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2023 NATIONAL TRAINING WORKSHOP ON WATER QUALITY DATA, ASSESSMENT, AND PLANS

COLLABORATING AND INNOVATING TOGETHER

National Conservation Training Center
Shepherdstown, West Virginia
June 21-23, 2023

FINAL PROJECT REPORT
&
TRAINING WORKSHOP PROCEEDINGS

ACKNOWLEDGMENTS

Except where expressly noted, the views expressed in the materials prepared and assembled by ELI should not be attributed to U.S. EPA, nor to other federal or state agencies, nor should any official endorsement be inferred.

ELI maintains a companion website for this project: our CWA 303(d) Program Resource Center (http://www.eli.org/freshwater-ocean/state-tmdl-program-resource-center).

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I.   INTRODUCTION

From June 21 through June 23, 2023, the Environmental Law Institute (ELI) convened the *2023 National Training Workshop on Water Quality Data, Assessment, and Plans: Collaborating and Innovating Together*. This event, supported through a cooperative agreement with the U.S. Environmental Protection Agency (EPA), brought together (in person) Clean Water Act (CWA) Section 303(d) listing and TMDL officials from 48 states, the District of Columbia, American Samoa, Puerto Rico, and the U.S. Virgin Islands as well as water quality professionals from the Confederated Tribes of the Umatilla Indian Reservation, the Eastern Band of Cherokee Indians, the Eastern Division of the Chickahominy Indian Tribe, the Fond du Lac Band of Lake Superior Chippewa, the Kickapoo Tribe in Kansas, the Lac du Flambeau Band of Lake Superior Chippewa, the Mississippi Band of Choctaw Indians, the Morongo Band of Mission Indians, the Prairie Band Potawatomi Nation, the Pueblo of Acoma, the Pueblo of Pojoaque, the Seneca Nation, the Shinnecock Indian Nation, the Skokomish Indian Tribe, and the Southern Ute Indian Tribe. In addition, more than 200 staff members of many of the states, tribes, and territories listed above as well as the two remaining states, the Commonwealth of the Northern Mariana Islands, Guam, the Cahuilla Band of Indians, the Campo Band of Mission Indians, the Chicken Ranch Rancheria of Me-Wuk Indians of California, the Comanche Nation, the Coyote Valley Band of Pomo Indians, the Fort Belknap Indian Community, the Hopi Tribe, the Kletsel Dehe Wintun Nation, the La Jolla Band of Luiseno Indians, the Manzanita Band of the Kumeyaay Nation, the Miccosukee Tribe of Indians of Florida, the Nooksack Indian Tribe, the Pinoleville Pomo Nation, the Quartz Valley Indian Reservation, the Red Lake Nation, the Soboba Band of Luiseno Indians, the Susanville Indian Rancheria, and the Tribal Marine Collaborative participated virtually.

As with similar CWA 303(d) events of national scope convened in the spring of most years since 2008, ELI staff intended for this training workshop to provide a forum for program officials to learn about current best practices in listing, TMDL development, and TMDL implementation; to interact with one another; and to share their programmatic ideas and concerns. To ensure a planning process that would culminate in a training workshop attuned to the needs of program implementers in the states, tribes, and territories, ELI staff assembled a Workshop Planning Group (WPG). For six months, the WPG worked through a highly participatory process to develop, shape, and refine the workshop objectives and agenda as well as the structure and focus of the workshop sessions.

Over the three days of the training workshop, participants learned about and contributed to approaches to communicating with and collaborating with a wide range of partners; approaches to the Focus Areas of the *2022-2032 Vision for the Clean Water Act Section 303(d) Program*; and methods for better incorporating environmental justice and climate change considerations into water quality data management, assessment, and restoration and protection activities. Participants also learned about and shared approaches to collaboratively prioritizing waterbodies for plan development and to improving coordination between water quality data management efforts and CWA 303(d) Program activities. In addition, many of them gained technical skills and programmatic acumen in water quality data management, assessment, CWA 303(d) listing, and TMDL development and received updates on research, materials, tools, and legal developments relevant to the CWA 303(d) Program. Participants also gained greater personal familiarity with

colleagues from other jurisdictions, representatives of EPA Headquarters and EPA Regions, a representative of the Association of Clean Water Administrators (ACWA), and a representative of NEIWPCC.

The event was successful by the metrics of sharing useful information and generating new ideas. This report provides detailed summaries of the plenary sessions and brief overviews of the breakout sessions. Appendices to the report include the training workshop agenda, a compilation of participant evaluations and comments, and information about ELI's companion website.

II. WORKSHOP PROCEEDINGS: SESSION-BY-SESSION DISCUSSION

The following is an overview and detailed discussion of the training workshop, presented session by session. The full training workshop agenda appears in Appendix 1 of this report.

Welcome

Adam Schempp of ELI welcomed participants to the *2023 National Training Workshop on Water Quality Data, Assessment, and Plans*, the fifteenth national CWA 303(d) training workshop and fifth national water quality data management training workshop. He expressed great appreciation and relief to finally be back together in person after four long years. Mr. Schempp noted how humbled he was by the fact that so many people were in attendance. He added that this was the first year attempting a hybrid format for the training workshop, with more than 200 people registered to attend virtually. Mr. Schempp encouraged the participants, whether in person or remote, to give their all throughout the week by asking questions and sharing their experiences, to contribute to the sessions as well as to learn from them.

Mr. Schempp offered thanks to EPA for supporting the training workshop, in particular: Jim Havard, Stacey Yonce, and program officers Rosaura Conde and Cynthia Johnson. He also thanked members of the Workshop Planning Group for helping to put the event together: Barbara Bennett of Colorado, Seth Book of the Skokomish Indian Tribe, Heidi Henderson of New Mexico, Traci Iott of Connecticut, Cam McNutt of North Carolina, Lesley Merrick of Oregon, Kathy Stecker of Maryland, Robert Voss of Missouri, Shera Reems of EPA Region 8, Dave Werbach of EPA Region 5, Jesse Boorman-Padgett of EPA Headquarters, Jasper Hobbs of ACWA, and Courtney Botelho and Beth MacBlane of NEIWPCC. Mr. Schempp then introduced Jim Havard for his opening remarks.

