Memo

Ohio River Valley Water Sanitation Commission
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Since 1948
Improving Water Quality in the Ohio River for over 70 Years

DATE: May 20, 2021

TO: Technical Committee

Bruno Pigott, Chairman	Eric Roy/Josh Miller, USCG
Scott Twait, IL	David Pfeifer, USEPA Region 5
Eileen Hack, IN	Mike Griffin, USGS
Katie McKone, KY	**Ex Officio**
Jeff Konsella, NY	Cheri Budzynski, PIAC
Audrey Rush, OH	Betsy Mallison, Chairman, PIACO
Kevin Halloran, PA	Alex Novak, Chairman, POTW
Melanie Davenport, VA	Angie Rosser, Chairman, WOAC
Scott Mandirola, WV	Bruce Whitteberry, Chairman, WUAC
Erich Emery, USACE	Richard Harrison, Chief Engineer

SUBJECT: Announcement of 226th Technical Committee Meeting, June 8-9, 2021, Virtual Meeting

FROM: Jason Heath, P.E., BCEE

Commissioner Bruno Pigott, Technical Committee Chairman, wishes to welcome everyone to the 226th meeting of the Technical Committee, which will take place virtually on Tuesday, June 8, 2021, from 1:00 to 5:00 PM (ET), and reconvening Wednesday, June 9, from 9:00 AM to Noon. Approximately one week prior to the virtual meetings, Technical Committee members will automatically receive an email that includes detailed information and instructions on how to participate in the GoToMeeting virtual meeting. TEC members do **not** need to register; however members of the public and other interested parties will be required to register to attend. As an FYI for others to register, visit www.orsanco.org/registration and submit the registration form. A link to register will also be available on www.orsanco.org under the "News" section.

The Technical Committee meeting will be held in conjunction with the 230th Commission meeting being held on Thursday, June 10, also virtually. Notes on agenda items are as follows:

Item 1: Minutes of the 225th Technical Committee Meeting
Draft minutes of the 225th Technical Committee meeting are attached. Chairman Pigott will ask TEC members for revisions or approval of the minutes.

Item 2: Chief Engineer's Report
Executive Director Harrison will report on selected items including the ORBA strategic plan abundant clean water objective.

Item 3: PFAS Project Update
Staff has been working diligently to finalize a sampling work plan and quality assurance program plan for this monitoring effort. The PFAS workgroup met on has been kept appraised of the status of this effort. Staff provided the work group a sampling plan, project QAPP, and sampling SOP for comment by January 15. We will send those documents out to TEC when completed (not before the TEC meeting).

Item 4: Freshwater Plastic Pollution: An Overview
Dr. Mason will provide a brief primer on the sources, transport and fate of plastic pollution. Dr. Mason will discuss the most common sampling and analysis methods employed to determine the prominence of this emerging contaminant within freshwater systems. The presentation will end with a brief overview of the ecological occurrence, impacts and potential human health concerns associated with freshwater plastic pollution within our region. Time has been allotted for Q&A with Dr. Mason following her presentation.

Item 5: Ohio River Basin Alliance (ORBA) Abundant Clean Water Objective Update
Director Harrison will provide an update on the status of the ORBA abundant clean water strategic plan objective.

Item 6: Biological Programs Update
Staff will provide final results of the Smithland Pool Assessment, as well as the status of biological trend analyses and the 2021 biological field season schedule.

Item 7: Source Water Protection and Emergency Response Programs Update
Staff will provide an overview of the ongoing activities associated with the Commission's Source Water Protection and Emergency Response programs. This update will include a status report on the Organics Detection System (ODS) Program and a summary review of past spill events.

Item 8: Status of Abatement for Ohio River CSO Communities
Staff will provide an annual report on the status of CSO abatement for communities along the Ohio River. This is an informational item.

Item 9: Technical Committee Member Reports
TEC members are asked to report on water quality issues of importance to their organization.

Item 10: Review of ORSANCO's Bimonthly/Clean Metals Monitoring Programs
Mainstem states met on March 5 to review the Commission's Bimonthly and Clean Metals monitoring programs. The workgroup developed a set of final recommendations and priorities which are included in the draft report (attached). Several of the top priority recommendations have been included in the Commission's proposed FY2022 program and budget. TEC may wish to endorse the report.

Item 11: FY2022 Proposed Technical Program
Staff will present a summary of technical program activities proposed for FY2022.

226th Technical Committee Meeting
Virtual Meeting
June 8-9, 2021
Beginning at 1:00 P.M. (Eastern)
Chairman Bruno Pigott, Presiding

TECHNICAL COMMITTEE MEETING AGENDA

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

ACTION ITEMS AND REPORTS

1. Action on Minutes of 225th Technical Committee Meeting*
2. Chief Engineer's Report
3. PFAS Project Update
4. Microplastics in Freshwater Aquatic Environments – Dr. Sherri Mason
5. Ohio River Basin Alliance Abundant Clean Water Objective Update
6. Biological Programs Update
7. Source Water Protection Programs Update
8. Status of Abatement for Ohio River CSO Systems

ADJOURN (5:00 P.M.)/RECONVENE WEDNESDAY (9:00 A.M. - NOON)

9. Technical Committee Member Reports
10. Review of ORSANCO's Bimonthly/Clean Metals Monitoring Programs *
11. FY22 Proposed Technical Programs

OTHER BUSINESS

- Comments by Guests
- Announcement of Upcoming Meetings
- Adjourn

*attachment

Agenda Item 1
226th Technical Committee Meeting
June 8-9, 2021

MINUTES
225th Meeting of the Technical Committee
Virtual Meeting
February 9-10, 2021

Chairman Bruno Pigott, Presiding

Call to Order

The 225th meeting of the ORSANCO Technical Committee was called to order by Chairman Pigott at 1:00 P.M. on Tuesday, February 9, 2021. Seven states, three federal agencies, and four Commission advisory committees were represented (for Roster of Attendance see on page 13). Chairman Pigott welcomed all to ORSANCO's virtually-held meeting of the Technical Committee.

Minutes of 224rd Committee Meeting

ACTION: Motion passed to accept the minutes of the 224th Technical Committee meeting.

Chief Engineer's Report

Director Harrison reported on the Ohio River Basin Association (ORBA) Restoration Initiative and strategic plan which is aimed at securing Congressional geographic program funding. He remarked that there are a number of strategic objectives, and that Jordan Lubetkin with the National Wildlife Federation is chairing the healthy and productive ecosystems objective, while ORSANCO is chairing an abundant clean water objective. A work group has been established of the chairs of each of the plan's multiple goals. March 4th will be the first meeting of the subcommittee addressing the abundant clean water objective and TEC members were asked to participate. The abundant clean water goal has a number of objectives including supporting Clean Water Act work, Safe Drinking Water, HABs and nutrients, water resources, and water-related infrastructure needs.

Support for Partnerships Between Water Utilities and Agriculture Producers to Utilize Farm Bill Funds for Source Water Protection

Dr. Adam Carpenter, Manager of Energy and Environmental Policy at the American Water Works Association, provided the presentation "Farm Bill Brings Major Source Water Opportunities." This presentation provided an overview of partnership and funding mechanisms administered by the Natural Resources Conservation Service (NRCS) as part of the Farm Bill.

Influenced partially on AWWA's advocacy efforts, beginning with the 2018 Farm Bill, source water protection (protecting sources of potable water supply) is recognized as a priority within the USDA's conservation programs for the first time. These conservation programs provide funding to assist agricultural producers (farmers, ranchers, and non-commercial forest landowners) in developing conservation plans, implementing conservation practices, and in establishing easements. The goals of these programs include providing species habitat, protecting against erosion, and water quality (both for ambient water and now for helping to protect sources of drinking water.
NRCS will now spend at least 10% of its conservation dollars to help protect sources of drinking water, nearly $400 million per year, and is required to consult with community water systems and their partners to help identify priority source water areas.

Key takeaways from this presentation include:

- Establishing a relationship with the State Conservationist (the head of NRCS for each state) is essential to opening a dialogue around source water protection needs and to help identify funding and partnership opportunities.
- Several programs exist that can help address source water protection needs, including the National Water Quality Imitative and the Regional Conservation Partnership Program (RCPP). The State Conservationist is always a good first resource for any of these programs, and they also manage funds for many other programs that may be able to help even if utilities cannot directly apply for them. All state conservationists are listed at: https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/contact/states/
- NRCS state offices are expected to annually assess their priority source water protection areas, and discussions around those can help lead to prioritization of other programs.

Status of ORSANCO's Monitoring Programs Resulting from the COVID-19 Shutdown

Staff provided a status report on all of its current and planned monitoring programs resulting from the COVID-19 shutdown, including: Bimonthly/clean metals sampling, contact recreation bacteria monitoring, HABs continuous monitoring network, biological pool surveys, fish tissue contaminants, ODS and emergency response. Staff developed sampling guidelines for the protection of staff and to minimize the potential spread of the SARS-CoV-2 virus. In general, all field sampling activities conducted from March through early July were limited to those activities that could be completed as a day trip by a one-person field crew. Beginning in mid-July, sampling requiring a multi-person crew or overnight travel was permitted on a case-by-case basis. Activities requiring staff to work within six feet for prolonged periods have remained prohibited.

