

OHIO RIVER VALLEY WATER SANITATION COMMISSION

MINUTES

**213th Commission Meeting
Embassy Suites Buffalo
Buffalo, New York
Thursday, October 8, 2015**

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Chairman Douglas Conroe, Presiding

Call to Order

Chairman Conroe called the 213th meeting of the Ohio River Valley Water Sanitation Commission to order at 9:00 A.M., Thursday, October 8, 2015.

Quorum Call

Commissioner Bruny, Commission Secretary, certified that a quorum was present (see Roster of Attendance, page 15).

Comments by Guests

Mr. Tim Joice, representing Kentucky Water Ways Alliance, commented on the petition for the creation of a Non-profits Committee, presented to the Commission in June 2015. He expressed appreciation for the Commission's willingness to work with the partner organizations and consider the petition. The Committee is only requesting an equal seat at the table similar to the other advisory committees. If the Commission decides not to take action at this meeting, the partner organizations look forward to working with the Commission further to support a proposal at the next Commission meeting.

Report of the Public Interest Advisory Committee

Betsy Mallison, Public Interest Advisory Committee (PIACO) Chairman, indicated that she wished to provide the Committee's report during opening comments, prior to when actions would be taken by the Commission. She reported that the Committee met on September 29, 2015 at the ORSANCO office in Cincinnati.

The Committee was pleased to have Executive Director Richard Harrison attend his first PIACO meeting and the opportunity to discuss HABs and other communication topics with Mr. Harrison. Mike Huff, from West Virginia, also attended his first PIACO meeting as a Committee member and shared some of his West Virginia videos, providing inspiration to staff and the Committee on creating new ORSANCO videos.

The group received a briefing about the Pollution Control Standards and the variances being discussed this meeting. The Committee also received a presentation on HABs from ORSANCO staff. Committee members shared their state experiences with the algae issue.

During the last year, ORSANCO's Public relations staff visited member states' public information offices to create relationships and determine their most effective communication techniques. PIACO applauded that effort because its benefits are being realized this year. The staff is spending a great deal of time on HAB issues and is communicating and cooperating with those contacts. Information from the affected states is being shared on the ORSANCO website.

The Committee discussed the formation of the NGO committee and was in agreement with the recommendation. However, the group recommended keeping the PIACO name by swapping interest for information in the name to be the Public Information Advisory Committee. The Committee felt it would be appropriate because ORSANCO staff and PIACO have worked hard at branding the acronym.

Mr. Russ Dudek, of AK Steel Corporation, representing Mountain State Carbon, commented that last January, a request for a variance for mercury was submitted to the Commission. He stated that it has been his pleasure to attend his third Commission meeting and is impressed with the dedication of Commissioners, the technical staff, and the members of the Pollution Control Standards Committee. It has become clear to him that these individuals have very important responsibilities and are taken very seriously. He appreciates the effort and diligence in dealing with these responsibilities.

Action on Minutes

ACTION: Motion by Commissioner Duritsa, second by Commissioner Fitzgerald and unanimously carried, that the minutes of the 212th meeting of the Commission and of the June 2015 Executive Session, electronically distributed on September 17, 2015, be adopted as presented.

Report of the Treasurer

Commissioner Bruny noted that a Treasurer's Report as of September 30, 2015 was provided in the meeting folder.

The report indicates a balance of \$906,068 in accounts receivable due the Commission as of September 30, 2015. The balance represents \$580,250 due from Signatory States, \$314,638 due from Federal sources, and \$11,180 due from other sources.

Additionally, the report indicates receipts of \$1,711,896 plus carryover of \$1,687,316 totaling \$3,399,212 through the end of September 2015. Of that amount, \$647,049 was expended on programs, leaving \$2,752,163 available for the continuation of ORSANCO's programs.

Through the first quarter of the fiscal year, approximately 19% of the budget has been spent, which is somewhat less than an expected 25%.

ACTION: Motion by Commissioner Bruny, second by Commissioner Lovan and unanimously carried, to receive the Treasurer's Report as presented.

Report of the Chairman

Chairman Conroe provided the following report to the Commission:

It is an honor to serve as your chairman this year. I do not carry your trust lightly. I treat it as a serious obligation of service even though it is only for a year. A year may not seem like much in the grand sequence of history; nonetheless, its events can impact the future quite significantly. We meet today in the land of the Seneca; the Keepers of the Western Door of the Iroquois Nation. The Seneca have a saying that I take to heart: when we make decisions, we must always ask ourselves, "How will that decision fare for the next seven generations?" We hold this land and its waters in trust as our forbearers did in stewardship for those who have followed. Unfortunately, that occasionally gets forgotten and we need to play catch up. We see that at times as we develop and refine water quality standards. Will our decisions of today benefit the next seven generations?

The good news about our decision-making process is that as we hopefully benefit the next seven generations, we do so having benefited from those who made decisions on our behalf previously. We are not in a position of reinventing the wheel so that we can start out. Rather, we can utilize the wheel to move further forward. My work as chairman benefits from the work of past chairs. Right now, I'd like to take a moment to recognize our immediate past chair, Tom Easterly.

It gives me great pleasure to present Tom with the flags of recognition that are traditionally presented to all chairmen at the conclusion of their first term as chair. It was a pleasure to serve alongside Tom, who has handed over the riverboat in good shape.

Buffalo was not chosen as our meeting site simply because it is situated in the chair's home state as always is the case for one commission meeting each year. And it wasn't chosen simply because it is more easily accessible than would be other sites, although both factors played into the decision. Buffalo has been a major player in the Ohio River basin's history.

One finger of the basin's headwaters originates less than 50 miles from here. I gave vice-chairman Lovan a tour of that area earlier this week. At the last Commission meeting, I talked about the French explorers that first explored the headwaters of the basin in 1679. That exploration led to the major north south travel route that is still used today by barge traffic from Pittsburgh to New Orleans. Buffalo has served at the major point for such traffic. At first, it was the Erie Canal that brought barges to and from the Hudson, and then it was the St. Lawrence Seaway that passes by here and still today serves five basin states.

The Ohio is an industrial river. Buffalo was an industrial city. We can learn from Buffalo's transition beyond industry into other sectors. The city is undergoing revitalization. People are moving into the city instead of out. Streets that five years ago one would not walk on at night are now alive with residential and entertainment activity.

I hope that members of the Commission have been able to take a moment during these past couple of days to appreciate Buffalo's architecture. Louis Sullivan's ornate guaranty building, just a couple of blocks away, is a learning tool of early skyscraper design. It has been credited as the country's first skyscraper. Frank Lloyd Wright's Darwin Martin house complex, the Graycliff estate, and other facilities are situated here, as well as the millionaire row of homes just up Delaware Avenue reflecting the gilded age grandeur. Perhaps you have walked by the rebirth of the hotel at the Lafayette, where some of us dined Tuesday evening, which was designed by Louise Blanchard Bethune, America's first female professional architect. And I cannot but mention Buffalo's parks and city layout design by Frederick Law Olmsted. Architectural students come from everywhere to marvel at and study Buffalo's architecture. Simply look out this meeting room's window and observe five different architectural styles, each built true to form.

Buffalo's waterfront has come alive after years of abandonment and industrial neglect. The inner harbor is flourishing, and the neighborhood called Canal Side abounds with activity, be it summer concerts or winter ice skating at the new arenas. Ohio River cities are experiencing the same excitement, holding triathlons, paddlefests, kayaking events, and festivals. Our decisions here at this table can reinforce activities on the river and help to move river life further into the 21st century if we are willing to shake off the pressure that we experience to continue the status quo. ORSANCO's science-based method has been good in that regard.

The first quarter of this ORSANCO year has not been one of inactivity for commissioners. Richard and I appear to have each other on speed dial, or should I say auto-dial. It has been a pleasure to interact with Richard. He excels at keeping everyone informed and in anticipating needs. There's been a bit of baptism by fire in his position for him given standards review activity and HAB challenges. No easing into the role there!

The committees have been alive with activity this summer, and we are so fortunate to have the dedicated committee members that we have in this day and age when volunteerism is declining. My appreciation goes out to each and every one of you for your dedication and contributions.

I won't dwell here on the challenges that were faced and overcome from the algal bloom conditions. I will simply say that we are also fortunate to have such a resilient and dedicated staff that can transpose itself so quickly and cooperatively when facing such challenges.

There has also been a series of sessions with admirable participation, sincere and engaged discussion, and collaboration and cooperation. I feel privileged to be associated with ORSANCO.

A quarter of the year is already passed. Work remains and deadlines approach all too quickly. It will be a busy next quarter. Our ad hoc committees have their tasks plotted out, and TEC has its work group assignments. Program and Finance will have some special needs to address before budget time. The audit is already commencing, and we have congressional communications needs to address. I have confidence that everything will be diligently addressed.

I pledge to keep on top of everything and to stay engaged. And I look forward to working with staff and commissioners as we take our next steps. This continues to be an exciting time. I appreciate all of the support the Commission has given me to date, and I look forward to continuing our good collaborations going forward.

Report of the Executive Director

Executive Director Richard Harrison began by reporting that staff has been highly engaged over the past couple of months in a robust response to a harmful algal bloom on the Ohio River which began on August 19th and still continues. Hopefully conditions are improving, and the bloom will soon wane.

It was very impressive how everyone pulled together during this event and worked well to balance their other activities. Staff worked to ensure that communications during the event were strong and that all stakeholders and interested parties were well-informed. He also recognized the state agencies which came together from day one to build an excellent team which effectively communicated and made decisions based on sound data to issue appropriate precautions and advisories. Each entity remained aware of what others were doing. This activity culminated in four releases being issued. He also noted that the communications network and decision-making went beyond state agencies and included water utilities, USACE, and several federal partners.

Mr. Harrison called attention to the 2015 Annual Report provided in the meeting packet. He requested that Commissioners advise him or Tracey Edmonds if they would like staff to submit the Report to their respective Governor or the President on their behalf.

Mr. Harrison reported on progress made in convening meetings with both state and federal Commissioners. He has met with each state, with the exception of Virginia, which will be scheduled soon. As part of this process, during meetings with Pennsylvania and New York, discussions regarding the water resources initiative took place. Through this effort, staff is working to communicate the value of this initiative, and they hope to secure consideration by the state Governors to participate in this effort. Work will continue over the next few months on this activity.

Mr. Harrison concluded his report with a sincere thanks to Chairman Conroe for his patience and guidance during this very active period. He also appreciates the level of collaboration and the seamless processes in place with the committee structure. He added that the Commission looks forward to working closely with our communications partners to ensure a consistent and uniform message.

Mr. Harrison also thanked past Chairman Thomas Easterly for his patience and support and congratulated Mr. Easterly on his recent retirement.

Recognition of Service

Chairman Conroe presented the following resolution:

RESOLUTION 6-15 RECOGNITION OF SERVICE Thomas W. Easterly

WHEREAS: Thomas W. Easterly has served as a Commissioner to the Ohio River Valley Water Sanitation Commission from 2005 to 2015, representing the State of Indiana; and

WHEREAS: Mr. Easterly has provided faithful and diligent service to the Commission serving on numerous Committees; and

WHEREAS: Mr. Easterly served as Chairman of the Commission in 2014-2015; and

WHEREAS: Mr. Easterly has earned the esteem and friendship of his fellow Commissioners; and

WHEREAS: Mr. Easterly has devoted his efforts to the cause of environmental protection while serving as the Commissioner of Indiana Department of Environmental Management.

NOW, THEREFORE, BE IT RESOLVED: The Commissioners of the Ohio River Valley Water Sanitation Commission express their heartfelt gratitude for Mr. Easterly's service and wish him all the best in his future endeavors.

ACTION: Motion by Commissioner Kupke, second by Commissioner Harrison and unanimously carried, to adopt Resolution 6-15 as presented.

Report of the Technical Committee

Commissioner Wilson, Committee Chairman, reported that the 209th Technical Committee meeting took place on October 6-7, 2015. Seven states, two federal agencies, and four advisory committees were represented. He then provided the following meeting outcomes:

2015 Water Quality Conditions

Staff presented an overview of field sampling results for this year. Flows in July were the highest July flows recorded in the past 30 years. Water quality exceedances of note were measured for bacteria, mercury, and iron, but in general, with the exception of the HAB event, water quality conditions were typical of other years.

Fish Tissue Contaminants

Staff is in the process of submitting a study report on trends in mercury in fish tissue to a peer-reviewed journal and will be making some revisions to the draft report before bringing it back to TEC in February for approval.