Jim Havard, Chief of the Watershed Branch at EPA Headquarters, began his remarks by welcoming everyone and expressing his appreciation for the return to Shepherdstown from "Cybertown." He added that one positive of those years was the move to a hybrid style of meeting, so that hundreds more colleagues could join. Mr. Havard thanked everyone for attending in person or virtually and noted what a privilege it is to meet with people who have a great love for the country's waters. He said that he would like to learn what sparked everyone's love for this field, explaining that his stemmed from his childhood: hiking in the woods to local ponds, streams, and lakes from his house; rowing and fishing with his dad on Rye Lake in Southern New York; the Adirondacks on summer vacations; and just sitting and listening to the peacefulness of streams running through the woods.

Mr. Havard then turned to several milestones that had been achieved in the prior year, most notably the fiftieth anniversary of the Clean Water Act and development of the *2022-2032 Vision for the Clean Water Act Section 303(d) Program* (Vision). He also highlighted the passage of the Bipartisan Infrastructure Law, the single largest federal investment ever in water infrastructure; the heightened focus on equity, climate, and tribal water quality; and the significant opportunity to work with other agencies like NRCS and FEMA to further water quality goals. Mr. Havard congratulated NEIWPCC, Jeff Berckes, and Sara Schwartz on season one of the Clean Water Pod,

which concluded with a discussion with Benita Best Wong and thoughts from many state experts from multiple CWA programs regarding the biggest challenges for the next 50 years. He highlighted a key theme from those conversations: the strong progress that has been made towards restoring and protecting the biological, chemical, and physical integrity of the country's waters, particularly addressing discharges from point sources.

Mr. Havard also conveyed some of the most notable challenges and areas for improvement gleaned from the conversations, such as addressing the impact of nonpoint source pollution, addressing emerging contaminants like PFAS and pharmaceuticals, addressing environmental injustices and achieving clean water for all, and addressing and adapting to climate change and its impact on pollutant loadings. He emphasized the importance of working with multiple government partners to harness resources and utilize authorities to improve water quality, the need to prioritize and make best use of limited resources, and the value of multidisciplinary teams. Mr. Havard also stressed the critical role of cooperative federalism, the importance of engaging and collaborating with various partners to achieve buy-in, and the enormous power of data and data tools. He emphasized the importance of pursuing green infrastructure along with gray infrastructure.

Mr. Havard then talked about the new Vision, which he said puts the program in a great place to play a fundamental role in addressing these challenges and opportunities. He highlighted a few key themes from the Vision: pursuing the efficient use of resources; prioritizing and planning; programmatic coordination, including engaging early and often and seeking synergies; harnessing stakeholder engagement; accomplishing restoration by choosing the right tool, designing plans for implementation success, implementing, tracking, and evaluating; pursuing protection plans to prevent impairments; making strategic use of data, analysis, and tools; and making advancements in environmental justice, climate, tribal engagement, and capacity building. Mr. Havard reiterated that the next step for the Vision is for states to develop long-term prioritization frameworks by April 1 of 2024. He added that these frameworks are a key opportunity to describe long-term Vision priorities (including a rationale for selecting those Vision priorities) and how programs will pursue the goals of the new Vision 2.0.

Mr. Havard transitioned to talking about tools to address the challenges and to capitalize on opportunities. He explained that EPA has updated the Recovery Potential Screening (RPS) tool, including adding environmental justice and climate-related parameters. He also noted the *2024 Integrated Reporting Memorandum*, which addresses long-term planning and prioritization, tribal water quality, environmental justice, climate, trash, and nutrients. Mr. Havard added that EPA drafted a new TMDL Foundations Course, to be piloted with states soon, as well as a TMDL climate paper. In addition, he said that EPA is developing enhanced products to assist tribes with water quality assessment.

In conclusion, Mr. Havard highlighted major program accomplishments. He started with the first CWA 303(d) Program Vision, recounting that all states created long-term frameworks that reflect their priorities for the development of TMDLs, other restoration plans, and protection approaches, and states and territories made close to 80 percent progress towards putting those plans in place. He also emphasized the development and use of enhanced data systems, improving information sharing and transparency and ultimately helping to gain significant efficiencies in program execution. Mr. Havard praised the more than 200,000 TMDLs that have been developed, but also the fact that at least 26 states have pursued advance restoration approaches (87 overall), and 9 states have pursued protection plans (70 overall). In addition, he noted that timeliness of actions

has dramatically improved, with more than 40 states submitting 2022 CWA 303(d) lists in 2022 and EPA having cleared its backlog. He congratulated everyone on all this great work before expressing how excited he was for the week and turning the podium over to Stacey Yonce.

Stacey Yonce, Acting Manager of the Water Data Integration Branch at EPA Headquarters, began her remarks by acknowledging the transition in leadership in the Water Data Integration Branch in the prior year, starting with the departure of Dwane Young for another role within EPA. She noted that Dwane left a team well-positioned to carry on the work that he championed and that the Office of Wetlands, Oceans, and Watersheds is continuing the search for his permanent replacement. She added that, in the meantime, she was honored to serve in the role and to be a part of this event, to collaborate and learn.

Ms. Yonce then turned to accomplishments of the prior year, including development of an ATTAINS priority module. She explained that the Water Data Integration Branch collaborated with regional and state partners to complete the development of this module in ATTAINS to support program metrics, such as the CWA 303(d) bridge metric. Ms. Yonce noted that, in fiscal year 2022 (FY22), states were asked to provide a list of metric priorities for FY23 and FY24 for the development of TMDLs, other restoration plans, and protection plans, adding that achieving this goal required extensive planning, demonstrations, quality assurance and quality control measures, and frequent communication. She applauded all 50 states and the District of Columbia for accomplishing this objective, with bridge metric priorities for all of them now successfully entered into the ATTAINS priority module. Ms. Yonce also highlighted the fact that, in FY23, seven tribes submitted water quality assessments to ATTAINS for the first time, bringing the total number of tribes with assessments in ATTAINS to 19. She added that 12 more tribes have volunteered to participate in the next phase of the project.

