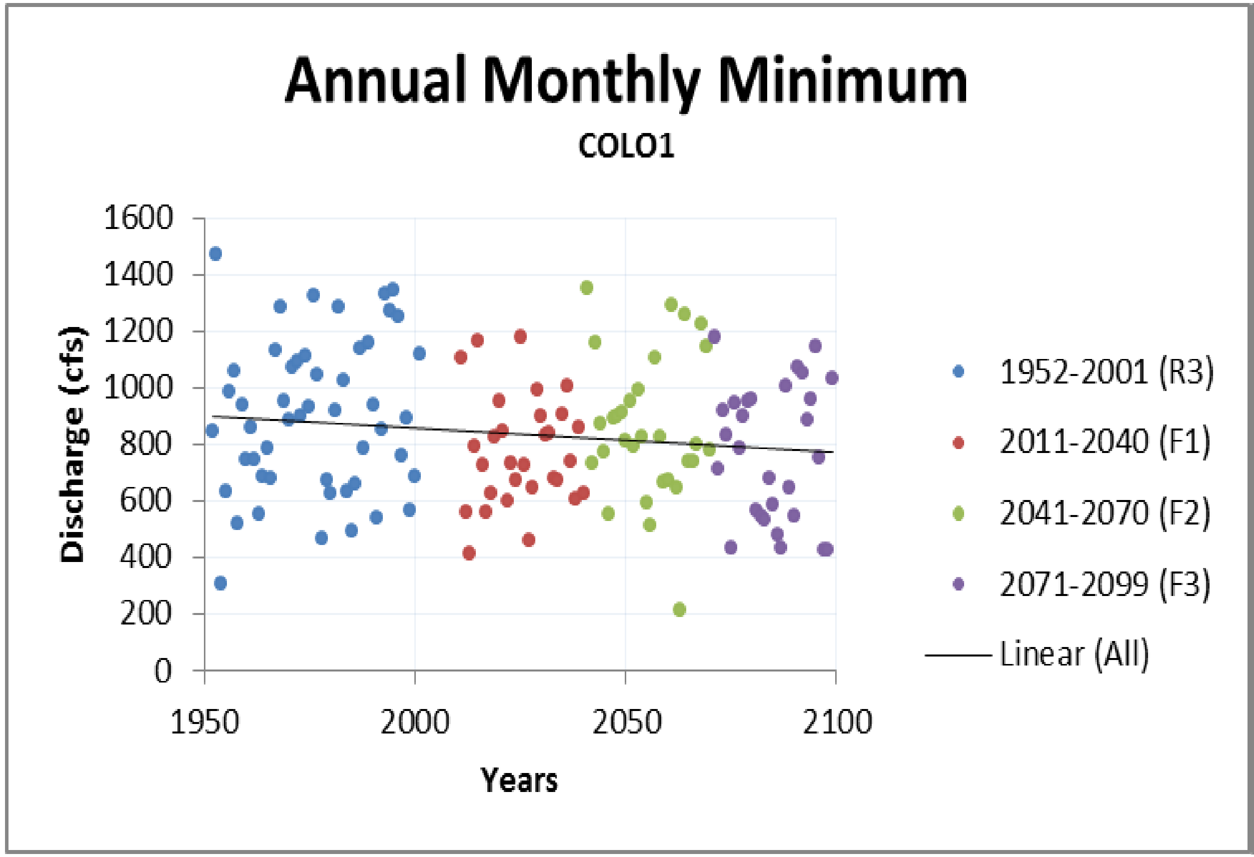


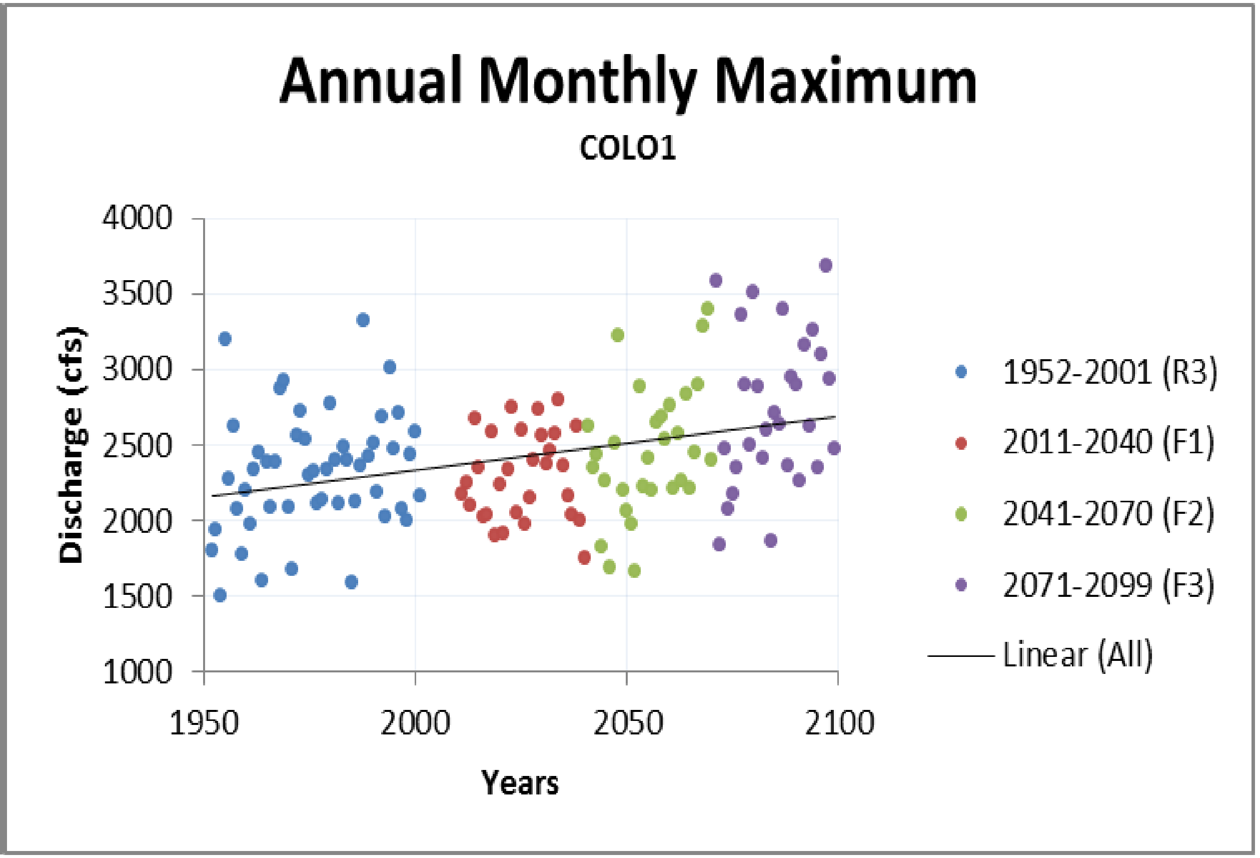




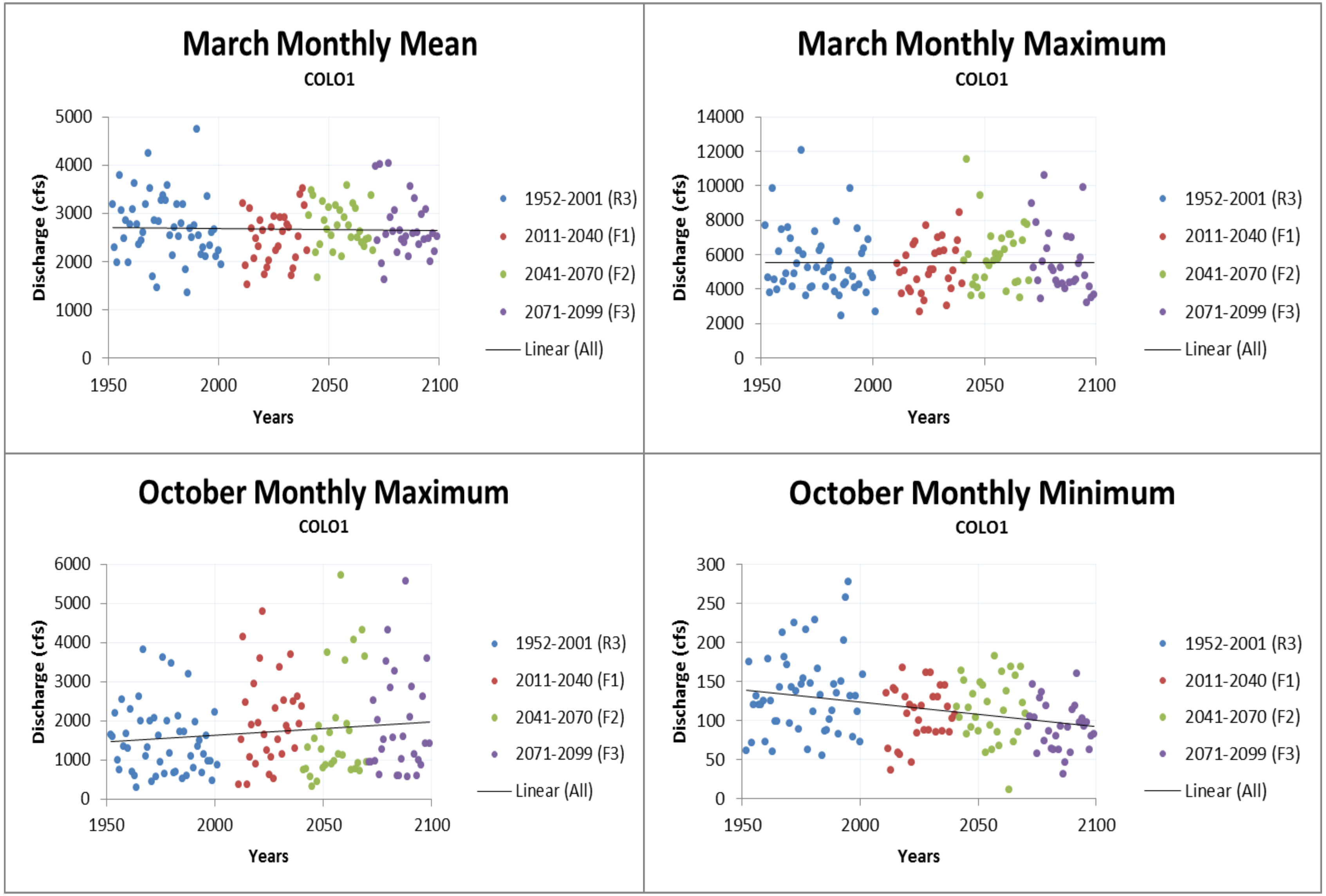


Columbus, OH Annual Projections

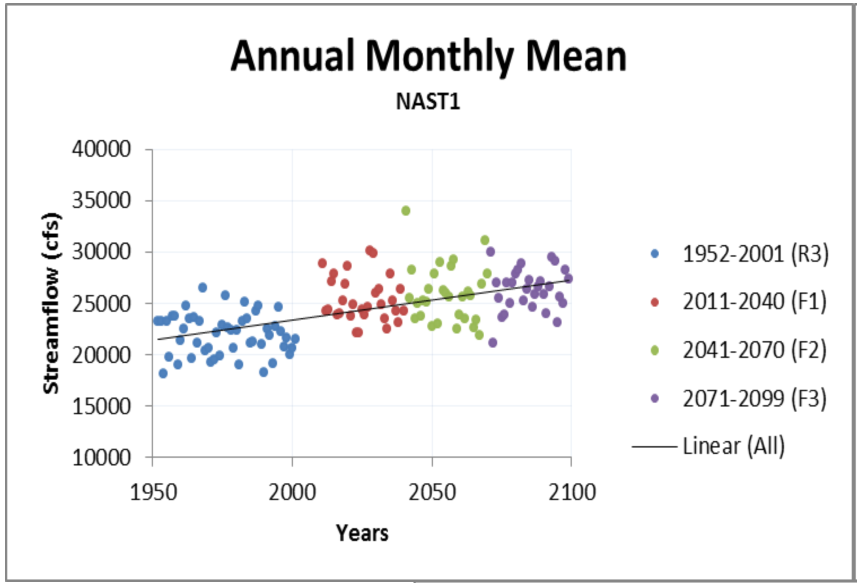


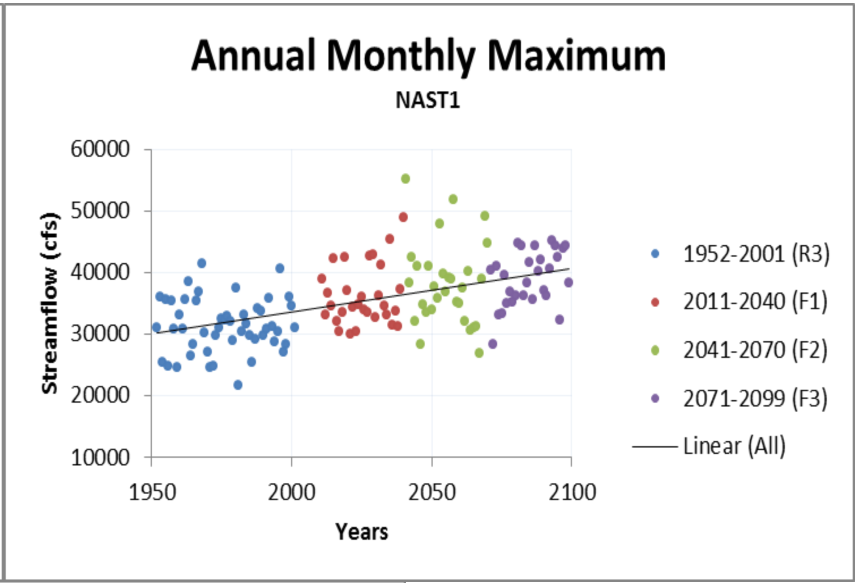


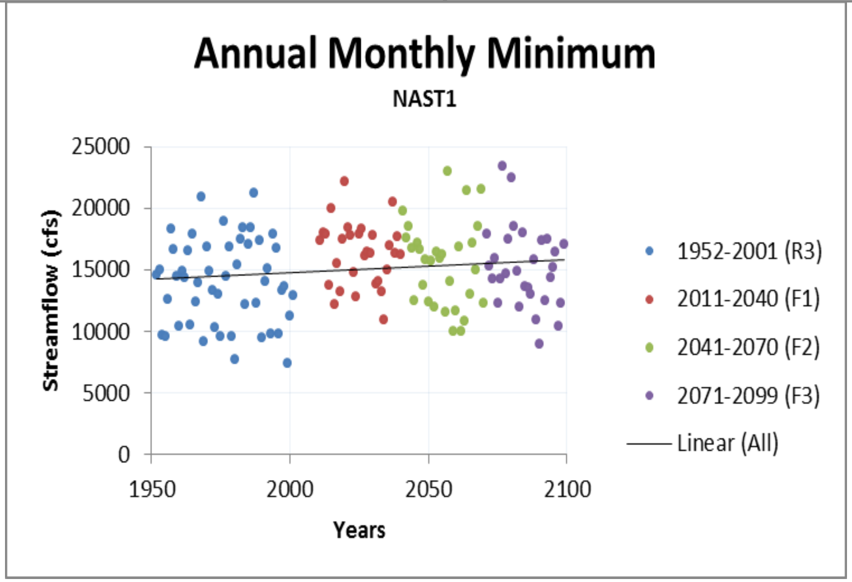
Columbus, OH Spring and Autumn Projections



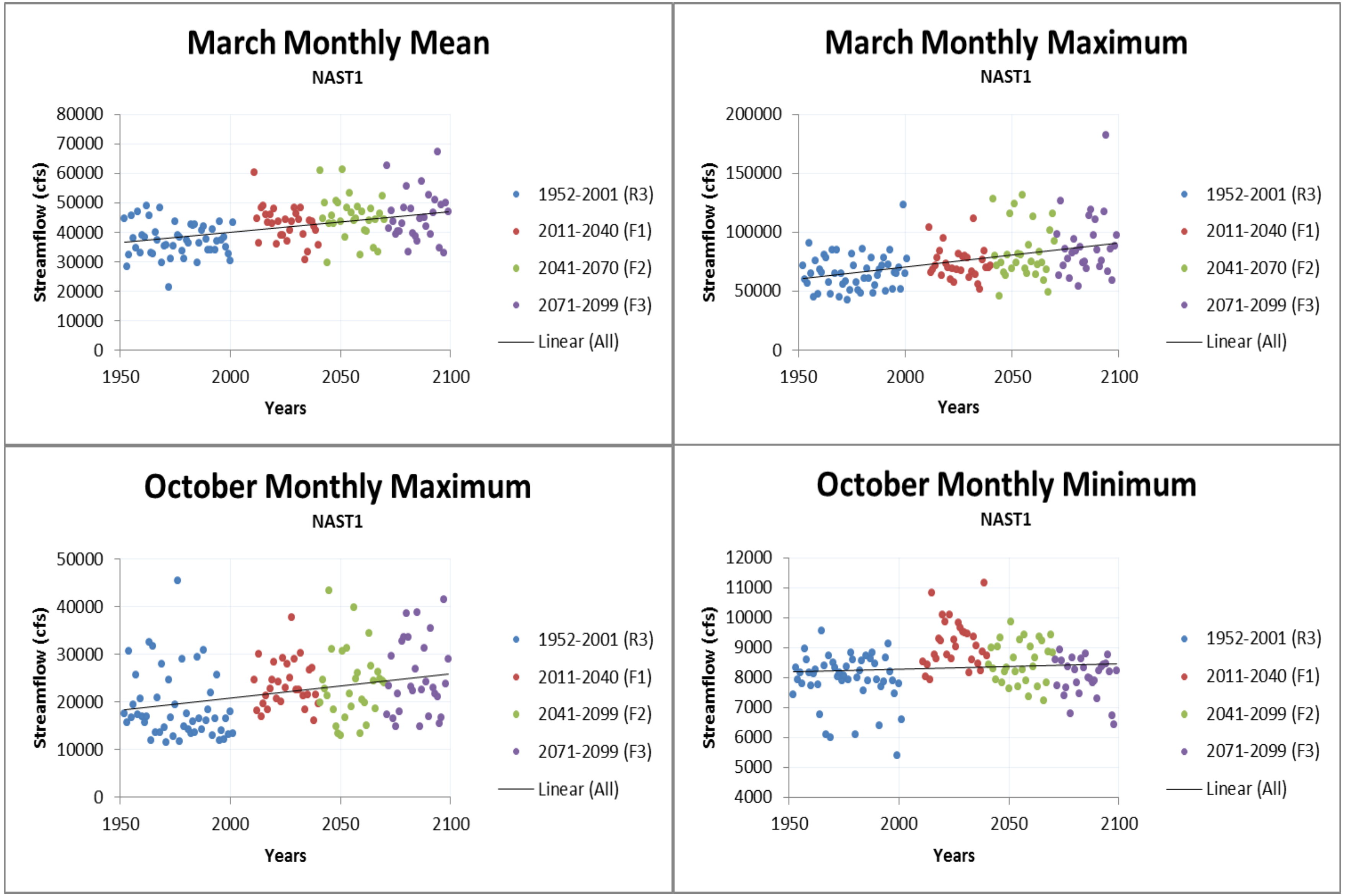
Nashville Annual Projections



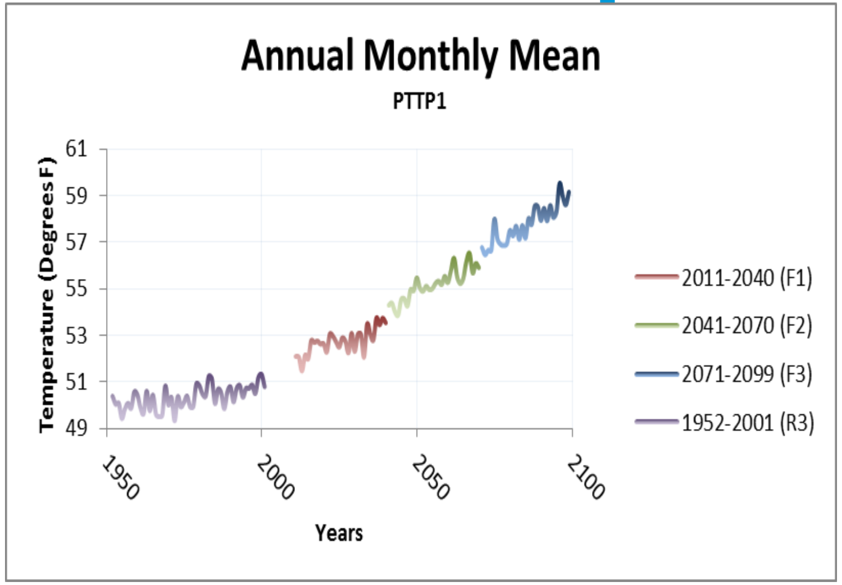


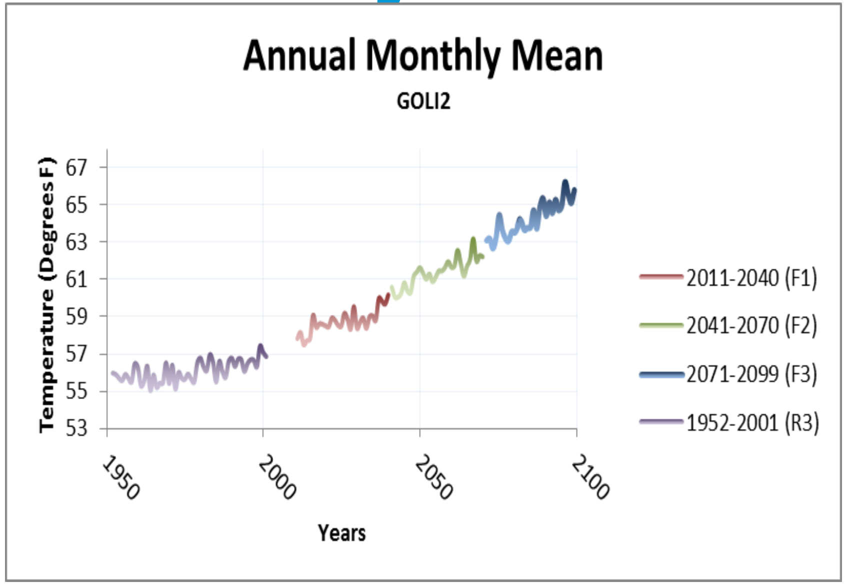


Nashville Spring and Autumn Projections



Review Temperature Projections





Pittsburgh (upper Ohio Valley) and Golconda (lower Ohio Valley) show a similar trend about +0.5F per decade then increases about +1F per decade from 2050 to 2099. The faster increase likely leads to increasing evapotranspiration and increasing spread and uncertainty.

I-64 temperatures shift to I-70 temperatures this century.

Summary/Impacts

- Climate models suggest wetting trends to continue in Ohio Valley through mid-century
- As temperatures warm and evapotranspiration increases variability will increase in low and high flows beyond mid-century
- We will likely exceed historic max and min flows and many location as century progresses

Questions?