Ad Hoc Committee on Mercury Studies

Commissioner Kupke provided a report of the Ad Hoc Committee on Mercury Studies. The Committee was established following the June Commission meeting to consider Ohio River study needs. An initial call was held Sept. 21. An initial set of tasks has been developed to identify the mercury information needs for the Ohio River, after which a recommended plan of study will be developed, and the Commission will receive a report of the Committee at its February meeting.

Source Water Protection Programs

Staff provided an update on the status of the ODS renovation. Staff also provided an update on the spill model upgrade. Phase 1 of that upgrade has been completed, and phase 2 will be completed in 2016, which will include a GIS component.

Ohio River Bacteria Trends Assessment

Staff is in the process of completing a bacteria trends assessment for the Ohio River which will be brought to TEC for review in February.

Harmful Algal Blooms (HABs)

Staff provided a summary of the HAB event that occurred on the Ohio River this year. A significant monitoring and communications response by ORSANCO and its state and federal partners was discussed. Staff also discussed development of a needed Ohio River HAB program that will be developed into a funding proposal.

Scott Kishbaugh with NYDEC gave a presentation on the occurrence of HABs in New York State, and Greg Boyer, Professor with SUNY College of Environmental Science and Forestry and Director of the Great Lakes Research Consortium discussed the science of HABs. Both Scott and Greg noted that nutrients appear to be one influencer that we may have some control over.

Staff also recommended that, with regard to the 2016 305 assessments for the Ohio River, use impairment determinations regarding the recent HAB event not be included, but that a chapter discussing it as an area of concern be included in the 2016 report.

Report of the NPDES Subcommittee

Paul Novak with the Indiana Dept. of Environmental Management provided a report of the NPDES Subcommittee where they discussed a number of important issues, and we appreciate their continued good work.

ACTION: Motion by Commissioner Wilson, second by Commissioner FitzGerald and unanimously carried, to accept the report of the Technical Committee.

Report of the Pollution Control Standards Committee

Commissioner Bruny, Committee Chairman, reported that the Pollution Control Standards Committee met in Cincinnati at ORSANCO's offices on July 23, 2015, and by conference call on September 14, 2015. The purpose of these meetings was to develop and finalize recommendations to the Commission regarding proposed revisions to the Commission's Pollution Control Standards, and recommendations to the Commission regarding the disposition of three variance applications for Koppers, Inc., Mountain State Carbon, LLC and Valley Converting Company, Inc.

With regard to the proposed revisions to the Pollution Control Standards, the Commission held a public hearing and public comment period which closed on May 14, 2015. The Hearing Board included Commissioners Bruny, FitzGerald, Frevert, Kupke, and Potesta. A summary of public comments received on the proposed revisions was provided to the Commission at its June meeting. After review of the public comments received, the Pollution Control Standards Committee is recommending revisions to the standards which are included in Attachment I, and summarized as follows:

- 1) Regarding the mixing zone prohibition provision, the committee recommends replacing the effective date of October 16, 2015, with "as soon as practicable" as determined by the permitting authority. Criteria for assisting the permitting authority in determining "as soon as practicable" are also included.
- 2) Public comment was sought on the water quality criterion for mercury. The committee is not recommending any revisions regarding the mercury water quality criterion at this time.
- 3) The committee is recommending clarifying language to replace "intakes" with "drinking water intakes" which applies to ammonia (for the protection of drinking water supplies) and total dissolved solids criteria.
- 4) The committee is recommending adoption of the US EPA's updated criteria for ammonia for the protection of aquatic life, including criteria that would be applicable when mussels are absent. It also specifies that mussels are presumed to be present unless the applicant demonstrates to the satisfaction of the permitting authority that mussels are absent.
- 5) Regarding the temperature criterion for the protection of human health, the committee is recommending clarifying language that the criterion applies both inside and outside the mixing zone, where public access is possible. No change to the temperature criterion is being proposed.
- 6) Public comment was sought on the specification of frequency and duration for all criteria in the standards. The committee is not recommending any revisions at this time.
- 7) Public comment was sought to include spills to its requirements regarding notification of upsets and bypasses, and the committee is not recommending any revisions at this time.

With regard to the three (3) variance applications before the Commission, at its previous meeting, the Commission authorized a public comment period and hearing on three draft variances, for Koppers, Inc., Mountain State Carbon LLC, and Valley Converting Company, Inc. A 30-day public comment period was held which closed on September 4, 2015. ORSANCO held an informational webinar on August 13, 2015, and a public hearing on August 18, 2015 in Huntington, West Virginia.

The hearing board consisted of Commissioners Bruny, Frevert, Kupke, and Potesta. A summary of public comments received on the three draft variances is included in Attachment II. After consideration of the public comments received, the committee is recommending either Scenario 1 or Scenario 2, depending on how the Commission votes on the proposed revisions to the mixing zone provision of the standards.

Scenario 1:

If the recommendation to revise the mixing zone prohibition as proposed is approved by the Commission, which is to replace the October 16, 2015 deadline for the mixing zone prohibition with “as soon as practicable” as determined by the permitting authority, then the committee recommends that all three variance applications be returned to the applicants. The committee believes that the variances will not be necessary if the mixing zone proposal, as recommended, is adopted by the Commission.

Scenario 2:

If the recommendation to revise the mixing zone prohibition as proposed is not approved by the Commission (the October 16, 2015 deadline remains in place for the prohibition of mixing zones for existing discharges), then the committee recommends that all three variances as contained in Attachments III, IV, and V be approved.

In the event these variances are approved by the Commission, all of these variances are to allow mixing zones for total mercury and include proposed expiration dates that coincide with the expiration of their current permit, as well as effluent limits based on recent performance. In addition, they all include requirements for implementing a mercury reduction plan. Regarding monitoring requirements, the variances have been revised by removing the monitoring requirements for Valley Converting, as this discharge has been demonstrated to have an un-measurable impact on Ohio River water concentrations for mercury, and the requirements may be overly burdensome for a small company. Regarding monitoring requirements for Koppers and Mountain State Carbon, the variances have been revised to allow these facilities to collaborate and share the monitoring requirements since these facilities are immediately adjacent to one another. Having each facility monitor independently would be an unnecessary utilization of resources without substantial benefit.

The Pollution Control Standards Committee also reviewed the City of Toronto, OH variance application, and it was returned for additional information. As of this date, no response had been received. Mr. Chairman, this completes the report of the Pollution Control Standards Committee.

ACTION: Motion by Commissioner Potesta, second by Bruce Pigott and unanimously carried to receive the report of the Pollution Control Standards Committee as presented.

ACTION: Motion by Commissioner Bruny, second by Commissioner Kupke and carried (Commissioners Hedman, Paylor, Wallace abstaining, Commissioner Elmaraghy voting no), that the Commission adopt revisions to Chapter 4.f, Mixing Zone Prohibition for BCCs, of the Pollution Control Standards, as detailed in Attachment I, to delete the effective date of October 16, 2015 as the deadline by which mixing zones for Bioaccumulative Chemicals of Concern would be eliminated and to leave to the respective permitting authority the determination of such deadline and replace the specific date with the language “as soon as practicable as determined by the permitting authority.”

ACTION: Motion by Commissioner Bruny, second by Commissioner Duritsa and carried (Commissioners Hedman, Paylor, Wallace abstaining), that the Commission adopt revisions to Chapter 3.1.d of the Pollution Control Standards, to add clarifying language to indicate “intakes” means “drinking water intakes” which applies to ammonia and total dissolved solids criteria, and adopt revisions to Chapter 3.2.e, ammonia criteria for aquatic life protection, the detailed language and associated Appendix A is included in your agenda packet.

ACTION: Motion by Commissioner Bruny, second by Ron Schwartz and carried (Commissioners Hedman, Paylor, Wallace and Tiffani Kavalec abstaining), that the Commission adopt revisions to Chapter 3.3.f, Human Health Temperature Criteria, of the Pollution Control Standards, to add clarifying language that the criteria applies both inside and outside the mixing zone where public access is possible. No change to temperature criteria is proposed.

ACTION: Motion by Commissioner Bruny, second by Commissioner Potesta and carried (Commissioners Hedman, Paylor, Wallace, Frevert abstaining), that the Commission adopts Resolution 7-15, Attachment VI, which is a standard procedural resolution necessary for the formal adoption of revisions to the Commission’s Pollution Control Standards.

Commissioner Fitzgerald offered a technical amendment to Section 1.6 in line with the Commission’s approval of the new language in Section 4.f. The technical amendment would be to eliminate the reference to Section 4.a in Chapter 1.6, because the clear intent was to eliminate the opportunity for ORSANCO variances with respect to mixing zones and to have the state permitting authorities manage the issue of the reduction and elimination of mixing zones for BCCs.

Chairman Conroe recommended tabling action on the current motion until such time as Commissioner FitzGerald’s intended motion is acted upon in the event that it could be incorporated into the open motion on the table if it was to carry.

ACTION: Motion by Commissioner Lovan, second by Commissioner FitzGerald and carried to table discussion on the current motion by Commissioner Bruny to entertain the intervening motion by Commissioner FitzGerald.

ACTION: Motion by Commissioner FitzGerald, proposed that as a matter of technical amendment to eliminate the reference to Section 4.f, in Chapter 1.6 of the Pollution Control Standards, which would eliminate the opportunity for a variance from ORSANCO for a mixing zone for BCCs. In as much as the Commission has shifted this process to the state permitting authority using the ORSANCO Standards, the intent of the Pollution Control Standards Committee was not to allow variances from those state permitting authorities. Motion failed to receive a second.

The tabled motion was then put to a vote (motion carried, as noted above).

ACTION: Motion by Commissioner Bruny, second by Commissioner Peter Goodman and carried (Commissioners Paylor, Wallace abstaining), that in light of the Commission’s action to amend Chapter 4.f of the Pollution Control Standards, that no action be taken on the Mountain State Carbon, LLC variance application, and that the application be returned to the applicant.

ACTION: Motion by Commissioner Bruny, second by Bruce Pigott and carried (Commissioners Paylor, Wallace abstaining), that in light of the Commission's action to amend Chapter 4.f of the Pollution Control Standards, that no action be taken on the Koppers, Inc. variance application, and that the application be returned to the applicant.

ACTION: Motion by Commissioner Bruny, second by Commissioner Peter Goodman and carried (Commissioners Paylor, Wallace abstaining), that in light of the Commission's action to amend Chapter 4.f of the Pollution Control Standards, that no action be taken on the Valley Converting Company, Inc. variance application, and that the application be returned to the applicant.

Commissioner Bruny then reported that there are two existing variances previously approved by the Commission, issued to Axiall Corporation and the First Energy Corporation pertaining to the prohibition of mixing zones for BCCs. Mr. Bruny proposed the following actions for consideration.

ACTION: Motion by Commissioner Bruny, second by Tiffani Kavalec and carried (Commissioners Paylor, Wallace, Flannery, Elmaraghy abstaining), that in light of the Commission's action to amend Chapter 4.f of the Pollution Control Standards, that the Commission modify by terminating, effectively immediately, the previously approved variance for Axiall Corporation.

ACTION: Motion by Commissioner Bruny, second by Ronald Schwartz and carried (Commissioners Paylor, Wallace, Flannery, Elmaraghy abstaining), that in light of the Commission's action to amend Chapter 4.f of the Pollution Control Standards, that the Commission modify by terminating, effectively immediately, the previously approved variance for First Energy Corporation.

Commissioner Elmaraghy commented on the mixing zone issue stating he regretted the Commission's vote to eliminate the mixing zone ban. This vote comes at the same time when ORSANCO staff came with information indicating an increasing trend in the concentration of mercury in fish tissue. ORSANCO used the mixing zone ban very successfully in the past to reduce the load of mercury to the Ohio River. Also, this vote to transfer the decision making on mixing zones to the states may sound logical, however some states do not have the legal authority to implement the elimination of mixing zones or include this requirement in permits. Other states are reluctant even to do this. Today's vote will diminish the role of ORSANCO and the first step to strip ORSANCO of its regulatory authority. This vote will take ORSANCO in the wrong direction.

Report of the Water Resources Committee

Commissioner Potesta, Committee Chairman, provided the following report:

Hydraulic Fracturing Report

The Commission approved three reports completed as part of the Water Resources Initiative (WRI) at the June 2015 meeting. These reports included a characterization of water use, an inventory of water resource laws and regulations, and an assessment of inter-basin transfers in the Ohio River Basin. Staff has now completed the fourth and final report of the WRI, which is a review of hydraulic fracturing in the watershed.