Ms. Yonce then turned to progress made on open-source software tools that assist states and tribes in managing assessment data. She explained that Tools for Automated Data Analysis (TADA) provides a suite of customizable software building blocks to assist with the process of discovering, assessing, and wrangling data in the Water Quality Portal. She added that this effort includes extensive community support and participation and ultimately will provide a suite of products that can streamline many of the repetitive tasks involved in water quality data analysis.

Ms. Yonce detailed several major improvements to How's My Waterway. She noted that the team released enhancements to the monitoring tab, including a date slider that provides the ability to view monitoring data by watershed anywhere from the late-1800's to 2022 by selecting a date range. She also highlighted the addition of separate monitoring location pages that provide means of digging deeper into data, including viewing by characteristic group and filtering data before downloading. Further, Ms. Yonce said that the map of monitoring locations was updated to include a clustering effect. She emphasized that all this progress was the result of several years of working closely with USGS on data and services from the Water Quality Portal. She also noted that 14 tribes had completed water quality assessments against their tribal thresholds or water quality standards in the prior year, and those data and decisions are available in How's My Waterway.

Ms. Yonce then focused on the Water Quality eXchange (WQX), explaining that the portal has continued to build resources and services to improve its functionality, including a move to the cloud from the onsite server it used to call home. She emphasized that, in the prior year, 477 organizations either added or updated more than 19 million results across approximately 145,000

stations in more than 12,000 individual uploads. Ms. Yonce said that those users also have found new ways to quality assure their data, including now having result-level reports from within the app and new quality reports on the data stations. She highlighted that, this past year, the first two state programs, Connecticut and South Carolina, completed data connections to submit via the WQX web API, further automating their use of the WQX web tools and their data submission process. She said that the Water Quality Portal also is seeing increased usage, with roughly 3,000 different IP address calls per day, serving those data to constituents, managers, researchers, and applications.

In conclusion, Ms. Yonce focused on what is planned for the next year for the Water Data Integration Branch, including continued improvements to ATTAINS, notably the upcoming Expert Query, which will allow anyone to query ATTAINS data in more detail and perform queries across organizations. She also highlighted big plans for TADA, such as several new modules and a graphical user interface to walk through the data analysis process. Ms. Yonce explained that WQX will be publishing new data profiles that are better tailored to assessment needs. She also noted that functionality and data sources will continue to be added to How's My Waterway. Ms. Yonce expressed her gratitude to everyone participating in the workshop and emphasized her excitement for the week ahead.

Jeff Berckes, President of Flip the Field, LLC, expressed how much he enjoyed being back at the National Conservation Training Center and with this group of people. He explained that he is working with NEIWPCC on the Clean Water Pod, which had just wrapped its first season. He emphasized his excitement in working with those in attendance on how to share their stories, including the opportunity to record over the course of the week.

Mr. Berckes noted that the Clean Water Pod is about the work that the people in the room do and encouraged anyone who had not yet listened to it to do so. He also suggested sharing it, as a way to convey to friends and family what the jobs of those participating entail. Mr. Berckes explained that the Clean Water Pod is aimed toward a more general public, particularly people who are interested in clean water work. He highlighted the role of their workgroup in helping direct the content of the podcast and the success story project generally, and he encouraged people who are interested in participating in that group to let him and Beth MacBlane of NEIWPCC know.

Mr. Berckes then talked about the second season of the podcast, which will focus on nutrients. He encouraged participants to come talk to him and Beth with ideas of potential podcast guests, from professors to talk about the science, to local champions with passion, to government staff with innovative approaches to nutrients. Mr. Berckes also solicited brief examples of ways that people talk about nutrients to a lay audience, such as in a public meeting or at Thanksgiving. He also offered that if anyone has an accomplishment that they would like to share in the nutrients space but would like help trying to shape it into a story, he and Beth could help in developing that story. He added that this project is only in its second of five years, so future years will cover other topics, and he would be very happy to also hear successes on issues other than nutrients.

In conclusion, Mr. Berckes said that this is a really exciting project, noting that how to do more and better communication was a frequent topic of conversation for years at this workshop and in his time at the State of Iowa. He expressed his hope that participants would take the opportunity for help in shining a spotlight on all the good work that they are doing.

Session 1: Breakouts I

This session consisted of six breakouts, each focusing on a different topic. ELI staff selected the topics based on responses in the registration materials and then, with the help of the WPG and staff of the Water Data Integration Branch, developed the respective agendas, including speakers, facilitators, and discussion questions. Most of the presentation slides and materials from breakouts that had them can be found here.

- How to Assess/List Waters and Develop TMDLs with Narrative Nutrient Criteria
    - Through a series of examples from across the country, this breakout explained some of the ways that states have assessed and listed waters (and in some cases developed TMDLs) using narrative nutrient criteria, including the use of translators, reference watersheds, and a weight of evidence approach. Jasper Hobbs of ACWA moderated the breakout, and presentations were delivered by Traci Iott of Connecticut, Katie McKone of Kentucky, Meredith Zeigler of New Mexico, and Kim Laster of Tennessee.
- Environmental Justice: Achieving Meaningful Involvement
    - This prestigious panel of Queen Quet of the Gullah/Geechee Nation, Jalisa Gilmore of Groundwork USA, and Amin Davis of the North Carolina Division of Water Resources and the Walnut Creek Watershed Action Team highlighted ways of meaningfully involving people and communities in decision-making and implementation. They relayed their experiences and lessons learned and introduced participants to Groundwork USA's resources for equity-centered engagement. Sara Schwartz of EPA Headquarters moderated the breakout.
- Advance Restoration Plans/5R and 4B Plans: Examples and EPA's Expectations
    - This breakout provided an overview of Advance Restoration Plans (ARPs, formerly "alternatives")/5R and 4B plans as well as examples and lessons learned regarding ARPs, followed by a discussion about opportunities for using ARPs to restore water quality. Presentations were delivered by Tracy Krueger of Maine, Matthew Reardon of Massachusetts, and Chris Hunter of EPA Headquarters.
- Evaluating TMDL Effectiveness: Getting the Necessary Data through Existing Means
    - This breakout provided an overview, with examples, of ways to evaluate the effectiveness of water quality restoration plans through common processes and data sources. Adam Schempp of ELI moderated the breakout, and presentations were delivered by Sophia Grossweiler of Maryland, Robert Voss of Missouri, and Brian Barnes of Nebraska.
- ATTAINS: A Secret Sauce Training (intermediate to advanced)
    - This training, intended for individuals responsible for entering and/or reviewing data in ATTAINS, covered various tips and tricks for navigating ATTAINS, dealing with common problems, and generally making the life of an ATTAINS user a little easier. Demonstrations were led by Jesse Boorman-Padgett and Wendy Reid of EPA Headquarters and Megan Tulloch of RTI
- Continuous Data Management Options and Tools
    - This breakout shared best practices for submitting continuous data to the Water Quality eXchange (WQX) before covering a variety of ways organizations QA/QC, analyze, assess, and visualize continuous datasets. The breakout concluded with a discussion of challenges and sharing of ideas from participants. Presentations were delivered by Mike Kusmiesz and Brett Wiley of New Jersey, Leah Ettema of EPA