Email:

James.Noel@noaa.gov

Agenda Item 5:

TEC Members Reports

- IL – Scott Twait
- IN – Brad Gavin
- KY – Katie McKone
- NY – Melanie Stein
- OH – Audrey Rush
- PA – Kevin Halloran
- VA – Melanie Davenport
- WV – Scott Mandirola
- USACE – Erich Emery
- USCG – Josh Miller
- USEPA – David Pfeifer
- USGS – Jeff Frey
- CIAC – Vacant
- PIAC – Cheri Budzynski
- PIACO – Betsy Mallison
- POTW – Alex Novak
- WOAC – Angie Rosser
- WUAC – Chris Bobay

228th Technical Committee Meeting

Scott Mandirola, Chair
Presiding
February 8-9, 2022

The meeting will begin at 8:30 A.M. (Eastern). Below are a few tips to effectively navigate the meeting:

- ***Confirm that your first and last name is entered correctly in the GoToMeeting software.***
- ***Mute your microphone at all times unless speaking.***
- ***Disable your camera unless you are a Technical Committee member.***
- ***The presenter will prompt participants for verbal questions, or use the Chat feature.***
- ***Detailed GoToMeeting instructions and important information can be found in the previously emailed document, "ORSANCO Virtual Technical Committee and Commission Meeting Instructions."***
- ***If you need assistance during the meeting, please call our office at 513-231-7719 ext. 100.***

Agenda Item 6:

Status Update for the Source Water Contamination Threat Inventory on the Ohio and Allegheny Rivers

Steve Allgeier, USEPA

OHIO & LOWER ALLEGEHENY RIVER SOURCE WATER ACUTE CONTAMINATION THREAT INVENTORY PROJECT STATUS

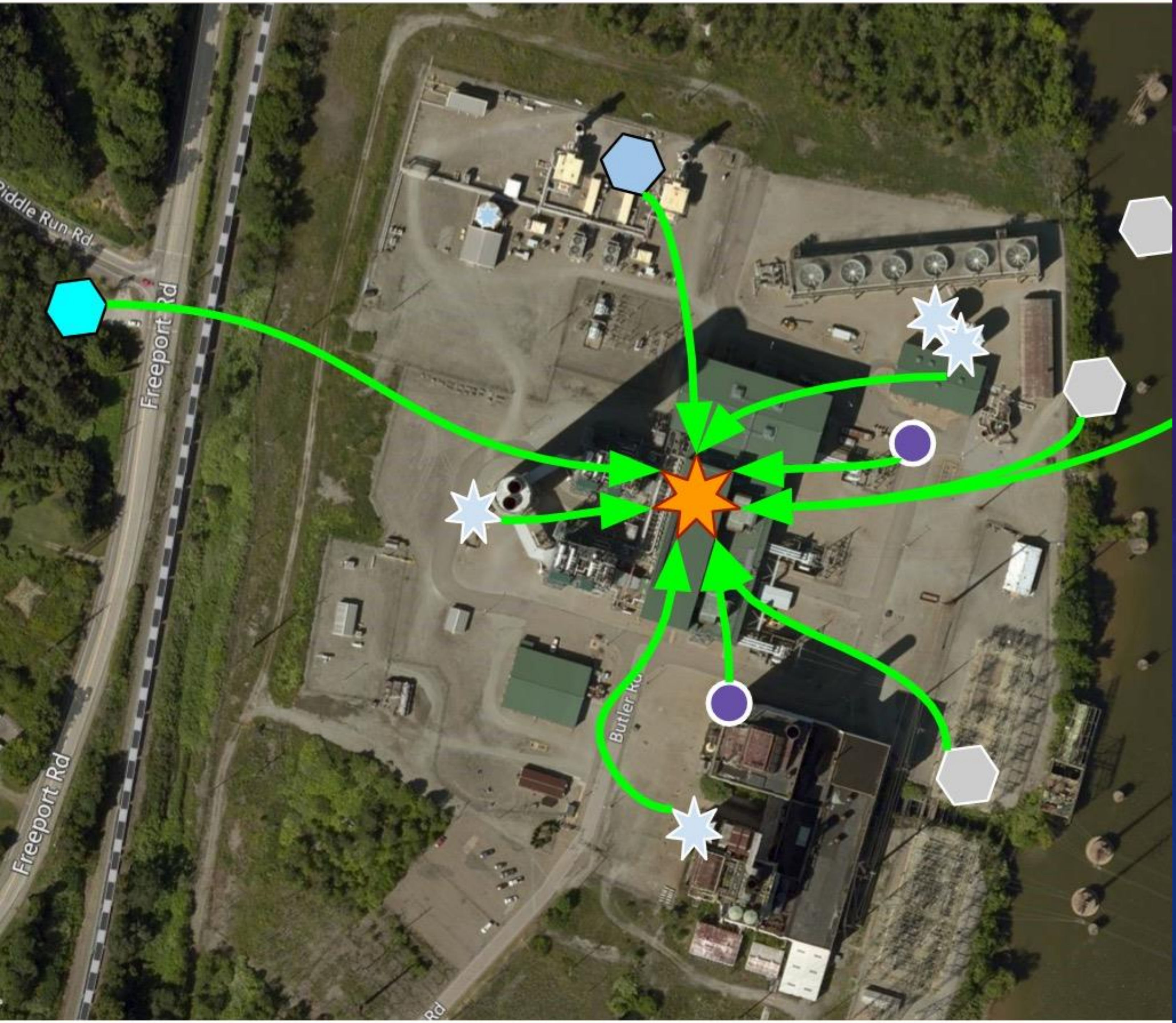
ORSANCO TECH MEETING

FEBRUARY 9, 2022

TYPES OF THREATS

- Chemical Storage (Tier II)
- Toxic Substances Control Act (TSCA)
- Toxics Release Inventory (TRI)
- Risk Management Plan Facilities (RMP)
- Facility Response Plan Facilities (FRP)
- Discharges / wastewater treatment
- Other storage tank datasets
- Mining

- Oil and gas extraction
- Landfills
- Hazardous waste sites & handling
- Contaminated / cleanup sites
- Pipelines
- Transportation: Road, rail, air
- Locks, dams, ports



WATERSUITE SITES

- Relates data points from multiple sources to a single Site point.
- Reduces data volume & clutter
- Practical unit for risk analysis

OHIO RIVER PROJECT

OHIO RIVER REGIONAL THREAT INVENTORY TIMELINE

2017-2020

- WaterSuite project setup, zone of concern development & intake locations
- Initial data acquisition & processing: USA, IN, OH, KY, WV
- TSCA/Tier II data comparison
- Initial data QA & site creation
- KY & OH Tier II data requests
- Travel time modeling & comparison to ORSANCO's travel time model for the mainstem Ohio River.
- Acute spill risk scoring
- User training

2020-2021

- Intermediate zones of concern created:
  - 2 Zones defined & loaded in WaterSuite
  - Automated data filtering method for most significant threats
  - Site creation
- Acute spill risk scores recalculated using an updated method that includes default values for missing data
- Received KY and some Ohio Tier II data
- On-site user training
- Local user data QC and ongoing system use

2021-2022

- Next steps …

FEDERAL DATASETS & 2021 UPDATES

29 DATASETS, 8 UPDATED IN 2021 (IN BOLD), 4 IN PROGRESS (IN ITALICS)

Significant Facilities

Airports
Coal Power Plants
EPA Facility Response Plan (FRP) Facilities
EPA Risk Management Plan Facilities
Power Plants
TSCA Consumer and Commercial Use Information
TSCA Industrial Processing and Use Information
TSCA Manufacturing Information

Storage Tanks

OIL

Oil & Gas

HGL Pipelines
Hydraulic Fracturing Wells by Type of Toxin - Gas
Natural Gas Inter and Intrastate Pipelines
Petroleum Product Pipelines

Transportation

Bridges
Hazardous Material Routes
Locks
Ports
Railroad Crossings
Railways
Road Crossings

Mining

Coal Mines

Hazardous Waste

CCR Rule Compliance
RCRA

Discharges

Discharge Monitoring Reports
NPDES
Industrial Discharge to POTW (Approved Program)

Spills & Releases

National Response Center Incident Reports
Toxics Release Inventory (TRI)

Cleanup

SEMS (CERCLIS/SUPERFUND)

OHIO DATASETS

16 DATASETS

Discharges
Combined Sewer Overflow Monitoring Samples
Individual Permits
NPDES Individual Permits

Storage Tanks
Above Ground Storage Tanks
Active Underground Storage Tanks
Select Counties Tier II Hazardous Chemical Storage

Spills & Releases
Combined Sewer Overflow Monitoring Samples

Significant Facilities
ODOT Facilities
Potential Sources of Contamination

Mining
Coal Mines Locations
Coal Mines Past
Industrial Mineral Locations

Oil & Gas
Oil and Gas Fields
Oil and Gas Wells

Hazardous Waste
Ohio Fly Ash Impoundments

Waste Management
Solid Waste Facilities

KENTUCKY DATASETS

16 DATASETS

Storage Tanks
Tier II Hazardous Chemical Storage
Underground Storage Tanks

Significant Facilities
Mineral Operations
Outlines of Quarries
PCFS Locations

Oil & Gas
Oil and Gas Wells

Discharges
Combined Sewer Overflows
KPDES Permitted Facilities
Package Treatment Plants
PCFS Locations
Wastewater Treatment Plant Outfalls
Wastewater Treatment Plants

Waste Management
Lift Stations
Solid Waste Landfills Areas
Solid Waste Landfills Points

Hazardous Waste
KY Class I Wells

WEST VIRGINIA DATASETS

13 DATASETS

Discharges
NPDES Industrial UIC
NPDES Select Industrial Permits
NPDES Sewage Permits
NPDES Sewage UIC
Office of Water Resources National Pollutant Discharge Elimination System Outlets
Office of Water Resources National Pollutant Discharge Elimination System Sites

Storage Tanks
Leaking Underground Storage Tanks Sites

Oil & Gas
Oil and Gas Permits

Mining
Abandoned Mine Land Points
Abandoned Mine Land Polygons
Mining Permit Points

Waste Management
Solid Waste Landfills

Cleanup
Voluntary Remediation Sites

INDIANA DATASETS

10 DATASETS

Storage Tanks
IN Select Counties EPCRA Tier II Hazardous Chemical Storage Data
Indiana Underground Tanks

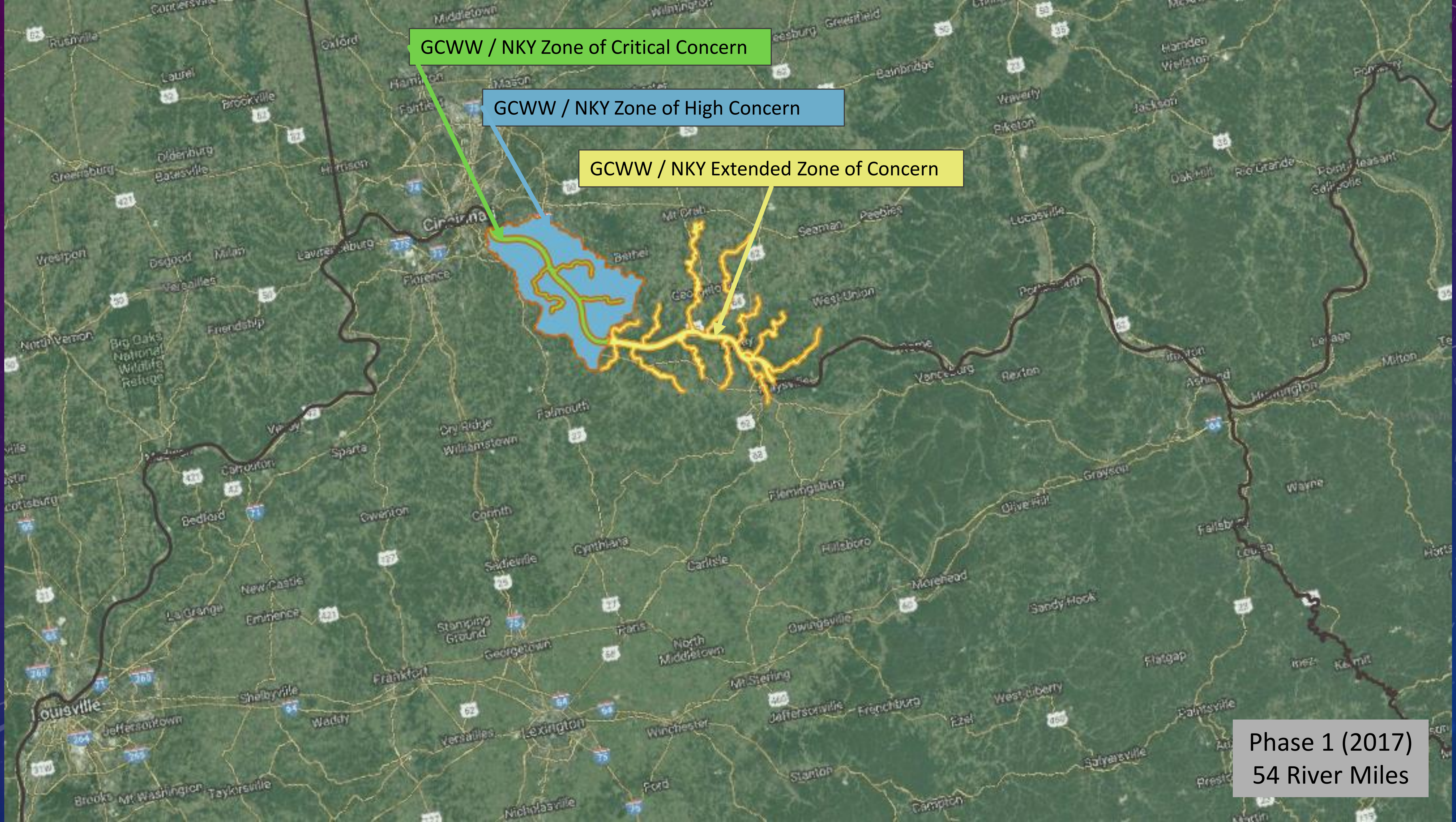
Discharges
Water NPDES Facilities
Water NPDES Pipe Locations

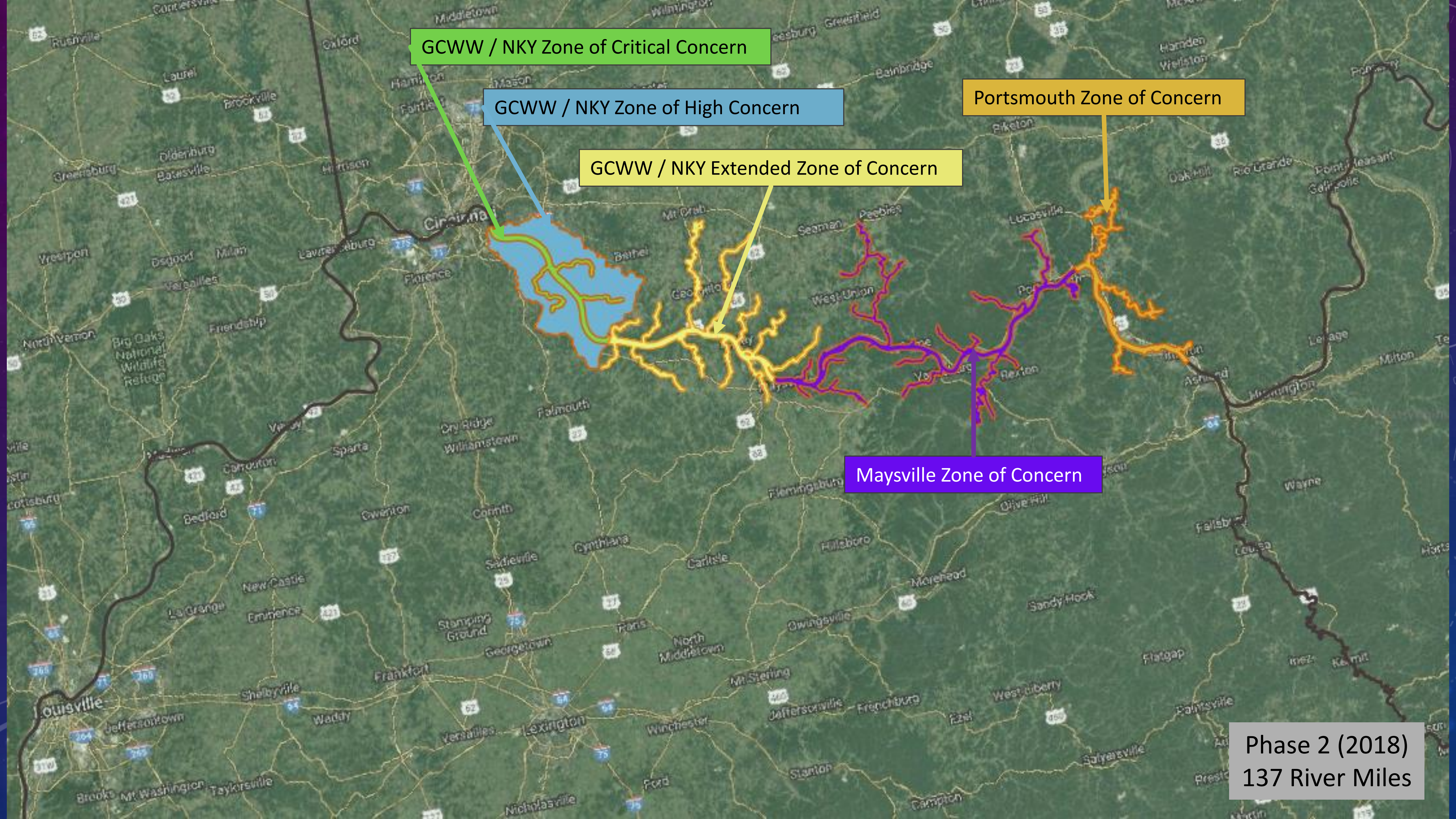
Significant Facilities
Industrial Sites

Cleanup
Institutional Control Sites

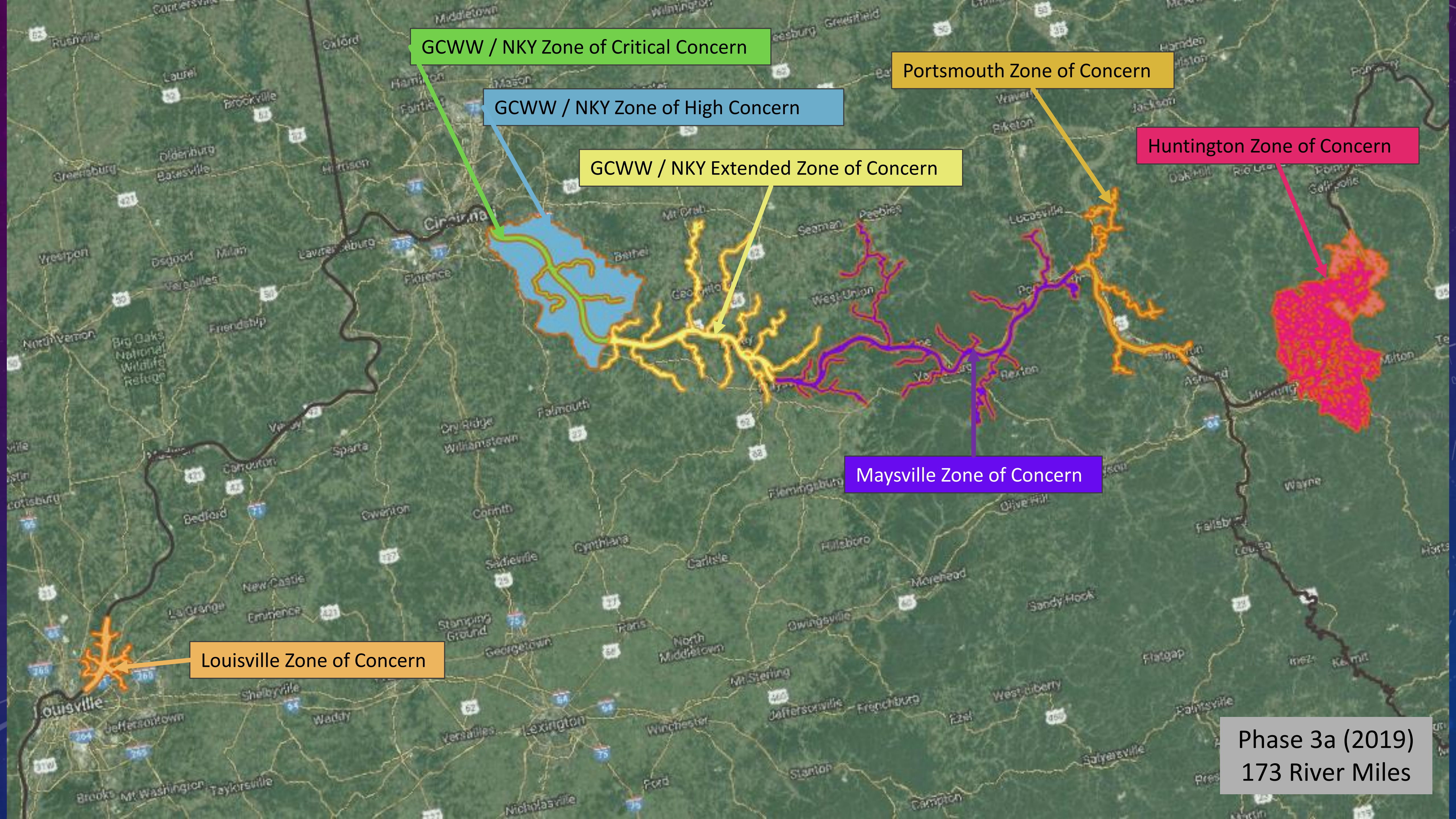
Oil & Gas
Pipelines Oil Gas

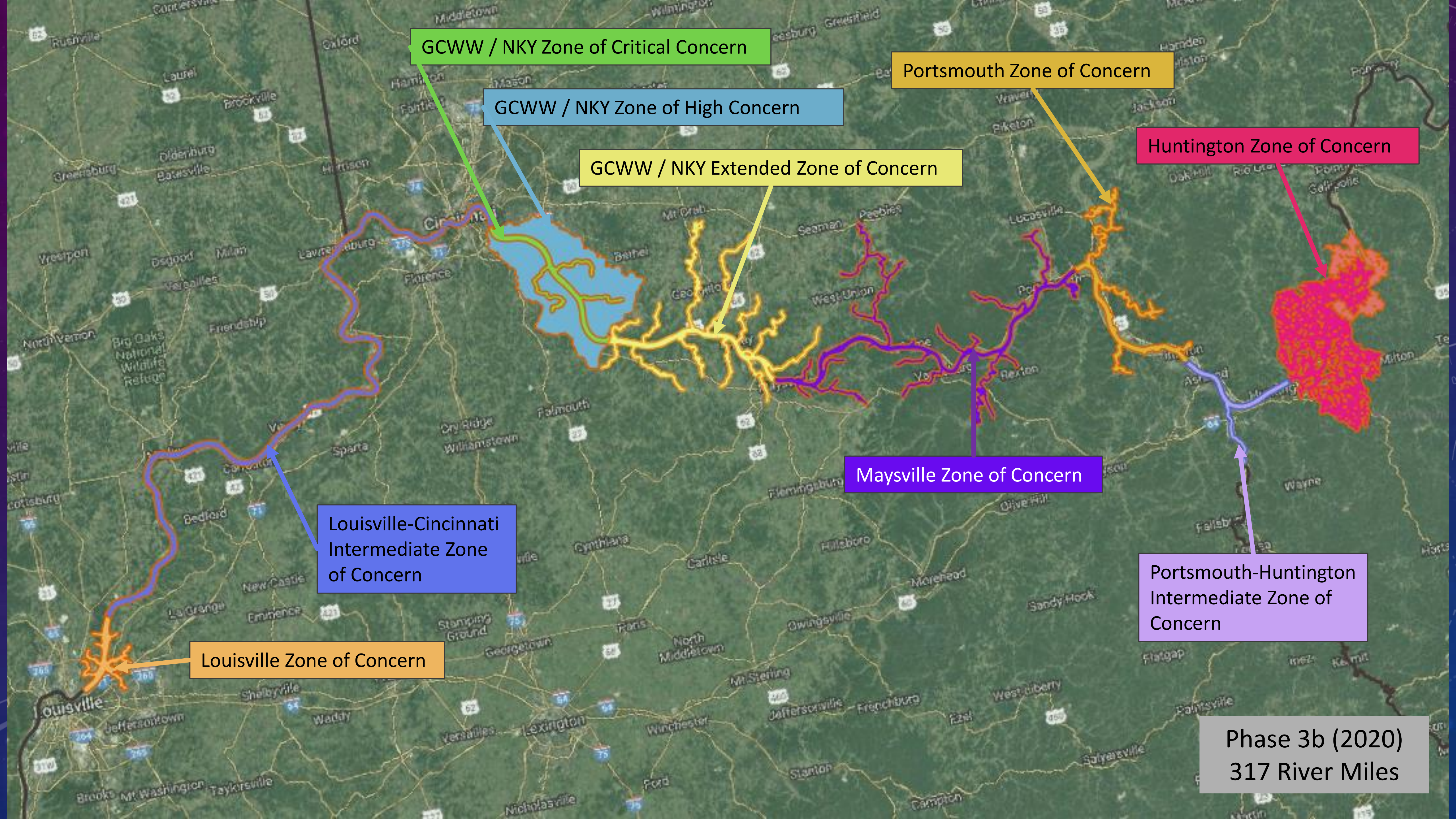
Waste Management
Composting Facilities
Landfill Boundaries
Waste Disposal Storage Handling