The Water Resources Committee, Technical Committee, and the Headwaters Resource Committee have reviewed the report and provided comments. Staff has revised the report to reflect the comments received. The report was included in the agenda packet for the October 2015 Commission meeting for review. Several comments were received following distribution of the report to the Commissioners. All comments were minor in nature and have been incorporated in the final draft.

The Commission is asked to consider action to approve the report for publication.

ACTION: Motion by Commissioner Potesta, second by Commissioner Duritsa and carried (Commissioner Hedman abstaining), to approve the Hydraulic Fracturing in the Ohio River Basin Report for publication.

Report of the Personnel Committee

Commissioner Conroe, Committee Chairman, reported that The Personnel Committee met via conference call on August 25, 2015 to consider proposed changes to the Administrative Procedures. ORSANCO staff recently conducted a review of the Procedures and requested a cursory review of the Procedures by legal counsel. The focus of this review was to ensure that the Procedures reflect current practices and are legally compliant. A further comprehensive review of the Procedures will be undertaken over the next year by the Personnel Committee, legal counsel, and staff.

A copy of the proposed revisions to the Administrative Procedures was provided on the Commissioners' secured web portal. A summary of the proposed revisions was provided in the meeting agenda packet.

In large part, the Procedures were revised to reflect changes in how ORSANCO currently operates as compared to when the Procedures were last updated in 2008. Some changes reflect legal or internal updated practices already in place, as well as deleting or changing confusing language.

ACTION: Motion by Commissioner Duritsa, second by Commissioner Potesta and carried unanimously, to approve the 2015 revisions to the Administrative Procedures.

Report of the Pension Committee

The Pension Committee met via conference call on August 20, 2015 to discuss proposed revisions to the Pension Plan. The Internal Revenue Service requires a restatement of the Plan on a five-year cycle to incorporate updated Subchapter D Rules governing qualified defined benefit pension plans. Language was also added to the Plan clarifying in-service distributions.

Melissa Kurzhals, a partner with Taft, Stettinius & Hollister, amended the Pension Plan to meet all current legal requirements. The revisions are technical in nature and do not affect Plan benefits. The 2015 Restated Plan was placed on the Commissioners' web portal for access.

The Committee requests Commission action to adopt the 2015 Restated Pension Plan.

ACTION: Motion by Commissioner Lovan, second by Commissioner Flannery and carried unanimously, to adopt the 2015 restatement of the Pension Plan.

The Committee will also continue its comprehensive review of the Plan as recommended by the Program & Finance Committee.

Finally, the Committee requests Commission action to elect Commissioner Harrison to serve on the Pension Committee.

ACTION: Motion by Commissioner Flannery, second by Peter Goodman and carried unanimously, to elect Commissioner Harrison to the Pension Committee.

Follow-Up to Petition Received to Authorize the Formation of a Non-Profits Advisory Committee

Chairman Conroe reported that this past June, the Commission received a joint communication from 15 non-profit, non-governmental water-oriented conservation and wildlife-focused organizations requesting that the Commission form a new advisory committee that would represent the interests of those Ohio River basin-based organizations and their associates in the same manner as do the various other existing Commission industry advisory committees.

Since that time, attention has been given between Commission meetings to the request, the result of which has been a re-visioning of the Commission's public information organization. I thank our PIACO Chair for her comments that were made earlier during this session about this agenda item in the follow-up to the re-visioning process that has occurred. For the benefit of those who may not be aware of what has occurred since the receipt of the communication, please allow me to take a few moments now to recap developments. A general summary can also be found in the attachment that was circulated with the advance agenda, although my comments will include an update to it to recognize developments that have occurred since its drafting.

My first action was to seek staff input. That resulted in an interest in re-visioning the Commission's public information organization from both internal and external vantage points. How would a new group relate to the Commission as contrasted to how PIACO relates to the Commission? Would there be duplication of roles? A teleconference was implemented amongst myself, staff, the PIACO chair, and the facilitator of the request. Duplication of roles was quickly ruled out as likelihood. Simply summarized, the new group would be a stakeholder group, while PIACO would continue as a Commission-based, programmatic and communications advisor. Unanimous agreement resulted that it would be appropriate for the Commission to have both Advisory committees, especially since during the last several years, we have been experiencing a much greater interest being expressed in water quality management from the public both individually and in groups.

At the same time, our Executive Director expressed an interest in forming a public information work group to assist the public information staff in its role of providing information to the public about Commission matters and the need to do such in a coordinated and consistent fashion amongst the signatory states.

Unfortunately, but fortuitously, the current harmful algal bloom experience throughout almost the entire length of the river has demonstrated the appropriateness of having such a group. The work group would be comprised of public information officers from the various states and US EPA, along with other public information staff and would be overviewed by PIACO in terms of the larger picture aspects that PIACO normally advises us about.

As Chair, I then put to paper a reorganization proposal that would continue PIACO in its public information role, create a new committee that would take the public advisory role and reside it in the requested water-oriented conservation and wildlife stakeholder advisory committee role, and establish a public information work group. I shared the paper with the Executive Director and the PIACO Chair and received their endorsement of it.

The proposal was next shared with the Commission's Executive Committee. Edits were suggested and incorporated, and the proposal was then attached to the agenda notice for this session.

Since the agenda's distribution, the full PIACO Committee had a regular meeting, included the proposal on its agenda, and endorsed it while suggesting a different new name for a name which nonetheless retains their board identity. Since then, I have had the occasion to talk with our various Commissioners about it. General opinion has been expressed that the time is right to move forward with such reorganization.

The question next arises as to what the next steps should be. Unless there are any objections, I am requesting that the minutes reflect a consensus amongst the Commission members in support of the request to form a new additional advisory committee, and that I will thus appoint an ad hoc committee to build upon my reorganization proposal to develop a specific final proposal, including necessary bylaws language, for the establishment of an advisory committee. The proposal is to be submitted for the Commission's consideration at its February 2016 regular Commission meeting.

Report of the Water Users Advisory Committee

Bruce Whiteberry, Committee Chairman, thanked all member states and ORSANCO staff for all the assistance to the water utilities during the recent HAB event. What turned out, at least from the public's perspective, to be a non-event for drinking water utilities, could have been much more otherwise. However, he didn't classify the HAB a non-event. The utilities spent a lot of extra money for treatment and manpower, and much of those decisions were based on information provided by ORSANCO.

Report of the Publicly Owned Wastewater Treatment Works (POTW) Advisory Committee

Alex Novak, Committee Chairman, reported that the Committee normally meets in September; however, the Committee postponed its meeting due to staff involvement in the HAB sampling. ORSANCO will be receiving public comments on the bacteria TMDL, which the Committee will review and provide comment on.

Comments by Guests

Commissioner FitzGerald commented on the actions taken at the meeting regarding mixing zones for BCCs. He expressed his respect for his fellow Federal Commissioner and his view on the action taken. He appreciates Commissioner Bruny's time, effort, and patience in working through these contentious issues.

He stated that the Commission approached the issue with very divergent views. While many of the press reports have suggested that the action taken today is a weakening of the existing Standards, it became apparent that, while there was a firm deadline in place for pre-2003 discharges, the mixing zone ban remains in place for any discharges after 2003. In fact, the ability to get variances from ORSANCO made that hard deadline porous at best. Additionally, any opportunity to challenge variances that were issued is somewhat limited. The change he authored, after exhaustive discussion, provides what he believes is a more robust and demanding assessment of actions that are taken and will be taken, with the goal that remains in place of reducing and eliminating the mixing zones for BCCs. He believes the technical amendment proposed still needs to be made, but it is clear notwithstanding, that with the action taken today, variances are no longer available from ORSANCO for mixing zones for BCCs. The decision of how and when to grant a variance will be made by the state permitting authorities in a more transparent and demanding fashion and will be subject to administrative and judicial review.

Commissioner Flannery asked that the Commissioners again recognize outgoing Commissioner and Chairman, Thomas Easterly, for his dedicated service to the Commission.

Thomas Easterly commented that he believes that ORSANCO is the best environmental organization, with a strong partnership with the States and Federal Government, to solve problems. He commented on past water quality issues, which have been mitigated, and current emerging issues such harmful algae blooms. The proper people and the good partnerships are in place to effectively address these issues. He stated that he is very pleased with the excellent work of the Commission to protect citizens.

Madeline Fleisher, of the Environmental Law & Policy Center, commented that she believes the role of the Commission is to ensure a level playing field across the Ohio River Basin and that “what is practicable” is consistent among states. The Commission was formed recognizing that the Ohio River crosses many jurisdictions, and on the basis that all these jurisdictions should have a clean, healthy river for their residents.

Ms. Fleisher then urged the Commission to continue to take seriously its important role that it needs to take on mercury, in monitoring the state of the River and sharing data with the States who will now determine whether mixing zones are appropriate, and in making decisions that are science-based and necessary to achieve the uses of the River.

She stated that she appreciated Commissioner FitzGerald’s comments that this decision will fully enable a transparent process with mixing zones going forward. It is now up to the States to make this happen. She concluded by thanking Chairman Conroe for consideration of the proposed non-profit advisory committee.

Chairman Conroe commented on the formation of an ad hoc committee to consider how to move forward in considering the mercury issue. An unbudgeted, additional mercury study has also been initiated.

Upcoming Meetings

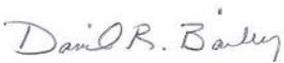
Chairman Conroe noted the following schedule for upcoming Commission meetings:

- February 9-11, 2016 Covington, Kentucky
- June 7-9, 2016 Pittsburgh, Pennsylvania
- October 2016 TBD

Adjournment

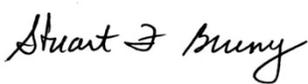
The 213th Commission meeting was adjourned at 10:45 A.M.

Prepared by:



Date: October 15, 2015
David Bailey
Director of Administration

Approved by:



Date: November 9, 2015
Stuart Bruny
Secretary/Treasurer

ROSTER OF ATTENDANCE
213th Commission Meeting
October 8, 2015

Commissioners

| | |
|---------------|--|
| Illinois | Toby Frevert |
| Indiana | Bruno Pigott (PROXY for Commissioner Carol Comer) John Kupke Joseph Harrison, Jr. |
| Kentucky | Ron Lovan Peter Goodmann (PROXY for Lt. Governor Luallen) |
| New York | Douglas Conroe Mike Wilson Jeff Konsella (PROXY for Acting Commissioner Marc Gerstman) |
| Ohio | Tiffani Kavalec (PROXY for Director Craig Butler) Stuart Bruny |
| Pennsylvania | Charles Duritsa Ron Schwartz (PROXY for Secretary John Quigley) |
| Virginia | David Paylor Lou Wallace |
| West Virginia | David Flannery Ron Potesta Scott Mandirola (PROXY for Randy Huffman) |
| Federal | Susan Hedman Tom FitzGerald George Elmaraghy |
| Legal Counsel | Ross Wales |

Executive Director

Richard Harrison

Guests

Thomas Easterly; Jan Easterly; Tim Henry – US EPA Region 5; Betsy Mallison – PIACO; Bruce Whitteberry – WUAC; Alex Novak – POTW; Tim Joice – KWA; Randy Payne – Kentucky; John Hirschfield – Axiall; Erich Emery – USACE; Joe Lapcevic – First Energy; Sara Smith – SMG; Kevin Sheridan – Westlake; Russ Dudek – AK Steel Corporation; David Piracle – AK Steel Corporation; Cheri Budzynsky – Shumaker, Loop & Kendrick; Madeline Fleisher – Environmental law & Policy Center; Lisa Eikenberg; Jackie Backus – Ramboll Environmental; Erin Sherer – Ohio EPA

Staff

David Bailey, Jason Heath, Sam Dinkins, Jerry Schulte, Jeff Thomas, Joe Gilligan, Greg Youngstrom, Lisa Cochran

DRAFT

**Proposed Amendments to the Pollution Control Standards
For Discharges to the Ohio River (2015 proposed revisions)**

The Pollution Control Standards Committee is providing the following recommendations to the Commission after having received and having considered all the public comment on the topics below.

1) The Pollution Control Standards (PCS) Committee is recommending to the Commission, the following proposed amendment to Chapter 4.F. Mixing Zone Prohibition for Bioaccumulative Chemicals of Concern (pg. 18). It would replace the existing Chapter 4.F.

(Proposal eliminates the effective date of October 16, 2015, requires that mixing zones for existing facilities be eliminated as soon as practicable as determined by the permitting authority, and adds guidance as contained in 1.i. and 1.ii. The proposal also adds provisions 2, 3, and 5.)