Specific program impacts as a result of the pandemic are listed below:

- Emergency Response – Some planning meetings cancelled. Full spill response readiness maintained throughout the pandemic.
- Harmful Algal Bloom (HAB) Continuous Monitoring – One site visit to the Markland & Newburgh stations was shifted from March to April. All sampling and site maintenance visits were otherwise completed as scheduled.
- Bacteria Monitoring – No sampling was completed in April, 2020. Four of the six CSO communities were sampled in May. Five of the six communities were sampled June through October. In total, 320 of the originally planned 455 samples were collected (~70% completion).
- Organics Detection System (ODS) – Station repair visits that could be completed by a single staff member as a day-trip were completed. Repair visits requiring overnight travel resumed in September. Preventative maintenance visits were suspended during March and April. Training visits resumed in September.
- Bimonthly and Clean Metals sampling returned to the full suite of sites once overnight travel was approved in the months of September and November. However, shortly after November sampling concluded overnight travel was once again prohibited. January2021 sampling was therefore restricted to those sites sampleable via day trips only, similar to the early months of 2020. The necessity to rotate between the full suite and subset of sites in future rounds will continue to be dependent upon restrictions to overnight travel.
- Restrictions to biological program activities was most influenced by safe social distancing protocols. Most routine sampling require boat-based crews of three or more personnel, which would lead to violations of safe social distancing protocols. Biologists instead focused on fish tissue collections which were performed with only two crew members and completed by the end of October. Routine probabilistic electrofishing and macroinvertebrate sampling is scheduled for 2021 pending field staff vaccination and timely employment of requisite seasonal biologists.

Biological Programs Update

The Biological Water Quality Subcommittee met virtually on January 19th and 20th. No pool assessments were reported due to the postponement of scheduled probabilistic surveys. Staff instead highlighted the successful collection of 91 fish tissue composites by ORSANCO and agency partners. The composites filled a large data gap

necessary for completion of future 305b methyl mercury assessments and fish consumption advisories. The subcommittee recommended that staff continue investigations into fish tissue contaminant trends and macroinvertebrate index refinement as additional data are made available. Staff presented highlights of these analyses including temporal trends in PCBs and adjustments to the Ohio River Macroinvertebrate Index (ORMIn). An approved adjusted pool survey schedule was presented that attempts to mitigate the effect of pandemic delays with a temporary return to four annual pool surveys in 2021 and 2022. The BWQSC also approved a guidance document formalizing the approach used by the subcommittee to evaluate annual survey results prior to finalizing pool assessments and annual sampling plans. In partial response to substantial member turnover, this decision-tree document will hopefully promote continuity and facilitate efficient evaluations at future BWQSC meetings. As for 2021 sampling recommendations, the subcommittee prioritized the probabilistic surveys of Dashields, Hannibal, Markland, and McAlpine pools above all other biological program activities; additional activities such as sampling the fixed station network, incorporating paired data collections, and accommodating state and federal agency requests, should be completed as resources and pandemic restrictions allow.

Source Water Protection Programs Update

Staff provided an overview of the ongoing activities associated with the Commission's Source Water Protection and Emergency Response programs. This included an update on the Organics Detection System (ODS) detailing the operational status of the system, software upgrades and ODS equipment replacement. The Committee was also briefed on several recent spill events affecting the Ohio River.

Two of the 17 ODS stations remained inoperable. The St. Albans (WV) station was inoperable due to instrumentation issues; however, staff has been unable to make repairs due to facility access restrictions due to COVID. The instrumentation at the Chemours facility in Parkersburg, WV was also not functioning properly. Staff is working to make repairs to get this site back on-line. Two additional sites (Hays Mine on the Monongahela and West View in Pittsburgh) were operational, but were running at limited capacity due to staff restrictions from COVID.

Software upgrades have been completed at the ODS sites in Louisville and Evansville. Additional upgrades will be made in the first half of 2021 at the stations in Huntington and Wheeling, WV.

One CMS 5000 gas chromatograph (GC) was purchased in late 2020. A second CMS unit is scheduled to be purchased in the first half of 2021. One unit will replace an aging unit within the system and the second will be used as a backup unit to quickly swap out units when they need to be repaired. This will greatly reduce the instrument down-time when units malfunction.

Many of the Emergency Response planning meetings scheduled for 2020 were cancelled due to the pandemic. The Commission staff, however, has maintained full readiness to respond to spills as needed. Fortunately, while there have been several notable incidents since the pandemic started, none have required an ORSANCO field response. Staff did recently complete an update ORSANCO's Emergency Response Directory which is used as a resource document by staff and other response agencies for spill notification and response activities.

Harmful Algae Blooms

Staff presented the updated HAB Monitoring, Response and Communications Plan, which had gone through its first full update since 2016. The updates were due to several changes in Federal and State drinking water standards and recreational advisory levels for algal toxins since the Plan was first written.
The Plan included comments from 5 States and 2 Federal agencies. After discussion part of the Plan was removed, which dealt with implementation of USEPA toxin advisory levels and were determined to not be relevant to the Plan. The Technical Committee approved the Plan with the removed section.

Report on Ohio River Water Quality Conditions

Each year staff provides the Technical Committee with an overview of Ohio River water quality conditions observed during the preceding field season. The 2020 field sampling season saw above average river flow conditions for May river-wide, with near to below normal flow conditions June through October.

Frequency of exceedances of the single sample bacteria criterion ranged from 17 to 47 percent in the six largest combined sewer overflow communities along the Ohio River. Dissolved oxygen (DO) levels remained above 5.0 mg/L throughout the summer. Water temperatures consistently remained below the temperature criteria throughout the field season river-wide.

No harmful algal blooms (HABs) were reported on the Ohio River in 2020. There was a filter-clogging issue reported from Maysville to Louisville, KY in late July and early August. Sampling revealed large amounts of filamentous diatom *Aulacoseira* were present in the river at that time.

Member Updates and Interstate Water Quality Issues

Illinois

Scott Twait reported that they are still waiting on the Illinois Pollution Control Board to finalize the Chloride Watershed Variance. The 2018 Integrated Report has not been formally submitted to USEPA. The Agency and Region 5 are still working on some issues. Previously mentioned, Illinois has developed a monitoring plan for sampling PFAS of the finished water at the public water supplies. We began the PFAS sampling in the middle of September and are currently about 30-35% finished. Mr. Twait indicated that he may be able to provide an update with preliminary results at the next meeting.

Indiana

Eileen Hack reported on the following items:

Legislative Agenda

We are in our legislative session. Bruno will give the update to the Committee on our legislative agenda this session, specifically, Senate Bill 389. This bill would repeal Indiana's Isolated Wetland Law, enacted in 2003 by the Republican legislature.

NPDES Updates

NPDES WWTF Permits - Industrial Ohio River dischargers 2021:

Municipal Permits currently under review:

- South Dearborn Regional Sewer District, a major municipal. It will be getting updated ammonia-N limits based on ORSANCO criteria.

Industrial Permits renewals currently under review:

- AEP Rockport permit modification request
- AK Steel Rockport permit renewal

Permit renewal applications due this year:

- Countrymark Refining and Logistics
- Lawrenceburg Power
- AB Brown Generating Station (Evansville/Mt Vernon) (Vectren)
- FB Culley Generating Station -Newburgh (Vectren)
- Indiana Kentucky Electric Corpoation-Clifty Creek (Madison).

316(a) and (b) reviews (none at this time)

- 316(a) – thermal
- 316(b) – impingement and entrainment

General Permits

- MS4 General permit is currently on public notice.

IDEM Water Quality Standards

Metals Rulemaking

IDEM held a Zoom public hearing for the draft metals rule before the Environmental Review Board on November 18, 2020. The draft rule for preliminary adoption was approved by the Environmental Rule Board. The proposed rule will be public noticed for 21 days.

This rule updated Indiana's aquatic life and human health surface water quality criteria for metals and was initiated in 2014. Since the first notice, EPA updated several aquatic life criteria for metals. We are proposing to adopt the updated selenium and cadmium (both 2016) aquatic life criteria but not the aluminum criteria (2018).

CSO Wet Weather Limited Use Designation

Indiana approved a second application for a CSO wet weather limited use designation (Fort Wayne). The CSO wet weather limited use designation suspends the recreational criteria after a qualifying rainfall event in specific stream segments downstream of CSOs for not more than four days after the date the overflow discharge ends.

IDEM is drafting a wet weather limited use subcategory rule that will be presented to our Environmental Rule Board, in either May or July. Once the ERB approves the rule, IDEM will submit it to EPA for review and approval.

PFAS

IDEM will be collecting source water and finished water from community public water systems in a phased approach, starting with public water supplies serving 3301-9999 (133 communities). IDEM and Indiana Department of Health are partnering on this effort. IDOH has received equipment and is finalizing quality control criteria. We anticipate in initiating this project in March.

IDEM has been working on a long-range plan for assessing the impacts of PFAS in the state. We plan to first focus on assessing drinking water, the principal exposure pathway, and have developed a plan to sample source water and finished water at non-transient public water systems. We anticipate the first round to be the 133 community water systems that serve 3300-9999 (86 utilities >10,000 were sampled as part of the 2012 UCMR 3, between 2013-2015. No Indiana public water system reported PFAS above the MDL. Indiana has 570 community water systems that serve less than 3000, and those systems will be sampled second. .

Fish tissue has been collected for PFAS for four years, as part of fish tissue monitoring program. This program is limited by funding. Generally, fish tissue samples selected for PFAS analysis are collected during probabilistic monitoring, at sites near potential source areas (e.g., fire training areas). After results from the 2018 sampling season were reported, ISDH posted two fish consumption advisories (a "do not eat (>200 µg/kg in fillet and >700 µg/kg in whole fish) and "One meal per month (56 µg/kg)" based on PFAS fish tissue results). Great Lakes Consortium best practice which uses USEPA RfD of 2 X 10^{-5} for calculating lifetime health advisory for drinking water.