GCWW / NKY Zone of Critical Concern
GCWW / NKY Zone of High Concern
GCWW / NKY Extended Zone of Concern
Phase 1 (2017)
54 River Miles



GCWW / NKY Zone of Critical Concern
GCWW / NKY Zone of High Concern
GCWW / NKY Extended Zone of Concern
Portsmouth Zone of Concern
Maysville Zone of Concern
Phase 2 (2018)
137 River Miles


GCWW / NKY Zone of Critical Concern
GCWW / NKY Zone of High Concern
GCWW / NKY Extended Zone of Concern
Portsmouth Zone of Concern
Huntington Zone of Concern
Maysville Zone of Concern
Louisville Zone of Concern
Phase 3a (2019)
173 River Miles


GCWW / NKY Zone of Critical Concern
GCWW / NKY Zone of High Concern
GCWW / NKY Extended Zone of Concern
Portsmouth Zone of Concern
Huntington Zone of Concern
Maysville Zone of Concern
Louisville-Cincinnati Intermediate Zone of Concern
Portsmouth-Huntington Intermediate Zone of Concern
Louisville Zone of Concern
Phase 3b (2020)
317 River Miles

OHIO RIVER PROJECT NEXT STEPS

1. Adjust sites & relationships for recently updated federal data *(winter 2022)*
2. Huntington data integration *(winter 2022)*
3. Run travel time model on Huntington & any newly identified sites *(winter 2022)*
4. Re-run acute spill risk score model for all systems *(winter 2022)*
5. Technical Memo *(spring 2022)*
6. Final user presentation & handoff *(spring 2022)*

ALLEGHENY RIVER PROJECT

ALLEGHENY RIVER REGIONAL THREAT INVENTORY TIMELINE

2020-2021

- Stakeholders engaged
- Zones of concern & intake locations obtained and loaded into WaterSuite
- Existing federal and PA datasets loaded into the Allegheny River Watersuite project
- Tier II data request facilitation
- User training to navigate the data
- Initial site creation and data QA

2021-2022

- 35 datasets updated or added (4 more in progress)
- Tier II data request facilitation
- MAWC user training on Watersuite Site creation
- Site creation & data QA for updated datasets - *in progress*
- *Next steps …*

PA DATASETS

32 DATASETS, 26 UPDATED IN 2021 (IN **BOLD**)

Oil & Gas
Coal Pillar Oil and Gas Locations
Conservation Wells
Conservation Wells Plugged
Historic Oil and Gas Wells
Mariner East 2
Oil & Gas Well Inventory
Oil and Gas Encroachment Locations
Oil and Gas Locations
Oil and Gas Locations Conventional/Unconventional
Oil and Gas Well Waste Disposal Facilities

Hazardous Waste
Captive Hazardous Waste Operations
Commercial Hazardous Waste Operations

Other Waste
Municipal Waste Operations
Residual Waste Operations

Storage Tanks
Storage Tanks

Mining
Abandoned and Orphaned Wells
Active Underground Mining Permit Boundaries
AML Inventory Points
AML Inventory Polygons
Bituminous Coal Mine Permits Update
Bituminous Coal Refuse Update
Coal Mining Operations
Coal Pillar Mining Locations
Digitized Mining Areas
Industrial Mineral Mine Permit Update
Industrial Mineral Mining Operations
Longwall Mining Panels

Discharges
Water Pollution Control Facilities
Water Resources

Cleanup
Abandoned Mine Drainage Treatment and Land Recycling Project Locations
Land Recycling Cleanup Locations
Mine Drainage Treatment Land Recycling Project

PA TIER 2 HAZARDOUS CHEMICAL STORAGE DATA REQUEST TIMELINE

OCT ‘20

Data Request Letters to L&I

Utilities sent letters to PA Dept. of Labor & Industry (L&I) requesting access to Tier II data under EPCRA & AWIA.

Nov ‘20

PATTS System in Progress

Utilities were notified that L&I was developing a user role in its PATTS system for water utilities to access these data by the end of 2020

Fall ‘20

Volunteer PATTS Testers

Several utilities volunteered to be system PATTS system testers

Dec ‘20

PATTS System Delayed

Utilities were notified that their user access to PATTS would not be ready in 2020

2021

Email Reminders

The regional group sent periodic email reminders and check-ins to L&I. By spring, the PATTS user role was ready and an NDA was being developed.

Oct ‘21

Second Written Request

Utilities submitted a second set of letters requesting Tier II data for use in this EPA-funded project

Oct ‘21

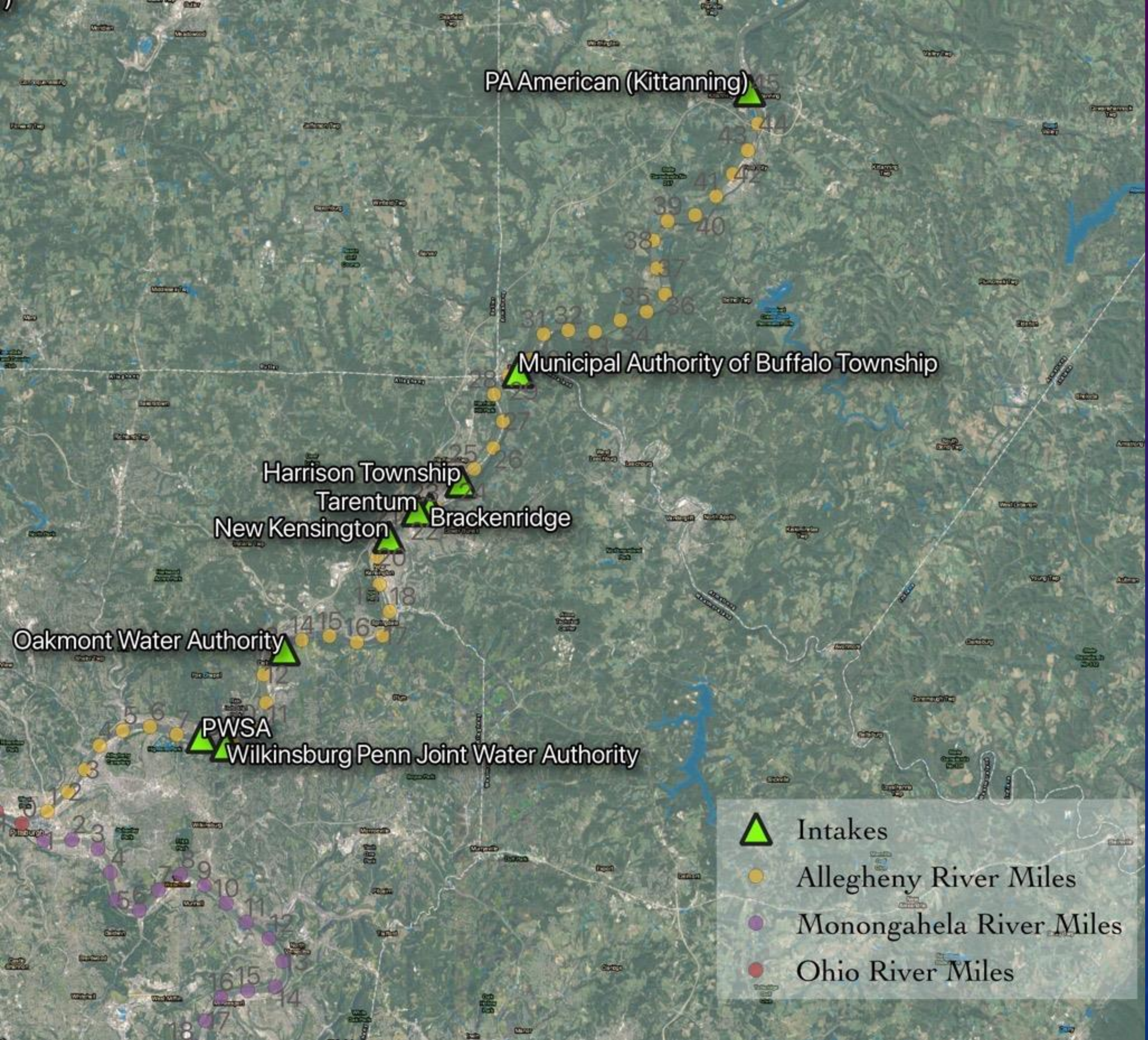
NDA Dialog with L&I Lawyers

The group spoke with L&I lawyers over several phone calls regarding NDA terms for system access & regional data sharing

Nov ‘21

NDA Data Sharing Request Denied

The Director of L&I denied the group’s request for NDA language changes to enable regional data sharing



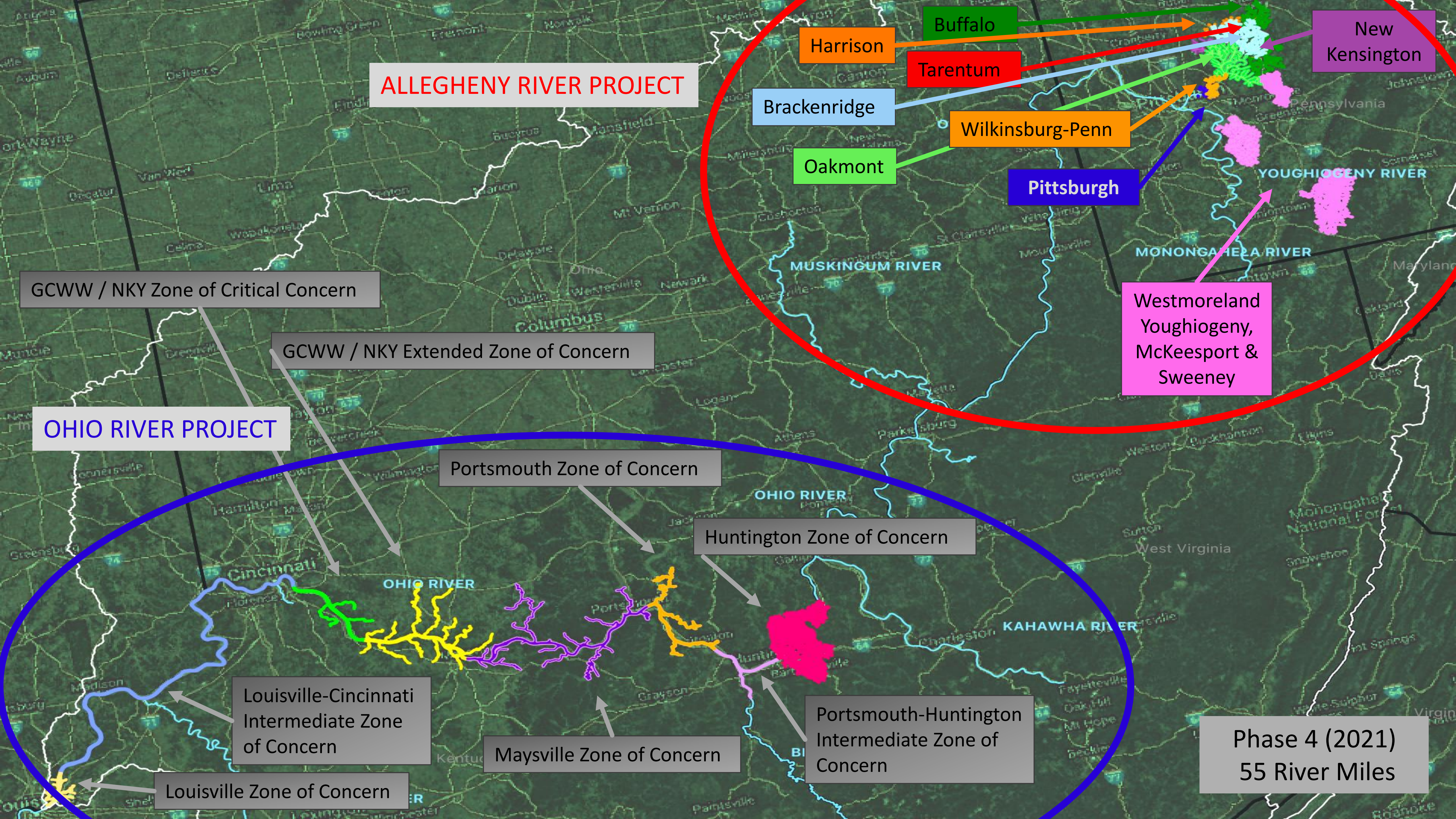
LOWER ALLEGHENY RIVER PROJECT

Participating systems:

- Pennsylvania American Water
- Municipal Authority of Buffalo Township
- Harrison Township Water Authority
- Tarentum Water Department
- Brackenridge Water Department
- New Kensington Water Authority
- Oakmont Water Authority
- Pittsburgh Water Supply Authority (2 intakes)
- Wilkinsburg Penn Joint Water Authority
- Municipal Authority of Westmoreland County (who also brought in 2 of their systems nearby on the Monongahela & Youghiogeny Rivers)

ALLEGHENY RIVER PROJECT NEXT STEPS

1. Finalize data QA and Site creation for new / updated datasets *(Dec 2021)*
2. Run travel time model on new / updated features & Sites *(winter 2022)*
3. Acute spill risk scoring *(winter 2022)*
4. Draft technical memo *(winter 2022)*
5. Provide user training *(spring 2022)*
6. Final user presentation *(spring 2022)*
7. Final technical memo *(spring 2022)*


ALLEGHENY RIVER PROJECT
Buffalo
Harrison
Tarentum
New Kensington
Brackenridge
Wilkinsburg-Penn
Oakmont
Pittsburgh
YOUGHIOGENY RIVER
MONONGAHELA RIVER
MUSKINGUM RIVER
Westmoreland Youghiogeny, McKeesport & Sweeney
GCWW / NKY Zone of Critical Concern
GCWW / NKY Extended Zone of Concern
OHIO RIVER PROJECT
Portsmouth Zone of Concern
OHIO RIVER
Huntington Zone of Concern
KAHAWHA RIVER
Louisville-Cincinnati Intermediate Zone of Concern
Maysville Zone of Concern
Portsmouth-Huntington Intermediate Zone of Concern
Louisville Zone of Concern
Phase 4 (2021)
55 River Miles

Agenda Item 7:

Source Water Protection Program Update

Sam Dinkins, ORSANCO Staff

Outline

1. Source Water Protection
   a. Contaminant Source Inventory
      - Covered in previous presentation
   b. Organics Detection System Status
      - System Status
      - Ongoing Upgrades
      - 2022 Program Goals
2. Emergency Response Update
   - Emergency Response Directory
   - Recent Spill Events

Organics Detection System Status Update

ODS Status Update

16 (current) ODS sites, 15 are operational

- Chemours (Parkersburg, WV)
  - Communication issues with purge and trap; operator was on leave so could not troubleshoot. Currently in discussion of when allowed to visit site for repair
- St. Albans- permanently down
  - OSHA Compliance issues- site reluctant to spend capital funds to meet needs; still seeking a replacement site on the Kanawha or near confluence with the Ohio River (near ORM 265)

Repairs and maintenance -15 site visits since September

- Down from 25 visits previous quarter
- Primarily issues: broken needles, bad screens, contaminated traps
- Several preventative maintenance visits
- Swapped out purge & trap at West View
- Swapped out autosampler at Louisville
- CMS instrument at Ashland repaired

Software Upgrades

GCMS Software Upgrades

- Chromeleon 7
  - All compatible GCMS sites (except Orsanco HQ) have Chrom 7:
    - Hays Mine (PA), Weirton, Wheeling, Huntington, Louisville, Evansville
    - Other 2 GCMS sites (West View (PA) and Chemours) are not compatible
    - Ordered Chrom 7 for Orsanco HQ in January- waiting for shipment
- WIN 10/PC Upgrades
  - Several PCs have been updated, 4 remaining to be upgraded in FY22
    - Evansville, Midland, Weirton, and Paducah

2022 Program Goals

- Simplify ODS training for operators.
  - New SOPs, Quick Reference Guides, YouTube Videos
    - ORSANCO staff will continue to make easy to follow guides, videos, and update SOPs in 2022 to ensure on-site ODS operators feel comfortable and prepared.
  - In Person Training at ORSANCO?
    - Alternative- Live Webinar

- Begin design and implementation of online ODS data management and alert system.
  - Received several bids from data management consultants
  - Plan to meet with group in February to begin feasibility study.

Program Goals cont'd

- ORSANCO staff will work on additional VOC analytes to add to our list of calibrated compounds.
  - System currently calibrated for 30 analytes
  - Evaluate up to 10 additional compounds
  - Analyte candidate list based on commonly spilled contaminants and system feasibility
  - Start date: Mid February– anticipate results prior to next meeting

Proposed List of New VOC Contaminants

- 1,2,4 Trichlorobenzene
- 1,2,3-Trichloropropane (trichlorohydrin, allyl trichloride)
- Propanol (n-propanol, 1-propanol)
- Napthalalene
- Isopropylbenzene (Cumene)
- Bromobenzene
- 2-Hexanone (MBK)
- Vinyl chloride*
- Total Xylenes*
- cis-1,2-Dichloroethylene (-ene) (1,2-DCE)

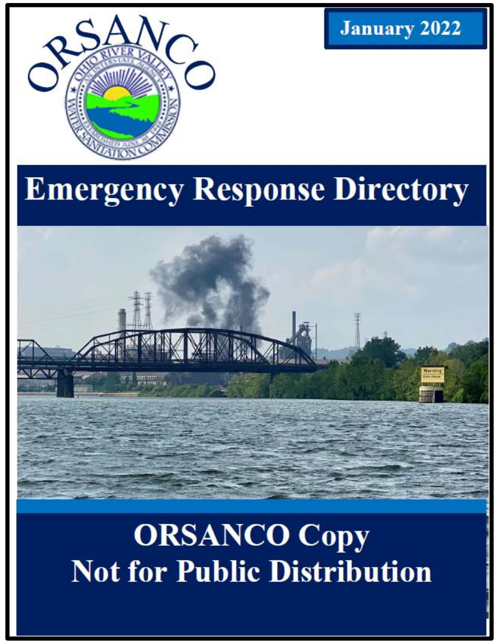
Emergency Response Update

Emergency Response Directory

- ORSANCO ERD serves as a resource document for ORSANCO staff, state/federal response agencies and water utilities for use during spill events.

- ERD is updated annually to keep contact info current.

- Produce 3 versions:
  - Public copy
  - Agency/Utility
  - Staff version

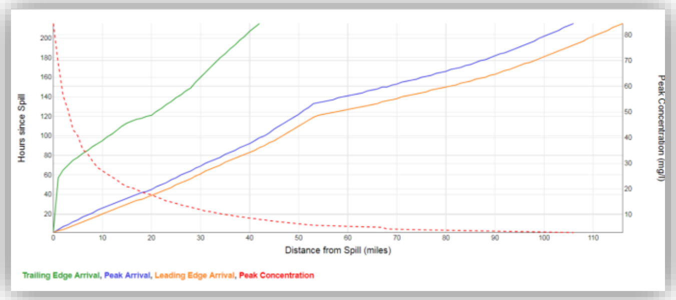


ERD Contents

- Latest copy updated January 2022
- Main Sections:
  - General notification procedures
  - Contacts:
    - Water utilities
    - State Emergency Response agencies
    - Federal ER agencies (NRC, US EPA, USCG, USACE)
    - State drinking water agencies
    - Organics Detection System stations
  - Ohio River Resource Details
    - Lock & Dams, county lines, tributary list, conversion factors
  - ORSANCO notification procedures (ORSANCO copy only)

Emergency Response Capabilities

- Initial Notification (24/7)
- Continued discussion/coordination
  - Response agencies and utilities
  - Unified Command Center
- Water quality sampling
  - Fixed station or via boat
- Analytical support
- Time-of-travel modeling



Recent Notable Spill Incidents

- Little Chartiers Creek (84, PA Nov 28, 2021)
  - 5,000-6,000 gallons of gasoline from gas station UST
  - Drained to unnamed trib>>>Little Chartiers>>>Chartiers Cr. (25+ miles to Ohio R.)
  - ORSANCO notified 11-29 by EPA after seeing media report
  - Ultimately determined non-issue for Ohio River WQ
  - Emphasizes need to maintain relationships with response agency personnel

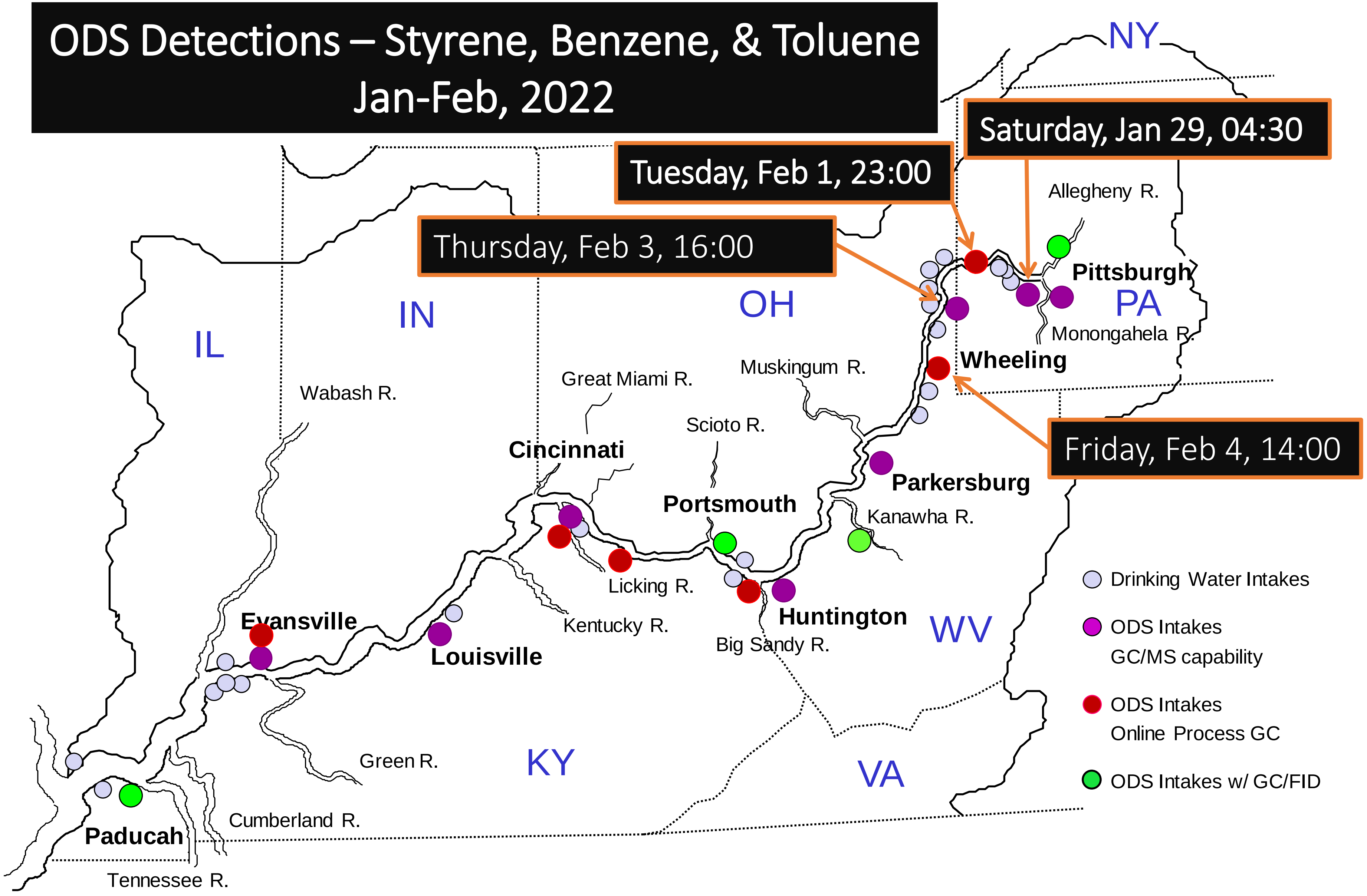
- Harrods Creek (Louisville, KY Nov 10, 2021)
  - Fire suppression system in roadway tunnel failed
  - AFFF drained via storm drain to Harrods Creek
  - Louisville Water received first report of incident

Recent Notable Spill Incidents

- Tow-boat fire (ORM 501, Nov 9, 2021)
  - Engine room of M/V Capt Kirby Dupuis caught fire
  - Crew had to be rescued
  - Unknown amount of fuel on-board
  - Tow boats can carry 50,000+ gallons of diesel fuel

- Explosive devices on barges
  - Pipe bombs discovered on barge/tow boats
  - St. Marys, WV; Williamstown, WV; Marietta, OH
  - All were removed without incident
  - Arrest has been made

ODS Detections – Styrene, Benzene, & Toluene Jan-Feb, 2022



Questions?