1. Facilities with discharges which were in existence on or before October 16, 2003 will have mixing zones eliminated for any bioaccumulative chemical of concern (BCC) as soon as is practicable, as determined by the permitting authority, considering the following criteria:
 - i. Measures taken during the current permit cycle and an evaluation of those measures proposed to be taken during the next permit cycle to reduce or eliminate the necessity of a mixing zone for each BCC;
 - ii. The concentration and duration of the discharge, bioaccumulation factors and exposure considerations for each BCC for which the mixing zone is sought to be continued.
2. The necessity for continuation of a mixing zone for a BCC shall be evaluated and determined by the permitting authority during each permit renewal and reissuance utilizing the criteria above in subparagraph 1.i. and 1.ii.
3. The addition of waste streams to an existing facility shall be evaluated under this section by the permitting authority at the time of permit review.
4. Mixing zones shall continue to be prohibited for BCCs for discharges from facilities that came into existence after October 16, 2003.

5. No mixing zone for a BCC shall be approved by a permitting authority that would result in a violation of any water quality standard or impairment of any designated use of a waterbody.
6. BCCs are defined as any chemicals that accumulate in aquatic organisms by a human health bioaccumulation factor (BAF) greater than 1000 (after considering various specified factors), and have the potential upon entering surface waters to cause adverse effects, either by themselves or in the form of their toxic transformation, as a result of that accumulation. Currently, the list of BCCs, as described in the Final Rule to Amend the Final Water Quality Guidance for the Great Lakes System to Prohibit Mixing Zones for Bioaccumulative Chemicals of Concern, includes:

Bioaccumulative Chemicals of Concern

| | |
|-----------------------------|-------------------|
| Lindane | Mirex |
| Hexachlorocyclohexane | Hexachlorobenzene |
| alpha-Hexachlorocyclohexane | Chlordane |
| beta-Hexachlorocyclohexane | DDD |
| delta-Hexachlorocyclohexane | DDT |
| Hexachlorobutadiene | DDE |
| Photomirex | Octachlorostyrene |
| 1,2,4,5-Tetrachlorobenzene | PCBs |
| Toxaphene | 2,3,7,8-TCDD |
| Pentachlorobenzene | Mercury |
| 1,2,3,4-Tetrachlorobenzene | Dieldrin |

2) The PCS Committee is not currently recommending to the Commission any proposed amendment based on its request (below) for input on the total mercury water quality criterion, Chapter 3.3.B Chemical Constituents (pg. 16). Staff is currently conducting scientific studies that may lead to future recommendations. Staff is also undertaking a review of frequency and duration for all of its criteria in the next 12-18 months.

This is a request for input on the “not to exceed” component of the total mercury water quality criterion. Following public input on this issue, a specific proposal may be put forth for consideration by the Commission at its October 2015 meeting. (See section further below on Specification of Frequency and Duration For Numeric Criteria).

3) The PCS Committee is recommending to the Commission the following proposed amendment to Chapter 3.1, Footnote D (pg. 11).

(Proposal clarifies footnote D, Chapter 3.1, page 11, that “intakes” means “drinking water intakes.” The term “drinking water” is added immediately before “intakes.”)

^D Criteria applies at drinking water intakes.

4) The PCS Committee is recommending to the Commission the following proposed amendment to Chapter 3.2.E. Ammonia Criteria for Aquatic Life Protection (pg. 13 and Appendix A). It replaces the current Chapter 3.2.E and the current Appendix A with the following, below:

(The proposal is to adopt the USEPA’s current recommended national criteria for ammonia for the protection of aquatic life which also includes the tables for mussels absent as contained in the USEPA’s recommended criteria appendix “Site-Specific Criteria for Ammonia.”)

E. AMMONIA:

1. *Acute Criterion Concentration: The one-hour average concentration of total ammonia nitrogen (mg/L) shall not exceed, more than once every three years on the average, the ACC (acute criterion) calculated using the following equations:*

i. *If unionid mussels are present:*

$$ACC = 0.7249 * \left(\frac{0.0114}{1+10^{7.204-ph}} + \frac{1.6181}{1+10^{ph-7.204}} \right) * MIN(51.93 \text{ or } 23.12 * 10^{0.036*(20-T)})$$

Where: T = Temperature, °C.

ii. *If unionid mussels are absent**:*

$$ACC = 0.7249 * \left(\frac{0.0114}{1+10^{7.204-ph}} + \frac{1.6181}{1+10^{ph-7.204}} \right) * MIN(51.93 \text{ or } 62.15 * 10^{0.036*(20-T)})$$

Where: T = Temperature, °C.

2. *Chronic Criterion Concentration: The 30-day rolling average concentration of total ammonia nitrogen (mg/L) shall not exceed, more than once every three years on the average, the CCC (chronic criterion) calculated using the following equations:*

i. *If unionid mussels are present:*

$$CCC = 0.8876 * \left(\frac{0.0278}{1+10^{7.688-pH}} + \frac{1.1994}{1+10^{pH-7.688}} \right) * (2.126 * 10^{0.028*(20-MAX(T \text{ or } 7))})$$

Where: T = Temperature, °C.

- ii. If unionid mussels are absent** and when fish early life stages are present (from March 1 to October 31):

$$CCC = 0.9405 * \left(\frac{0.0278}{1+10^{7.688-pH}} + \frac{1.1994}{1+10^{pH-7.688}} \right) * MIN(6.920 \text{ or } 7.547 * 10^{0.028*(20-T)})$$

Where: T = Temperature, °C.

- iii. If unionid mussels are absent** and when fish early life stages are absent (from November 1 to the last day of February):

$$CCC = 0.9405 * \left(\frac{0.0278}{1+10^{7.688-pH}} + \frac{1.1994}{1+10^{pH-7.688}} \right) * (7.547 * 10^{0.028*(20-MAX(T \text{ or } 7))})$$

Where: T = Temperature, °C.

- iv. In addition, the highest four-day average within the 30-day period should not exceed 2.5 times the chronic criterion.

Note: Acute and chronic criteria concentrations for total ammonia-nitrogen (in mg/L) for different combinations of pH and temperature are shown in Appendix A.

*** For purposes of determining the applicable water quality-based limitations on ammonia-nitrogen, Unionid mussel shall be presumed to be present at all times in the Ohio River unless the applicant demonstrates to the satisfaction of the permitting authority and ORSANCO that mussels are absent.*

Appendix A

**Acute and Chronic Criteria Concentrations
for Total Ammonia Nitrogen (in mg/L)
For Varying Combinations of pH and Temperature**

Table A1: Temperature and pH-Dependent Values of the Acute Criterion for Total Ammonia Nitrogen; Unionid Mussels Present

| pH | Temperature, Celsius | | | | | | | | | | | | | | | | | | | | |
|------------|----------------------|-----|-----|-----|-----|------|------|------|------|------|-----------|------|------|------|------|------|------|------|------|------|------|
| | 0-10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 6.5 | 51 | 48 | 44 | 41 | 37 | 34 | 32 | 29 | 27 | 25 | 23 | 21 | 19 | 18 | 16 | 15 | 14 | 13 | 12 | 11 | 9.9 |
| 6.6 | 49 | 46 | 42 | 39 | 36 | 33 | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 17 | 16 | 14 | 13 | 12 | 11 | 10 | 9.5 |
| 6.7 | 46 | 44 | 40 | 37 | 34 | 31 | 29 | 27 | 24 | 22 | 21 | 19 | 18 | 16 | 15 | 14 | 13 | 12 | 11 | 9.8 | 9.0 |
| 6.8 | 44 | 41 | 38 | 35 | 32 | 30 | 27 | 25 | 23 | 21 | 20 | 18 | 17 | 15 | 14 | 13 | 12 | 11 | 10 | 9.2 | 8.5 |
| 6.9 | 41 | 38 | 35 | 32 | 30 | 28 | 25 | 23 | 21 | 20 | 18 | 17 | 15 | 14 | 13 | 12 | 11 | 10 | 9.4 | 8.6 | 7.9 |
| 7.0 | 38 | 35 | 33 | 30 | 28 | 25 | 23 | 21 | 20 | 18 | 17 | 15 | 14 | 13 | 12 | 11 | 10 | 9.4 | 8.6 | 7.9 | 7.3 |
| 7.1 | 34 | 32 | 30 | 27 | 25 | 23 | 21 | 20 | 18 | 17 | 15 | 14 | 13 | 12 | 11 | 10 | 9.3 | 8.5 | 7.9 | 7.2 | 6.7 |
| 7.2 | 31 | 29 | 27 | 25 | 23 | 21 | 19 | 18 | 16 | 15 | 14 | 13 | 12 | 11 | 9.8 | 9.1 | 8.3 | 7.7 | 7.1 | 6.5 | 6.0 |
| 7.3 | 27 | 26 | 24 | 22 | 20 | 18 | 17 | 16 | 14 | 13 | 12 | 11 | 10 | 9.5 | 8.7 | 8.0 | 7.4 | 6.8 | 6.3 | 5.8 | 5.3 |
| 7.4 | 24 | 22 | 21 | 19 | 18 | 16 | 15 | 14 | 13 | 12 | 11 | 9.8 | 9.0 | 8.3 | 7.7 | 7.0 | 6.5 | 6.0 | 5.5 | 5.1 | 4.7 |
| 7.5 | 21 | 19 | 18 | 17 | 15 | 14 | 13 | 12 | 11 | 10 | 9.2 | 8.5 | 7.8 | 7.2 | 6.6 | 6.1 | 5.6 | 5.2 | 4.8 | 4.4 | 4.0 |
| 7.6 | 18 | 17 | 15 | 14 | 13 | 12 | 11 | 10 | 9.3 | 8.6 | 7.9 | 7.3 | 6.7 | 6.2 | 5.7 | 5.2 | 4.8 | 4.4 | 4.1 | 3.8 | 3.5 |
| 7.7 | 15 | 14 | 13 | 12 | 11 | 10 | 9.3 | 8.6 | 7.9 | 7.3 | 6.7 | 6.2 | 5.7 | 5.2 | 4.8 | 4.4 | 4.1 | 3.8 | 3.5 | 3.2 | 2.9 |
| 7.8 | 13 | 12 | 11 | 10 | 9.3 | 8.5 | 7.9 | 7.2 | 6.7 | 6.1 | 5.6 | 5.2 | 4.8 | 4.4 | 4.0 | 3.7 | 3.4 | 3.2 | 2.9 | 2.7 | 2.5 |
| 7.9 | 11 | 9.9 | 9.1 | 8.4 | 7.7 | 7.1 | 6.6 | 6.0 | 5.6 | 5.1 | 4.7 | 4.3 | 4.0 | 3.7 | 3.4 | 3.1 | 2.9 | 2.6 | 2.4 | 2.2 | 2.1 |
| 8.0 | 8.8 | 8.2 | 7.6 | 7.0 | 6.4 | 5.9 | 5.4 | 5.0 | 4.6 | 4.2 | 3.9 | 3.6 | 3.3 | 3.0 | 2.8 | 2.6 | 2.4 | 2.2 | 2.0 | 1.9 | 1.7 |
| 8.1 | 7.2 | 6.8 | 6.3 | 5.8 | 5.3 | 4.9 | 4.5 | 4.1 | 3.8 | 3.5 | 3.2 | 3.0 | 2.7 | 2.5 | 2.3 | 2.1 | 2.0 | 1.8 | 1.7 | 1.5 | 1.4 |
| 8.2 | 6.0 | 5.6 | 5.2 | 4.8 | 4.4 | 4.0 | 3.7 | 3.4 | 3.1 | 2.9 | 2.7 | 2.4 | 2.3 | 2.1 | 1.9 | 1.8 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 |
| 8.3 | 4.9 | 4.6 | 4.3 | 3.9 | 3.6 | 3.3 | 3.1 | 2.8 | 2.6 | 2.4 | 2.2 | 2.0 | 1.9 | 1.7 | 1.6 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.96 |
| 8.4 | 4.1 | 3.8 | 3.5 | 3.2 | 3.0 | 2.7 | 2.5 | 2.3 | 2.1 | 2.0 | 1.8 | 1.7 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.93 | 0.86 | 0.79 |
| 8.5 | 3.3 | 3.1 | 2.9 | 2.7 | 2.4 | 2.3 | 2.1 | 1.9 | 1.8 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.90 | 0.83 | 0.77 | 0.71 | 0.65 |
| 8.6 | 2.8 | 2.6 | 2.4 | 2.2 | 2.0 | 1.9 | 1.7 | 1.6 | 1.5 | 1.3 | 1.2 | 1.1 | 1.0 | 1.0 | 0.88 | 0.81 | 0.75 | 0.69 | 0.63 | 0.58 | 0.54 |
| 8.7 | 2.3 | 2.2 | 2.0 | 1.8 | 1.7 | 1.6 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.94 | 0.87 | 0.80 | 0.74 | 0.68 | 0.62 | 0.57 | 0.53 | 0.49 | 0.45 |
| 8.8 | 1.9 | 1.8 | 1.7 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.93 | 0.86 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.52 | 0.48 | 0.44 | 0.41 | 0.37 |
| 8.9 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.93 | 0.85 | 0.79 | 0.72 | 0.67 | 0.61 | 0.56 | 0.52 | 0.48 | 0.44 | 0.40 | 0.37 | 0.34 | 0.32 |
| 9.0 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.93 | 0.86 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.52 | 0.48 | 0.44 | 0.41 | 0.37 | 0.34 | 0.32 | 0.29 | 0.27 |