IDEM Assessment and Monitoring – Busy year, despite pandemic

- IDEM formally submitted the 2020 CALM with the Integrated Report on January 19, 2021.
- IDEM collected fish tissue samples in 2020 from tributaries of the Ohio River and the Great lakes (Lake Michigan, Lake Erie).
    - We typically don't sample too many sites in the Ohio River basin because many of the tributaries are smaller, or impacted by the Ohio River. In 2020, we sampled Tanners Creek, Laughery Creek, Silver Creek, Indian Creek, and Anderson River.
    - All samples are being analyzed for PCBs, metals, organochlorine pesticides, and PFAS. Our contract laboratory recently switched to a new PFAS test method which enables them to analyze 35 different PFAS compounds. The new test method is based on the DoD Quality Systems Manual Version 5.3. This will be the first PFAS fish tissue data from the Ohio River basin in Indiana. Samples are at the lab but results are not expected until April.
    - Fish Tissue sampling will take place in the West Fork and Lower White River Basin as well as the Patoka River basin in 2021.
- Program development: IDEM began working with U.S. EPA Region 5 and Tetra Tech to (1) develop a Diatom Index of Biotic Integrity for rivers and streams, and (2) develop a Coolwater IBI project to revise the biological indices for coolwater streams.
- IDEM continues targeted monitoring for watershed characterization studies (TMDL and NPS monitoring) in the Maria Creek Watershed (tributary to the Wabash River). In 2021, the watershed characterization project will take place in the Vernon Fork Muscatatuck River which is a tributary to the East Fork White River which eventually flows into the Wabash River and subsequently, the Ohio River.

- IDEM embarked on a special project this year to assess the water quality and biological conditions of the main stem of the West Fork White River and White River from its headwaters to its confluence with the Wabash River. Partners included IDEM, IDNR and City of Muncie Bureau of Water Quality. Partners assessed water chemistry @ 59 sites (3 rounds, spring, summer and fall), fish communities (@62 sites) and benthic macroinvertebrates (@11 sites, multi-habitat macroinvertebrate collection procedure).

  Highlights from the White River Study-
  - White River Facts
    - 312 mile long, Confluence with East Fork 50 miles upstream of confluence with Wabash River.
    - Through heart of State of Indiana
    - Headwaters in Winchester, Randolph County
    - Muncie, Anderson, Noblesville, Indianapolis
    - Mounds state Park, White River State Park (Indy), McCormick Creek State Park[Indiana's first state park on July 4, 1916 to celebrate Indiana centennial, (Spenser)]
    - December 2019 marked the 20-year anniversary of what was often referred to as "the Guide spill," a deliberate release of chemicals that became thiram, which many call the worst environmental disaster in Indiana's history. More than 4 million fish were killed along a 50-mile stretch of the White River from Anderson through downtown Indianapolis.
  - Collaboration between 3 agencies, IDEM, IN DNR, and Muncie Bureau of Water Quality (21 staff and 4 interns)
    - IDEM was beginning their 5th cycle of probabilistic monitoring in the White River basin so already in the area!
    - Aquatic life use for the entire river (sampling stretches that have never been sampled or sampled very long ago)
    - Possible removal of impairments
    - Sport fish information for the IN DNR
    - Looking at spread of Asian Carp in the river (found just south of Indianapolis, no bighead carp collected)
    - Identify shifts in fish community structure along the river
  - Water Chemistry 3x (spring, summer, and fall) at 60 sites; general chemistry and metals to U.S. EPA lab in Chicago (no charge saving the State $$$$), contract lab for Nutrients ($25,000)
    - Final violations will be determined and assessed later in February
  - Fish Community[once at 62 sites with 3 crews out on the river using backpack, tote barge, and boat electrofishing equipment (June-October); all agencies helping to still get "normal" sampling done in addition to this special project].
    - Index of Biotic Integrity (IBI) scores went from Excellent/Good in the headwaters to Poor in the lower part of the river; however, the IBI scores were better than historical scores and Fair to Good scores even in Indianapolis!
    - 49/62 sites passed with an IBI score of 36 or above.
    - 94 species (205 species in Indiana so very cool to get so many in one river system!)
    - 17,232 total fish
    - 34.36% Sensitive
    - 27.06% Tolerant
    - Top 5 species sampled: Bluegill, Longear Sunfish, Spotfin Shiner, Bluntnose Minnow, and Sand Shiner
    - Noteworthy catches: American Eel, Shovelnose Sturgeon, Mountain Madtom, and Harlequin Darter. Several Blue Suckers, 18+ inch Smallmouth Bass, 9+ inch Rock Bass, 25+ inch Channel Catfish, large Longnose Gar, large Blue Catfish, and the largest fish collected: a 40 pound Flathead Catfish.
  - Macroinvertebrate Community (once at 11 sites)
    - The average mIBI score was 36 with 7/11 sites passing with a mIBI score of 36 or above.
    - Notable specimens,
      - Chironomidae midge *Paratendipes basidens* that IDEM had never seen and was not in the list of Indiana macroinvertebrate species.

        - § Mayfly *Pentagenia vittigera* which is considered rare in Indiana, being limited to large sandy rivers - is a species of riverbed burrower mayfly in the family Palingeniidae.
    - Qualitative Habitat Evaluation Index (QHEI) at all 62 sites
        - QHEI scores went from Excellent/Good in headwaters to Poor in the lower part of the river; however, 48/62 sites scored Excellent or Good!
    - Outreach
        - 7 media interviews
        - 2 Agency press releases
        - 4 radio stories
        - 5 newspaper articles
        - 8 agency Facebook posts

Check out the 2020 White River Mainstem Project Story Map for site locations, photos, outreach events, and results http://idem.in.gov/WhiteRiverProject.

Kentucky

Katie McKone reported the following:

Water Quality Standards

- We are planning to put out a public notice for the Triennial Review this spring, with one or more public listening sessions tentatively scheduled for May/June 2021.

Integrated Report

- Finished assessments for a combined 2018/2020 cycle, preparing to public notice the 2018/2020 303(d) list.
- Beginning work on the 2022 Integrated Report, where we will be updating assessments to the Ohio River, where appropriate.

Drinking Water

- Data from the 2020 PWS Source Water survey was compiled and a viewer with data results is near completion.
- A 2021 source water survey is under development, we expect to send it out this summer to public water systems, including those who treat both surface and ground water.

Nutrients

- Our Surface Water Permits Branch continues to develop a KPDES permitting strategy for nutrient optimization for POTWs.
- Nutrient Reduction Strategy continues to be a priority for our Watershed Management Branch, and the collaboration with ORSANCO in review of the bimonthly and clean metals program will continue to help support these efforts.
- Story map on Nutrient Reduction in Kentucky: https://kygis.maps.arcgis.com/apps/MapSeries/index.html?appid=401eaf6ea6e24ffa82985d122cf1bbb0

Water Quality Certification

- To assist applicants for water quality certifications in complying with the newly effective changes to 40 CFR 121, the Water Quality certification section has developed forms to assist applicants to meet the new USACE administrative and procedural requirements for requesting a Water Quality Certification.
- WQC web page is located at https://eec.ky.gov/Environmental-Protection/Water/PermitCert/WQ401Cert/Pages/default.aspx

Water Infrastructure Branch

- The focus is currently on getting the construction permits out in a timely fashion, completing Sanitary Survey's for Drinking Water, and funding SRF projects.
- On the SRF, DOW is currently ranking the projects for the 2022 Intended Use Plan which will come out this summer.
- The 2021 Drinking Water Needs Survey is occurring this year and we will be collecting the infrastructure needs data for 70 Drinking Water systems this year.

New York

Commissioner Wilson remarked that the Commission should look at historical programs similar to what is being discussed with the current Farm Bill to see what worked well. There was a similar program in the 1990's with

funding that brought local leaders together and funded smaller grant projects. Nonprofits, health departments, highway departments etc. came together at the county or local level to interact and solve local environmental problems proactively. It was a highly successful program in NY State and may be quite useful in understanding from a historical perspective what types of initiatives were successful, and which were not.

Ohio

Audrey Rush reported on the following items:

PFAS – A drinking water survey of 1,500 public water supply facilities was completed in December of 2020. The survey, which took a year and a half, resulted in non-detects at 94% of the facilities and just two facilities requiring some action due to exceedance of Health Advisory levels. There has been some discussion with the Great Lakes Consortium pertaining to test ng for PFAS in fish tissue. However, OEPA has no immediate plans to commence sampling as it awaits further reporting from USEPA.

Rulemaking – OEPA's human health criteria were affected on January 18, 2021, and are awaiting approval by USEPA Region V. A web-link detailing the new triennial review process was posted on February 9th, 2021. The link describes the four step process for completing reviews: internal review and drafting of priority standards, public comment period, public hearing after release of the report, and initiation of priority rulemaking. Some changes have been made to water quality standards concerning the addition of new implementation rules and the removal of an antiquated use designation, "limited warm water habitat". Interested party reviews (IPR) are underway for variance and beneficial use rulemaking. Ammonia variance rules were developed through assistance from USEPA. The beneficial uses currently released for IPR include those for the Southeastern and Southwestern tributaries and the Little Miami, Great Miami, Hocking, Muskingum, and Scioto rivers (Central Ohio tributaries and Mill Creek will be released in 2022).

Monitoring– Though lacking formal approval of a COVID workplan, biological crews are planning to sample the Hocking, Mahoning, Mohican, Olentangy, Tuscarawas, and Walhonding rivers. Additionally crews plan to sample Big Darby, Big Walnut, Killbuck, Paint, Sandy, Salt, and Wills creeks. Positions have been posted for two additional permanent biological staff, though the ability to hire interns for the upcoming season is still unclear. A multi-watershed bacterial TMDL to assess recreational use impairments throughout the state is currently underway. The loading analyses for the TMDL is completed; work continues on the modeling portion of the project.