Agenda Item 8:
Biological Programs Update

Report of the Biological Water Quality Subcommittee

Ryan Argo

rargo@orsanco.org

Daniel Cleves

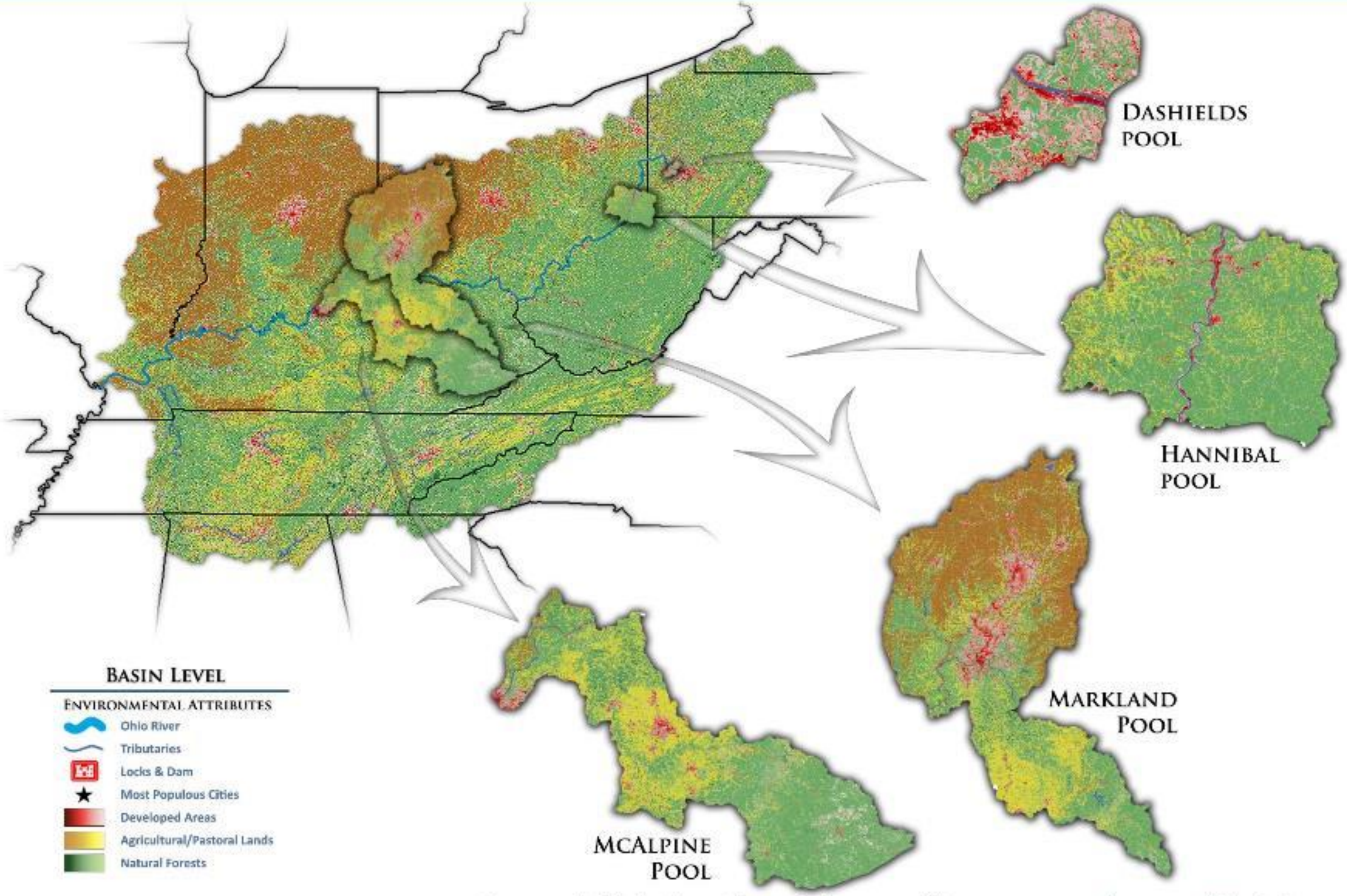
dcleves@orsanco.org

ORSANCO Biological Sampling Overview

- Sample 3 pools per year (4 pools this season to account for 2020)
  - Fish assemblages (night-time electrofishing)
  - Macroinvertebrate assemblages (Hester-Dendy, kick net)
  - Habitat assessment (benthic substrate, aquatic macrophytes)
- 15 random sites per pool (scores averaged)
  - Collectively represent the condition of pool
  - Scored using a fish (*m*ORFIn) and macro (ORMIn) indices
- 18 river-wide fixed stations (fish, macros, habitat); 2004-present
- River-wide fish tissue collection
  - Additional collections on behalf of IDEM
- Basin-wide mobile aquarium displays

2021 Pool Survey Results

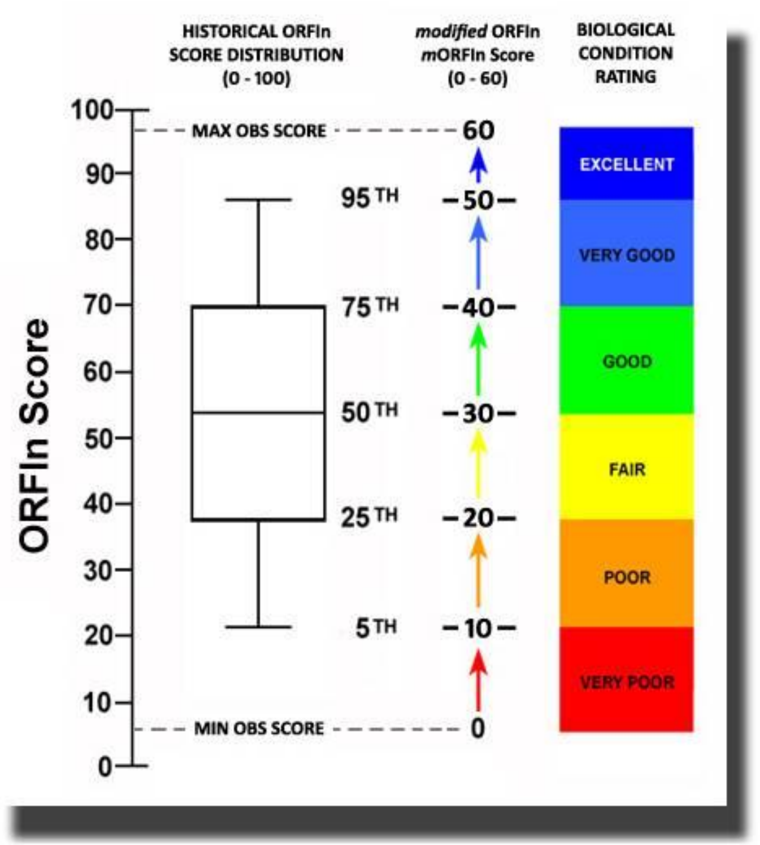
The results of the 2021 biological surveys are detailed in the following pages (relative pool locations shown below). Included are brief descriptions of the land use & hydrology, site level mORFIn & ORMIn ratings, summaries of notible catches & instream habitat, and the overall biological condition of each pool.



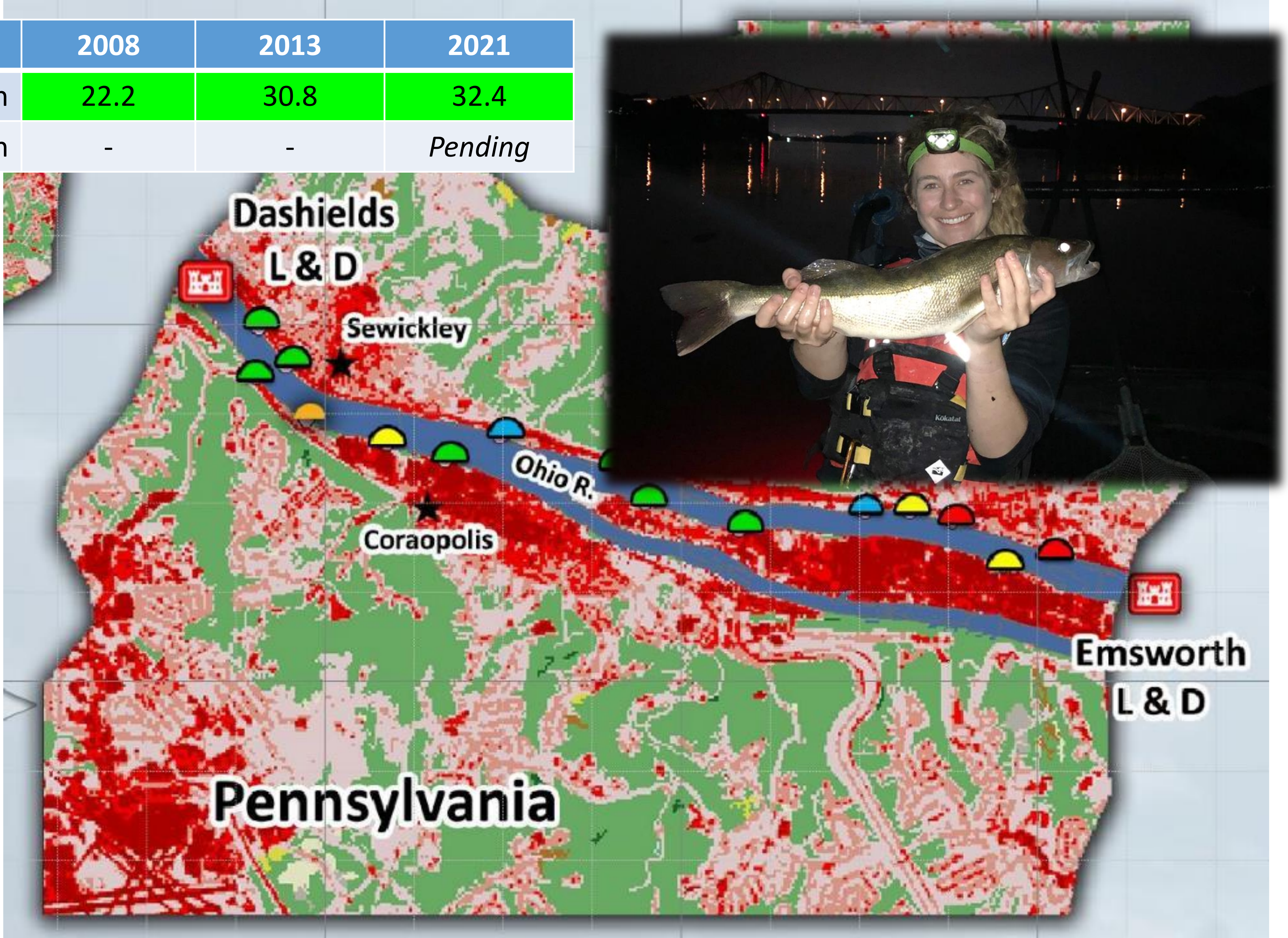
For more detailed catch, metric, and index scores visit www.orsanco.org/programs/biological-programs

Assessment Tools

- 2003 - Created a multi-metric Ohio River Fish index (ORFIn)
- 2008 - Modified (*m*ORFIn) to incorporate updated habitat classes and metric scoring methods
- 2012 - Created a multi-metric Ohio River Macro index (ORMIn)
- Fish and Bug metrics
  - Diversity, abundance, feeding/reproductive guilds, pollution tolerance, health, and habits
- Compare observed index score of a site to the past performance of sites with similar habitat
- Biological Condition Ratings (colors) are based on this relative performance
- Support > 20 average index score, 'Fair' **rating or better**



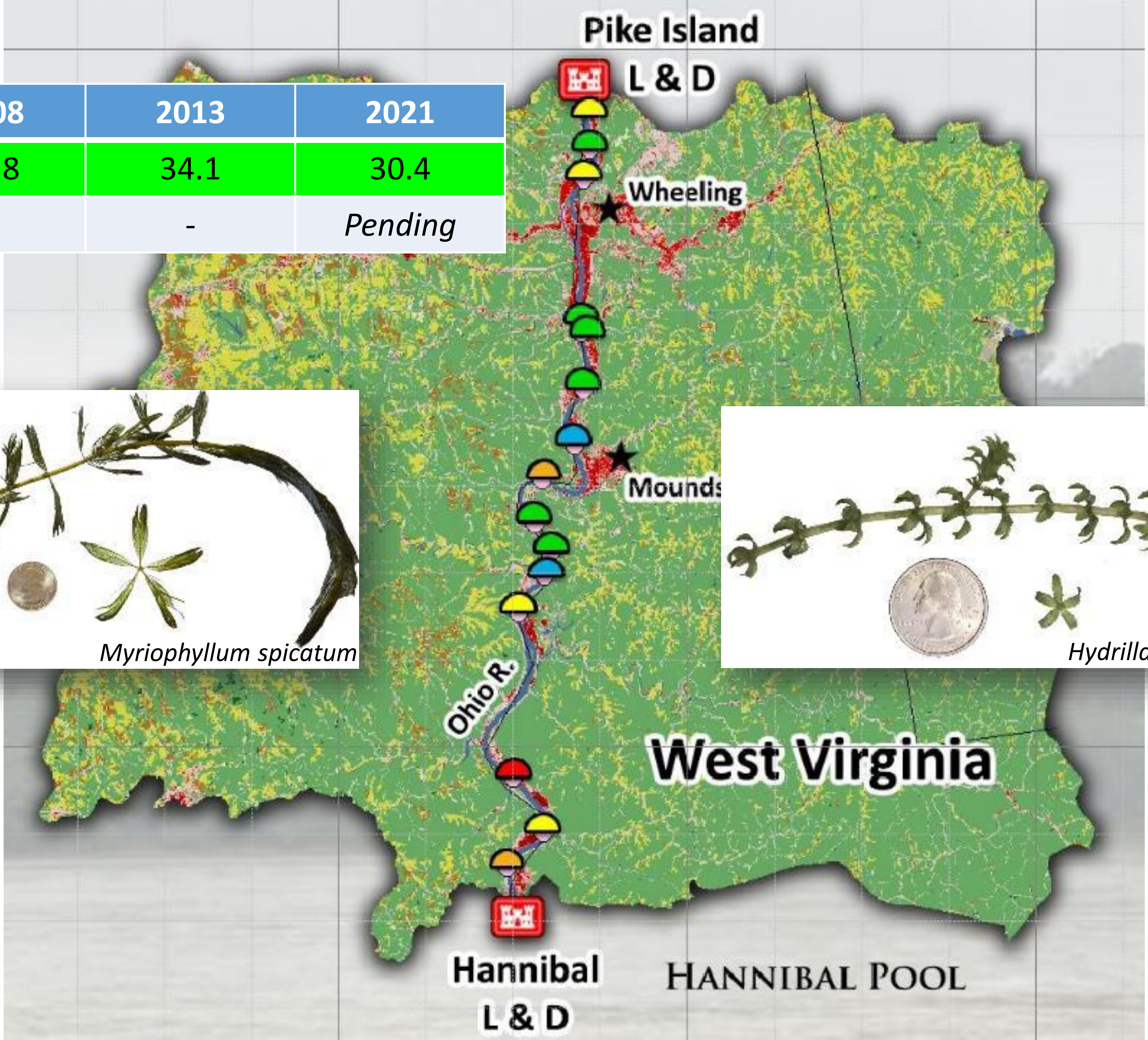
Dashields	2008	2013	2021
*m*ORFIn	22.2	30.8	32.4
ORMIn	-	-	*Pending*



Dashields

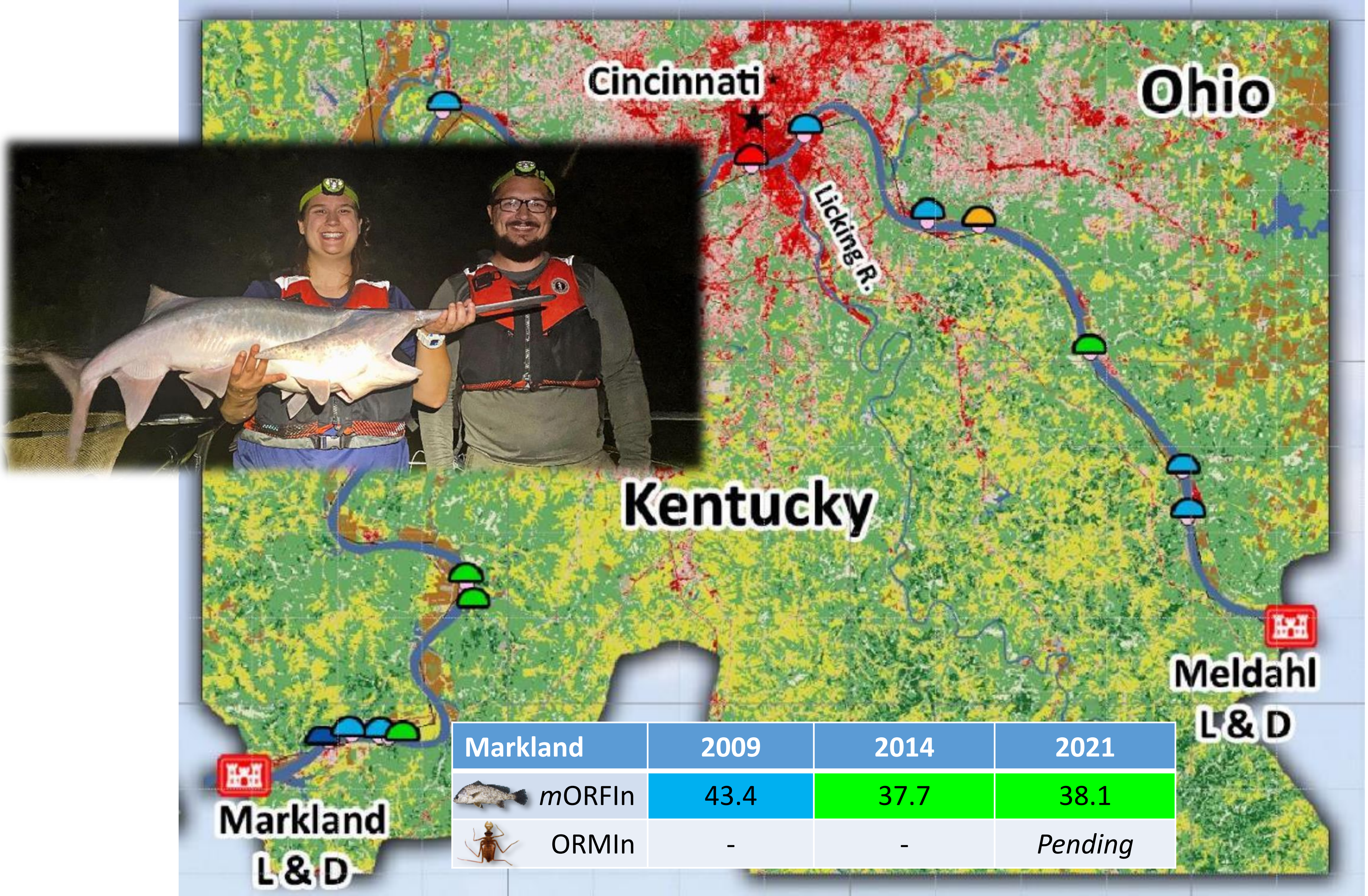
Variable	2008	2013	2021
Environmental Factors			
Avg. seasonal flow (cfs)	**Low**	**Low**	**Low**
Avg. CPUE Score	**1.9**	**9.5**	**25.8**
Channel Shiner	1	108	1423
Emerald Shiner	5	46	748
All Fish	1231	2177	3697
Avg. % Invert Score	**23.7**	**30.6**	**86.1**
Bluegill	32	34	105
Golden Redhorse	33	155	177
Avg. % Piscivore Score	**61.4**	**58.6**	**15.5**
Flathead Catfish	11	6	7
Sauger	23	17	12
Avg. Great River Species Score	**40**	**4.4**	**0**
Silver Chub	26	0	0
Mooneye	11	1	0
Assessment Result			
Avg. mORFIn Score	22.2	30.8	32.4
Fish Condition Rating	**Fair**	**Good**	**Good**