Region 3, Tom Faber of EPA Region 1, and Adam Griggs and Cristina Mullin of EPA Headquarters.

Keynote Address

Bruno Pigott, Deputy Assistant Administrator for the Office of Water at EPA Headquarters, began his remarks by admitting to being a little intimidated by the great group of people assembled. He specifically called out Paul McMurray, Angie Brown, and Katie McKone, who, for many years, answered his questions and were very kind to teach him how things work in this field during his time at the Indiana Department of Environmental Management. Mr. Pigott thanked everyone for the work that they do and for the opportunity to be there with them.

Mr. Pigott then analogized progress in water quality management to advancements in automobiles. He harkened back to 1885 and the production of the first Benz motor vehicle, which was revolutionary but a very basic creation. He explained that, soon thereafter, people started thinking of improvements to it: adding a fourth wheel, lights, a roof, a windshield, doors, windows, and beyond. Mr. Pigott said that, throughout his lifetime, vehicles have further improved, from seatbelts to air bags and beyond, and the Benz car is hardly recognizable in the vehicles of today. He added that even the method of propulsion is changing, from internal combustion to electric motors. He declared that this is a common story, one of many hands making good work.

Mr. Pigott likened this to improvements in environmental protection and specifically the CWA 303(d) Program. He referenced, as an example, the *2022-2032 Vision for the Clean Water Act Section 303(d) Program*, which was the work of many hands. He added that staff at EPA know how valuable conversations like those had by this group are and have been in the past; it is the collection of everyone that makes improvements possible. Mr. Pigott highlighted the improved timeliness of CWA 303(d) list submissions as well as timely EPA actions on submissions. He also praised tools like How's My Waterway for giving people unprecedented access to information on the waters in their backyards.

Mr. Pigott acknowledged that it is often lost in the work of a given day what the impact of that work is on individuals, but the collaborations like those among the people in the room help to keep an eye on the ball – improving water quality for habitat, recreation, and drinking. He referenced the fiftieth Anniversary of the Clean Water Act and the progress that has been made. He highlighted not just the better and more extensive data available than 50 years ago but the improvements to the country's waterways, from the restoration of Boston Harbor to protection of salmon in Puget Sound. Mr. Pigott said that the next 50 years of progress is being charted, including through the new Vision, focusing on planning and prioritization through thoughtful processes. He noted that EPA's work has been focused on the intersection of environmental protection and environmental justice, which is reflected in the new Vision, along with addressing climate change and an emphasis on issues important to tribes. Mr. Pigott added that EPA continues to promote and support tribal communities seeking Treatment in the Same Manner as a State for their water quality programs and is working to build tribal capacity for water quality assessment work, including through training staff of tribes on the use of key data tools, such as ATTAINS, WQX, and TADA. He also highlighted the continued importance of data management and planning as the National Water Program moves forward so that water quality data are findable, accessible, interoperable, and reusable.

Mr. Pigott then shared EPA Administrator Regan's message following the Supreme Court decision in the *Sackett* case: from EPA's perspective, EPA remains committed to ensuring that all people, regardless of race, the money in their pocket, or community they live in, have access to clean, safe water; it is a commitment and a responsibility that EPA has never wavered from. He added that the Supreme Court decision erodes longstanding clean water protections, and this administration has worked to establish a durable definition of Waters of the United States that safeguards the country's waters, strengthens economic opportunity, and protects people's health while providing the clarity and certainty that farmers, ranchers, and landowners deserve. Mr. Pigott said that these goals will continue to guide the agency forward as it carefully reviews the Supreme Court decision and considers next steps. He acknowledged that participants may have questions about how this decision affects the CWA 303(d) Program as they prepare their 2024 Integrated Reports. He suggested that states and territories consider submitting impaired waters lists that are inclusive and do not rely on new evaluations of jurisdictional status. He added that such submittals can note that EPA approval is sought for waters to the extent that they constitute Waters of the United States, and, in appropriate circumstances, EPA can note that it is approving lists of waters to the extent they contain impaired Waters of the United States.

Mr. Pigott emphasized the unprecedented investment in the country's water infrastructure through the Bipartisan Infrastructure Law. He noted that, when he was working at the Indiana Department of Environmental Management, they typically received capitalization grants to run their state revolving fund programs on the order of $32 million per year for wastewater and roughly $18 million per year for drinking water. As a result of the Bipartisan Infrastructure Law, he continued, EPA will invest $50 billion in the country's drinking water, wastewater, and stormwater infrastructure to protect the health, equity, and resilience of American communities. Mr. Pigott said that $5.2 billion has been distributed to 50 states and 6 tribes or territories so far, and there is more to come. He reiterated that this is the largest federal investment in water infrastructure in the country's history and will help upgrade aging infrastructure, deliver safe drinking water, and further protect water quality.

To conclude, Mr. Pigott highlighted that EPA and the Biden-Harris Administration are investing in America, appreciating that safe, clean water for drinking and recreation are essential to thriving communities. Yet, he added, it is the partnerships, including with everyone attending this workshop, that are vital to making it all work. He pledged to continue to work closely with state, tribal, territorial, local, and other federal partners to leverage resources and authorities in a way that protects and restores water quality. Mr. Pigott emphasized how grateful he is to be a part of this team, at this workshop, with people who work hard to protect waters all across the country, appreciating that he is surrounded by those who dedicate their lives to improving water where they live. He noted how excited he is to learn about all the efforts going on in their states, tribes, and territories to improve and correct water quality, adding that many hands make good work.