Pennsylvania

Kevin Halloran reported on the following:

1. Shell Cracker:
    - Started water intake in January
    - First fire of cogen plant in April
    - Production spring 2022
2. ALCOSAN officially executed federal Consent Decree. Consent Decree amendment executed. Major work to include:
    - plant headworks upgrade to 480 MGD, 600 MGD primary and disinfection
    - takeover of all inter-municipal trunk sewers
    - storage tunnels under the Rivers, including a 1.9 mile long tunnel under the Ohio
    - green infrastructure funding
    - establishing flow targets for contributing municipalities.
3. Water Quality Criteria updates: published final triennial review in October 2020, with EPA for final approval.
    - EPA Aquatic Life Ambient Water Quality Criteria for Ammonia – equation with temperature and pH
    - EPA E. Coli criteria for Water Contact use to replace coliform based criteria
    - Toxic Substances- 73 compounds have updated criteria, 11 new human health criteria
4. The Proposed Rulemaking for Water Quality Standard for Manganese was published in the Pa Bulletin on July 25, 2020 (50 Pa.B. 3724). The Public Comment Period just closed on September 25, 2020. The Department is currently reviewing all the comments received during the public comment period and 3 public hearings to develop recommendation for final rulemaking that will be presented to the Department's Advisory Committees before being considered by the Environmental Quality Board (EQB). The proposed rulemaking that was approved by the EQB establishes 0.3 mg/L for human

health, and discusses two possible approaches with respect to the point of compliance – either statewide as would be consistent with our other toxic substances criteria, or it will be only applied at the PWS withdrawal as per 25 Pa. Code § 96.3(d) to be consistent with Act 40 of 2017.

5. 2020 Integrated Water Quality Report on website digital interactive.

Virginia

Melanie Davenport reported that predominant theme in legislation from the most recent general assembly session concerned environmental justice. An act passed in 2020 focused on analyses of possible environmental justice impacts across all state agencies. Legislation proposed by the *Equity in Wastewater Treatment Administration* established state policy and means to achieve universal access to wastewater treatment, focused on protecting public health and the environment. VADEQ had a bill, that did not make it past committee level, which would have required all new individual air, water, and landfill permits to complete community outreach and report those results to DEQ prior to an application being considered complete.

Monitoring & Rulemaking- COVID and budgetary concerns continue to complicate the department's ability to acquire seasonal student and intern assistance for summer monitoring programs. The 2020 integrated report (IR) was approved by USEPA on December 11th, 2020. The department make have difficulty meeting the USEPA spring deadline for the next IR due in 2022. VADEQ's citizen board has directed staff to initiate rulemaking on an instream turbidity standard; a direct result of recent pipeline construction in the state.

West Virginia

Scott Mandirola reported the following:

The new WVDEP Cabinet Secretary is Harold Ward. He has 30 plus years with the WVDEP, the latest as DMR Director.

WV Air quality designation

EPA has recently accepted WVDEP redesignation request for the remaining area that was in non-attainment. WV now has no area of the state in non-attainment. WV is one of only 16 states with no non-attainment areas and the first state in R3.

Aquatic Life Assessment Rule

We went out to notice last Friday with a procedural rule on how to make assessment decisions.

PFAS Study update

During the 2020 Legislative session SCR 46 passed requiring the DEP and DHHR to study PFAS statewide in drinking water intakes. This has been underway and an update is listed below.

- The project began on July 1, 2020 and the was proposed on a two-year timeline, with sampling in year 1 and data analysis and report preparation occurring in year 2.
- As of 2/2/21, 223 sites have been sampled leaving 56 to go.
- There are 51 PWS's and 5 schools remaining to be sampled.
- We have received preliminary results for many sites and few have shown levels above the EPA health advisory for PFOA or PFOS.
- All results are still preliminary and subject to change upon review.
-We currently have 5 USGS sampling crews operating in West Virginia one each from WV, OH, VA, KY, and PA.

AST Update

DHHR has redrawn ZCC based on SWIG being treated like surface intakes along the Ohio River. This is causing problems with about 300 plus AST's that were previously not regulated, other than register and label. Many are now level 1 tanks and need inspected and certified by an engineer. The O&G industry is introducing legislation in an attempt to exempt themselves from the regulations for tanks in the ZCC.

WQS Update

April of this year the DEP is proposed a WQS rule change for HH criteria as required by the legislature in 2019. We have proposed to update 24 of the 56 criteria that we currently have in the rule and EPA updated in 2015. The remainder of the criteria are being reviewed by a committee that was formed from DEP folks and the Environmental Protection Advisory Committee. This group has met 4 times and is looking closely at how the EPA made the changes and why. The group is attempting to agree on the science used to make the updates. The goal is to get the 24 proposed updates through legislature and have a proposal ready for April to propose additional updates for next legislative session.

404/401 update

The USACE notified WV of some issues they had with our 401 cert of the reissuance of the 404 nationwide permits. They viewed a couple of statements dealing with the "Secretary's discretion to require and individual permit" as reopener clauses and requested a call with the state to discuss. After discussion they decided to state that, for the activities which contained the Secretary's discretion, the state did not certify those projects and an individual permit would need to be applied for from the state. The review of the WOTUS rule and the 401 rule may cause changes to the USACE nationwide permit reissuance.

Legislative Update

Air rules to stay consistent with federal rules

WQS HH updates of 24 compounds

Voluntary Remediation Program rule update to remove the de-minimis table from the rule so these numbers can be update without going to legislature, which is an 18 month process.

US Army Corps of Engineers

Erich Emery reported that the Corps is working on a low-flow calibration of their HEC-RAS flow model for the Ohio River. The goal of this effort is to facilitate coordination of releases from Ohio River dams to avoid longitudinal wave propagation that can affect the operations at Olmsted and Barkley dams. This work may also be relevant to ORBA's abundant clean water initiative. Also, the district's planning activities continue for this season's field activities in the Corps multi-purpose reservoirs.

US Geological Survey

Jeff Frey reported that there is national USGS funding for HABs work that the USGS Science Centers must compete for. Last year funding was received for Ohio River site sampling at Meldahl, Ironton, Markland, Cannelton, and on the Wabash River at New Harmony. It included discrete sampling for nutrients, cyanobacteria, cyanotoxins, and phytoplankton community analyses. The effort will be used to predict the probability of HABs occurrence. However, funding is needed from cooperators. Pike Island will be added to this effort which is also an ORSANCO site.

Funding will be available again this year for supergages on the Ohio River at Ironton, and on the Kentucky, Licking, Green, and Salt rivers. The next generation of regional studies will include intensive sampling of the Kankakee and Illinois rivers for nutrients and HABs and water quantity.

He reported that he is working with ORBA and has put together a subcommittee to evaluate the USGS's stream gages in the Ohio Basin, how the data is being used, and what are the future needs of the network.

United States Environmental Protection Agency

Dave Pfeifer reported that USEPA will have new leadership. Michael Regan has been proposed for EPA Administrator, and also Janet McCabe for Assistant Administrator for climate change who was previously with IDEM. He reported that many activities that were undertaken under the last administration are currently being reevaluated and reconsidered. Region 5 staffing changes include Tim Elkins who is the new Standards Section Chief, Donna Keklic is the new Watersheds Section Chief, and Erin Johnson is the new Regional Water Quality Standards Coordinator. The region has a chloride implementation workgroup that is working with communities and states to help facilities achieve effluent limits. They have a new 2022 303(d) template to assist the states in completing their lists by the April deadline. There was a large hiring initiative in 2020 that has gone into 2021.

Power Industry Advisory Committee

Cheri Budzynski reported that 2021 is the first year that industry must report on PFAS (172 named PFCs) release as part of the toxic release inventory. The reporting period is July 1, 2021 and industry is currently considering how to address their fire retardants relative to reporting and potential disposal or replacement. Utilities are also working towards ELG implementation for steam electric power generation stations. Deadlines for these implementations have been extended to Dec 31st 2028 and Dec 31st 2035 for the voluntary incentives program and rules concerning flue gas desulfurization (FGD) wastewater and bottom ash (BA) transport water, respectively. Utilities were also in support of the recent addition of *Permit C* to the renewal of the nationwide permits which specifically applies to utility lines.

Public Information Advisory Committee

Betsy Mallison reported that the committee held a virtual meeting in late January and discussed a holistic approach to funding FORE's educational programs. Mini River Sweeps were conducted in 2020 due to COVID, and the same is being planned for 2021.

Watershed Organization Advisory Committee

Angie Rosser reported the following:

1. **Quarterly meeting.** The committee met on December 16 and February 1 and discussed:
   - 2021 priorities
   - Update on ORSANCO activities from Richard Harrison
   - Member updates
2. **2021 priorities.** The committee identified the following priority areas of focus for 2021:
   a. PFAS. Chris Tavenor will continue as WOAC's representative on ORSANCO's PFAS committee.
   b. Harmful Algal Blooms. Members are interested in advancing nutrient reduction strategies.
   c. Emerging Pollutants and Legacy Pollutants. Involves a wide range of concerns including mercury, coal ash, microplastics, oil and gas waste, spill prevention and response.

   WOAC established a subcommittee to facilitate a strategic planning process for WOAC to further identify activities and coordination around shared priorities.
3. **Basin Plan involvement.** WOAC members are currently participating in three of the work groups: Abundant Clean Water, Healthy & Productive Ecosystems, and Knowledge & Education to Inform Decisions. There is continued interest in advocacy for funding to implement the Plan.
4. **Monitoring proposed projects.**
   a. **Oil and gas waste barge dock facilities**. There are now three barge dock facilities that have recently been permitted by USACE for the purpose of accepting large quantities of oil and gas waste (located in Meigs, Marshall and Belmont Counties of Ohio). It appears most of the waste is bound for underground injection wells near, or connected to, the barge facilities. These facilities raise concerns of emerging risk due to the toxic and radioactive nature of oil and gas waste and byproduct components. WOAC recommends that ORSANCO consider adding many of the known components of this waste stream to a list of emerging pollutants to consider/monitor. There is a coalition of grassroots groups forming to continually track and take action on regulatory issues surrounding these facilities. For more info, contact Robin Blakeman: robin@ohvec.org.
   b. **Mountaineer NGL Storage Facility.** This proposed facility is under permit review by ODNR, public comment period ended 2/6. The facility would house massive amounts of Natural Gas Liquids in underground storage caverns very close to the Ohio River. The process of creation of the caverns entails pumping large quantities of brine water into holding ponds on the surface, and it appears part of the holding pond complex is within the floodplain of the Ohio River. Powhatan would withdraw approximately 1,928,000 gallons of fresh water each day from the Ohio River to carve out the first storage cavern. More caverns could be constructed to increase storage capacity, each of which would require approximately 380,200,000 gallons of freshwater.