Table A2: Temperature and pH-Dependent Values of the Acute Criterion for Total Ammonia Nitrogen; Unionid Mussels Absent

| pH | Temperature, Celsius | | | | | | | | | | | | | | | | |
|-----|----------------------|-----|-----|-----|-----|-----|-----------|-----|-----|-----|-----|-----|-----|------|------|------|------|
| | 0-14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 6.5 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 48 | 44 | 40 | 37 | 34 | 31 | 29 | 27 |
| 6.6 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 46 | 42 | 39 | 36 | 33 | 30 | 28 | 26 |
| 6.7 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 43 | 40 | 37 | 34 | 31 | 29 | 26 | 24 |
| 6.8 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 41 | 38 | 35 | 32 | 29 | 27 | 25 | 23 |
| 6.9 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 38 | 35 | 32 | 30 | 27 | 25 | 23 | 21 |
| 7.0 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 35 | 32 | 30 | 27 | 25 | 23 | 21 | 20 |
| 7.1 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 32 | 29 | 27 | 25 | 23 | 21 | 19 | 18 |
| 7.2 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 29 | 26 | 24 | 22 | 21 | 19 | 17 | 16 |
| 7.3 | 27 | 27 | 27 | 27 | 27 | 27 | 27 | 27 | 27 | 26 | 23 | 22 | 20 | 18 | 17 | 16 | 14 |
| 7.4 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 22 | 21 | 19 | 17 | 16 | 15 | 14 | 13 |
| 7.5 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 19 | 18 | 16 | 15 | 14 | 13 | 12 | 11 |
| 7.6 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 17 | 15 | 14 | 13 | 12 | 11 | 10 | 9.3 |
| 7.7 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 14 | 13 | 12 | 11 | 10 | 9.3 | 8.6 | 7.9 |
| 7.8 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 12 | 11 | 10 | 9.2 | 8.5 | 7.8 | 7.2 | 6.6 |
| 7.9 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 9.9 | 9.1 | 8.4 | 7.7 | 7.1 | 6.5 | 6.0 | 5.5 |
| 8.0 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 8.2 | 7.5 | 6.9 | 6.4 | 5.9 | 5.4 | 5.0 | 4.6 |
| 8.1 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 6.8 | 6.2 | 5.7 | 5.3 | 4.9 | 4.5 | 4.1 | 3.8 |
| 8.2 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.6 | 5.1 | 4.7 | 4.4 | 4.0 | 3.7 | 3.4 | 3.1 |
| 8.3 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 4.6 | 4.2 | 3.9 | 3.6 | 3.3 | 3.0 | 2.8 | 2.6 |
| 8.4 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 3.8 | 3.4 | 3.2 | 3.0 | 2.7 | 2.5 | 2.3 | 2.1 |
| 8.5 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.1 | 2.9 | 2.6 | 2.4 | 2.2 | 2.1 | 1.9 | 1.8 |
| 8.6 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.6 | 2.4 | 2.2 | 2.0 | 1.9 | 1.7 | 1.6 | 1.4 |
| 8.7 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.0 | 1.8 | 1.7 | 1.5 | 1.4 | 1.3 | 1.2 |
| 8.8 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.7 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 |
| 8.9 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.92 | 0.85 |
| 9.0 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.93 | 0.85 | 0.78 | 0.72 |

Table A3: Temperature and pH-Dependent Values of the Chronic Criterion for Total Ammonia Nitrogen; Unionid Mussels Present

| pH | Temperature, Celsius | | | | | | | | | | | | | | | | | | | | | | | |
|-----|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 0-7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 6.5 | 4.9 | 4.6 | 4.3 | 4.1 | 3.8 | 3.6 | 3.3 | 3.1 | 2.9 | 2.8 | 2.6 | 2.4 | 2.3 | 2.1 | 2.0 | 1.9 | 1.8 | 1.6 | 1.5 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 |
| 6.6 | 4.8 | 4.5 | 4.3 | 4.0 | 3.8 | 3.5 | 3.3 | 3.1 | 2.9 | 2.7 | 2.5 | 2.4 | 2.2 | 2.1 | 2.0 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.3 | 1.2 | 1.1 |
| 6.7 | 4.8 | 4.5 | 4.2 | 3.9 | 3.7 | 3.5 | 3.2 | 3.0 | 2.8 | 2.7 | 2.5 | 2.3 | 2.2 | 2.1 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.2 | 1.1 |
| 6.8 | 4.6 | 4.4 | 4.1 | 3.8 | 3.6 | 3.4 | 3.2 | 3.0 | 2.8 | 2.6 | 2.4 | 2.3 | 2.1 | 2.0 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 |
| 6.9 | 4.5 | 4.2 | 4.0 | 3.7 | 3.5 | 3.3 | 3.1 | 2.9 | 2.7 | 2.5 | 2.4 | 2.2 | 2.1 | 2.0 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.2 | 1.1 | 1.0 |
| 7.0 | 4.4 | 4.1 | 3.8 | 3.6 | 3.4 | 3.2 | 3.0 | 2.8 | 2.6 | 2.4 | 2.3 | 2.2 | 2.0 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 | 1.0 |
| 7.1 | 4.2 | 3.9 | 3.7 | 3.5 | 3.2 | 3.0 | 2.8 | 2.7 | 2.5 | 2.3 | 2.2 | 2.1 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.2 | 1.1 | 1.0 | 1.0 |
| 7.2 | 4.0 | 3.7 | 3.5 | 3.3 | 3.1 | 2.9 | 2.7 | 2.5 | 2.4 | 2.2 | 2.1 | 2.0 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.3 | 1.2 | 1.1 | 1.0 | 1.0 | 0.90 |
| 7.3 | 3.8 | 3.5 | 3.3 | 3.1 | 2.9 | 2.7 | 2.6 | 2.4 | 2.2 | 2.1 | 2.0 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.3 | 1.2 | 1.1 | 1.0 | 1.0 | 0.91 | 0.85 |
| 7.4 | 3.5 | 3.3 | 3.1 | 2.9 | 2.7 | 2.5 | 2.4 | 2.2 | 2.1 | 2.0 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.3 | 1.2 | 1.1 | 1.0 | 1.0 | 0.90 | 0.85 | 0.79 |
| 7.5 | 3.2 | 3.0 | 2.8 | 2.7 | 2.5 | 2.3 | 2.2 | 2.1 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.2 | 1.1 | 1.0 | 1.0 | 0.89 | 0.83 | 0.78 | 0.73 |
| 7.6 | 2.9 | 2.8 | 2.6 | 2.4 | 2.3 | 2.1 | 2.0 | 1.9 | 1.8 | 1.6 | 1.5 | 1.4 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 | 1.0 | 0.92 | 0.86 | 0.81 | 0.76 | 0.71 | 0.67 |
| 7.7 | 2.6 | 2.4 | 2.3 | 2.2 | 2.0 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 | 1.0 | 0.94 | 0.88 | 0.83 | 0.78 | 0.73 | 0.68 | 0.64 | 0.60 |
| 7.8 | 2.3 | 2.2 | 2.1 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.2 | 1.1 | 1.0 | 1.0 | 0.89 | 0.84 | 0.79 | 0.74 | 0.69 | 0.65 | 0.61 | 0.57 | 0.53 |
| 7.9 | 2.1 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.2 | 1.1 | 1.0 | 1.0 | 0.89 | 0.84 | 0.79 | 0.74 | 0.69 | 0.65 | 0.61 | 0.57 | 0.53 | 0.50 | 0.47 |
| 8.0 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 | 1.0 | 0.94 | 0.88 | 0.83 | 0.78 | 0.73 | 0.68 | 0.64 | 0.60 | 0.56 | 0.53 | 0.50 | 0.44 | 0.44 | 0.41 |
| 8.1 | 1.5 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 | 1.0 | 0.92 | 0.87 | 0.81 | 0.76 | 0.71 | 0.67 | 0.63 | 0.59 | 0.55 | 0.52 | 0.49 | 0.46 | 0.43 | 0.40 | 0.38 | 0.35 |
| 8.2 | 1.3 | 1.2 | 1.2 | 1.1 | 1.0 | 1.0 | 0.90 | 0.84 | 0.79 | 0.74 | 0.70 | 0.65 | 0.61 | 0.57 | 0.54 | 0.50 | 0.47 | 0.44 | 0.42 | 0.39 | 0.37 | 0.34 | 0.32 | 0.30 |
| 8.3 | 1.1 | 1.1 | 1.0 | 0.93 | 0.87 | 0.82 | 0.76 | 0.72 | 0.67 | 0.63 | 0.59 | 0.55 | 0.52 | 0.49 | 0.46 | 0.43 | 0.40 | 0.38 | 0.35 | 0.33 | 0.31 | 0.29 | 0.27 | 0.26 |
| 8.4 | 0.95 | 0.89 | 0.84 | 0.79 | 0.74 | 0.69 | 0.65 | 0.61 | 0.57 | 0.53 | 0.50 | 0.47 | 0.44 | 0.41 | 0.39 | 0.36 | 0.34 | 0.32 | 0.30 | 0.28 | 0.26 | 0.25 | 0.23 | 0.22 |
| 8.5 | 0.80 | 0.75 | 0.71 | 0.67 | 0.62 | 0.58 | 0.55 | 0.51 | 0.48 | 0.45 | 0.42 | 0.40 | 0.37 | 0.35 | 0.33 | 0.31 | 0.29 | 0.27 | 0.25 | 0.24 | 0.22 | 0.21 | 0.20 | 0.18 |
| 8.6 | 0.68 | 0.64 | 0.60 | 0.56 | 0.53 | 0.49 | 0.46 | 0.43 | 0.41 | 0.38 | 0.36 | 0.33 | 0.31 | 0.29 | 0.28 | 0.26 | 0.24 | 0.23 | 0.21 | 0.20 | 0.19 | 0.18 | 0.16 | 0.15 |
| 8.7 | 0.57 | 0.54 | 0.51 | 0.47 | 0.44 | 0.42 | 0.39 | 0.37 | 0.34 | 0.32 | 0.30 | 0.28 | 0.27 | 0.25 | 0.23 | 0.22 | 0.21 | 0.19 | 0.18 | 0.17 | 0.16 | 0.15 | 0.14 | 0.13 |
| 8.8 | 0.49 | 0.46 | 0.43 | 0.40 | 0.38 | 0.35 | 0.33 | 0.31 | 0.29 | 0.27 | 0.26 | 0.24 | 0.23 | 0.21 | 0.20 | 0.19 | 0.17 | 0.16 | 0.15 | 0.14 | 0.13 | 0.13 | 0.12 | 0.11 |
| 8.9 | 0.42 | 0.39 | 0.37 | 0.34 | 0.32 | 0.30 | 0.28 | 0.27 | 0.25 | 0.23 | 0.22 | 0.21 | 0.19 | 0.18 | 0.17 | 0.16 | 0.15 | 0.14 | 0.13 | 0.12 | 0.12 | 0.11 | 0.10 | 0.09 |
| 9.0 | 0.36 | 0.34 | 0.32 | 0.30 | 0.28 | 0.26 | 0.24 | 0.23 | 0.21 | 0.20 | 0.19 | 0.18 | 0.17 | 0.16 | 0.15 | 0.14 | 0.13 | 0.12 | 0.11 | 0.11 | 0.10 | 0.09 | 0.09 | 0.08 |