Hannibal	2008	2013	2021
*m*ORFIn	34.8	34.1	30.4
ORMIn	-	-	*Pending*

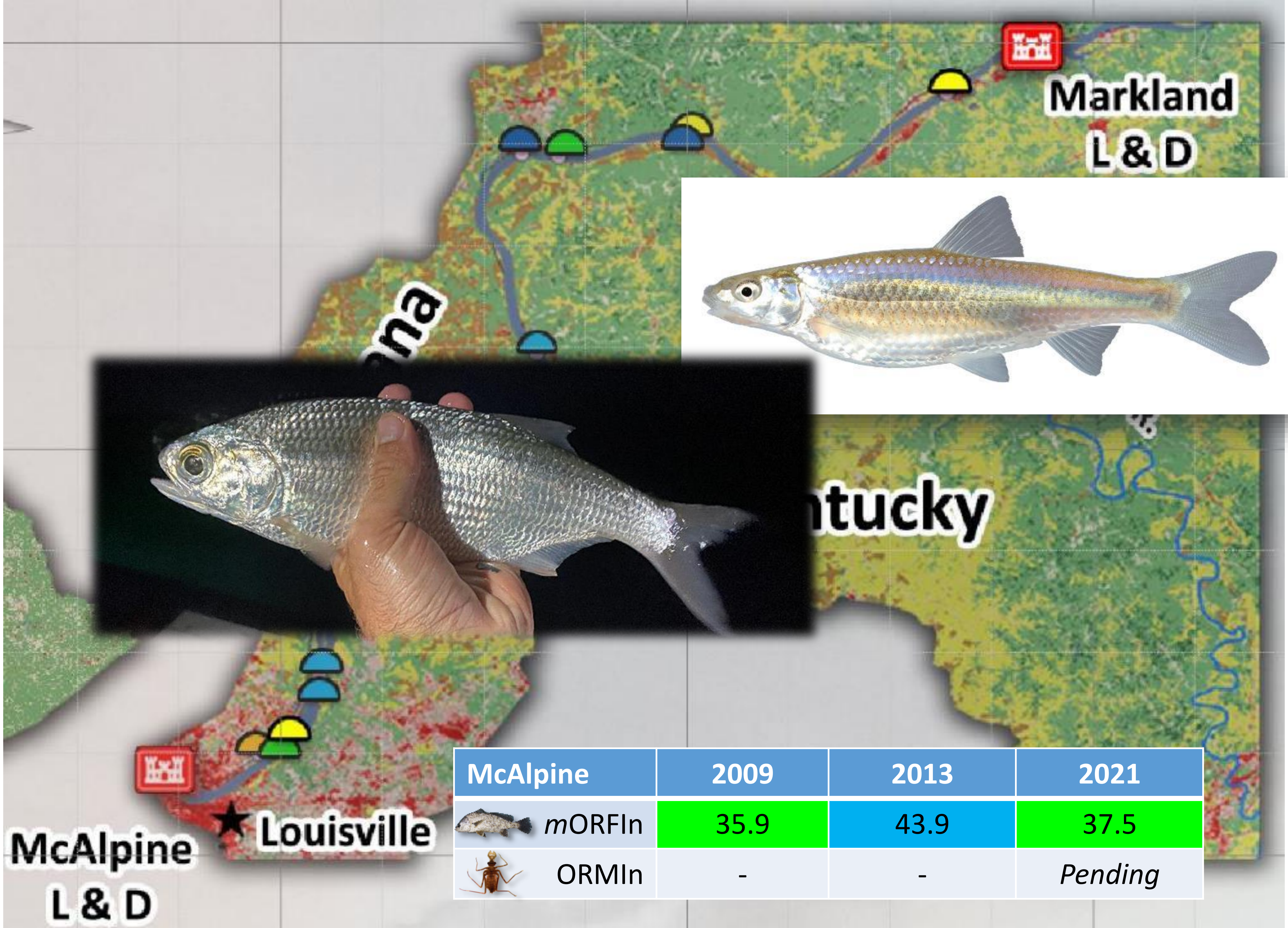


Myriophyllum spicatum

Hydrilla verticillata

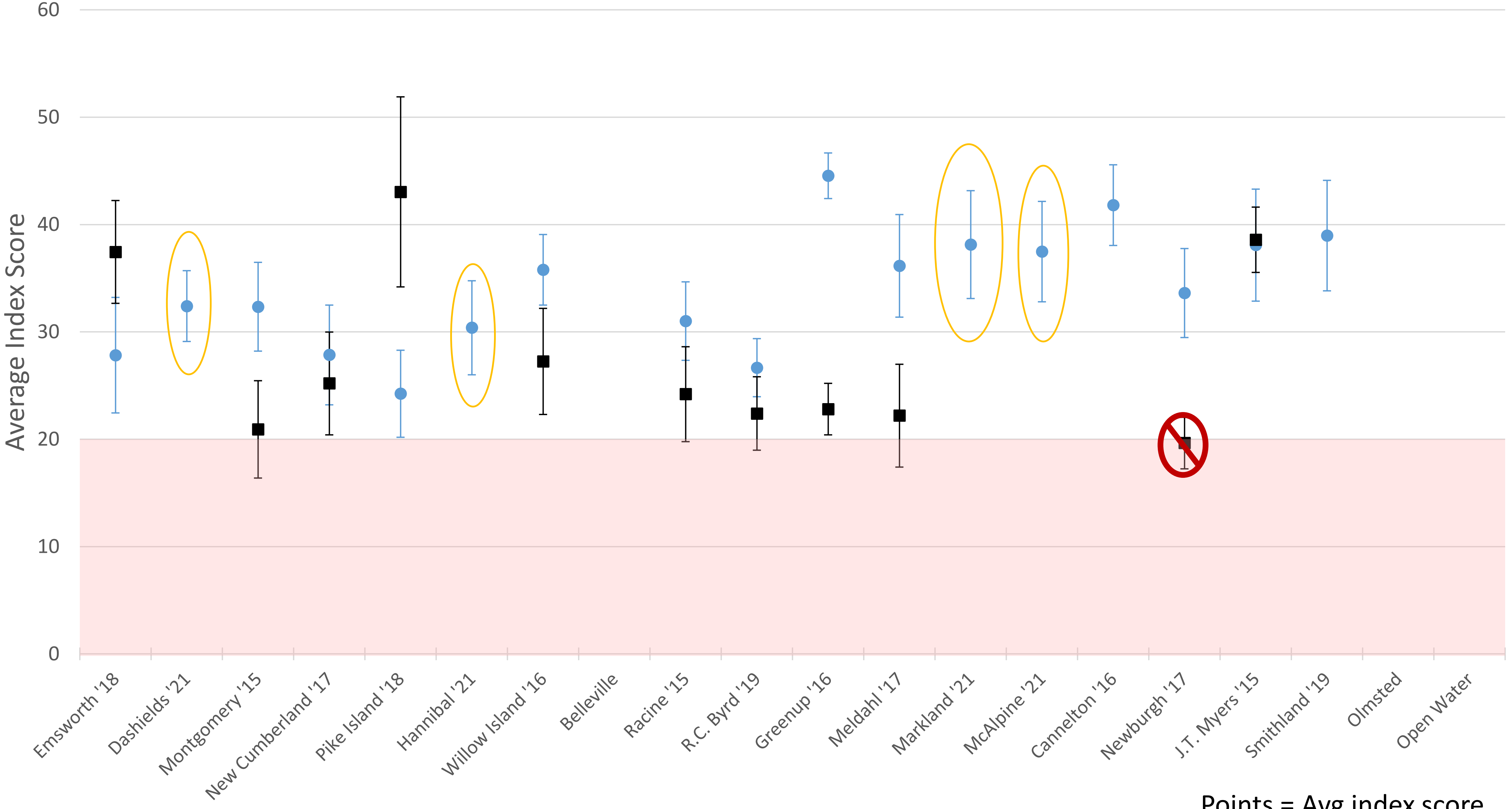


Markland	2009	2014	2021
*m*ORFIn	43.4	37.7	38.1
ORMIn	-	-	*Pending*



McAlpine	2009	2013	2021
*m*ORFIn	35.9	43.9	37.5
ORMIn	-	-	*Pending*

3rd Pool Assessment Cycle Results



Points = Avg index score
Bars = 90% CI

Macroinvertebrate Sampling

- Primary ORMIn data - Hester Dendy Collections
  - Requires minimum of 10 sites per pool
  - Met quota in all 4 pools
  - Hannibal – paired continuous DO and sestonic nutrient sampling
- Secondary ORMIn data – Multi-Habitat kicks
  - Surrogate for lost/qualified HD samples
  - Collected at all 18 Fixed Stations and 60 probabilistic sites
- Data are speciated and enumerated by a contractor
  - Expected in February, will review assessments with BWQSC

Fish Tissue Collections

- 2020 Collections filled data gaps for 2022 305(b) assessments
  - Data returned in July of 2021
- ORSANCO Collections for consumption and assessments included 16 composites from 4 probabilistic pools and fixed stations
- IDEM Grant - 11 composites collected From Markland and McAlpine pools
  - To be analyzed for PCBs, metals, and PFC investigations
- BWQSC recommended adding PFAS analytes to all future FT collections

Pool	Sample Year	TL3 samples	TL 4 samples	Existing samples	Total # TL3 and TL4
Markland	**2021**	**3**	**3**	**4**	**10**
McAlpine	**2021**	**2**	**3**	**5**	**10**
J.T. Myers	2022	2	2	**6**	**10**
Cannelton	2023	5	5	**0**	**10**
Newburgh	2024	4	4	**2**	**10**
Totals		**16**	**17**	**17**	**50**

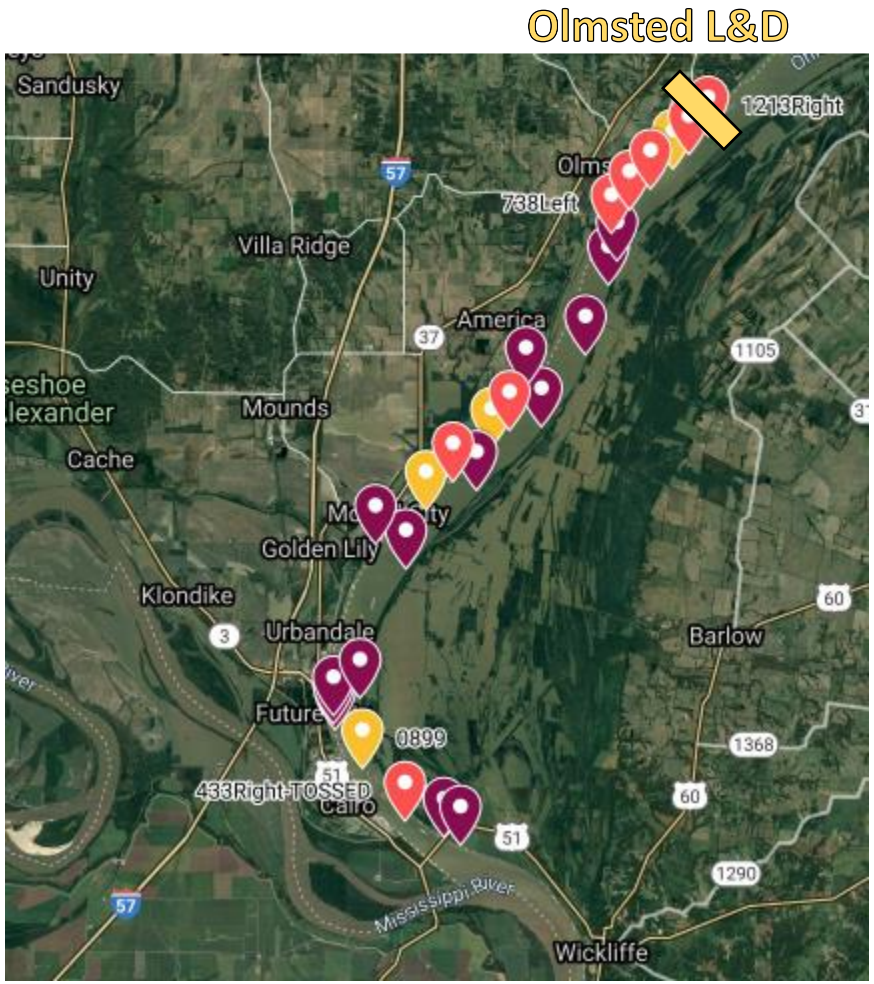
Pool	Times Assessed	Yrs Since Last Survey	Cycle 3								Cycle 4					
			2015	2016	2017	2018	2019	2020	IDEM 2021	IDEM 2022	IDEM NRSA 2023	IDEM NRSA 2024	2025	2026	2027	2028
Emsworth	3	4				X		Asseesments Postponed - COVID						X		
Dashields	3	1							X						X	
Montgomery	3	7	X								X					
New Cumberland	3	5			X								X			
Pike Island	3	4				X								X		
Hannibal	3	1							X						X	
Willow Island	3	6		X									X			
Belleville	2	8								X						X
Racine	3	7	X									X				
RC Byrd	3	3					X							X		
Greenup	3	2		X									X			
Meldahl	3	5			X								X			
Markland	3	1							X						X	
McAlpine	3	1							X							X
Cannelton	3	6		X							X					
Newburgh	3	5			X							X				
JT Myers	3	7	X							X*						
Smithland	3	3					X							X		
Olmsted	2	8								X						X
Open Water		8								X						X

Everything past the double yellow line is hypothetical

Indiana Fish Tissue pools highlighted

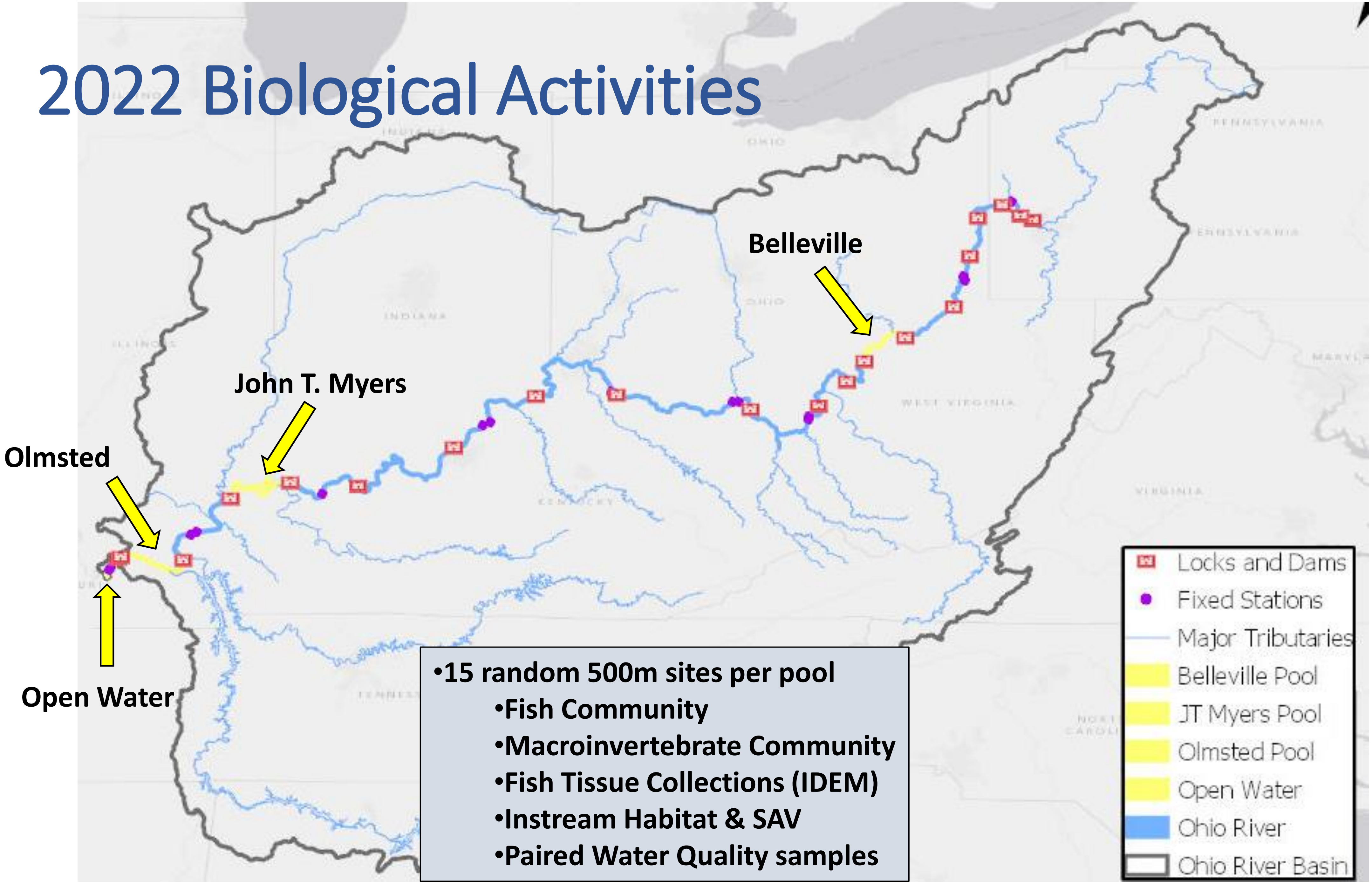
*first pool in 4th Assessment

Historical Open Water Sampling



- Sites have been added every year while sampling Olmsted pool
- 13 electrofishing sites – 22 events
  - Predominately homogenous habitat: Class D
  - Sites perform poorly from using the *m*ORFIn
  - Macro dataset is even smaller
- IL and KY: Most interested in raw population data (fish & macros)
  - BWQSC supports continued sampling of Open Water to meet state needs and evaluate indices

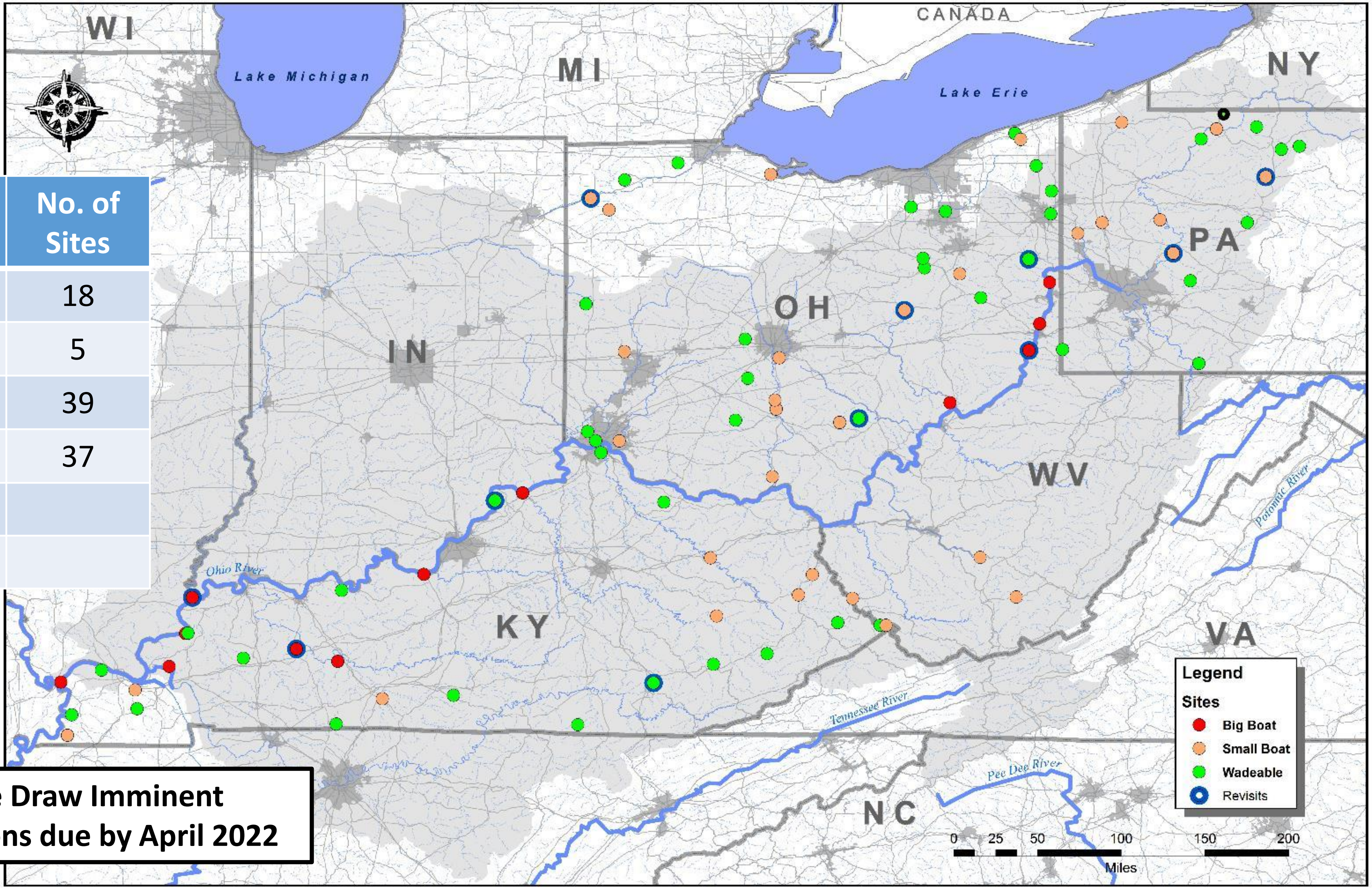
2022 Biological Activities



- 15 random 500m sites per pool
  - Fish Community
  - Macroinvertebrate Community
  - Fish Tissue Collections (IDEM)
  - Instream Habitat & SAV
  - Paired Water Quality samples

ORSANCO Sites for the 2018-2019 National Rivers and Streams Assessment (NRSA)

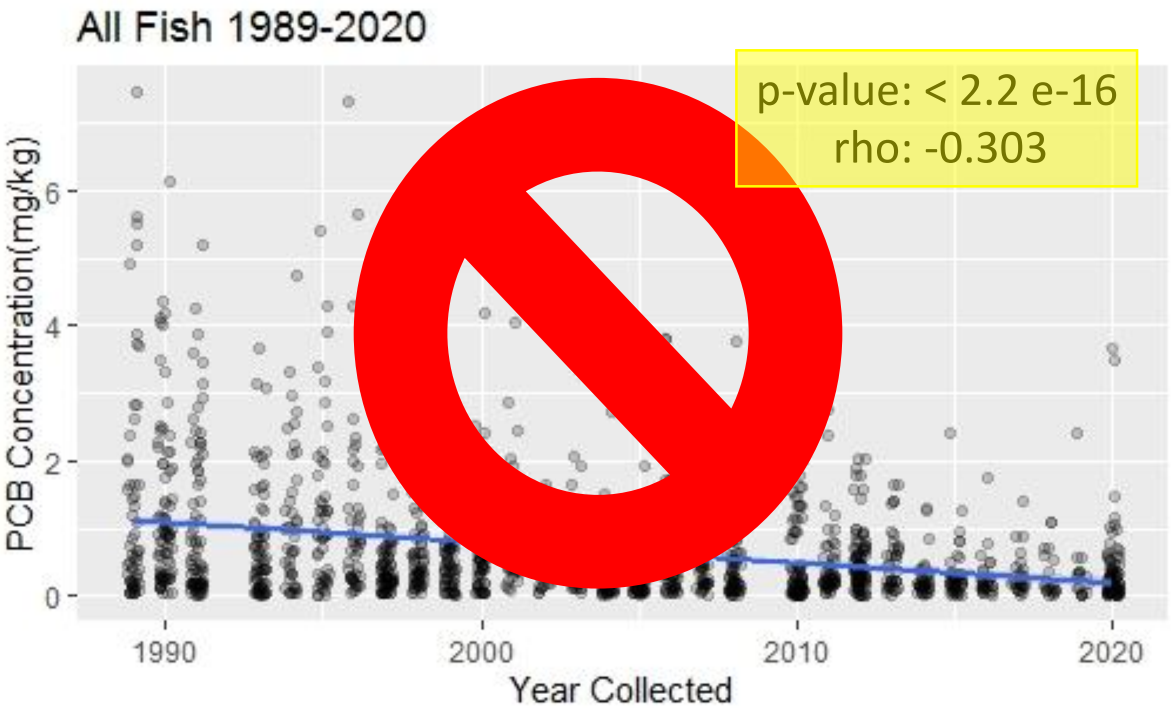
Mainsteam States	No. of Sites
PA	18
WV	5
OH	39
KY	37
IN	
IL	