Water Users Advisory Committee

Bruce Whitteberry reported that Ohio River water quality has been good recently with no facilities reporting problems since the last meeting. The committee met virtually in January, and the virtual format is good in that it allows for more participation by water utility personnel in the meetings. They received a summary of the HABs plan which was approved by TEC and had no concerns with it. They also received a summary of the petition to USEPA on the need for Ohio River nutrients criteria and TMDLs. They also received an update on the PFAS study. Steve Algier with USEPA reported on the Source Water Contamination Threat Inventory project to map in GIS the significant contamination threats to water utilities. The project currently covers the Cincinnati to Louisville segment of the river, but EPA is planning to expand it to the Allegheny River. The committee also supports the proposed upgrade of ODS equipment at ORSANCO's offices which provides the ability for additional analyses if necessary, as well as being a backup unit for the ODS network.

Review of Bimonthly/Clean Metals Monitoring Programs

A review of ORSANCO's fixed station Bimonthly and Clean Metals monitoring programs was initiated following the June TEC meeting. The review work group has convened multiple times and last met in December to discuss recommendations and resources necessary to implement those recommendations. Recommendations and priorities include the addition of several parameters across the entire network as well as the addition of new monitoring stations to the network. The Technical Committee was provided a summary of the work group's recommendations and priorities, and was asked to submit any additional input following the TEC meeting. The

work group will then meet again prior to the next TEC meeting to finalize recommendations, priorities, and associated resource needs to implement them. Results of this effort will be presented to the Commission's Program and Finance Committee and will ultimately be included in ORSANCO's monitoring strategy.

Ohio River PFAS Study

An update was provided to the Technical Committee on efforts to develop a PFAS monitoring project to characterize ambient levels of PFAS compounds in the Ohio River. Staff has been working, with guidance from the PFAS Work Group, to develop a sampling plan and a Quality Assurance Program Plan (QAPP) to detail the specifics of the project. The work group met in December and discussed the following:

- Review of 20 monitoring sites selected for the survey.
- Addition of one monitoring site each on the Allegheny and Monongahela rivers as requested by Three Rivers Quest/WV Water Resources Institute.
- Proceeding with the USGS EDI sample collection cross-section method for large rivers.
- Planning to collect discrete samples at three of the previously selected sites in addition to EDI sampling to investigate PFAS distribution in the water column. Discrete sampling will involve collecting surface, mid-depth, and bottom samples at three points across the stream. The work group suggested selecting discrete sites at locations near existing data indicating that detections might be expected, as well as sites downstream of larger tributaries.
- Discussed the sampling schedule and QA/QC samples.
- Reviewed the field sampling plan and QAPP.
- The USEPA discussed the analytical services being provided through Batelle Labs.
- The USEPA discussed their passive sampler project that they are planning at ORSANCO sampling sites.

Staff is tentatively planning to begin the survey in the late spring to early summer of 2021 when COVID considerations allow for field work. TEC was asked if they would like the sampling plan and QAPP documents and was offered the opportunity to review and submit comments on them.

Adjournment

The 225th meeting of the ORSANCO Technical Committee was adjourned by Chairman Pigott at 12:17 pm on Wednesday, February 10, 2021.

Approved:

_____

Bruno Pigott

Roster of Attendance

Technical Committee

Chairman	Commissioner Bruno Pigott
Illinois	Scott Twait
Indiana	Eileen Hack
Kentucky	Katie McKone
New York	Not present
Ohio	Audrey Rush
Pennsylvania	Kevin Halloran
Virginia	Melanie Davenport
West Virginia	Scott Mandirola
US Army Corps of Engineers	Erich Emery
US Environmental Protection Agency	David Pfeifer
US Geological Survey	Jeffrey Frey
Chemical Industry Advisory Committee	Vacant
Power Industry Advisory Committee	Cheri Budzynski
Public Interest Advisory Committee	Betsy Mallison Bialosky
POTW Advisory Committee	Not present
Water Users Advisory Committee	Bruce Whitteberry
Watershed Organizations Advisory Committee	Angie Rosser
ORSANCO Chief Engineer	Richard Harrison
Staff Liaison	Jason Heath

Commissioners/Proxies

Douglas Conroe, Charles Duritsa, George Elmaraghy, David Flannery, Carey Johnson, Summer Kunkel, John Kupke, John Hoopingarner, Paul Miller, Ron Potesta, Mike Wilson and Davitt Woodwell.

Staff

Ryan Argo, Dave Bailey, Bridget Borrowdale, Danny Cleves, Lisa Cochran, Stacey Cochran, Sam Dinkins, Tracey Edmonds, Emilee Harmeling, Richard Harrison, Jason Heath, Melissa Mann, Heather Mayfield (FORE), Adam Scott, Bridget Taylor, Rob Tewes, Jamie Tsiominas, Emilee Urichich, Greg Youngstrom, Lila Ziolkowski

Guests

Chris Bobay	Louisville Water Company
Robin Blakeman	Ohio Valley Environmental Coalition & WV Interfaith Power and Light
Samuel Blazey	
Adam Carpenter	AWWA
Caroline Cox	
Wendy Drake	
Jessica Fox	EPRI
Brad Gavin	IDEM/NPDES Subcommittee
Peter Goodmann	Louisville Water Company
John Hirschfield	Westlake Chemical
Cara Kitchen	
Amy Krammer	Northern Kentucky Water District
Jim Lazorchak	US EPA
Ron Lovan	Northern Kentucky Water District
Travis Luncan	City of Wilmington, OH
Jordan Lubetkin	National Wildlife Federation
Cary McElhinney	
Tracy Mehan	AWWA
Martha Mettler	IDEM
Marc Mills	US EPA
Ellie Murphy	
Kay Sanborn	
Richard Stuck	Greater Cincinnati Water Works

Dan Somma	
Jeff Thomas	EPRI
Josh Thompson	
Dave White	9b Group

Prepared by Jason Heath with contributions from Ryan Argo, Sam Dinkins, and Greg Youngstrom.
(Recording of proceedings available at Commission Headquarters)
PowerPoint presentations from this meeting are available on the Commission website at www.orsanco.org.

Agenda Item 10
226th Technical Committee Meeting
June 8-10, 2021

Bimonthly & Clean Metals Program Review Summary

A workgroup of mainstem states was established to review and make recommendations on ORSANCO's Bimonthly and Clean Metals monitoring programs, and they first met in June, 2020. Fixed station grab sampling is conducted every other month at 14 Bimonthly stations and 16 Bimonthly/Clean Metals stations. These monitoring programs have been in place for more than twenty years. An appendix to this report provides more background on these programs. The following provides the results of several meetings and iterations to finalize recommendations regarding the Commission's Bimonthly and Clean Metals monitoring programs. A number of these recommendations are included in the Commission's proposed FY2022 program and budget which can be found on pages 9-10 of this report. It is intended to attach this report to ORSANCO's overall monitoring strategy document.

I. INITIAL SET OF RECOMMENDATIONS FROM THE STATES WITH COST ESTIMATES

*****Black font text are states recommendations/priorities. Blue font text are ORSANCO's additional input and associated costs on recommendations.**

Shipping - Please note that some of these additional parameter discussed below have 48 hour hold times (e.g. MBAS, DOC, Osmotic Pressure, BOD, and/or Orthophosphate). There will be an added flat shipping cost of **$9,660** if one or more of these parameters are desired. The total recoverable metals samples will be processed by a different lab and require separate shipment at an annual cost of **$5,250**. There will be no added cost for Alkalinity as it can be shipped with existing Bimonthly parameters.

PA Comments

1. Add a bimonthly monitoring location on the main stem of the Ohio River in the Montgomery pool downstream of the mouth of the Beaver River and upstream of the Interstate 376 bridge (approx. RM 27)—before the string of industrial facilities (Shell, NOVA, BASF, Beaver Valley Power Station, Bruce Mansfield/Little Blue Run). It would be the only point for general chemistry and metals data in the Montgomery Pool (including DEP and USGS monitoring).

   There are no fixed structures from which the main Ohio River discharge can be safely sampled by foot in the desired target area (as with other Clean Metals stations). In order to sample from this target area, a crew of two individuals would need to deploy via an ORSANCO vessel. The annual cost of this sampling would be $ 2,800 in travel in addition to the $6,884 analytical costs = **$9,684**. This option would prove logistically difficult given ORSANCO personnel commitment to the remaining stations; requiring reallocation of personnel time within the program.

A secondary option would be to obtain a grab sample from the Monaca Boat ramp. This site could be incorporated into the current sampling schedule with minimal difficulty. Monaca boat ramp is slightly downstream of the Beaver River, however this would provide a sample from outside the main discharge (differing from the SOP for sampling at other stations). Given this caveat, the annual cost of this sampling would result in $1,812 in incidentals/travel for the sampler $6,884 analytical costs = **$8,696.**

2. Add parameters alkalinity, CBOD-5, MBAS, and osmotic pressure.

   Annual Analytical Cost for alkalinity at 30 stations = $3,960
   Annual Analytical Cost for MBAS at 30 stations = $18,900
   Annual Analytical Cost for osmotic pressure at 30 stations = $22,440
   - $9,660 for priority shipping, if one or more are desired

*ORSANCO could purchase an osmometer ($15,000-$25,000) and process samples in house, pending staff and resource availability. Cost does not include schedule maintenance and processing supplies.