Session 2: Interagency Collaboration

In this session, moderated by Bonita Johnson of EPA Region 4, staff of multiple federal agencies and a tribe shared lessons learned from cooperation, including keys to building and maintaining relationships, how to identify opportunities for collaboration, and effective means of sharing data.

The panel consisted of:
- **Allison Odell, U.S. Bureau of Reclamation**
- **Jeffrey Lerner, EPA Chesapeake Bay Program**
- **Bradley Dean, Federal Emergency Management Agency**
- **Nancy Schuldt, Fond du Lac Band of Lake Superior Chippewa**
- **Joan Carlson, U.S. Forest Service**
- **Martin Lowenfish, Natural Resources Conservation Service**

Ms. Johnson began the session by introducing the topic and noting that collaboration is a theme of this year's workshop. She added that the *2022-2032 Vision for the Clean Water Act Section 303(d) Program* and the *2024 Integrated Reporting Memorandum* also encourage collaboration on all levels in planning and implementing program activities and in data sharing, while addressing pollutants; assessing waters; developing TMDLs; restoring waters; and addressing tribe-specific matters, climate change, participatory science, and environmental justice. Ms. Johnson said that the most recent environmental justice executive order, EO 14096, signed in April of 2023, notes that environmental justice can successfully occur only through meaningful engagement and collaboration with underserved communities. She explained that collaboration is key at all levels of relationships and environmental work.

Ms. Johnson then invited the panelists to introduce themselves. Nancy Schuldt, the Water Projects Coordinator with the Fond du Lac Band of Lake Superior Chippewa, began by expressing her interest in the discussion because they have experienced more instances of collaboration not going well than being successful. She explained that, working for a tribe, she gets to do everything Clean Water Act-related, not just assessment, listing, and TMDLs. Ms. Johnson added that much can be learned from bad experiences as well.

Martin Lowenfish, the Branch Chief for Areawide Planning at the Natural Resources Conservation Service (NRCS), explained that NRCS provides voluntary conservation assistance that is available across the country. Yet, he added, to make it work, especially for things like water quality, more than random acts conservation are needed. Mr. Lowenfish said that the right things must be done in the right places, and, being a voluntary agency, they must set up incentives that they can do within their own agency. Still, he continued, partnerships are important, and to leverage them, his job is to set the conditions where NRCS can work well in the partnerships because it is through local partnerships that they can make a difference and get the right things done in the right places to get clean water, wildlife habitat, and clean air.

Brad Dean explained that he works in the newly established Office for Resilience Strategy, which covers all things before disasters at the Federal Emergency Management Agency (FEMA), and his job is the communications and partnerships lead. In defense of his presence on a panel concerning water quality, he noted that he is a coastal ecologist who helped on the FEMA nature-based solutions resources, adding that this work is important to him. Mr. Dean noted that, in a former role, he led the Resilient Nation Partnership Network, diversifying and being purposeful about how and where FEMA collaborated. He suggested that the phrase "meet people where they are" is one of the most over-used phrases for the federal government because, in 99 percent of cases, it is not designed to meet people where they are. He said that this is why partnerships and collaboration outside and across the federal government are essential.

Joan Carlson, a hydrologist and the National Watershed Program Leader with the U.S. Forest Service, said that her portfolio includes all things surface water except water rights, so Clean Water Act compliance; the National Best Management Practices Program; and watershed restoration, including the Watershed Condition Framework and municipal source water protection. She explained that the Forest Service was established more than 100 years earlier, and in the Organic Act of 1897, one of the purposes for establishing the National Forest was continued supply of timber and favorable conditions of water flow. Ms. Carlson added that the hydrologists in the agency like to remind their colleagues and leadership that water is one of the agency's founding principles. She noted that she tries to provide tools and otherwise help those in the field do their jobs better, protecting and restoring water quality and surface water resources.

Allison Odell, the Open Water Data Coordinator at the U.S. Bureau of Reclamation, explained that Reclamation is a federal water and power management agency within the Department of the Interior, working in the 17 Western States. She said that her background is more on water supply and operations planning, so she is excited to be connecting with water quality professionals. Ms. Odell noted that, in her current role, she is responsible for managing Reclamation's data sharing system, the Reclamation Information Sharing Environment, which is able to share all of the data that Reclamation collects and produces, including water quality data.

Jeff Lerner, Acting Branch Chief for the Partnerships and Accountability Branch of the Chesapeake Bay Program, acknowledged that he had not been with the program long but that he was learning much about the extensive partnerships throughout the Bay watershed. He added that they are a little unique in that they are celebrating the fortieth anniversary of the program, but a TMDL has been in place only since 2010. Thus, he continued, they are fortunate to have a framework for interagency collaboration that started before the development of the TMDL. Mr. Lerner emphasized that states are key partners in doing the work, and when "interagency collaboration" is referenced, it is not just about federal agencies, but also state agencies. He suggested that they are somewhat successful because of the agreed upon data standards, including quality assurance and quality control protocols. He also referenced the Chesapeake Bay Progress website that displays much of this information and noted that they are developing a tool to capture information more seamlessly across jurisdictions, including spatial information. Mr. Lerner identified nonpoint sources of pollution as still a major challenge in the watershed, noting that they will be depending on future collaborations with other agencies, such as NRCS and the Forest Service, to help achieve the overall goals for the watershed.

Ms. Johnson thanked the panelists and then asked them to share examples of interagency collaboration from their experience. Ms. Schuldt pointed to some collaborations between the State of Minnesota, the State of Wisconsin, EPA Region 5, and the Fond du Lac Band on a mercury TMDL for the St. Louis River watershed, a shared water amongst those jurisdictions, in 2010. She noted that some progress was made over two years, with funding through the Great Lakes Restoration Initiative, but roughly halfway through the process, the consensus and collaboration fell apart; they lost the shared vision. Ms. Schuldt added that, ten years later, the State of Minnesota reinitiated the mercury TMDL process for the St. Louis River watershed, but as more of a Minnesota TMDL process than the interagency collaboration of before. She noted that this development is prompting the Fond du Lac Band to examine other opportunities to address their priorities. Ms. Schuldt highlighted that that they have had successful collaborations across the federal family, exercising the trust responsibility, and with state agency partners on a staff-to-staff basis, as well as strong and effective research collaborations with academia, after spending time

to develop those relationships and laying ground rules around data use and data sovereignty. She remarked that there are many ways to seek out and participate in collaborations, and that is the only way to make progress on big, gnarly problems.