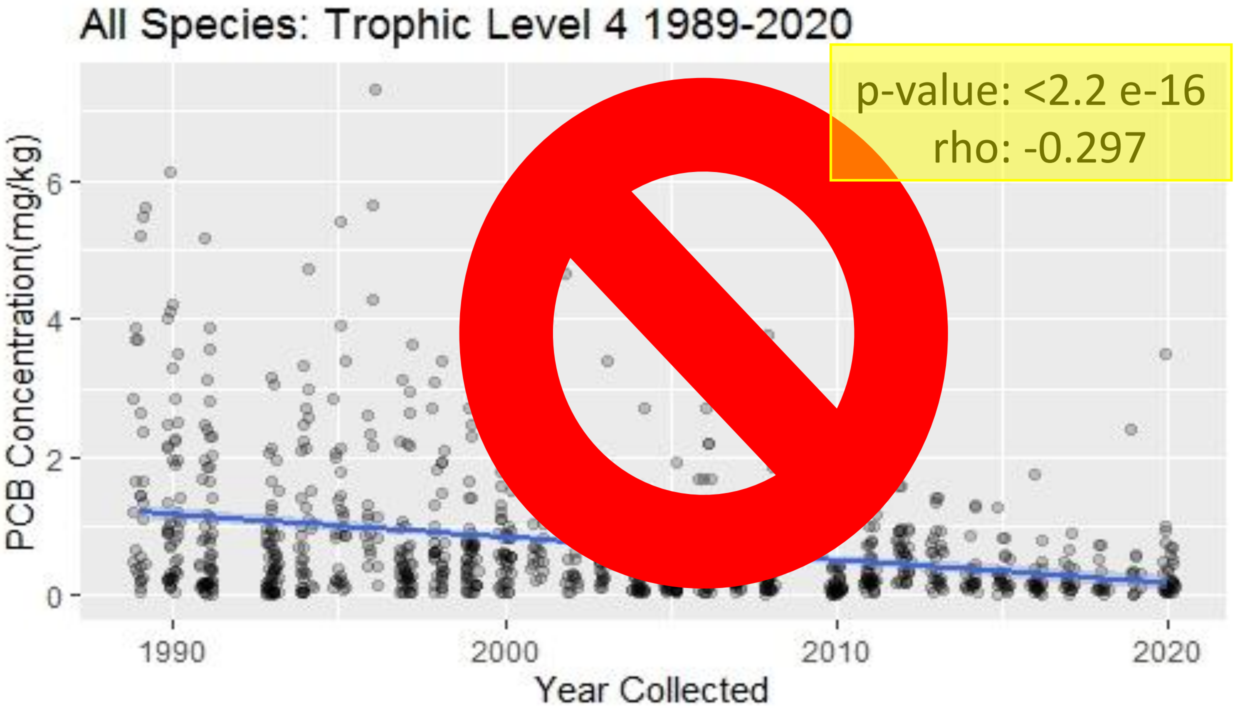


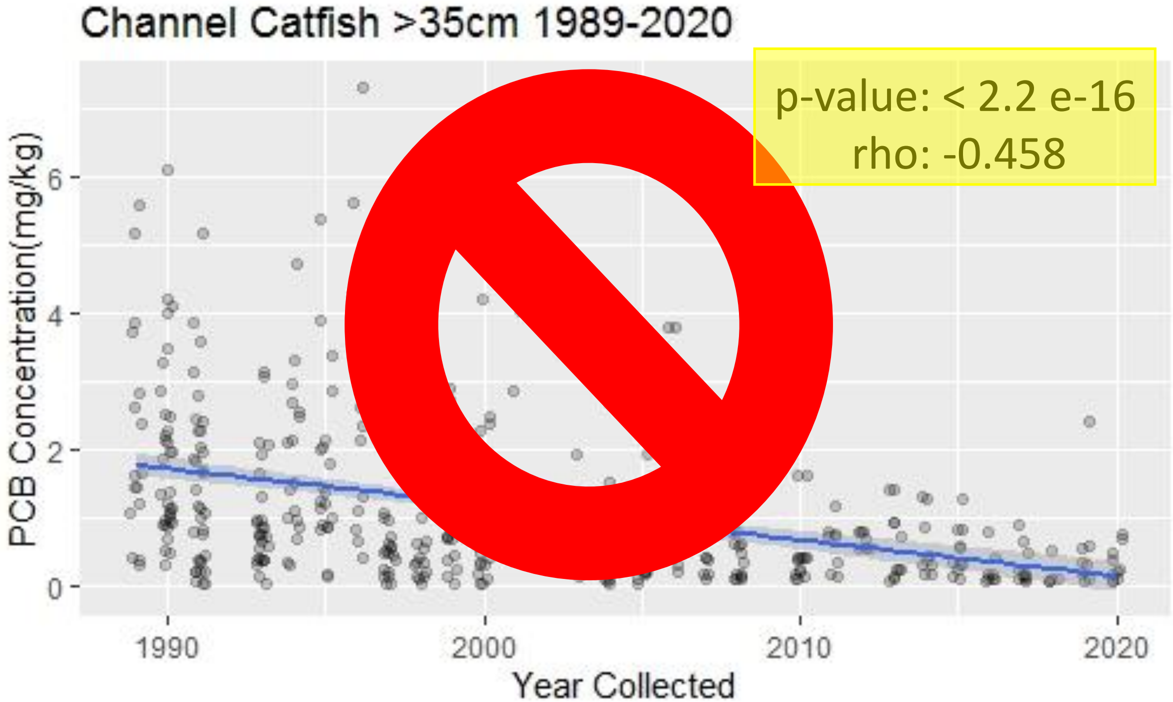
23/24 Site Draw Imminent
Applications due by April 2022

Ongoing Data Management/Analytical Efforts

- Progress in uploading biological data to the UESPA's WQX database
  - All Lock Chamber and Electrofishing data have been uploaded (Jan 2nd)
  - Macroinvertebrate data targeted by the end of FY22
- Biotic Index Recalibration
  - 3rd assessment cycle ends in 2022
  - Effect of SAV proliferation, Open Water adjustments, scoring thresholds
- Biological / Abiotic trends
  - Temporal trends in fine sediments
  - Fish tissue contaminants


All Fish 1989-2020
p-value: < 2.2 e-16
rho: -0.303
PCB Concentration(mg/kg)
0
2
4
6
1990
2000
2010
2020
Year Collected


All Species: Trophic Level 4 1989-2020
p-value: <2.2 e-16
rho: -0.297
PCB Concentration(mg/kg)
0
2
4
6
1990
2000
2010
2020
Year Collected

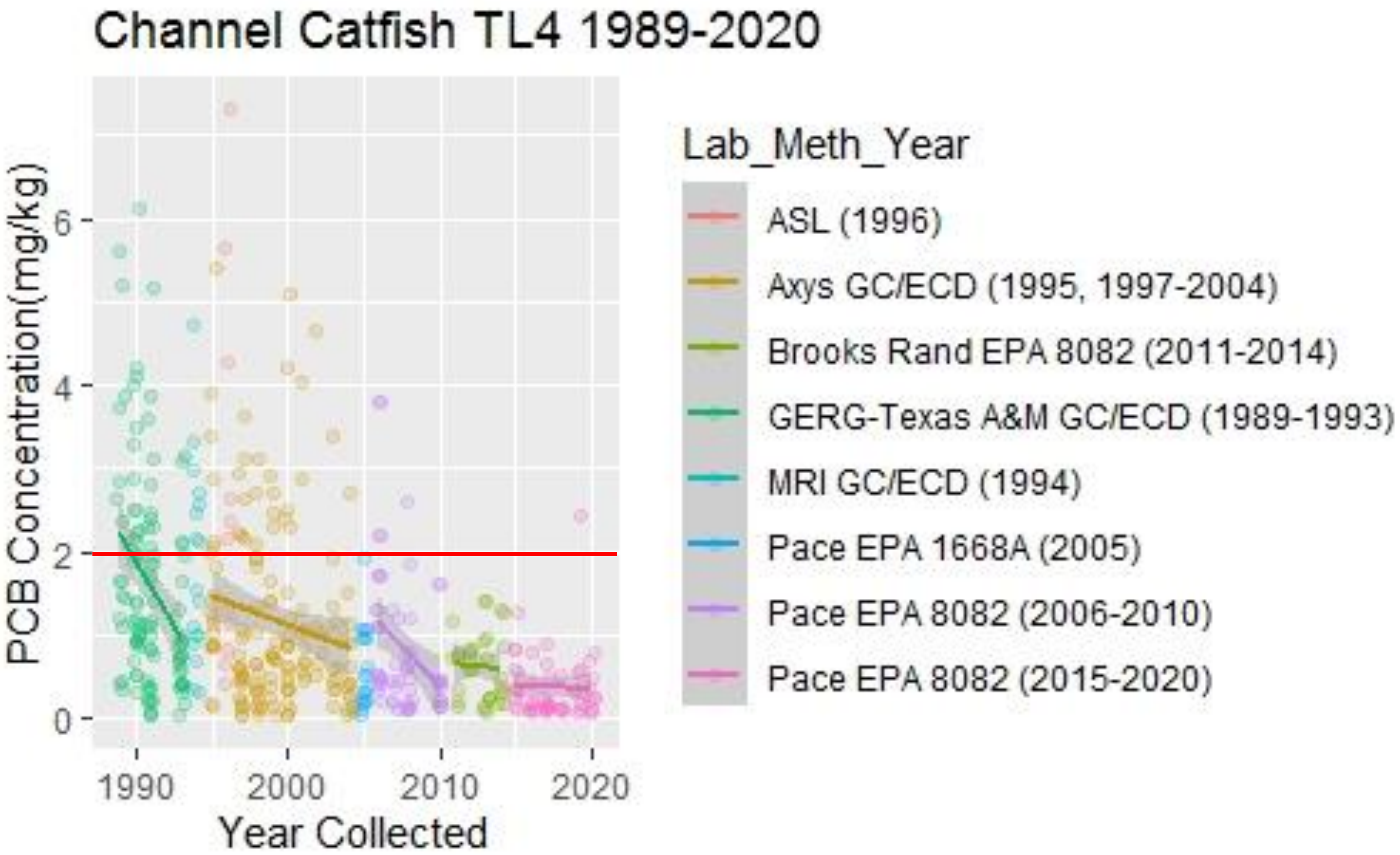

Channel Catfish >35cm 1989-2020
p-value: < 2.2 e-16
rho: -0.458
PCB Concentration(mg/kg)
0
2
4
6
1990
2000
2010
2020
Year Collected

Why did we choose this approach?

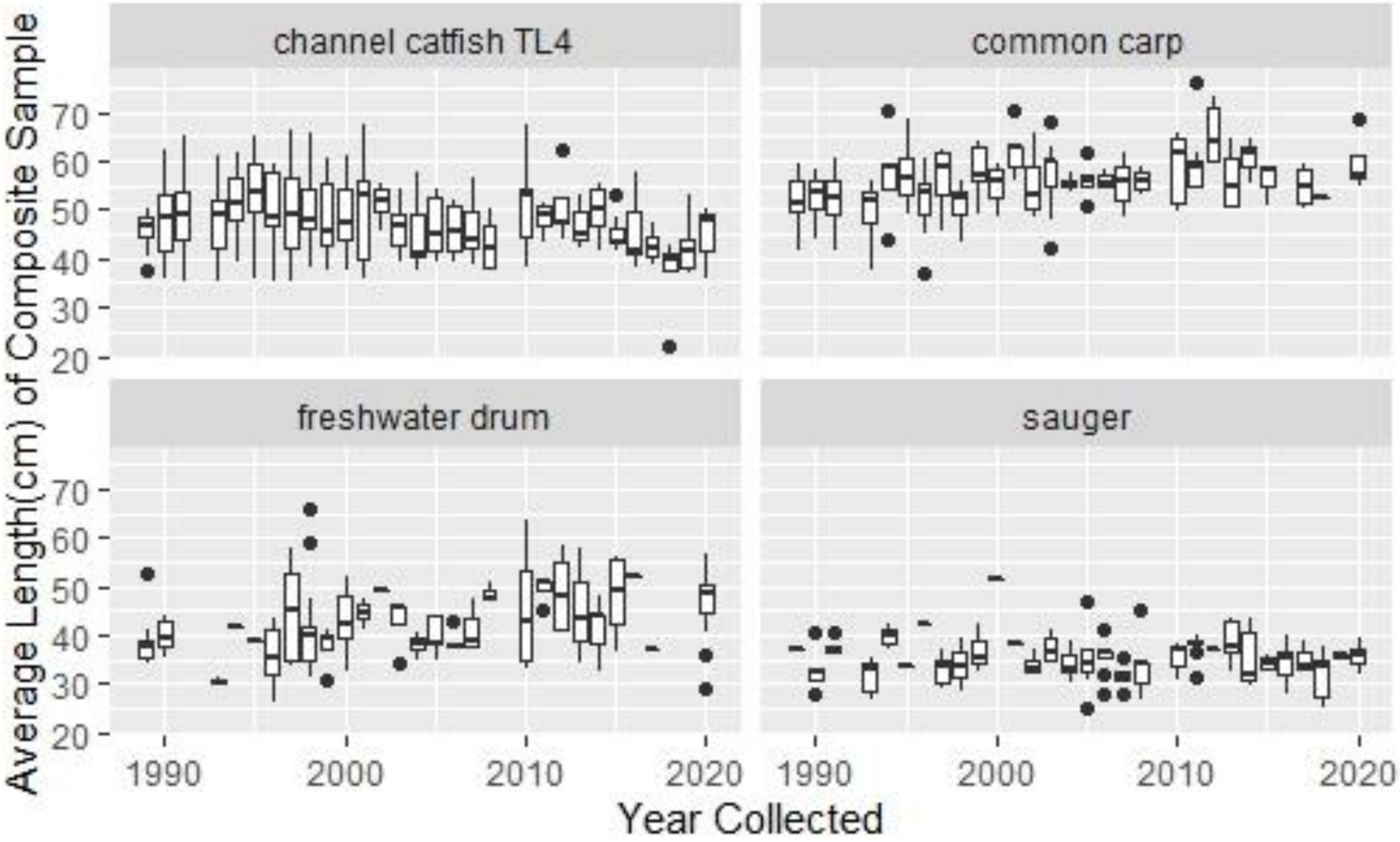
- Recent Literature suggests PCB concentration measurements are not comparable over time if they were not analyzed by the **same lab and analytical method**
  (*Butcher et al.* 1997; *USEPA: Second Five-Year Review Report Hudson River PCBs Superfund Site* 2017)

- Confounding factors
  - differences in “total PCB” enumeration schemes and laboratory standards
  - inherent biases within an historic dataset
  - species’ differences (different diets/lifecycle changes lead to differing rates of bioaccumulation)
  - seasonal variability (lipid content and PCBs are positively correlated; lipid content fluctuates seasonally)

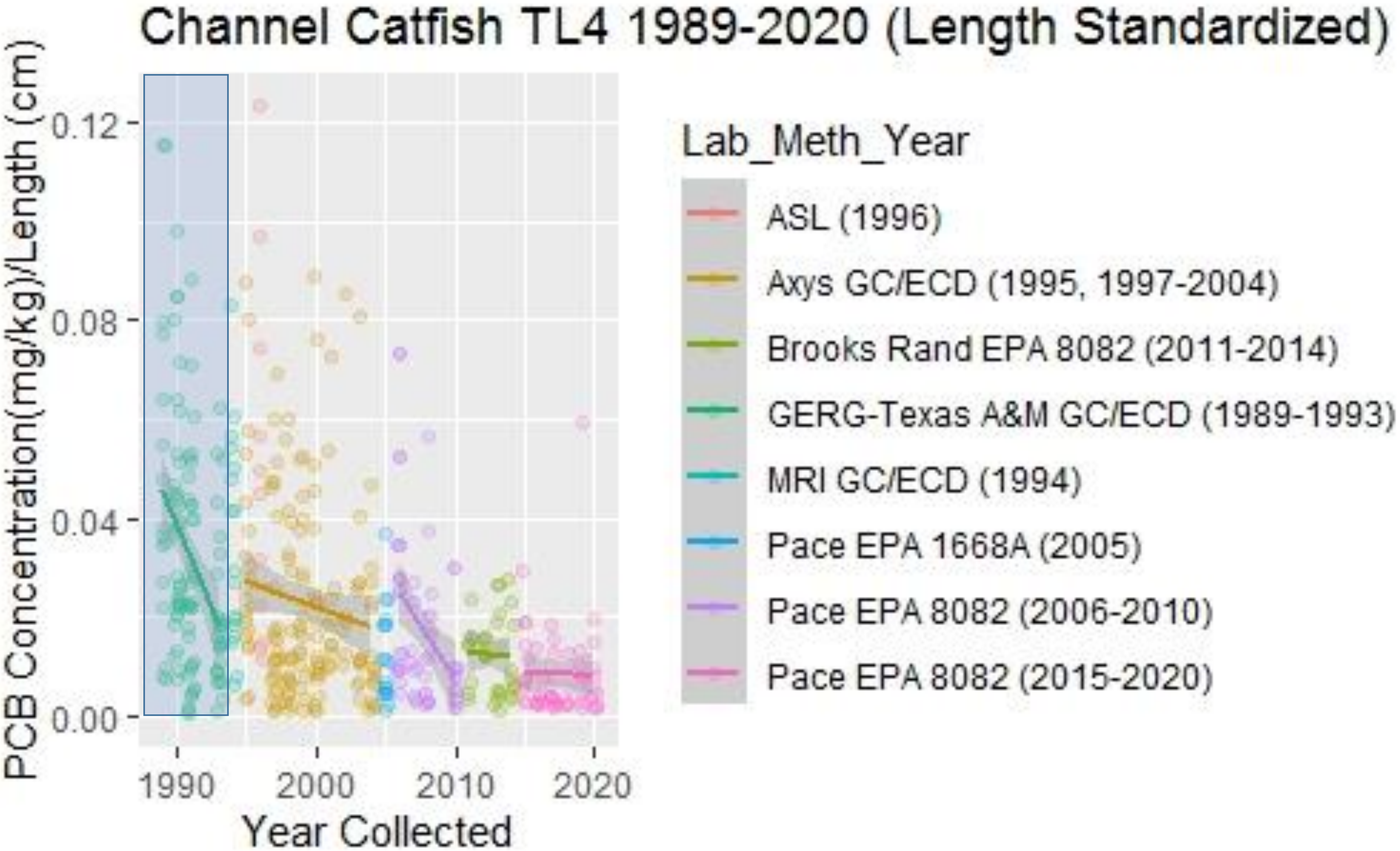
- Multiple analytical approaches such as Length Standardization (PCBs (mg/kg)/Length(cm)), Lipid Normalization (PCBs (mg/kg)/Percent Lipid) procedures, and robust statistical analysis can provide agreement across differing approaches resulting in higher confidence in observed trends

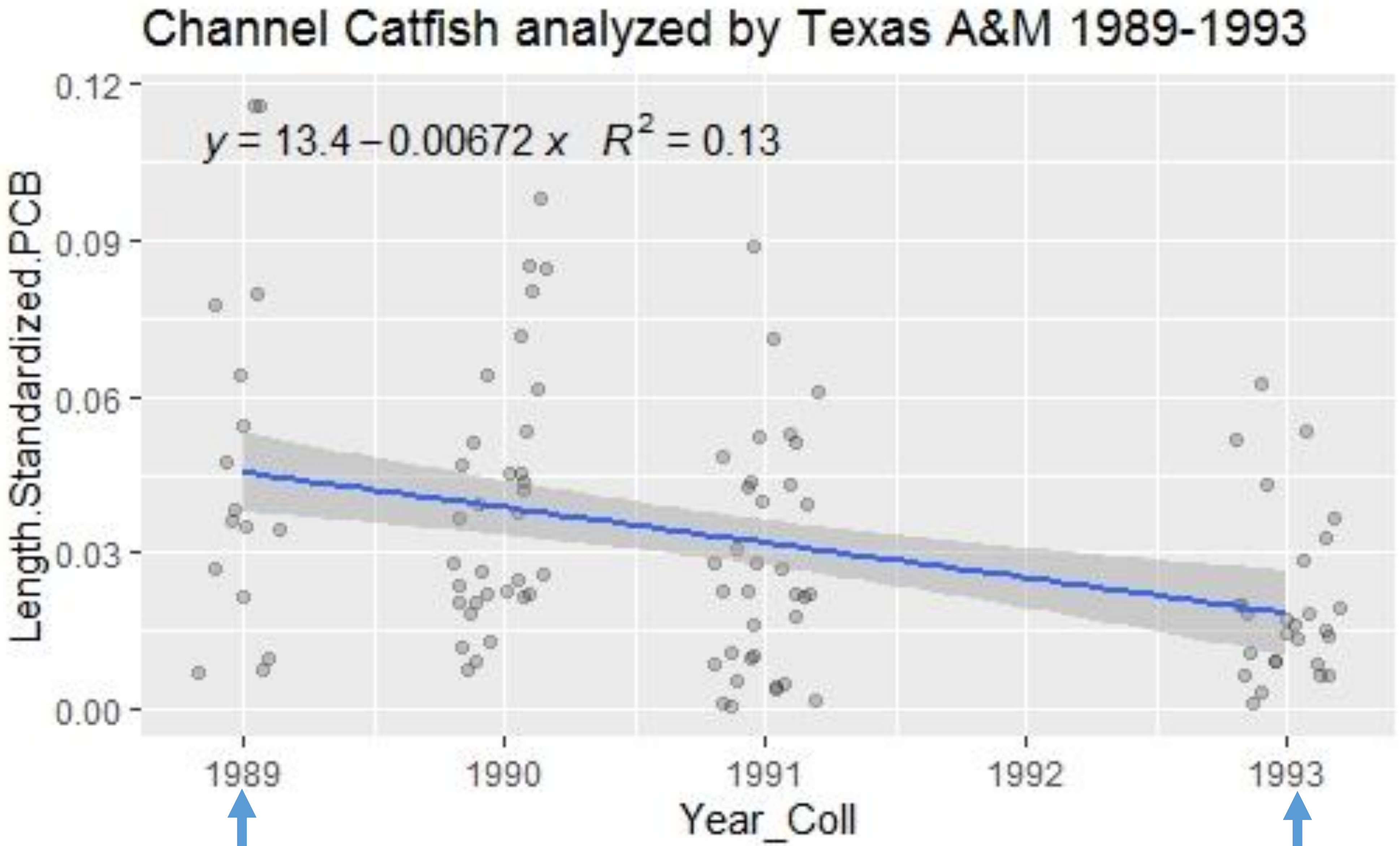


Channel Catfish TL4 1989-2020
PCB Concentration(mg/kg)
0
2
4
6
1990
2000
2010
2020
Year Collected
Lab_Meth_Year
ASL (1996)
Axys GC/ECD (1995, 1997-2004)
Brooks Rand EPA 8082 (2011-2014)
GERG-Texas A&M GC/ECD (1989-1993)
MRI GC/ECD (1994)
Pace EPA 1668A (2005)
Pace EPA 8082 (2006-2010)
Pace EPA 8082 (2015-2020)



channel catfish TL4
common carp
freshwater drum
sauger
Average Length(cm) of Composite Sample
Year Collected
20
30
40
50
60
70
1990
2000
2010
2020

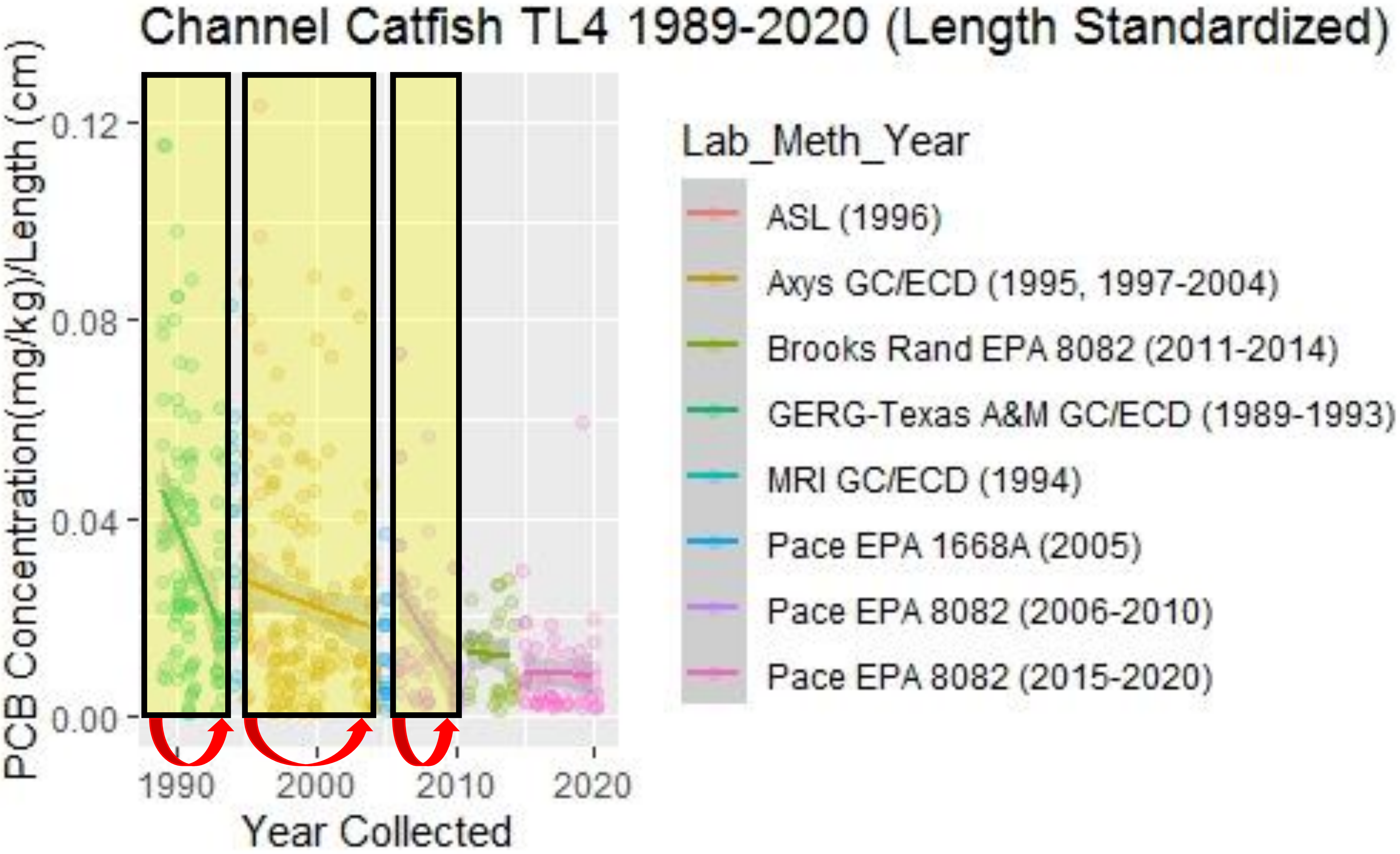

Channel Catfish TL4 1989-2020 (Length Standardized)
PCB Concentration(mg/kg)/Length (cm)
0.12
0.08
0.04
0.00
1990
2000
2010
2020
Year Collected
Lab_Meth_Year
ASL (1996)
Axys GC/ECD (1995, 1997-2004)
Brooks Rand EPA 8082 (2011-2014)
GERG-Texas A&M GC/ECD (1989-1993)
MRI GC/ECD (1994)
Pace EPA 1668A (2005)
Pace EPA 8082 (2006-2010)
Pace EPA 8082 (2015-2020)