KY Comments - *$9,660 for priority shipping, if one or more are desired

1. Parameters
   a. Add DOC* to both the Clean Metals sites and the Bimonthly sites
      Annual Analytical Cost for DOC at 30 stations = $6,336

   b. Add total recoverable metals to the Bimonthly sites
      Annual Analytical Cost for total metals at 14 Trib Bimonthly stations = $55,784 + $5,250 in priority shipping cost = $61,034
      Total and dissolved metals are collected at all mainstem stations. If total dissolved metals are also requested it would cost $6,170 per site, this would have *substantial* implications for logistics and staffing given the necessary added personnel time associated with dissolved samples.

   c. Measure pH, Temp, Hardness and TOC at the Clean Metals sites
      This is already being done.

   d. Add orthophosphate* to the Bimonthly sites
      Annual Analytical Cost for orthophosphate at 30 stations = $2,640

   e. Add BOD* (Biochemical oxygen demand) to the Bimonthly sites
      Annual Analytical Cost for BOD at 30 stations = $5,808

2. Location
   a. From our Watershed Management Branch (WMB), who is responsible for Kentucky's Nutrient Reduction Strategy
      i. If possible (in priority order), add the following locations:
         1. add a site as close to the mouth of the Salt River as possible (to avoid backwater impacts), then
            Annual cost for 1 Bimonthly/Clean Metals station = $714

Suggested location - KY Road FD-1002 bridge (37.992264, -85.921988) could offer foot access to main discharge.

2. add a site as close to the mouth of the Green River as possible (to avoid backwater impacts); there is an existing site at Sebree, but a site further downstream would be preferable

   Annual cost to move the station would be one year of samples collected concurrently at the old and new station = $714.

   After the first year, there would be no additional costs for a moved station.

   Suggested location - Green River Lock & Dam #1

b. Add a site as close to the mouth of the Kentucky River as possible (to avoid backwater impacts)
   i. Lat/Long of DOW site: 38.656434, -85.158472
      1. This site is not sampled regularly, but is part of DOW's historic watershed trends biological network
      2. Description of site: 0.7 miles downstream of Kentucky River Lock and Dam no. 1

         Annual Cost to add one Bimonthly Tributary station = $714

         Suggested location – Sampling at the provided coordinates would require a boat and multiple personnel at an additional cost of $2,800 and would prove logistically difficult given ORSANCO personnel commitment to the remaining stations; requiring reallocation of personnel time within the program. KY R. Lock & Dam #1 would provide foot access 0.7 rmi upstream of long term site and eliminate this additional cost.

Overall, individual sites could be potentially added to existing daytrips. If two or more of these sites are desired, a dedicated overnight trip at an additional cost of $3,954 would be required.

3. Frequency
   a. No comments or suggestions; good as is

4. Method
   a. Request from the WMB for the purposes of the Nutrient Reduction Strategy
      i. The EDI method would be excellent to have for any of the existing sites (or potentially any newly added sites) where there is not an existing USGS gage in proximity that could be utilized to calculate loads
      ii. If the EDI method could be used at a few sites per year, Kentucky would have an interest in providing input for prioritization of those sites

   Cost to change from grab to EDI sample collection at one site = $3,750

   Current sample collection is completed with one staff, a vehicle, and multiple samples can be collected in a day. EDI method requires 3 staff, a boat, and half a day per sample. Therefore addition of EDI sampling would require *substantial* reallocation of staffing resources currently devoted to regular bimonthly and clean metals sampling.

5. General Comments
   a. Maintain bimonthly data collection at the existing sites as is, at a minimum

b. Several of the sites will be extremely helpful to fill in data gaps, and because the data is bimonthly and ORSANCO collects the same nutrient parameters as our primary ambient sites, it is comparable across the state
c. From Permitting: We don't currently use the data. I could see where it could be beneficial when evaluating background information for permits but other than that I don't see other direct benefits to the permitting program
d. From Drinking Water: Drinking Water Branch does not use the data and they don't expect they would

IN Comments

IDEM Office of Water Quality program technical staff reviewed ORSANCO's current Bimonthly and Clean Metals monitoring program. Technical staff were polled to determine if they use these data, and how these programs might be modified to enhance their utility. Staff also reviewed recommendations for additional parameters submitted to ORSANCO by Katie McCone, Kentucky ORSANCO Technical Committee Representative to see if they agree with these recommendations, and/or had additional recommendations. Staff agreed (or had no opinion) with including Kentucky's suggested parameter list, below.

Parameters- *$9,660 for priority shipping, if one or more are desired

a. Add DOC* to both the Clean Metals sites and the Bimonthly sites
   Annual Analytical Cost for DOC at 30 stations = $6,336

b. Add total recoverable metals* to the Bimonthly sites
c. Annual Analytical Cost for total metals at 14 Trib Bimonthly stations = $55,784 + $5,250 in priority shipping cost = $61,034
   Total and dissolved metals are collected at all mainstem stations.

d. Measure pH, Temp, Hardness and TOC at the Clean Metals sites
   This is already being done.

e. Add orthophosphate* to the Bimonthly sites
   Annual Analytical Cost for orthophosphate at 30 stations = $2,640

f. Add BOD* (Biochemical oxygen demand) to the Bimonthly sites
   Annual Analytical Cost for BOD at 30 stations = $5,808

Indiana General Comments

6. Maintain bimonthly data collection at the existing sites as is, at a minimum.

7. OWQ's Groundwater Section does not currently use these data for program purposes. ORSANCO could consider sampling both the Wabash and White Rivers prior to their confluence, as they have very different watershed land uses.
   Cost to add a White River Bimonthly station = $714
   Cost to add an upstream Wabash River Bimonthly station =$714
   If it is desired to replace the existing Wabash River at New Harmony with this one upstream of the White River confluence, the $714 difference would be removed after one year of concurrent sampling

at both sites. Depending on the current sampling schedule to absorb these additional stations, a dedicated overnight trip at an additional cost of $3,954 could be required.

8. OWQ NPDES Permit Branch uses these data to derive permit limits for direct dischargers to the Ohio River. The current number of sites and their location is sufficient for program uses.

   One issue NPDES has discovered with using the data is the wide swings in pH values at individual sites. Since aluminum and ammonia water quality criteria include pH as a variable, it is desirable to have confidence in the Ohio River values, and with the wide swing in values, we do not use these data. Currently, we use a default pH value of 7.8 s.u.

   ORSANCO could consider adding pH monitoring to the existing dissolved oxygen and temperature monitoring conducted May through October and making that data available online. In addition, if ORSANCO has deployed Hydrolabs on the Ohio River, they could collect pH data and make that data available online.
   Cost for the addition of pH loggers at DO stations = $695 a piece at 7 stations = $4,865. An additional cost for travel and consumables for one person to maintain/calibrate meters throughout the desired timeframe = $4,500. Total cost = **$9,365.**
   ORSANCO does not collect the DO/temp monitoring data, it is collected by hydropower facilities. We currently solicit this information from 11 stations, four of which possibly collect pH. Thus ORSANCO staff would need to purchase and maintain an additional seven probes to cover the remaining stations. This would require reallocation of staffing resource currently committed to bimonthly and clean metals sampling should the maintenance not be concurrent with existing sampling schedules.

9. OWQ NPDES Permit Branch would like to have access to any temperature data collected November through April in addition to the existing Bimonthly sampling data that are already available online.
   No cost.
   Temperature data is collected with all Bimonthly/Clean metals samples. Drinking water utilities may also collect temperature data.

10. OWQ Assessment and Monitoring programs use the bimonthly and clean metals data. While more sites are always desirable, the bimonthly chemical sampling includes a site in every pool that borders Indiana. Based on the way Indiana assesses surface water quality for Clean Water Act assessments, having one sample location per pool is sufficient for program purposes.
    No cost.

Summary of Programmatic Additions

Current Bimonthly Budget	Current Clean Metals Budget	Current BM & CM Budget
$41,834.75	$94,371.90	$136,206.65

Parameters

	Annual Cost	
Alkalinity	$3,960.00	No Added Shipping Cost
BOD	$5,808.00	
DOC	$6,336.00	
MBAS	$18,900.00	
Orthophosphate	$2,640.00	
Osmotic Pressure	$22,440.00	
TR Metals	$55,784.00	
Shipping	$9,660.00	Decreased Hold Time Shipping
Shipping	$5,250.00	Metals Shipping
total	**$130,778.00**	

Sites

	Base BM	BM added Parameters	Base CM
Single IN/KY Site	$714.00	$3,783.00	N/A
Montgomery Pool	$714.00	$3,783.00	$6,170.16

	Additional Travel Cost
Sampling PA site (Monaca option)	$1,812.00
If two or more additional KY sites desired	$3,954.00
If two additional IN sites desired	$3,954.00

II. REVISED RECOMMENDATIONS AND PRIORITIES

Illinois Priorities

For priorities, I would rank them as follows:

- the addition of DOC
- the addition of alkalinity
- the addition of BOD and/or COD
- the addition of orthophosphate
- addition of MBAS
- the addition of total recoverable metals
- addition of osmotic pressure

I think we will remain silent on the addition/relocation of individual sampling locations requested by other states.

Indiana Priorities

IDEM staff have reviewed and discussed the Bimonthly and Clean Metals Programs Review report that ORSANCO circulated to mainstem TEC Committee members and their colleagues on December 10, for our discussion on December 15. Based on the report and discussion, we suggest the following priority ranking for additions/changes to the Bimonthly and Clean Metals Programs.