Ms. Johnson remarked that Ms. Schuldt touched on numerous key points, but Ms. Johnson focused on the reference to losing a shared vision. She asked all the panelists how important it is to have a shared vision, and what can be done if that shared vision does not exist. Mr. Lerner said that there is a shared vision in the Chesapeake Bay because it was written down; there is a watershed agreement and they have been through a couple iterations of it. He added that all of this has been ironed out with the jurisdictions, agency partners, etc. Mr. Lerner acknowledged that it is a long process, but they now have a document, a statement that they can always go back to, helping to define the structure of partnerships, including the goal teams and management board. He emphasized that the shared vision statement is critical to what they do. Ms. Johnson asked whether a shared vision is something that should be done at the beginning of the relationship, to which Mr. Lerner responded that it probably is a good exercise early in the process, but there needs to be a recognition among the partners that it will change over time.

Mr. Lowenfish explained that, being from DC, he can speak mostly to big-picture mechanisms, which hopefully foster good collaborations and partnerships at the local level, where work is done on the ground. He provided the example of the National Water Quality Initiative (NWQI). At the federal level, he continued, it is a partnership between EPA and NRCS to look at small watersheds and where there is impairment or threat of impairment related to agriculture. Mr. Lowenfish said that EPA provides the connection to water quality staff in state government while NRCS is trying to empower State Conservationists to work effectively with state water quality staff to identify watersheds where there is a particular issue that NRCS can help address, and then identify funding that can be used to address the predominantly nonpoint source issues in that watershed. Speaking to the shared vision, Mr. Lowenfish said that NRCS has long had the idea that, for impaired waters, they would try to work effectively according to a plan and involve stakeholders in formalizing it over time. He noted that part of the NWQI has been the requirement of a watershed assessment in order for funding to flow and to be delivered on the ground. Mr. Lowenfish provided an example of conservation success, detailing how a watershed in Louisiana that had roughly 20 dairies and a pathogen impairment was eventually delisted after the NWQI planning process and funding for conservation efforts on 19 of those 20 dairies. Following that process and having that framework at the national level that flows down to the local level, he added, can get results on ground. He acknowledged that not everything can happen that quickly, but they are proud of their roughly 20 delistings within NWQI watersheds across the country thus far.

Mr. Dean, focusing on the pre-disaster side, noted that one of FEMA's examples of success most relevant to this audience is the Hazard Mitigation Program's memorandum of understanding with the EPA Smart Growth Program, linking sustainable development goals with hazard mitigation actions. He said that there is a very shared vision and much overlap between those two programs. Mr. Dean also referenced the EPA Green Infrastructure Federal Collaborative, explaining that the White House Council on Environmental Quality is involved and that FEMA is leading multiple tasks on it as they look to implement the White House's Nature-Based Solutions Roadmap. He noted that it has been hugely successful but has taken significant effort, so he expressed his appreciation to EPA for standing it up. Mr. Dean then talked about the Resilient Nation Partnership Network. He noted that federal agencies are good at push marketing and pull marketing; push marketing is just pushing things at people, and pull marketing is establishing a demand for

something, producing it, and then pushing it to people. He explained that the Resilient Nation Partnership Network was designed around a community-based marketing approach, building something that attracts people. Mr. Dean conveyed that one of the things they have found to make collaborations successful is not saying anything and instead bringing in the right people to do the communication, putting the federal ego aside when others may not be interested in hearing from them. He emphasized that the engagements where all partners have a shared vision but the agency does not have credibility have been really valuable. He said that often people partner because they should, but collaboration for collaboration's sake is not always right. He added that, if there is not a shared vision and clarity of purpose, it is hard to know who the right partners are. He acknowledged that everyone only has a certain amount of capacity, so the smarter those decisions about collaboration are, the more effective and efficient the collaborations undertaken will be.

Ms. Carlson noted that she now sits in the Washington, DC office, and they are somewhat siloed there. She explained that the Forest Service is a decentralized agency, with 193 million acres spread across 37 states, and that is where the action happens, in the field. Ms. Carlson gave an example from her time in the Rocky Mountain Regional Office, explaining that a group had been out taking water samples on Forest Service land, found bacteria in the stream, and reported it to the Wyoming DEQ. She said that Forest Service and DEQ did not really have a relationship then, so there was some butting of heads, but the outcome was a memorandum of understanding that greatly improved the relationship, outlining the various roles of the Forest Service and the state. Ms. Carlson added that all the Forest Service field staff in Wyoming would get together with the Wyoming DEQ staff every couple of years to discuss issues and make trips to the field. As a specific example of cooperation, she recalled Wyoming needing nitrate and phosphorous data from high-elevation lakes when they were working on their nutrient criteria, and while the Forest Service does not collect those data, they offered to take collections when their air program was going to those lakes. Ms. Carlson emphasized that formalizing the relationship via a memorandum of understanding was very helpful in building up the relationship. She noted that the Forest Service has a memorandum of understanding with a number of states. She concluded by encouraging participants to go out in the field with Forest Service staff, adding that time in the car on trips to the field is invaluable for learning about each other and each other's programs.

Ms. Odell said that the Bureau of Reclamation also is rather decentralized, with much of the work occurring at the local level, especially with operating partners at the various dams, irrigation canals, etc. She noted that, when she thinks of collaboration, she thinks about the shared vision or, if one does not exist, at least the shared resource that all partners are working together to manage. Ms. Odell acknowledged that each participating organization may have their own goals, desires, and constraints, including legal and budgetary, so being respectful of those objectives and limitations while also looking for mutually beneficial opportunities, or just an add-on (e.g., a grab sample while doing something else), is key. She added that the small things can lead to bigger gains in collaboration and maintaining relationships.