Table A4: Temperature and pH-Dependent Values of the Chronic Criterion for Total Ammonia Nitrogen; Unionid Mussels Absent and Fish Early Life Stages Present (March 1 – October 31)

| pH | Temperature, Celsius | | | | | | | | | | | | | | | | |
|------------|----------------------|------|------|------|------|------|------|------------|------|------|------|------|------|------|------|------|------|
| | 0-14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 6.5 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.0 | 6.6 | 6.2 | 5.8 | 5.4 | 5.1 | 4.8 | 4.5 | 4.2 |
| 6.6 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 6.9 | 6.5 | 6.1 | 5.7 | 5.4 | 5.0 | 4.7 | 4.4 | 4.1 |
| 6.7 | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | 6.8 | 6.4 | 6.0 | 5.6 | 5.3 | 4.9 | 4.6 | 4.3 | 4.1 |
| 6.8 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.6 | 6.2 | 5.8 | 5.5 | 5.1 | 4.8 | 4.5 | 4.2 | 4.0 |
| 6.9 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.5 | 6.1 | 5.7 | 5.3 | 5.0 | 4.7 | 4.4 | 4.1 | 3.9 |
| 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.2 | 5.8 | 5.5 | 5.1 | 4.8 | 4.5 | 4.2 | 4.0 | 3.7 |
| 7.1 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | 6.0 | 5.6 | 5.3 | 4.9 | 4.6 | 4.3 | 4.1 | 3.8 | 3.6 |
| 7.2 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 5.7 | 5.3 | 5.0 | 4.7 | 4.4 | 4.1 | 3.9 | 3.6 | 3.4 |
| 7.3 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 | 5.4 | 5.0 | 4.7 | 4.4 | 4.1 | 3.9 | 3.6 | 3.4 | 3.2 |
| 7.4 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | 5.0 | 4.7 | 4.4 | 4.1 | 3.9 | 3.6 | 3.4 | 3.2 | 3.0 |
| 7.5 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 | 4.6 | 4.3 | 4.1 | 3.8 | 3.6 | 3.3 | 3.1 | 2.9 | 2.8 |
| 7.6 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.2 | 3.9 | 3.7 | 3.5 | 3.2 | 3.0 | 2.9 | 2.7 | 2.5 |
| 7.7 | 3.9 | 3.9 | 3.9 | 3.9 | 3.9 | 3.9 | 3.9 | 3.9 | 3.8 | 3.5 | 3.3 | 3.1 | 2.9 | 2.7 | 2.6 | 2.4 | 2.3 |
| 7.8 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.4 | 3.2 | 3.0 | 2.8 | 2.6 | 2.4 | 2.3 | 2.1 | 2.0 |
| 7.9 | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | 3.0 | 2.8 | 2.6 | 2.4 | 2.3 | 2.1 | 2.0 | 1.9 | 1.8 |
| 8.0 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.6 | 2.4 | 2.3 | 2.1 | 2.0 | 1.9 | 1.7 | 1.6 | 1.5 |
| 8.1 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.1 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 |
| 8.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 |
| 8.3 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.2 | 1.1 | 1.0 | 0.96 |
| 8.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 | 0.99 | 0.93 | 0.87 | 0.81 |
| 8.5 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 | 1.0 | 0.95 | 0.89 | 0.83 | 0.78 | 0.73 | 0.69 |
| 8.6 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.97 | 0.91 | 0.85 | 0.80 | 0.75 | 0.70 | 0.66 | 0.62 | 0.58 |
| 8.7 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.82 | 0.77 | 0.72 | 0.68 | 0.64 | 0.60 | 0.56 | 0.52 | 0.49 |
| 8.8 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.70 | 0.65 | 0.61 | 0.58 | 0.54 | 0.51 | 0.47 | 0.44 | 0.42 |
| 8.9 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.60 | 0.56 | 0.52 | 0.49 | 0.46 | 0.43 | 0.41 | 0.38 | 0.36 |
| 9.0 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.51 | 0.48 | 0.45 | 0.42 | 0.40 | 0.37 | 0.35 | 0.33 | 0.31 |

Table A5: Temperature and pH-Dependent Values of the Chronic Criterion for Total Ammonia Nitrogen; Unionid Mussels Absent and Fish Early Life Stages Absent (November 1 – February 29)

| pH | Temperature, Celsius | | | | | | | | | | | | | | | | | | | | | | | |
|-----|----------------------|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 0-7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 6.5 | 19 | 17 | 16 | 15 | 14 | 13 | 13 | 12 | 11 | 10 | 9.7 | 9.1 | 8.5 | 8.0 | 7.5 | 7.0 | 6.6 | 6.2 | 5.8 | 5.4 | 5.1 | 4.8 | 4.5 | 4.2 |
| 6.6 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 12 | 11 | 10 | 9.6 | 9.0 | 8.4 | 7.9 | 7.4 | 6.9 | 6.5 | 6.1 | 5.7 | 5.4 | 5.0 | 4.7 | 4.4 | 4.1 |
| 6.7 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 11 | 10 | 9.4 | 8.8 | 8.3 | 7.7 | 7.3 | 6.8 | 6.4 | 6.0 | 5.6 | 5.3 | 4.9 | 4.6 | 4.3 | 4.1 |
| 6.8 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9.8 | 9.2 | 8.6 | 8.1 | 7.6 | 7.1 | 6.7 | 6.2 | 5.8 | 5.5 | 5.1 | 4.8 | 4.5 | 4.2 | 4.0 |
| 6.9 | 17 | 16 | 15 | 14 | 13 | 12 | 12 | 11 | 10 | 9.5 | 8.9 | 8.4 | 7.8 | 7.4 | 6.9 | 6.5 | 6.1 | 5.7 | 5.3 | 5.0 | 4.7 | 4.4 | 4.1 | 3.9 |
| 7.0 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9.8 | 9.2 | 8.6 | 8.1 | 7.6 | 7.1 | 6.7 | 6.2 | 5.9 | 5.5 | 5.1 | 4.8 | 4.5 | 4.2 | 4.0 | 3.7 |
| 7.1 | 16 | 15 | 14 | 13 | 12 | 11 | 11 | 10 | 9.4 | 8.8 | 8.3 | 7.7 | 7.3 | 6.8 | 6.4 | 6.0 | 5.6 | 5.3 | 4.9 | 4.6 | 4.3 | 4.1 | 3.8 | 3.6 |
| 7.2 | 15 | 14 | 13 | 12 | 12 | 11 | 10 | 9.5 | 9.0 | 8.4 | 7.9 | 7.4 | 6.9 | 6.5 | 6.1 | 5.7 | 5.3 | 5.0 | 4.7 | 4.4 | 4.1 | 3.9 | 3.6 | 3.4 |
| 7.3 | 14 | 13 | 12 | 12 | 11 | 10 | 9.6 | 9.0 | 8.4 | 7.9 | 7.4 | 6.9 | 6.5 | 6.1 | 5.7 | 5.4 | 5.0 | 4.7 | 4.4 | 4.1 | 3.9 | 3.6 | 3.4 | 3.2 |
| 7.4 | 13 | 12 | 12 | 11 | 10 | 9.5 | 9.0 | 8.4 | 7.9 | 7.4 | 6.9 | 6.5 | 6.1 | 5.7 | 5.3 | 5.0 | 4.7 | 4.4 | 4.1 | 3.9 | 3.6 | 3.4 | 3.2 | 3.0 |
| 7.5 | 12 | 11 | 11 | 10 | 9.4 | 8.8 | 8.2 | 7.7 | 7.2 | 6.8 | 6.4 | 6.0 | 5.6 | 5.2 | 4.9 | 4.6 | 4.3 | 4.1 | 3.8 | 3.6 | 3.3 | 3.1 | 2.9 | 2.8 |
| 7.6 | 11 | 10 | 10 | 9.1 | 8.5 | 8.0 | 7.5 | 7.0 | 6.6 | 6.2 | 5.8 | 5.4 | 5.1 | 4.8 | 4.5 | 4.2 | 3.9 | 3.7 | 3.5 | 3.2 | 3.0 | 2.9 | 2.7 | 2.5 |
| 7.7 | 9.9 | 9.3 | 8.7 | 8.1 | 7.7 | 7.2 | 6.8 | 6.3 | 5.9 | 5.6 | 5.2 | 4.9 | 4.6 | 4.3 | 4.0 | 3.8 | 3.5 | 3.3 | 3.1 | 2.9 | 2.7 | 2.6 | 2.4 | 2.3 |
| 7.8 | 8.8 | 8.3 | 7.8 | 7.3 | 6.8 | 6.4 | 6.0 | 5.6 | 5.3 | 5.0 | 4.6 | 4.4 | 4.1 | 3.8 | 3.6 | 3.4 | 3.2 | 3.0 | 2.8 | 2.6 | 2.4 | 2.3 | 2.1 | 2.0 |
| 7.9 | 7.8 | 7.3 | 6.8 | 6.4 | 6.0 | 5.6 | 5.3 | 5.0 | 4.6 | 4.4 | 4.1 | 3.8 | 3.6 | 3.4 | 3.2 | 3.0 | 2.8 | 2.6 | 2.4 | 2.3 | 2.1 | 2.0 | 1.9 | 1.8 |
| 8.0 | 6.8 | 6.3 | 6.0 | 5.6 | 5.2 | 4.9 | 4.6 | 4.3 | 4.0 | 3.8 | 3.6 | 3.3 | 3.1 | 2.9 | 2.7 | 2.6 | 2.4 | 2.3 | 2.1 | 2.0 | 1.9 | 1.7 | 1.6 | 1.5 |
| 8.1 | 5.8 | 5.5 | 5.1 | 4.8 | 4.5 | 4.2 | 4.0 | 3.7 | 3.5 | 3.3 | 3.1 | 2.9 | 2.7 | 2.5 | 2.4 | 2.2 | 2.1 | 2.0 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 |
| 8.2 | 5.0 | 4.7 | 4.4 | 4.1 | 3.9 | 3.6 | 3.4 | 3.2 | 3.0 | 2.8 | 2.6 | 2.5 | 2.3 | 2.2 | 2.0 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 |
| 8.3 | 4.2 | 4.0 | 3.7 | 3.5 | 3.3 | 3.1 | 2.9 | 2.7 | 2.5 | 2.4 | 2.2 | 2.1 | 2.0 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.2 | 1.1 | 1.0 | 1.0 |
| 8.4 | 3.6 | 3.4 | 3.2 | 3.0 | 2.8 | 2.6 | 2.4 | 2.3 | 2.1 | 2.0 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 | 1.0 | 0.92 | 0.87 | 0.81 |
| 8.5 | 3.0 | 2.8 | 2.7 | 2.5 | 2.3 | 2.2 | 2.1 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.2 | 1.1 | 1.0 | 1.0 | 0.89 | 0.83 | 0.78 | 0.73 | 0.69 |
| 8.6 | 2.6 | 2.4 | 2.2 | 2.1 | 2.0 | 1.9 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.3 | 1.2 | 1.1 | 1.0 | 1.0 | 0.91 | 0.85 | 0.80 | 0.75 | 0.70 | 0.66 | 0.62 | 0.58 |
| 8.7 | 2.2 | 2.0 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 | 1.0 | 0.93 | 0.88 | 0.82 | 0.77 | 0.72 | 0.68 | 0.63 | 0.60 | 0.56 | 0.52 | 0.49 |
| 8.8 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 | 1.3 | 1.2 | 1.1 | 1.0 | 1.0 | 0.90 | 0.85 | 0.79 | 0.74 | 0.70 | 0.65 | 0.61 | 0.58 | 0.54 | 0.51 | 0.47 | 0.44 | 0.42 |
| 8.9 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 | 1.0 | 0.94 | 0.88 | 0.82 | 0.77 | 0.72 | 0.68 | 0.64 | 0.60 | 0.56 | 0.52 | 0.49 | 0.46 | 0.43 | 0.40 | 0.38 | 0.36 |
| 9.0 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 1.0 | 0.92 | 0.87 | 0.81 | 0.76 | 0.71 | 0.66 | 0.62 | 0.58 | 0.55 | 0.51 | 0.48 | 0.45 | 0.42 | 0.40 | 0.37 | 0.35 | 0.33 | 0.31 |

5) The PCS Committee is recommending to the Commission the following proposed amendment to Chapter 3.3.F. Human Health Temperature Criterion (pg. 17). The amendment replaces the current Chapter 3.3.F. with the language below.

(The proposal clarifies that the criterion applies anywhere public access is possible, both inside and outside the mixing zone.)

F. TEMPERATURE: The maximum temperature at any location where public access is possible, whether inside or outside a mixing zone, shall not exceed 110 degrees F to protect human health caused by exposure resulting from water contact.

6) The PCS Committee is recommending to the Commission the proposed amendment regarding its request for input on specification of frequency and duration for numeric criteria. The language below is to be inserted into the standards as a stand-alone paragraph under Chapter 3.1 Water Quality Criteria Summary and before the summary table of criteria. Staff has also been tasked to further review and provide recommendations, specific to individual criteria or categories of criteria, within the next 12 to 18 months.