1. Maintain Bimonthly and Clean Metals data collection at the existing sites.
2. Include analysis for dissolved organic carbon (DOC) at Clean Metals and Bimonthly sites ($6,336 annual analytical cost + $9,660 for priority shipping).
3. Add a bimonthly and clean metals monitoring station on the main stem of the Ohio River in the Montgomery Pool downstream of the mouth of the Beaver River and upstream of the Interstate 376 bridge (approximate RM 27) ($2,800 travel + $6,884 annual analytical costs = $9,684)
    a. The lack of a Bimonthly/Clean Metals sampling location in the Montgomery pool is a gap in the Ohio River mainstem monitoring network.
    b. No other agency (state, USGS) is monitoring general chemistry and metals in the Montgomery Pool.
    c. This proposed sampling location would be the first Clean Metals site on the Ohio River mainstem in Pennsylvania.
    d. The proposed sampling location will serve to establish background water quality for deriving water quality based effluent limits for downstream industrial dischargers in the Montgomery Pool (Shell, NOVA, BASF, Beaver Valley Power Station, Bruce Mansfield/Little Blue Run).
4. Add a Bimonthly/Clean Metals site on the Salt River ($714 annual analytical cost).
    a. This major tributary to the Ohio River is not sampled under the current programs.
5. Add a Bimonthly/Clean Metals site on the Kentucky River ($714 annual analytical cost).
    a. This major tributary to the Ohio River is not sampled under the current programs.
6. Since priority shipping will be triggered for the DOC samples (#2), include orthophosphate ($2,640 annual analytical cost) which must be priority shipped and can be shipped with the DOC samples.
7. ORSANCO should investigate the wide swings in variability in the Bimonthly pH data, as pH is used to derive aquatic life criteria for ammonia and aluminum, and will likely be used in planned updates to aquatic life criteria for cobalt, copper, lead, nickel and zinc. The addition of pH loggers will allow for the identification of any monthly trends and diel fluctuations in pH for comparison to one-time

measurements at Bimonthly sites. (pH loggers at seven DO stations $4,865 one-time cost + travel and consumables to maintain $4,500 annual cost = $9,365 for Year 1, $4, 500 for following years)

Comments:

- It is not a priority for IDEM to include BOD ($5,808 annual analytical cost), alkalinity (($3,960 annual analytical cost), MBAS ($18,900 annual analytical cost) or osmotic pressure ($22,400) annual analytical cost.
- Given the cost, IDEM does not think that adding clean metals to the bimonthly locations ($55,784 annual analytical cost + $5,250 priority shipping) is warranted.
- IDEM withdraws the request for an additional site on the White River and an upstream Wabash River bimonthly station.

Kentucky Priorities

- Include analysis for dissolved organic carbon (DOC) at Clean Metals and Bimonthly sites ($6,336 annual analytical cost + $9,660 for priority shipping)
    - Kentucky would appreciate clarification of method that would be used to quantify DOC. Is priority shipping needed because samples will be filtered at the lab instead of in the field?
- Include analysis for orthophosphate at Clean Metals and Bimonthly sites ($2,640 annual analytical cost, where cost for priority shipping is accounted for with addition of DOC)
    - Kentucky would appreciate clarification of the sample preservation and analytical method that would be used to quantify orthophosphate.
- Move Bimonthly site on the Green River to Lock & Dam 1 (Annual cost to move the station would be one year of samples collected concurrently at the old and new station = $714)
    - Before suggesting to move this site, Kentucky seeks clarification on why the site was initially placed at Sebree. Are there concerns about Ohio River backwater influencing this location from time to time? Some interruptions in the sampling data due to flooding?
    - Advantages of the proposed location is the co-location of a USGS gage at Lock & Dam 1, and the closer proximity to the mouth for analysis of loads for the Nutrient Reduction Strategy
- Add a Bimonthly site on the Kentucky River ($714 annual analytical cost plus $3,954.00 for additional travel cost to add two sites)
- Add a Bimonthly site on the Salt River at KY Road FD-1002 bridge ($714 annual analytical cost, where cost of additional travel is accounted for with the Kentucky River site)

Kentucky Comments/Questions

1. How do these suggestions impact state budgets and funding. That is, we would like to confirm that these additions are part of ORSANCO's current operating budget, and will not add cost to Kentucky DOW.
2. We support and acknowledge the priority to add a bimonthly and clean metals monitoring station on the main stem of the Ohio River in the Montgomery Pool downstream of the mouth of the Beaver River and upstream of the Interstate 376 Bridge.
3. For sampling with the EDI method, Kentucky would like to move that priority off this list, but seeks to continue conversations about the possibility of a side project where sites without a USGS gage may be prioritized for the EDI method if funding and resources are available.
4. We withdraw our comment to add clean metals to the bimonthly locations. We will continue to work with ORSANCO on sampling for metals within Kentucky pools through other programs, such as their

probabilistic program, and appreciate the collaborative approach to better understand Kentucky's iron listing along portions of the Ohio River.

5. As with IDEM, it is not a priority for Kentucky to include alkalinity ($3,960 annual analytical cost), MBAS ($18,900 annual analytical cost) or osmotic pressure ($22,400 annual analytical cost). However, Kentucky would appreciate hearing from PA about the specific reasons for including these in their priorities.

Ohio Priorities

Include the DOC sampling as a priority.

West Virginia Priorities

1. Maintain Bimonthly and Clean Metals data collection at the existing sites.
2. Include analysis for dissolved organic carbon (DOC) at Clean Metals and Bimonthly sites ($6,336 annual analytical cost + $9,660 for priority shipping). I don't think DOC needs to be retained long-term, but do think it's important to collect this data throughout all seasons for a year or 2.
3. Add a bimonthly and clean metals monitoring station on the main stem of the Ohio River in the Montgomery Pool downstream of the mouth of the Beaver River and upstream of the Interstate 376 bridge (approximate RM 27) ($2,800 travel + $6,884 annual analytical costs = $9,684)
4. ORSANCO should investigate the wide swings in variability in the Bimonthly pH data, as pH is used to derive aquatic life criteria for ammonia and aluminum, and will likely be used in planned updates to aquatic life criteria for cobalt, copper, lead, nickel and zinc. Seems questions about pH swings could largely be answered with existing (or maybe enhanced a bit) deployed meters used for HAB monitoring.
5. No issues with adding sites in KY and IN, but not a priority for WV

III. FINAL RECOMMENDATIONS/PRIORITIES

This section is a summary of results fromRecommendation #1 below has been included in the proposed FY22 program and budget under the federal 106 grant which becomes effective Oct. 1, 2021. Recommendation #2 is included in the proposed FY22 program and budget as a higher priority unfunded project, and will tentatively be funded under the federal supplemental monitoring grant which becomes effective Oct. 1, 2021. Recommendation #3 can initially be addressed with existing continuous monitors, and subsequent to data assessment and evaluation, it will be determined whether additional monitoring may be necessary. There are no plans currently to implement recommendation #4, however it may be considered in the future for Pennsylvania monitoring sites. These recommendations, through this report, will be attached to ORSANCO's monitoring strategy.

1. Add DOC, Orthophosphate and BOD to all monitoring stations:

Costs for analytical and shipping for all three parameters combined is approximately $24,500 annually. This cost is currently included in the proposed FY22 budget, which for federal 106 funds, begins Oct. 1, 2021.

2. **Add the following monitoring sites:**
   It is planned to include the following four additional monitoring stations into the FY22 budget under the federal supplemental monitoring grant which becomes effective on Oct. 1, 2021.
   a. **Bimonthly monitoring station on the Kentucky River near confluence with Ohio River**
      This is the largest tributary to the Ohio River without a monitoring station. Total annual costs for this bimonthly station is $1,750 annual analytical, $1,318 for additional travel annually, and $460 annual shipping. Total annual cost = $3,528.
   b. **Bimonthly monitoring station on the Salt River near confluence with Ohio River**
      The Salt River is the second largest Ohio River tributary without a monitoring station.
      Total annual cost = $3,528 (see breakdown above).
   c. **Bimonthly monitoring station further downstream on the Green River**
      The bimonthly monitoring station on the Green River is located at Ohio River mile 41.3. The KYDOW would like to reposition the station further downstream. The benefit of this is that monitoring results would also capture influences from more of the tributary as a whole. The downside is that a long-term historical record of Green River water quality would be interrupted if the station was moved. We are proposing to add a new station further downstream while maintaining the current location for at least a one year period, after which the need to maintain the current station could be reevaluated.
      Total annual cost = $3,528 (see breakdown above).
   d. **Bimonthly/Clean Metals station on the Ohio River in PA at Ohio River Mile 27 (approx.)**
      ORSANCO does not currently operate a monitoring station on the mainstem of the Ohio River in Pennsylvania. PADEP would like to add a clean metals and bimonthly monitoring station at ORM ~27, upstream of a number of NPDES discharges and downstream of the Beaver River. The annual cost for this would be approximately $1,200 in travel, $7,978 analytical, and $2130 shipping.
      Total annual cost = $11,308.