Mr. Lerner noted that there are many good examples of collaboration within the Chesapeake Bay watershed, making it hard to pick just one or two. He first echoed some of the comments made about interagency collaboration in general, especially the need to find what interests other agencies and identify how that fits with the one's overall goals. Mr. Lerner explained that there is a shared vision of restoring water quality in the Chesapeake Bay, but with the ultimate goal of getting to the health of the ecosystem and the living resources that are there. He added that this provides a way to find collaborations and overlap with, for example, the Forest Service (e.g., forest buffers),

large-scale land protection (identifying healthy sub-watersheds and protecting them), the U.S. Fish and Wildlife Service (e.g., the health of fish habitat and fish passage), and NOAA (e.g., ocean fisheries). Mr. Lerner said that those relationships are then formalized through agreements and the structure of programs, and there is even sharing of resources at times. He noted that the Chesapeake Bay Program shares its resources with partners, and they know that the partners put money into projects on the ground that deliver results for their agency missions and the overall shared water quality goals. He encouraged all participants to think creatively about what is possible and go into conversations with potential partners with an idea of what is in it for them, not just one's own benefit.

Ms. Johnson said that this point, as well as the value of a shared vision or plan, leads well into her next question of what the most important factors to establishing successful collaboration have been.

Mr. Lowenfish noted that understanding one's own mission is really important in successful collaboration. He added that, yes, it also is important to know what the partners need, but that the conversation goes two ways, and one needs to be able to articulate what one is trying to get from the partnership as well. Mr. Lowenfish noted that NRCS has overall strategic goals, but they do not have responsibility over the water quality of a state, like those in the audience do. Thus, he continued, it is vital for NRCS to articulate its goals, capabilities, and limitations and bring them to the partnership. He acknowledged that NRCS sometimes forgets this when asking people what they need. He reiterated that one cannot be a good partner without being able to say what one can do and what one's limitations are.

Mr. Lowenfish also stressed that partnerships are constant work. He explained that NRCS is founded on being locally led; going back in time and looking at NRCS authorities, they have State Technical Committees, which are written into law and say that the State Conservationist shall work with the natural resource stakeholders to advise about priorities; there also are local working groups that are supposed to advise the priorities; and they work hand-in-hand with conservation districts. Mr. Lowenfish said that, because partnerships are such a significant part of how NRCS works, it is an advantage, but it also can be stale because they have been doing it for so long. He added that, going back to the equity priority of the Administration, it is important to always be on the lookout and not be satisfied with the current set of partners. Who is missing? Who is not in the conversation that can benefit from collaboration?

Mr. Lerner echoed the point that partnerships take work; it is critical to keep at it. He noted that they have found consistent and transparent communication to be key to sustaining interagency coordination efforts. He emphasized that this takes time. Mr. Lerner added that he has seen numerous watershed-based partnerships across the country fall apart because they do not maintain regular communication. He highlighted that the Chesapeake Bay Program has been together for 40 years and everyone is still hanging together. He attributed that largely to talking to each other all the time.

Ms. Schuldt, pointing to an example from the broader water quality restoration context rather than the TMDL-specific one, talked about the resources that have been put toward the Great Lakes Restoration Initiative and Areas of Concern since 2010, emphasizing that the results show that making a difference is possible. She added that these efforts rely on interagency collaboration. Ms. Schuldt focused on the St. Louis River Area of Concern, noting that the collection of data and the

planning and prioritization of remediation and restoration, including the Natural Resource Damage Assessment, has been a complex, multiagency effort, and the Fond du Lac Band's ability to sit at the table with state and federal partners has been critical to the success and the perceived success around the region. She noted that everyone has celebrated the fact that they collectively have managed to clean up one of the most polluted and degraded Areas of Concern on the U.S. side of the Great Lakes. She added that it has been gratifying to be recognized as a full and contributing partner in that collaboration.

Ms. Johnson noted that communication has been a common answer for what is significant to maintaining relationships, but she asked what the panelists have seen, in their experience, to be critical to building relationships.

Mr. Dean highlighted that, while collaborations and partnerships are, on the surface, between organizations, they are really between motivated individuals. He noted that, when he thinks of very good collaborations and partnerships, he thinks of trust. He added that, in the course he teaches, he has just one slide on commitment: the only thing that must be done when committing to a partnership is accountability. Mr. Dean said that he will not say "yes" to something he cannot do because it immediately removes trust from the relationship with that individual or organization. Acknowledging that the phrase is overused, he noted that it is hard to earn trust but quite easy to lose it. Mr. Dean also emphasized selflessness, that partnerships require a commitment to the service of others. He explained that, as federal staff, if someone comes to him with a question that he cannot answer, he needs to find someone who does have the answer, within or outside his agency. Mr. Dean also emphasized the importance of energy in a partnership. As an analogy, he referenced a high school chemistry experiment where two chemicals combined in a beaker did nothing, but when a magnet spinner is added and turned on, the reaction is catalyzed. Interagency coordination, he continued, requires time and energy, and it is selfless, and there are not awards for it. Mr. Dean stressed that, the best way to achieve interagency coordination is to figure out how to be persistent and annoying but likable, which is a really fine line.

Ms. Odell agreed with the importance of persistence. She added that many collaborations start with some kernel of need. She gave an example from when she was working on the San Diego Basin study. She explained that the Bureau of Reclamation was cost-sharing with the City of San Diego, and she was brought in as the technical lead and told to develop a model of the extremely complicated water supply system. Ms. Odell said she did not have enough time to develop the model, and no one would trust results because the model would be too simple. Picking up the point about how important being on the ground and connecting with people is, she noted that she went on a field trip and started talking with people from the San Diego County water authority. Ms. Odell was excited to learn that they had a model, the problem was that it was unclear whether she could use it because it was developed with a consultant. She referenced back to the importance of persistence, continuing to ask whether it would be possible to work on the model together. Through that process, she continued, the Bureau of Reclamation was able to use the model, and that study turned out much better than it otherwise would have, if the project was done more in isolation. She explained that the model had been used for other planning studies and was trusted by all of the stakeholders. Thus, she noted, they could talk to people about the potential impacts derived through the model, and people knew the model and trusted it. She concluded by reemphasizing the value of persistence, starting with that kernel of need, and being willing to pursue it.