The frequency and duration values for the acute, chronic, human health (carcinogen and non-carcinogen) and fish consumption criteria contained in the existing Pollution Control Standards, where not specified, shall be consistent with the design assumptions utilized in development of the criteria.

7) The PCS Committee is not currently recommending a proposed amendment to Chapter 5.5.C. Notification of Upsets and Bypasses from Industrial Waste Treatment Facilities (pg. 24).

(The language below contains the original proposal that went out for public comment.)

The proposal extends the notification requirement to include spills.

5.5.C. Industrial waste treatment facilities shall notify ORSANCO of all upsets, bypasses and spills within two hours of their discovery.

Summary of Comments Received During Public Comment Period on Three Variances from Mixing Zone Prohibition: Koppers, Mountain State Carbon, Valley Converting

Public Hearing Statements (10 attendees, 5 speakers)

Amendola Engineering on behalf of Valley Converting

- See written summary below and hearing record.

AK Steel/Mountain State Carbon (2 speakers)

- See written summary below and hearing record.

West Virginia Rivers Coalition

- See written summary below and hearing record.

Ohio Valley Environmental Coalition

- See written summary below and hearing record.

Comments from General Public

107 individual comments from the general public/concerned citizens specifically against the three variances, against variances in general, or against mercury in general.

Comments from Organizations

Kentucky Waterways Alliance (KWA)

- Comments pertain primarily to Koppers and Mountain State Carbon variances. Regarding Valley Converting, encourage use of existing Clean Water Act permitting mechanisms for a viable compliance timeline.
- ORSANCO should deny the variances.
- If variances are granted, ORSANCO should require more comprehensive fish and water sampling (at least ten samples each from trophic level 3 and 4 fish).
- ORSANCO's must not issue a variance that becomes incorporated into an NPDES permit for 5 years or until the permit is renewed with no ability for ORSANCO to reconsider its variance should new information warrant revisiting the variance.
- None of the three variances meets the requirements set forth by USEPA in its August 21, 2015 new rule governing variances.
- None of the three variances meets ORSANCO's own requirements
- Koppers application does not show its total contribution of mercury (no mass discharge data or TRI mass discharge data).
- There is insufficient Ohio River data (water and fish) to determine Koppers impact on the Ohio River.
- Koppers application does not demonstrate that Ohio River designated uses will be maintained and that water quality criteria will be met.
- Koppers has had CWA compliance violations in 8 of the last 10 quarters, two categorized as "significant noncompliance", which should be considered.
- Mountain State is not complying with its current interim permit limits. They have been in "significant non-compliance" for both water and air for the entire last three years.

- Mountain State has provided no data to show that its discharge is not violating water quality criteria (TRI shows 10 pounds mercury released 2012-2014).
- ORSANCO has documented increasing mercury trends in trophic level 4 fish. ORSANCO has reported a risk of fish to exceed the methylmercury criterion at water concentrations less than the water quality criterion.
- Mountain State Carbon's application does not demonstrate that Ohio River designated uses will be maintained and that water quality criteria will be met.
- Recognize that Valley Converting's mercury discharge is of a lower order than Koppers and Mountain State Carbon.
- Valley Converting is conducting a good faith effort to reduce its mercury discharge.
- Recommend OEPA include a rigorous and enforceable compliance schedule in the NPDES permit requiring them to implement new treatment measures, rather than an ORSANCO variance.
- Absent a demonstration that sufficient mercury reductions are not attainable with improved TSS removal processes, a variance for Valley Converting is not appropriate.
- ORSANCO must not issue these variances until significant modifications to the proposed variances are made to ensure the facilities will make swift improvements at their facilities.

Ohio River Foundation

- Requests ORSANCO deny the three variances. ORSANCO must maintain the existing deadline for the mixing zone ban.
- The variances result in the avoidance of related expenses which provides a competitive advantage for non-compliance.
- All industries are capable of meeting the mixing zone ban.
- The Ohio River's flow does not cause discharged mercury to disappear. Mercury still bioaccumulates as in the Great Lakes.
- All applicants have provided weak rationale as to why they have not evaluated their mercury discharge or updated their mercury treatment.
- There is no justification for delay in eliminating mixing zones for BCCs in light of their well-documented impacts to human health.
- In light of the two approved variances, and now the three pending variances, ORSANCO should no longer consider itself a pollution control agency dedicated to protecting the Ohio River.

Ohio Valley Environmental Coalition

- Please deny the three variance applications.
- These corporations were given twelve years to comply. There should be consequences for companies that don't comply.
- The Ohio River already suffers the most industrial pollution in the nation.
- Many people along the Ohio River consume its fish, which is especially true for impoverished families.
- There are fish advisories for the Ohio River, but a lack of Ohio River fish advisories specifically for mercury, while there are abundant fish advisories for mercury on tributaries to the Ohio River.
- Please make it clear to the public how much mercury is in Ohio River fish.

League of Women Voters of West Virginia

- Strongly opposes the three proposed variances.
- The variances are unfair to other corporations that meet their limits.

Environmental Law & Policy Center

- Comments pertain primarily to Koppers and Mountain State Carbon variances. Regarding Valley Converting, encourage use of existing Clean Water Act permitting mechanisms for a viable compliance timeline.
- ORSANCO should deny the variances.
- If variances are granted, ORSANCO should require more comprehensive fish and water sampling (at least ten samples each from trophic level 3 and 4 fish).
- ORSANCO's must not issue a variance that becomes incorporated into an NPDES permit for 5 years or until the permit is renewed with no ability for ORSANCO to reconsider its variance should new information warrant revisiting the variance.
- None of the three variances meets the requirements set forth by USEPA in its August 21, 2015 new rule governing variances.
- None of the three variances meets ORSANCO's own requirements
- Koppers application does not show its total contribution of mercury (no mass discharge data or TRI mass discharge data).
- There is insufficient Ohio River data (water and fish) to determine Koppers impact on the Ohio River.
- Koppers application does not demonstrate that Ohio River designated uses will be maintained and that water quality criteria will be met.
- Koppers has had CWA compliance violations in 8 of the last 10 quarters, two categorized as "significant noncompliance", which should be considered.
- Mountain State is not complying with its current interim permit limits. They have been in "significant non-compliance" for both water and air for the entire last three years.
- Mountain State has provided no data to show that its discharge is not violating water quality criteria (TRI shows 10 pounds mercury released 2012-2014).
- ORSANCO has documented increasing mercury trends in trophic level 4 fish. ORSANCO has reported a risk of fish to exceed the methylmercury criterion at water concentrations less than the water quality criterion.
- Mountain State Carbon's application does not demonstrate that Ohio River designated uses will be maintained and that water quality criteria will be met.
- Recognize that Valley Converting's mercury discharge is of a lower order than Koppers and Mountain State Carbon.
- Valley Converting is conducting a good faith effort to reduce its mercury discharge.
- Recommend OEPA include a rigorous and enforceable compliance schedule in the NPDES permit requiring them to implement new treatment measures, rather than an ORSANCO variance.
- Absent a demonstration that sufficient mercury reductions are not attainable with improved TSS removal processes, a variance for Valley Converting is not appropriate.
- There is still considerable uncertainty whether Ohio River mercury levels are unsafe. Therefore, urge ORSANCO to deny the three variances.

West Virginia Rivers Coalition

- A survey found that 76% of WV residents supported fining or shutting down facilities that cannot meet pollution standards in time. Only 3% supported relaxing standards.
- ORSANCO is not considering the potential cumulative effects of allowing all of these facilities mixing zones.
- ORSANCO must eliminate the variance procedures.
- The timeline of 3-5 years for compliance is excessively long.
- The proposed variances fail to directly address what happens if monitoring shows adverse impacts.
- Recommend the variances require payments into a fund to support mercury research and discharge reduction, as an incentive to work quickly towards reducing discharges.
- ORSANCO should consider that Mountain State Carbon has been in "significant non-compliance" for Clean Water Act violations for the last four quarters.

- Comments pertain primarily to Koppers and Mountain State Carbon variances. Regarding Valley Converting, encourage use of existing Clean Water Act permitting mechanisms for a viable compliance timeline.
- ORSANCO should deny the variances.
- If variances are granted, ORSANCO should require more comprehensive fish and water sampling (at least ten samples each from trophic level 3 and 4 fish).
- ORSANCO's must not issue a variance that becomes incorporated into an NPDES permit for 5 years or until the permit is renewed with no ability for ORSANCO to reconsider its variance should new information warrant revisiting the variance.
- None of the three variances meets the requirements set forth by USEPA in its August 21, 2015 new rule governing variances.
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- Koppers application does not show its total contribution of mercury (no mass discharge data or TRI mass discharge data).
- There is insufficient Ohio River data (water and fish) to determine Koppers impact on the Ohio River.
- Koppers application does not demonstrate that Ohio River designated uses will be maintained and that water quality criteria will be met.
- Koppers has had CWA compliance violations in 8 of the last 10 quarters, two categorized as "significant noncompliance", which should be considered.
- Mountain State is not complying with its current interim permit limits. They have been in "significant non-compliance" for both water and air for the entire last three years.
- Mountain State has provided no data to show that its discharge is not violating water quality criteria (TRI shows 10 pounds mercury released 2012-2014).
- ORSANCO has documented increasing mercury trends in trophic level 4 fish. ORSANCO has reported a risk of fish to exceed the methylmercury criterion at water concentrations less than the water quality criterion.
- Mountain State Carbon's application does not demonstrate that Ohio River designated uses will be maintained and that water quality criteria will be met.
- Recognize that Valley Converting's mercury discharge is of a lower order than Koppers and Mountain State Carbon.
- Valley Converting is conducting a good faith effort to reduce its mercury discharge.
- Recommend OEPA include a rigorous and enforceable compliance schedule in the NPDES permit requiring them to implement new treatment measures, rather than an ORSANCO variance.
- Absent a demonstration that sufficient mercury reductions are not attainable with improved TSS removal processes, a variance for Valley Converting is not appropriate.

Floyds Fork Environmental Association

- Any consideration to allow more mercury in the Ohio River is unacceptable.
- Mercury does not break down, once it enters the environment it remains and bioaccumulates in the aquatic food chain, making the human consumption of fish hazardous.
- Pollution prevention is the best approach to achieving reductions.
- The statement that "Each state will approach this with a unique nature. They have better knowledge of the individual discharges than we do" is patently false
- The Ohio River suffers more industrial pollution than any other river in the nation for the last seven years.

Comments from Companies

Valley Converting (submitted by Amendola Engineering)

- Agrees that a variance is needed.

- Requests that ORSANCO would allow Valley Converting to withdraw its variance application, or its variance (if granted), at any time. They are not making this request at this time.
- Valley converting requests confirmation of the following understanding, under the provision that the mixing zone prohibition is amended as proposed, and that Valley Converting's variance is approved:
 - o Until February 29, 2020 (permit expiration), ORSANCO's Pollution Control Standards Chapter 4.F would not apply to Valley Converting, and that after February 29, 2020, that Chapter 4.F would apply to Valley Converting.
- Concerned about monitoring requirements and associated costs as follows:
 - o Valley converting's discharge of mercury is negligible. Complete elimination of the discharge would result in an unmeasurable reduction of 0.0004 ng/L at Ohio River low flows.
 - o Annual monitoring cost of \$70,000 is excessive for a small business (family-owned business employing 50 people).
 - o Mercury is present in trace quantities in its recycled paper feedstock.
 - o Upgraded its treatment system in 2011. Since then, its average mercury discharge is 12.3 ng/L which is just above the water quality criterion of 12 ng/L.
 - o At their average discharge, the water quality criterion of 12 ng/L in the Ohio River would be achieved almost immediately.
 - o The cost to install treatment to consistently meet 12 ng/L is out of proportion to the benefits. Removal costs are estimated to be \$200,000,000-\$1,000,000,000 per pound of mercury removed.
 - o The Pike Island pool is already in attainment with the water quality and fish tissue criteria. A variance issued to Valley Converting will not change that.
 - o The \$70,000 annual monitoring cost would prevent Valley Converting from updating equipment and/or improving manufacturing processes which are vital to staying competitive in their industry.
 - o Requests that effluent limits in the variance align with the NPDES permit, which is 86 ng/L monthly average for mercury.