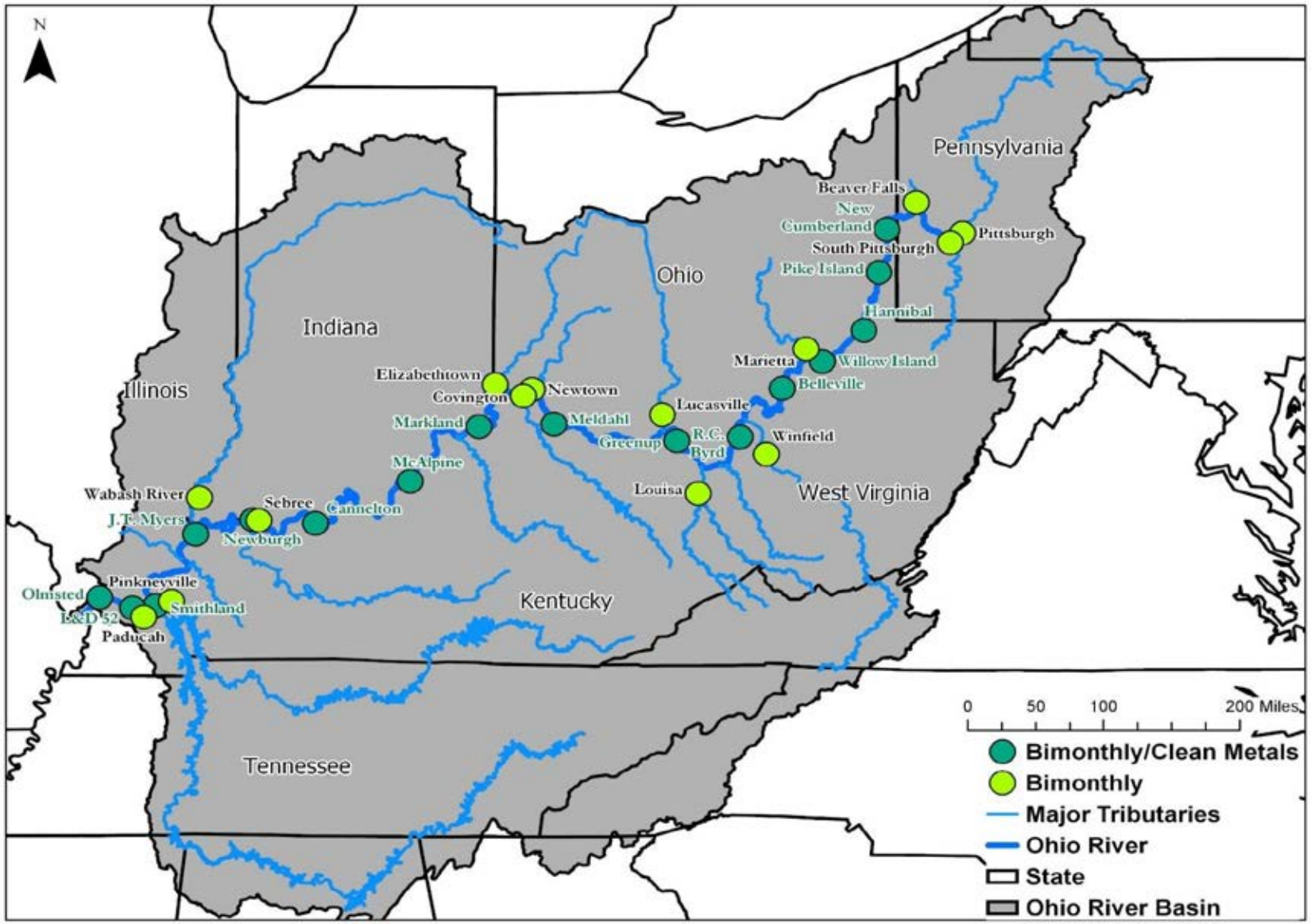
3. **Evaluate existing continuous pH monitoring data to determine if additional pH monitoring should be considered:**
   ORSANCO measures pH at its bimonthly and clean metals stations when collecting samples every other month. States have an increasing need for pH data in part due to pH-dependent water quality criteria. There have been some questions as to the usefulness and validity of ORSANCO's pH data collected at bimonthly/clean metals stations. Because the addition of multiple continuous pH monitors could be costly and could require additional staff to service these instruments, we are recommending that existing continuous pH data be analyzed and evaluated as a first step. This step should be completed by the end of this calendar year and would lead to a conclusion regarding the need for more or better pH data for the Ohio River. This evaluation will also utilize USGS Ohio River data and available raw water data from Ohio River water utilities as part of the evaluation.

4. **Add alkalinity, MBAS, and osmotic pressure to monitoring stations:**
   PADEP includes the above noted parameters in its wastewater permits, and as such, submitted this recommendation. This recommendation is being retained, however as the lowest priority of the final 4 recommendations since these analyses are expensive and none of the other states have an interest. The annual cost for these parameters at all thirty stations would be approximately $45,000, while the annual cost at four Pennsylvania stations only would be $4,860. Including these parameters at the Pennsylvania stations only would significantly reduce the overall cost of this recommendation.

Appendix

- Initiated a review of ORSANCO's Bimonthly & Clean Metals monitoring programs following the June TEC meeting.
- Bimonthly monitoring began in 1975 (monthly at the time), and moved to bimonthly in the early 90's (budget constraints). Includes conventional water quality parameters and some total metals.
- Clean Metals began in 1998 which includes total and dissolved metals.
- Prior to the Clean Metals program and dissolved metals criteria, there would often be total metals criteria violations.
- We do not see criteria violations for dissolved metals.
- ORSANCO uses the data from these monitoring programs primarily for 305b use assessments and trends.

Bimonthly & Clean Metals Sampling Sites



Bimonthly Parameter List

Stations	Nutrients, Major Ions	Symbol	Units	Method Number	Reporting Limit
16 Ohio River stations 14 major tributaries	Bromide	Br-	mg/L	EPA 300.0	0.05
	Chloride	Cl-	mg/L	SM 4500 Cl E	2.0
	Hardness	Hardness	mg/L	SM 2340 B	3.0
	Ammonia Nitrogen	NH3-N	mg/L	EPA 350.1	0.03
	Nitrate-Nitrite Nitrogen	NO2-NO3-N	mg/L	EPA 353.2	0.05
	pH	pH	Std. Units	Physical	N/A
	Sulfate	SO4	mg/L	ASTM D516-90	12.5
	Specific Conductivity	SpCond	us/cm	Physical	N/A
	Total Kjeldahl Nitrogen	TKN	mg/L	EPA 351.2	0.1
	Total Organic Carbon	TOC	mg/L	SM 5310 C	0.5
	Total Phosphorus	TP	mg/L	EPA 365.3	0.01
	Total Suspended Solids	TSS	mg/L	SM 2540 D	1.0
	Total Dissolved Solids	TDS	mg/L	SM 2540 C	5.0
	Total Nitrogen	TN	mg/L	TKN+(N+N) Calculation	0.5
	Phenols	Phenols	ug/L	EPA 420.4	0.01
	Dissolved Oxygen	DO	mg/L	Physical	N/A
	Temperature	Temp	Deg. C	Physical	N/A
	Turbidity	Turbidity	NTU	Physical	N/A
5 Upper Ohio Basin Winter months only (Nov, Jan, Mar)	Cyanide	CN	ug/L	EPA 335.4	5.0

Clean Metals Parameter List

Parameter	Reporting Units	Test Method	MDL	RDL
Silver (Diss. & Total)	Ag (µg/L)	EPA 1638/200.8	0.01	0.1
Aluminum (Diss. & Total)	Al (µg/L)	EPA 1638/200.8	0.3	1
Arsenic (Diss. & Total)	As (µg/L)	EPA 1638/200.8	0.1	1
Barium (Diss. & Total)	Ba (µg/L)	EPA 200.7	3	10
Beryllium (Diss. & Total)	Be (µg/L)	EPA 1638/200.8	0.1	1
Calcium (Diss. & Total)	Ca (mg/L)	EPA 200.7	0.02	0.1
Cadmium (Diss. & Total)	Cd (µg/L)	EPA 1638/200.8	0.1	1
Chromium (Diss. & Total)	Cr (µg/L)	EPA 1638/200.8	0.3	1
Copper (Diss. & Total)	Cu (µg/L)	EPA 1638/200.8	0.09	1
Iron (Diss. & Total)	Fe (µg/L)	EPA 200.7	6	50
Hardness (Diss. & Total)	Hardness (mg/L)	EPA 200.7	0.3	1
Mercury (Diss. & Total)	Hg (ng/L)	EPA 245.7	0.2	1.5
Potassium (Diss. & Total)	K (mg/L)	EPA 200.7	0.2	0.5
Magnesium (Diss. & Total)	Mg (mg/L)	EPA 200.7	0.04	0.1
Manganese (Diss. & Total)	Mn (µg/L)	EPA 1638/200.8	0.1	1
Sodium (Diss. & Total)	Na (mg/L)	EPA 200.7	0.06	0.5
Nickel (Diss. & Total)	Ni (µg/L)	EPA 1638/200.8	0.08	1
Lead (Diss. & Total)	Pb (µg/L)	EPA 1638/200.8	0.1	1
Antimony (Diss. & Total)	Sb (µg/L)	EPA 1638/200.8	0.01	0.1
Selenium (Diss. & Total)	Se (µg/L)	EPA 1638/200.8	0.4	1
Strontium (Diss. & Total)	Sr (µg/L)	EPA 200.7	0.2	1
Thallium (Diss. & Total)	Tl (µg/L)	EPA 1638/200.8	0.01	0.1
Zinc (Diss. & Total)	Zn (µg/L)	EPA 1638/200.8	0.4	1

Approach to the Review

- We have started this review with the mainstem states' only.
- Two conference calls have been held since the last TEC meeting.
- Provided Quality Assurance Plans, sampling SOPs, site descriptions and 10 yrs of monitoring data.
- We asked for recommendations for program modifications/enhancements independent of any cost or other resource considerations.
- Once we receive comments/recommendations from all the mainstem states, they will be summarized and then open for review by the full TEC Committee.
- After receiving all comments from TEC, costs will be assigned to recommendations and we will begin a prioritization process which would include budget considerations.
- This analysis would then go into a monitoring strategy document.
- Comments thus far have included the addition of two monitoring stations and addition of 5 parameters.