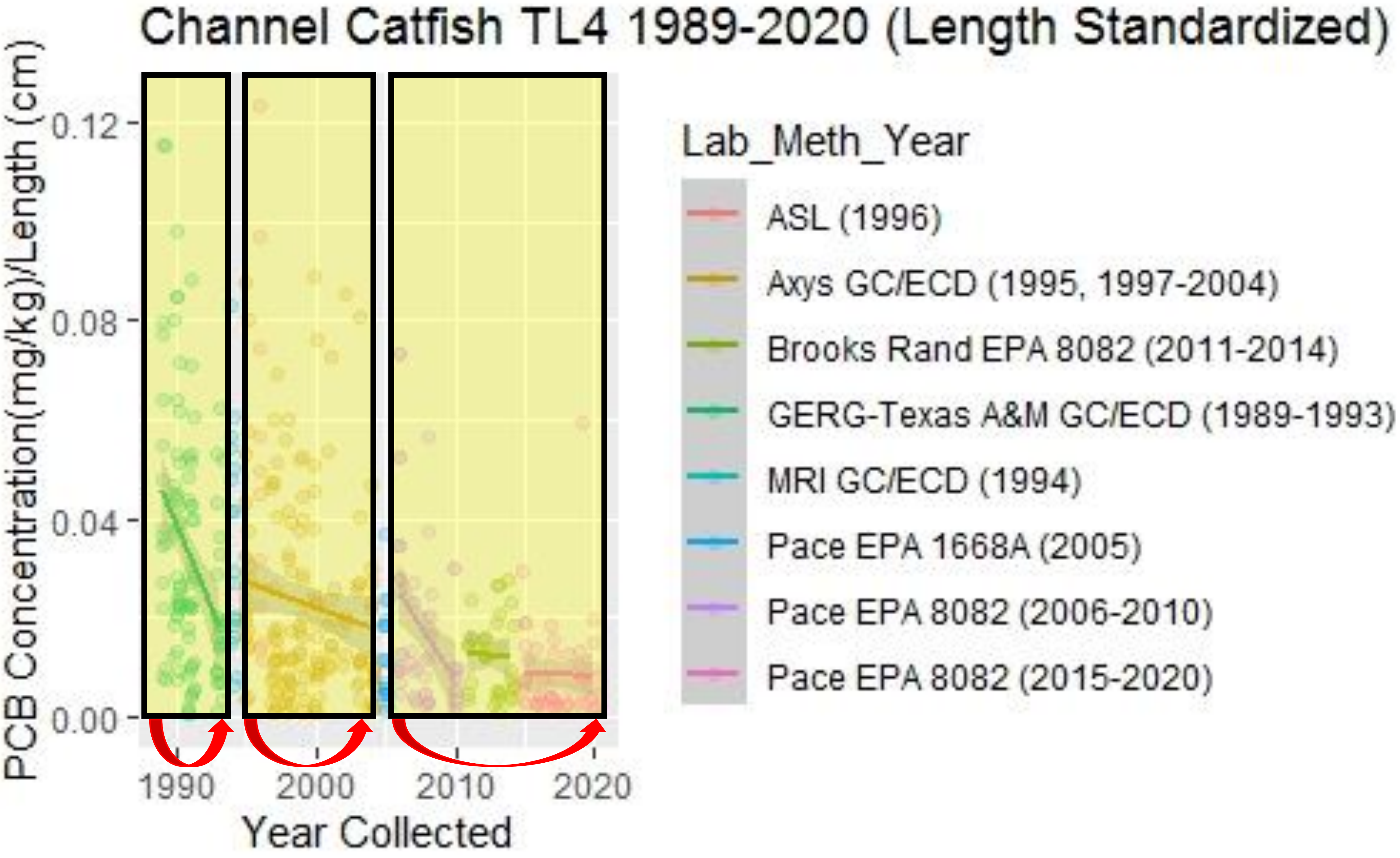
Is there a statistical difference between sample means collected in the 1st and last years of records with consistent lab and analytical method?

P-Values : Mann-Whitney-U test results to determine temporal differences in mean PCB concentrations (length standardized PCBs(mg/kg)/Length(cm))

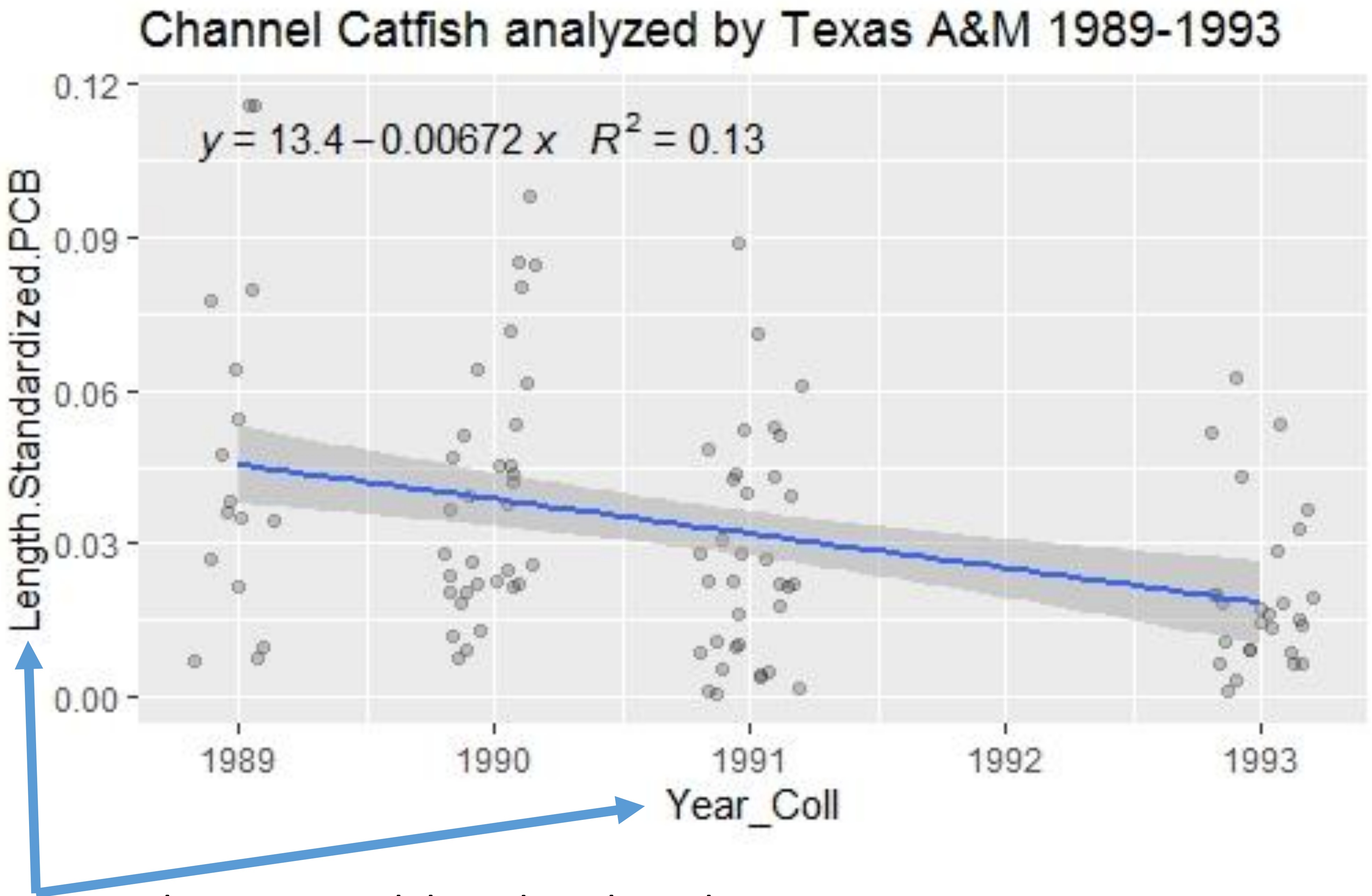
Lab, Analytical Method, and Years in service	Channel Catfish >35cm	Common Carp	Freshwater Drum	Sauger
GERG-Texas A&M GC/ECD (1989-1993)	0.002964	0.9048	0.5818	0.4444
Axys GC/ECD (1995, 1997-2004)	0.006129	0.4462	0.8	0.6667
Pace A EPA 8082 (2006-2010)	0.0009284	0.1215	0.5163	0.03015
Brooks Rand EPA 8082 (2011-2014)	0.8852	1	0.2931	0.8591
Pace B EPA 8082 (2015-2020)	0.2175	0.7589	0.4301	0.5273
Pace A-B EPA 8082 (2006-2020)	0.0008822	0.1455	0.05878	0.09187



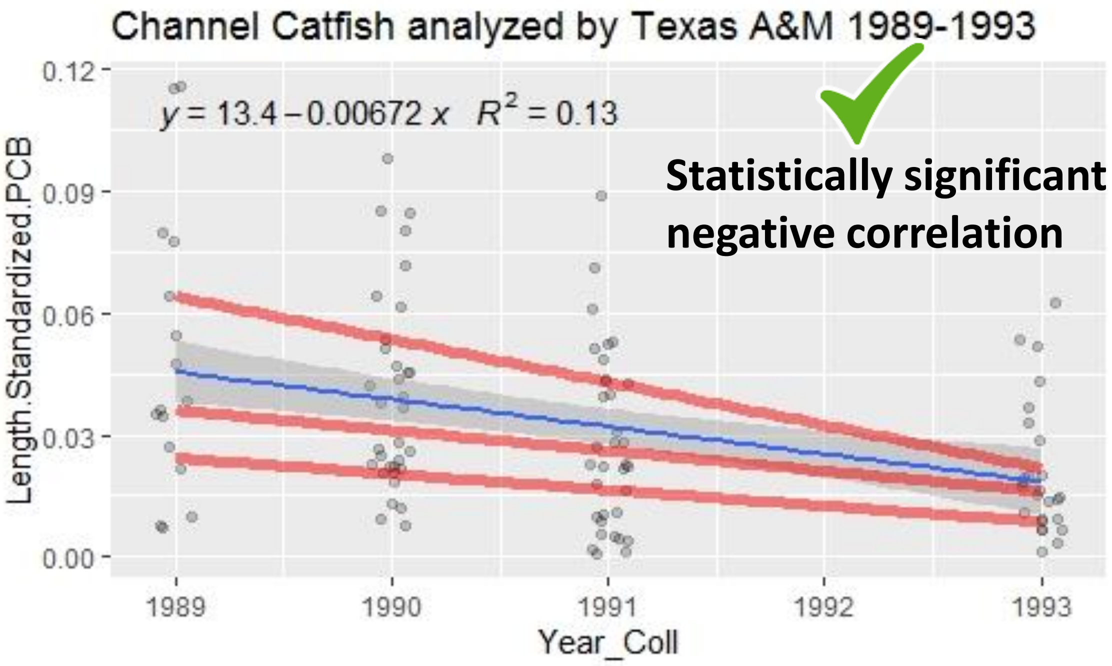
Channel Catfish TL4 1989-2020 (Length Standardized)
PCB Concentration(mg/kg)/Length (cm)
0.12
0.08
0.04
0.00
1990
2000
2010
2020
Year Collected
Lab_Meth_Year
ASL (1996)
Axys GC/ECD (1995, 1997-2004)
Brooks Rand EPA 8082 (2011-2014)
GERG-Texas A&M GC/ECD (1989-1993)
MRI GC/ECD (1994)
Pace EPA 1668A (2005)
Pace EPA 8082 (2006-2010)
Pace EPA 8082 (2015-2020)

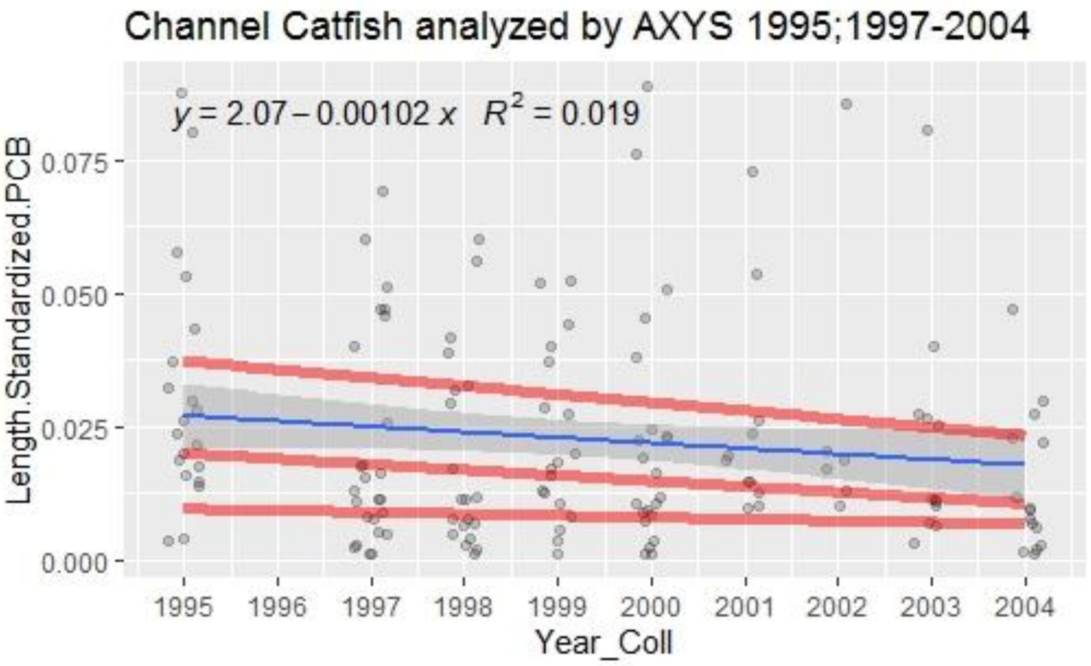


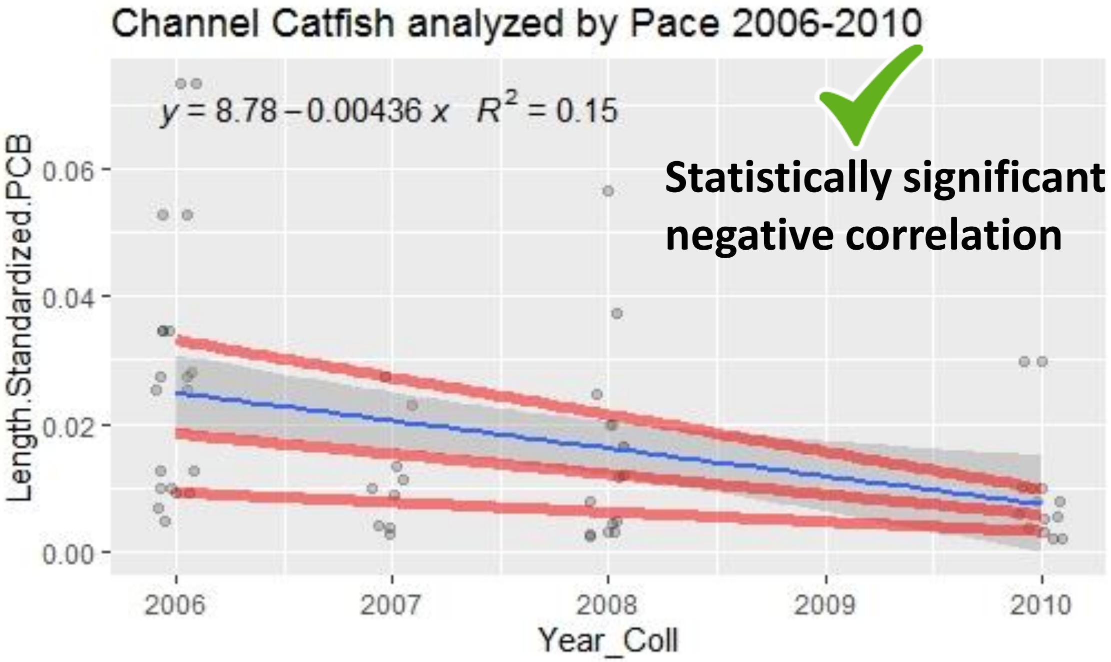
Channel Catfish TL4 1989-2020 (Length Standardized)
PCB Concentration(mg/kg)/Length (cm)
0.12
0.08
0.04
0.00
1990
2000
2010
2020
Year Collected
Lab_Meth_Year
ASL (1996)
Axys GC/ECD (1995, 1997-2004)
Brooks Rand EPA 8082 (2011-2014)
GERG-Texas A&M GC/ECD (1989-1993)
MRI GC/ECD (1994)
Pace EPA 1668A (2005)
Pace EPA 8082 (2006-2010)
Pace EPA 8082 (2015-2020)

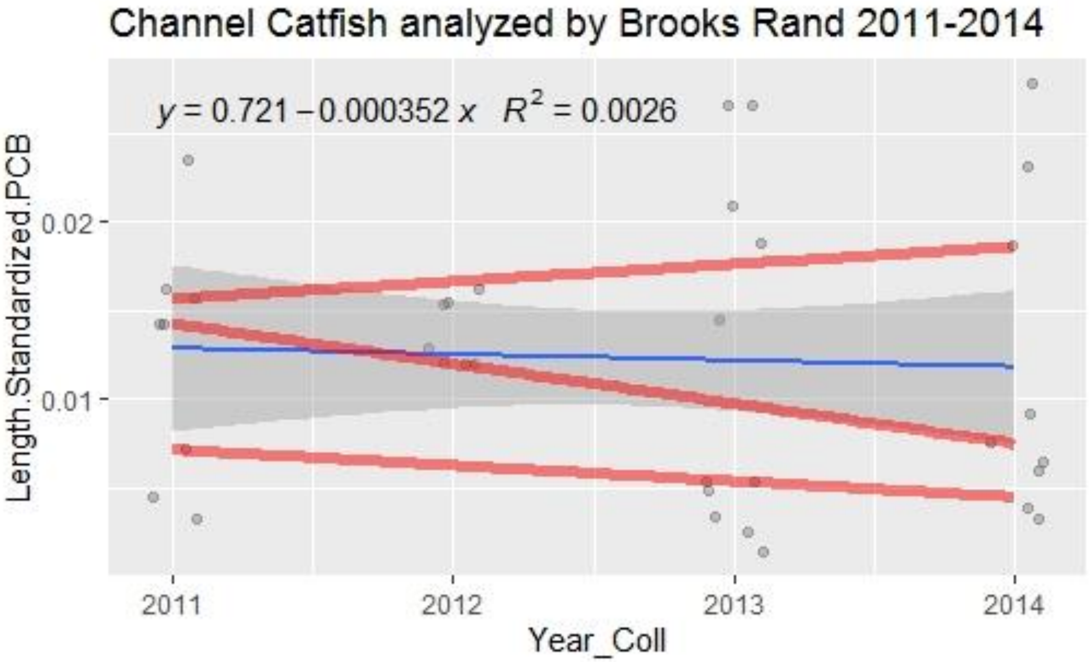


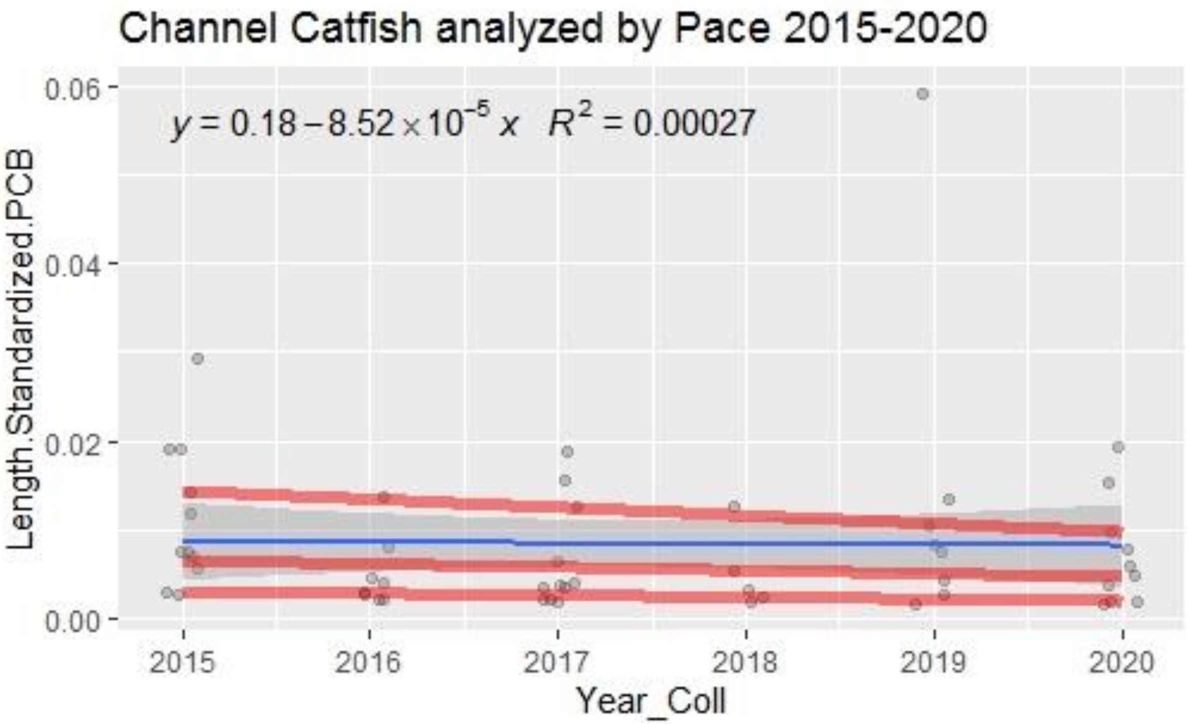
Within groups with consistent lab and analytical method, **are these variables correlated?**