AK Steel/Mountain State Carbon

- MSC is a coke facility. Mercury is present in its raw product. MSC has advanced chemical/biological wastewater treatment systems.
- MSC's treatment systems exceed USEPA's BAT as specified in 40CFR420.
- Treatment systems remove 95-97% of the mercury.
- Reduced its discharge of mercury by 70% since 2013.
- Has invested \$11,000,000 in treatment systems.
- Estimates lowest cost solution to no mixing zone is \$10,000,000 capital cost and over \$1,000,000 annual operating cost.
- MSC has invested considerable effort and funds as noted above in the last twelve years in an effort to meet new requirements.
- AK Steel acquired MSC less than one year ago and is making substantial increased efforts towards maintaining regulatory compliance.
- Requests proposed variance be issued for a 5 year term. If not issued for 5 years, then state that the intent is to reissue the variance after its expiration.
- Requests proposed variance effluent limits be revised to 330 ng/L monthly avg. and 678 ng/L daily max.
- Sampling during winter months and high flows is excessive. Also, because MSC and Koppers facilities are adjacent, sampling by both companies during the same time periods is excessive.

- Requests that water sampling be conducted during April through November, and that MSC and Koppers alternate those months so that only one company is sampling during any given month.
- Request that fish tissue sampling be required every other year beginning in 2016, and that MSC and Koppers alternate those years such that each company samples fish once every two years.
- Because Valley Converting's mercury discharge is very small, and Valley Converting is located in proximity to Koppers and MSC, recommend that fish and water monitoring requirements for Valley Converting be removed, and rely on data collected by MSC and Koppers.

Koppers

- The current term of the proposed variance is until June, 30, 2016 when the current permit expires, which is only eight months.
- Recommend the term of the variance be at least three years, or that it include a statement that the intent is to renew the variance with the 2016 permit renewal.
- Sampling during the winter may be hazardous, and the water sampling frequency is excessive.
- Recommend water sampling once every three months between March 31 and December 31.
- Recommend alternating sampling with MSC since the facilities are adjacent, such that only one company is sampling during a given time.
- Koppers believes the fish sampling requirement is excessive, and recommends fish tissue sampling only if monitoring results show an increase in mercury concentrations above established "routine" levels ("routine" would be the average concentration within the regulatory mixing zone).

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Variations from Pollution Control Standards

III. Koppers Inc., Carbon Materials and Chemicals, Follansbee, WV (Permit WV0004588)

- 1) A variance from the requirements as set forth in the Ohio River Valley Water Sanitation Commission Pollution Control Standards for Discharges to the Ohio River 2015 Revision, Chapter 4.F, Mixing Zone Prohibition for Bioaccumulative Chemicals of Concern is granted to Koppers Inc., NPDES Permit WV0004588, with regard to its discharge of mercury from Outfall 001, for a period beginning October 16, 2015, and not to exceed its permit expiration date of June 30, 2016.
- 2) Koppers will be allowed a mixing zone as specified above; however, at WV0004588 Outfall 001, the monthly average limit for Total Hg shall not exceed 0.232 ug/L, and a maximum daily limit of 0.645 ug/L.
- 3) Koppers mercury reduction plan submitted to the Commission in its application dated April 29, 2015 shall be fully implemented.
- 4) Koppers shall submit to the Commission and WVDEP semi-annual progress reports beginning April 16, 2016 including the status of implementing its mercury reduction plan and all mercury monitoring data collected as a requirement of this variance and NPDES Permit WV0004588.
- 5) Beginning October 16, 2015, monthly Ohio River in-stream sampling for Total Hg shall be conducted upstream of WV0004588 Outfall 001 and downstream of Outfall 001 at the downstream and lateral edge of the regulatory mixing zone as specified by WVDEP. Samples shall be representative of the entire water column at each location. Koppers shall develop a monitoring and analytical work plan to be approved by ORSANCO prior to sampling. The required monitoring may be a shared, collaborative effort with the Mountain State Carbon facility.
- 6) Beginning October 16, 2015, annual fish tissue monitoring for total and methyl mercury shall be conducted downstream, in the vicinity of WV0004588 Outfall 001. A minimum of three samples each from trophic levels three and four fish shall be collected annually. Koppers shall develop a monitoring and analytical work plan to be approved by ORSANCO prior to sampling. The required monitoring may be a shared, collaborative effort with the Mountain State Carbon facility.
- 7) The Commission shall have the sole authority and discretion to modify, renew, or revoke the variance being granted herein. Further, if the Commission modifies or revokes this variance, the Commission shall formally notify the WVDEP in writing of any such modification or revocation once finalized by the Commission. Nothing in this variance shall be construed to limit the WVDEP's authority to impose any additional requirements or more stringent requirements in WV/NPDES Permit No. WV0004588 for Outfall 001.

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Variances from Pollution Control Standards

IV. Mountain State Carbon, LLC, Follansbee, WV (WV0004499)

- 1) A variance from the requirements as set forth in the Ohio River Valley Water Sanitation Commission Pollution Control Standards for Discharges to the Ohio River 2015 Revision, Chapter 4.F, Mixing Zone Prohibition for Bioaccumulative Chemicals of Concern is granted to Mountain State Carbon, NPDES Permit WV0004499, with regard to its discharge of mercury from Outfall 006, for a period beginning October 16, 2015, and not to exceed its permit expiration date of June 30, 2017.
- 2) Mountain State Carbon will be allowed a mixing zone as specified above; however, at WV0004499 Outfall 006, the monthly average limit for Total Hg shall not exceed 0.234 ug/L, and a maximum daily limit of 0.417 ug/L.
- 3) Mountain State Carbon's mercury reduction plan submitted to the Commission in its application dated January 20, 2015 shall be fully implemented.
- 4) Mountain State Carbon shall submit to the Commission and WVDEP semi-annual progress reports beginning April 16, 2016 including the status of implementing its mercury reduction plan and all mercury monitoring data collected as a requirement of this variance and NPDES Permit WV0004499.
- 5) Beginning October 16, 2015, monthly Ohio River in-stream sampling for Total Hg shall be conducted upstream of WV0004499 Outfall 006 and downstream of Outfall 006 at the downstream and lateral edge of the regulatory mixing zone as specified by WVDEP. Samples shall be representative of the entire water column at each location. Mountain State Carbon shall develop a monitoring and analytical work plan to be approved by ORSANCO prior to sampling. The required monitoring may be a shared, collaborative effort with the Koppers facility.
- 6) Beginning October 16, 2015, annual fish tissue monitoring for total and methyl mercury shall be conducted downstream, in the vicinity of WV0004499 Outfall 006. A minimum of three samples each from trophic levels three and four fish shall be collected annually. Mountain State Carbon shall develop a monitoring and analytical work plan to be approved by ORSANCO prior to sampling. The required monitoring may be a shared, collaborative effort with the Koppers facility.
- 7) The Commission shall have the sole authority and discretion to modify, renew, or revoke the variance being granted herein. Further, if the Commission modifies or revokes this variance, the Commission shall formally notify the WVDEP in writing of any such modification or revocation once finalized by the Commission. Nothing in this variance shall be construed to limit the WVDEP's authority to impose any additional requirements or more stringent requirements in WV/NPDES Permit No. WV0004499 for Outfall 006.

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Variances from Pollution Control Standards

IV. Valley Converting Company, Inc., Toronto, OH (0IA00006)

- 1) A variance from the requirements as set forth in the Ohio River Valley Water Sanitation Commission Pollution Control Standards for Discharges to the Ohio River 2015 Revision, Chapter 4.F, Mixing Zone Prohibition for Bioaccumulative Chemicals of Concern is granted to Valley Converting Company, Inc., NPDES Permit 0IA00006, with regard to its discharge of mercury from Outfall 001, for a period beginning October 16, 2015, and not to exceed its permit expiration date of February 29, 2020.
- 2) Valley Converting Company will be allowed a mixing zone as specified above; however, at 0IA00006 Outfall 001, the monthly average limit for Total Hg shall not exceed 0.034 ug/L, and a maximum daily limit of 1.7 ug/L.
- 3) Valley Converting Company's mercury reduction plan submitted to the Commission in its application amendment dated May 12, 2015 shall be fully implemented.
- 4) Valley Converting Company shall submit to the Commission and Ohio EPA semi-annual progress reports beginning April 16, 2016 including the status of implementing its mercury reduction plan and all mercury monitoring data collected as a requirement of this variance and NPDES Permit 0IA00006
- 5) The Commission shall have the sole authority and discretion to modify, renew, or revoke the variance being granted herein. Further, if the Commission modifies or revokes this variance, the Commission shall formally notify the Ohio EPA in writing of any such modification or revocation once finalized by the Commission. Nothing in this variance shall be construed to limit the Ohio EPA's authority to impose any additional requirements or more stringent requirements in OH/NPDES Permit No. 0IA00006 for Outfall 001.

RESOLUTION 7-15

ADOPTION OF POLLUTION CONTROL STANDARDS - 2015 REVISION

WHEREAS: The Ohio River Valley Water Sanitation Commission, which was created by the Ohio River Valley Water Sanitation Compact, effective June 30, 1948, as an agency representing eight sovereign states embracing territory from which waters flow directly or indirectly into the Ohio River or its tributaries, is charged by the provisions of the Compact with responsibility for achieving, through control of pollution discharged into those waters, stated objectives deemed to be necessary in order to place and maintain those waters in condition suitable for uses contemplated by the Compact; and

WHEREAS: Article VI of the Ohio River Valley Water Sanitation Compact establishes minimum standards for the treatment of sewage discharged by municipalities or other political subdivisions, public or private institutions or corporations into the waters of the Ohio River Basin, specifies a basic level of modification or treatment of industrial wastes discharged or permitted to flow into those waters and, in addition, empowers the Commission, after investigation, due notice and hearing, to establish such higher degrees of treatment and modification as the Commission may determine to be necessary in order to achieve the objectives stated in the Compact; and

WHEREAS: On October 10, 2013, through exercise of the power thus granted to it, the Commission adopted and promulgated Pollution Control Standards (2013 Revision) which established levels of treatment and modification then considered to be required for both sewage and industrial wastes discharged into the Ohio River, but subsequently determined that clarifying amendments to or restatements of specific segments thereof were necessary and, by action on February 19, 2015, approved consideration of alterations of its Pollution Control Standards (2013 Revision) and designated a Hearing Board, empowered and directed to conduct a public hearing with respect to them, at a location to be specified and after due notice; and

WHEREAS: For the purpose of implementing that resolution, the Hearing Board, after appropriate notice, held a public hearing with respect to the proposed alterations of its Pollution Control Standards (2013 Revision) at the Holiday Inn, Greater Cincinnati Airport, Erlanger, Kentucky on April 14, 2015. A transcript of the hearing has been prepared and placed on file in the offices of the Commission, in Cincinnati, Ohio and, thereafter, submitted to the Commission with recommendations for adoption, a final set of amended and restated Pollution Control Standards covering discharges into the Ohio River.

NOW, THEREFORE, UPON DUE CONSIDERATION of the procedures previously established by the Commission and followed by the Hearing Board in conducting the above-described hearings, the testimony and other evidence introduced at these hearings, together with various views and opinions there expressed, and the recommendations submitted by the Hearing Board; in exercise of the authority granted to it by Article VI of the Ohio River Valley Water Sanitation Compact.

THE COMMISSION HEREBY RESOLVES THAT:

1. Notice of the time and place at which the above-mentioned hearing was to be held was sufficient, in form and extent of publication, to inform all interested parties and all parties likely to be affected thereby;
2. The procedure followed by the Hearing Board in the conduct of the hearing adequately provided to all interested parties and to all parties likely to be affected thereby full opportunity to be heard and to present any pertinent testimony, evidence, opinions, or views which anyone might wish to submit for the consideration of the Commission; and
3. Pollution Control Standards (2013 Revision) which, as heretofore adopted and promulgated by the Commission, require clarifying amendments or restatements of specific segments.

THE COMMISSION HEREBY FURTHER RESOLVES THAT:

Subject to any subsequent revisions which the Commission may, from time to time, determine to be required by changing conditions, its POLLUTION CONTROL STANDARDS (2013 Revision) for Discharges to the Ohio River, shall be and they hereby are in that form readopted and repromulgated by this Commission to be hereafter designated as POLLUTION CONTROL STANDARDS – 2015 Revision.

THE COMMISSION HEREBY FURTHER RESOLVES THAT:

Public notification of this action in the readoption and repromulgation of Pollution Control Standards - 2015 Revision, as thus amended and restated, be given by publication in newspapers having general circulation in the major population centers within the Ohio River Basin and by direct mail to all persons, entities and governmental agencies within that area known to have an interest in that action or to be affected by it.