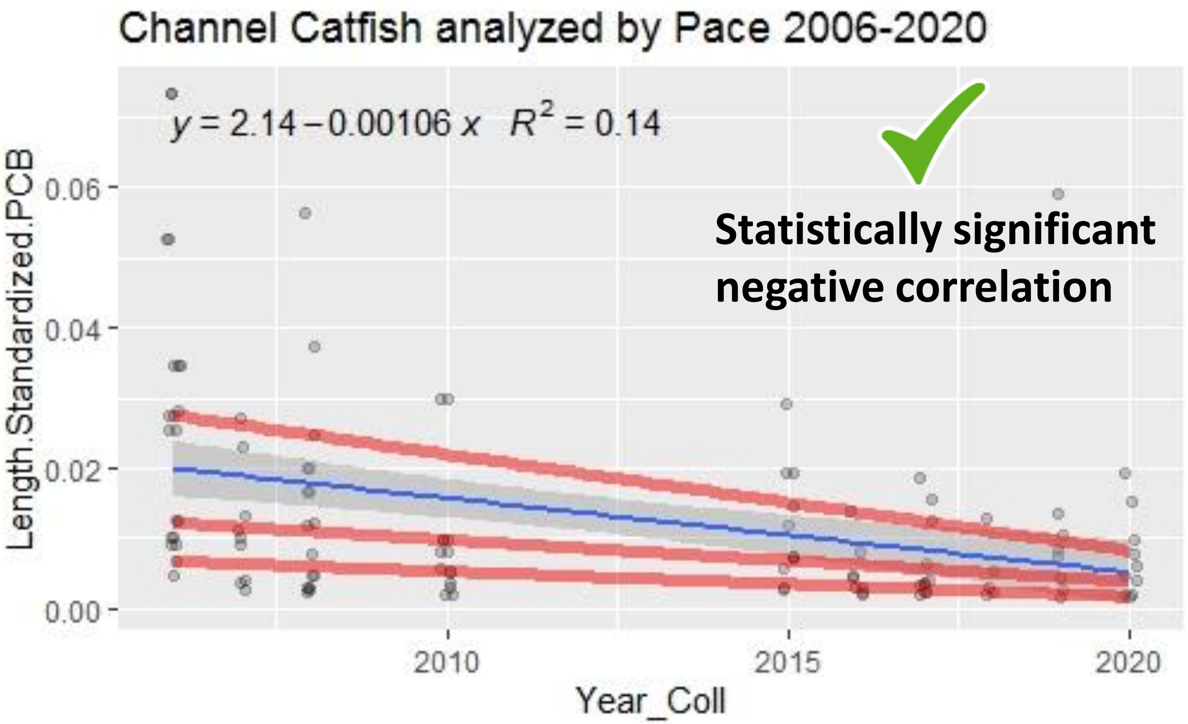

Channel Catfish analyzed by Texas A&M 1989-1993
y = 13.4 − 0.00672 x   R² = 0.13
Statistically significant negative correlation
Length.Standardized.PCB
0.12
0.09
0.06
0.03
0.00
1989
1990
1991
1992
1993
Year_Coll

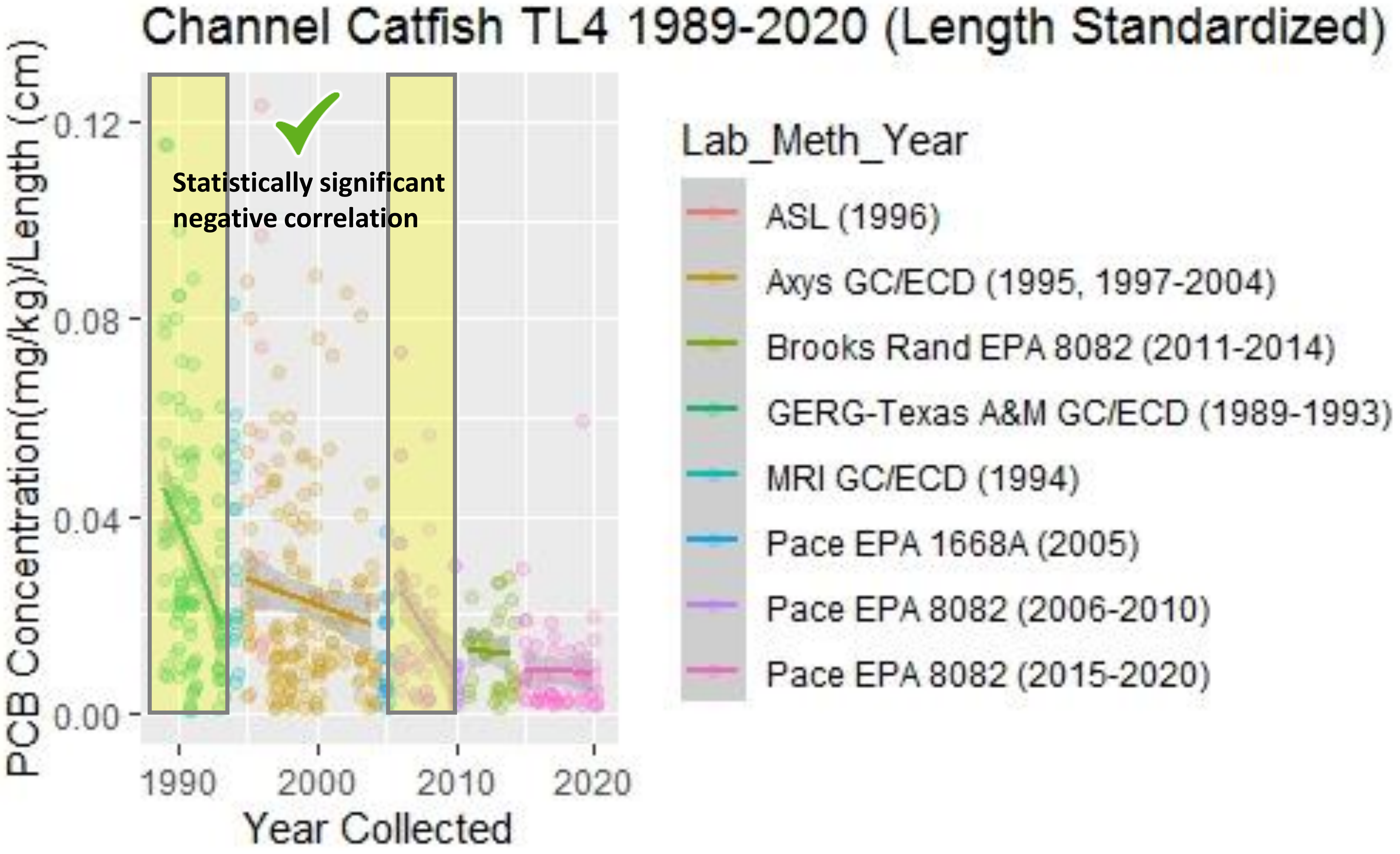

Channel Catfish analyzed by AXYS 1995;1997-2004
y = 2.07 − 0.00102 x   R² = 0.019
Length.Standardized.PCB
0.075
0.050
0.025
0.000
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Year_Coll


Channel Catfish analyzed by Pace 2006-2010
y = 8.78 − 0.00436 x   R² = 0.15
Statistically significant negative correlation
Length.Standardized.PCB
0.06
0.04
0.02
0.00
2006
2007
2008
2009
2010
Year_Coll


Channel Catfish analyzed by Brooks Rand 2011-2014
y = 0.721 − 0.000352 x   R² = 0.0026
Length.Standardized.PCB
0.02
0.01
2011
2012
2013
2014
Year_Coll


Channel Catfish analyzed by Pace 2015-2020
y = 0.18 − 8.52 × 10⁻⁵ x   R² = 0.00027
Length.Standardized.PCB
0.06
0.04
0.02
0.00
2015
2016
2017
2018
2019
2020
Year_Coll


Channel Catfish analyzed by Pace 2006-2020
y = 2.14 − 0.00106 x   R² = 0.14
Statistically significant
negative correlation
Length.Standardized.PCB
0.06
0.04
0.02
0.00
2010
2015
2020
Year_Coll


Channel Catfish TL4 1989-2020 (Length Standardized)
PCB Concentration(mg/kg)/Length (cm)
0.12
0.08
0.04
0.00
1990
2000
2010
2020
Year Collected
Statistically significant negative correlation
Lab_Meth_Year
ASL (1996)
Axys GC/ECD (1995, 1997-2004)
Brooks Rand EPA 8082 (2011-2014)
GERG-Texas A&M GC/ECD (1989-1993)
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Pace EPA 1668A (2005)
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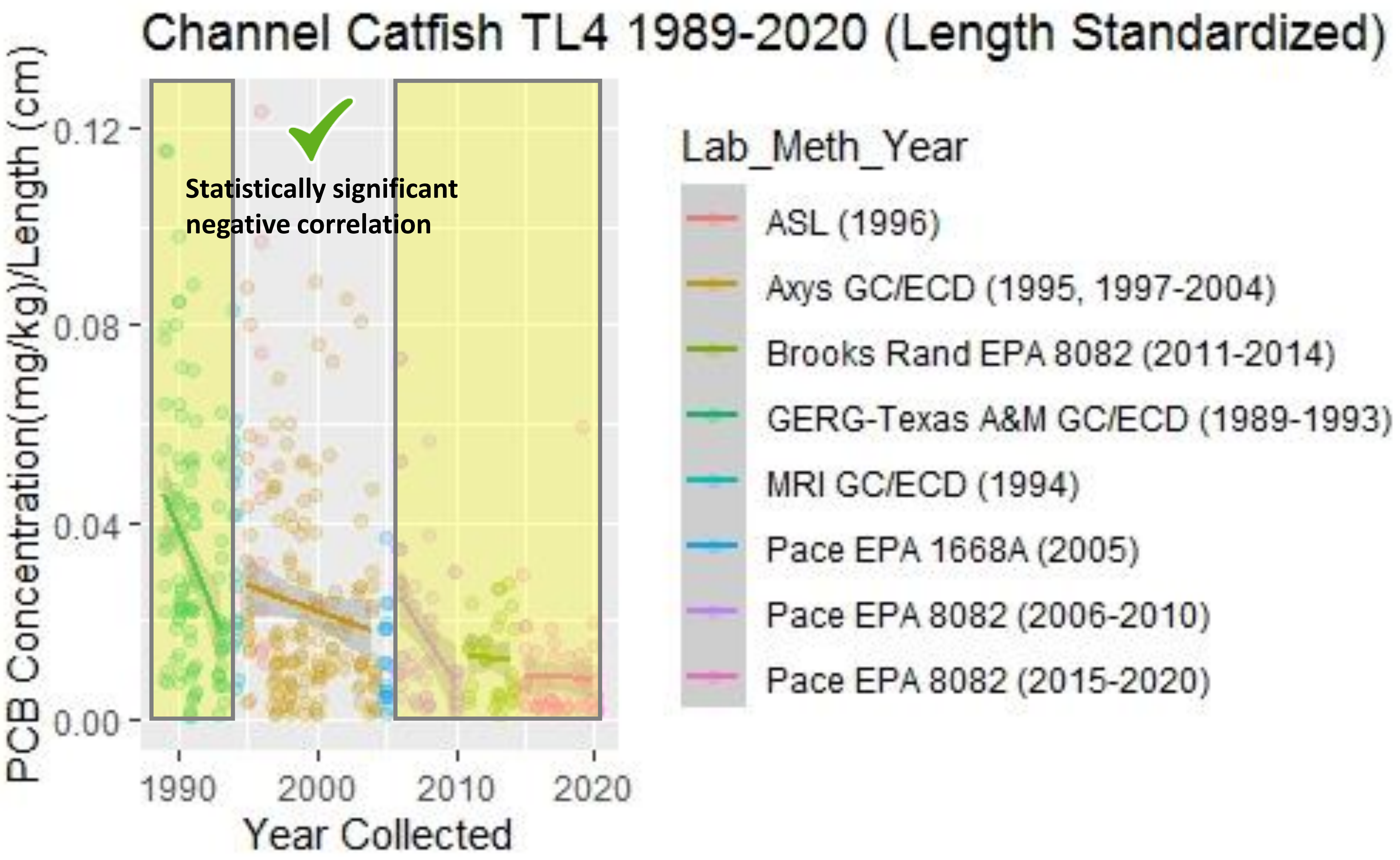

Channel Catfish TL4 1989-2020 (Length Standardized)
PCB Concentration(mg/kg)/Length (cm)
0.12
0.08
0.04
0.00
1990
2000
2010
2020
Year Collected
Statistically significant
negative correlation
Lab_Meth_Year
ASL (1996)
Axys GC/ECD (1995, 1997-2004)
Brooks Rand EPA 8082 (2011-2014)
GERG-Texas A&M GC/ECD (1989-1993)
MRI GC/ECD (1994)
Pace EPA 1668A (2005)
Pace EPA 8082 (2006-2010)
Pace EPA 8082 (2015-2020)

BWQSC Recommendations

1. Approve the use of fish survey results from Dashields, Hannibal, Markland, and McAlpine in final 2021 pool assessments.

2. Review Dashields, Hannibal, Markland, and McAlpine macroinvertebrate data with the BWQSC for potential use in final 2021 pool assessments, once data are available.

3. Conduct 2022 biological surveys in Belleville, John T. Myers, and Olmsted pools, as well as six probabilistic sites in the open water section below Olmsted Locks and Dam.

4. Add analyses for perfluorinated/polyfluorinated compounds to all ORSANCO Ohio River fish tissue collections.

5. Evaluate the necessity to recalibrate biotic indices following the 2022 field season.

6. Support the analytical methods used in evaluating potential PCB trends in ORSANCO's fish tissue dataset.

7. Support ORSANCO staff's continued participation in upcoming 23/24 USEPA National Rivers and Streams Assessment (NRSA), recognizing that this may affect concurrent Ohio River activities.

Agenda Item 9:

Preliminary Results of Ohio River Ambient PFAS Survey

Jason Heath, Sam Dinkins - ORSANCO Staff

Study Objective

- Characterize ambient conditions relative to PFASs in the Ohio River at 20 locations
  - Two rounds of sampling (different seasons)
  - Probabilistic-systematic approach used for site selection.
  - Outside of any regulatory mixing zones.

- The survey is not intended to focus on drinking water, but rather develop ambient baseline conditions for the Ohio River.

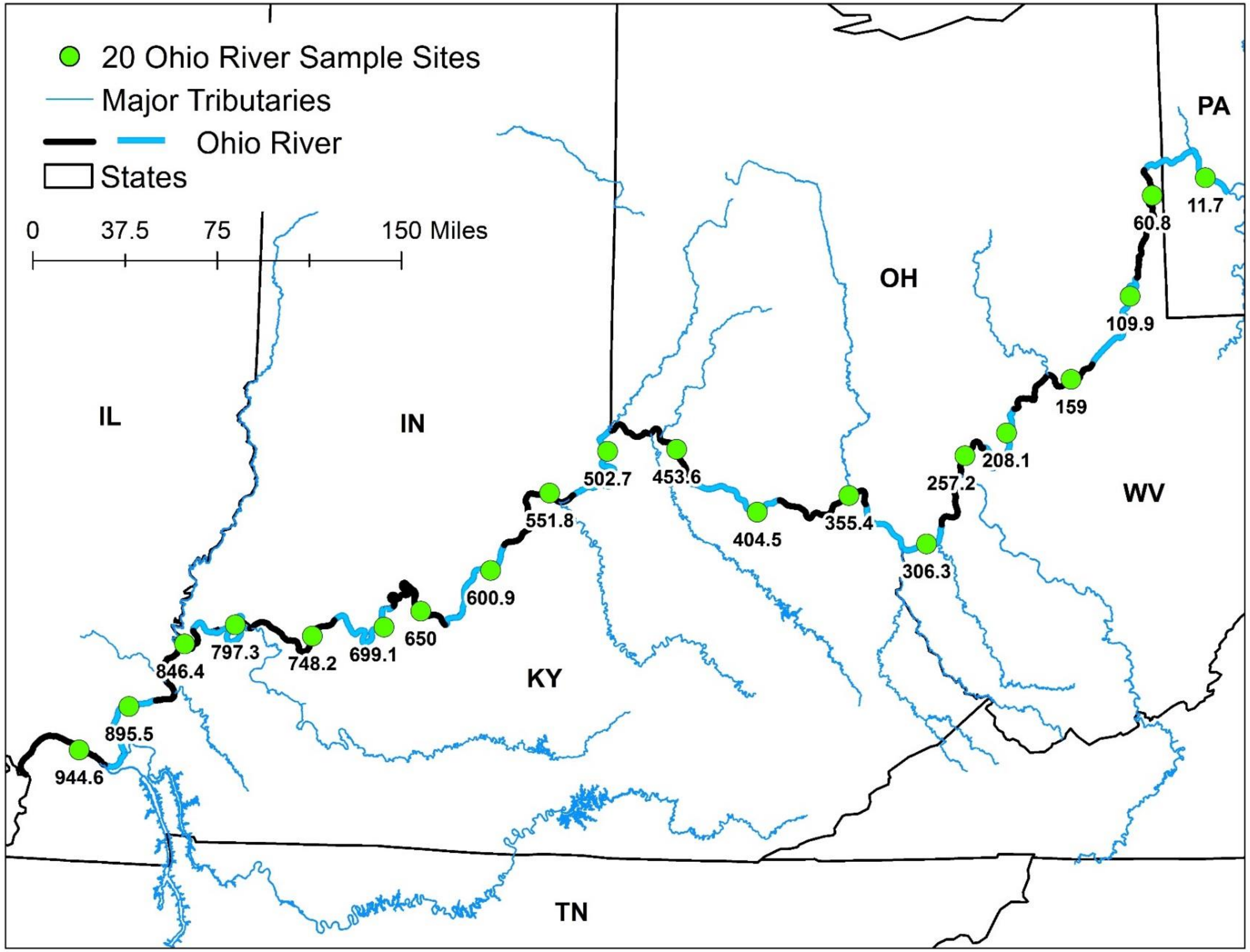
- Results may inform states, EPA, utilities & other interested parties on Ohio River ambient water quality conditions. The Commission is developing a communication plan.

Survey Design

- PFAS Sample Collection
  - 20 Ohio River ambient sites
  - 2 tributaries (Allegheny & Monongahela)
  - 9-point discrete sample collection at 3 sites
  - Conduct test run with field blanks (Spring 2021)

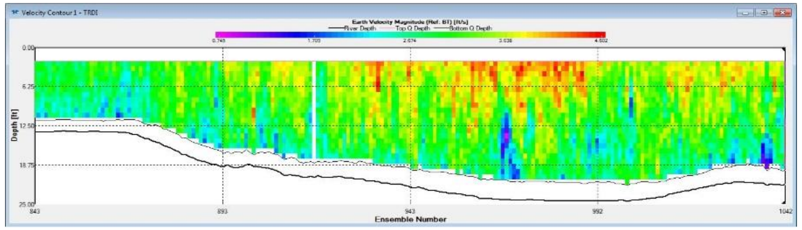
- Survey Timing
  - Round #1: Summer 2021
  - Round #2: Fall 2021
  - Each round requires 6 weeks to complete

Systematic-Probabilistic Approach to Sampling Site Selection



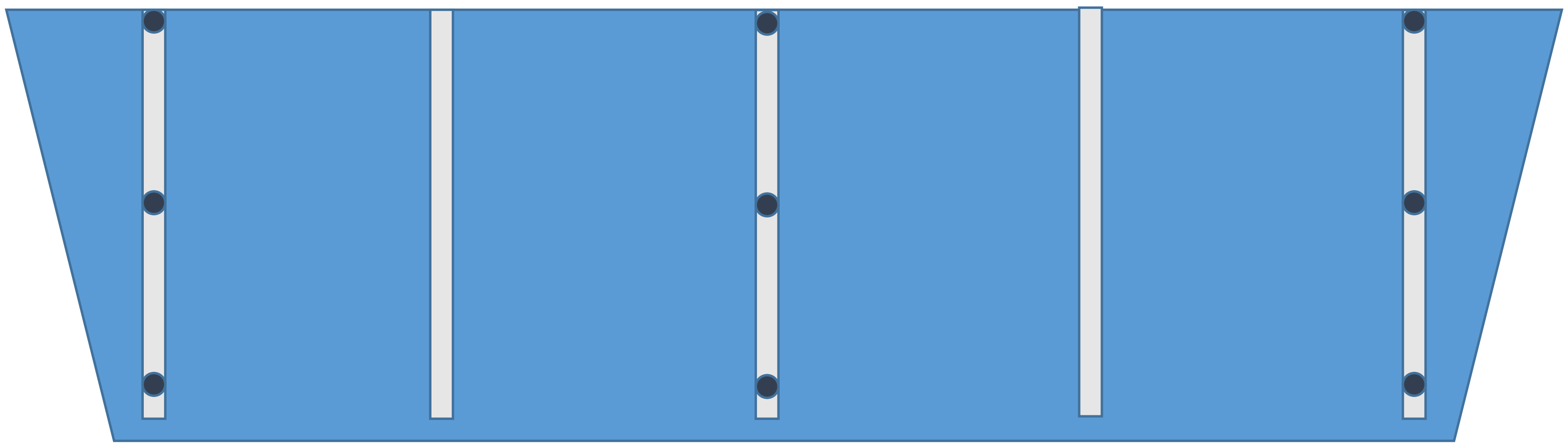
Sample Collection Methodology

- Use EDI (Equal Discharge Increment) method for all Ohio River and tributary sampling locations
  - Flow-weighted, depth integrated cross-sectional sampling provides for a more representative sample collection method
- Discrete samples to be collected at 3 existing EDI sampling sites during the first round, and 5 sites during the second round.
  - Analyze discrete samples separately to gain understanding of vertical and lateral distribution of PFAS in the water column



Discrete Sampling at 3 Transects

- Below diagram represents one transect from the 20 selected sites.
- 9 discrete samples will be collected using a peristaltic pump and silicone tubing.
- The purpose is to investigate how PFASs are distributed in the water column.
- Discrete samples will be collected during the EDI composite sampling.



Sample Analysis

- Analysis performed by US EPA contractor Battelle Laboratories
- Newer DoD lab method (LC-MS/MS)
- 28 PFAS analytes (includes Gen-X)
- QA/QC Samples
  - Equipment blanks – 1 per site
  - Replicates and Matrix Spikes – 3 per round
  - Field blanks & Trip blanks – 1 per week

Since Last Update

Round #1 Completed

- June 15 – July 21, 2021
- 20 Ohio River + 2 tributary sites
- Discrete sampling at 3 sites

Round #2 Completed

- September 29 – October 26, 2021
- Increased number of discrete sampling sites from 3 to 5
  - Added discrete sites at ORM 306 and ORM 355 in round #2, based on round #1 preliminary data indicating a likelihood of greater detections at these locations.

USEPA has completed a passive sampler study at multiple ORSANCO sites to evaluate 3 different sampler technologies.

Observations from Round 1 Preliminary Data

- 5 of 28 PFAS were above the laboratory level of quantification (~ 5 PPT).
  - PFOA (8 sites)
  - HFPO-DA (GenX) (9 sites)
  - PFBA (1 site)
  - PFBS (3 sites)
  - PFPeA (5 sites)
- 12 of 28 PFAS were above the detection level.
- PFOA & GenX had the largest number of samples above LOQ.
- GenX had the highest value (32ppt).
- There were detections of 1 or more PFAS at every site.
- 15 sites had one or more PFAS above LOQ.
- 9 discrete samples collected at each of 3 sites – nothing stands out in terms of PFAS distribution in the water column.

Observations from Round 2 Preliminary Data

- 5 of 28 PFAS were above the laboratory level of quantification (~ 5 PPT).
  - PFOS (1 site)
  - PFOA (6 sites)
  - HFPO-DA (GenX) (3 sites)
  - PFBA (7 site)
  - 6:2FTS (1 site)*
- 9 of 28 PFAS were above the detection level.
- PFOA & PFBA had the largest number of samples above LOQ.
- 6:2FTS had the highest value (28ppt)*. If not, then GenX at 12PPT.
- There were detections of 1 or more PFAS at every site. PFOS at all sites.
- 14 sites had one or more PFAS above the LOQ.
- 9 discrete samples collected at each of 5 sites – nothing stands out in terms of PFAS distribution in the water column.

Preliminary Data: QA Results

- Equipment blanks were collected with every sample
  - 1 PFAS detected < LOQ at each of 3 sites (PFHxA, PFPeA, 6:2FTS) – 1st Round.
  - 2 PFAS detected > LOQ at 1 site; 6:2FTS detected at 2 sites.
- 6 sets of replicates all had good agreement.
- 1 Batch of Round 2 samples being rerun for concerns with PFOS & 6:2FTS.
- 2 samples arrived out of temperature specifications and had levels of PFPeA. Samples were not recollected.
- Preliminary data is subject to an EPA external review prior to being considered final – possibly April or May.
- Overall positive results from blanks & replicates both rounds.

Other Business:

- Comments by Guests
- Announcement of Upcoming Meetings
- Adjourn

Chair, Scott Mandirola