Ms. Schuldt provided an example of collaboration between several of the Ojibwe Bands in Minnesota and the University of Minnesota. She explained that some early-career research scientists decided that they wanted to work with the tribes on wild rice. She clarified that wild rice is an important cultural and natural resource to the Ojibwe People and the Dakota People in that region. Ms. Schuldt said that these researchers thought that they knew what the issues, priorities, and questions were; they got a million-dollar grant and only then started reaching out to the tribes, expressing their interest in collaborating. She stressed that this is absolutely not the way to start a collaboration, and not the way to earn trust, to come to a shared vision, to honor and respect cultural differences, or to recognize the fact that the tribes have been managing and protecting sustainable stands of wild rice for eons. Ms. Schuldt said that the tribes persuaded the researchers to take time to take a step back. She noted that it took more than a year to develop relationships between the researchers and tribal communities, leaders, and staff. Only then, she continued, did they get to the conversations about priorities and what a shared vision could be. She said that it has turned into one of the best examples of how parties from different walks of life can come to a respectful and mutually beneficial collaborative process.

Ms. Johnson said that this example reminded her of one where people delivered trees for the community to plant, but the community did not ask for trees, so they never got planted. She noted that it is done far too often, someone decides to do something without consulting the people who would be most affected. She highlighted that this is part of meaningful engagement in environmental justice: start with who will be affected before beginning the planning process and have them at the table from the beginning, to see what they need and want. This led Ms. Johnson back to the question of how the collaborative process begins, whether it starts with the mission, and then the right partners are identified.

Mr. Lowenfish answered that, recognizing the fundamental element of trust, the relationship almost always has to come first. He provided an example from 2013, explaining that the Chief of NRCS and the Chief of the Forest Service had a good relationship and came up with the idea to work across the public-private boundary. He noted that this collaboration has been successful on the ground, is now called the Joint Chiefs, and was recently authorized in the Bipartisan Infrastructure Law as its own program. Mr. Lowenfish summarized the point of the story as the existing relationship provided fertile ground for a good idea. He added that it works on levels, demonstrated by the fact that Montana and Oregon have many Joint Chiefs projects because the NRCS State Conservationist and the Regional Forester have a good relationship and talk all the time, so they are able to develop good projects. He clarified that those pairs are not just coming up with good projects on their own, but they have relationships with various and overlapping groups of people on the ground, whether watershed groups, tribes, or farm groups; they are able to bring people together and showcase an opportunity, or great ideas can be brought to this trusted partnership.

Ms. Johnson then shifted the topic of the discussion, asking the panelists about the barriers to collaboration they have experienced and how they were overcome.

Mr. Dean responded by identifying resource management as almost always the biggest problem. Despite the many instances of time and effort having been identified by the panel as key components of successful collaboration, Mr. Dean said that he has yet to see an agency create positions just to do that. He noted that FEMA has federal coordinating officers, but only post-disaster, adding that they are evaluating how to create that type of structure on the front end to

manage resilience. Mr. Dean acknowledged that it is difficult to go to management and say there is not enough staff, but this is where partnerships can be beneficial: if the homework has been done and the introspective work to evaluate one's organization has been done, partnerships are a tool to overcome resource constraints. It is possible to research organizations that have the capacity (e.g., five staff to devote) to help achieve the desired ends. Mr. Dean admitted that this takes significant effort; one must do the research and have the "partner speed dating" for compatibility. He said that his team has worked to overcome this hurdle by investing in the research on the front-end, including analyzing how to better communicate value and the mutual value proposition of those partnerships.

Mr. Lerner noted that the Chesapeake Bay Program is committed to an adaptive management process, including their strategy review system, where they get together on a biennial basis to talk about how things are going and get feedback from the partnership on what is and is not working. He explained that they have used that system to identify challenges and make tweaks and changes. He also highlighted the need to think about sharing resources, especially understanding whether people have resources to support their time to participate in the process, as well as considering when meetings should occur to make it easier for people to participate. Mr. Lerner added the importance of thinking about deploying resources in a way that gets to the larger goals of the overall effort, which could be in supporting the capacity of the partnership rather than just how much money can go to the restoration project.

Ms. Johnson opened the session to questions from the audience. One participant asked the panelists how their respective groups renew failed relationships and collaborations, including accepting accountability for shortcomings. Mr. Dean noted that he works for an agency that has one of the lowest levels of public trust in the federal government, which is not to say that it does not have a great mission and great people working hard, but sometimes he just needs to take the criticism, often for programs and activities in which he is not involved. He emphasized that there must be a level of humility; people make mistakes, and the federal government is not super agile, as much as it would like to be. Mr. Dean said that sometimes one just has to be a good steward of the organization and say, "we were wrong," understanding that there are certain limitations on when one can and cannot say that. He added that, if one is truly invested in advancing one's agency's or organization's mission, one has to be a good human, listening and connecting the speaker to the right person. Mr. Lerner responded by noting that the Chesapeake Bay Program tries to own up to what the data say is the status of the health of the system, adding that they have 10 different goals and 31 different outcomes, and they know that they likely will not reach some of their 2025 outcomes. He added that they have started a process to think about what they are going to do about those situations, looking beyond 2025. Mr. Lerner also mentioned that the Chesapeake Bay Program has an independent Science and Technical Advisory Committee, and their recommendations are something that the Program needs to react to, adapting when not succeeding. Ms. Schuldt responded to the question by noting that, when relationships and collaborations have stalled or failed, they often have turned to invoking the trust responsibility of federal partners and requesting consultation with the State of Minnesota. She added that the current Governor of Minnesota has made tribal relations a priority, and there are tribal liaisons within each of the state agencies, which help.

Another participant asked what makes for a good shared vision for collaboration, what key components are, as there can be vagueness and different intentions within a written vision. Mr. Lerner responded to the question by noting that legislation created the Chesapeake Bay Program,

so they had something with which to start, most notably the goal of restoring water quality and the overall health of the Bay ecosystem. He said that the legislation was the foundation of the subsequent watershed agreement, which has far more detail than the legislation and has been refined over time. He highlighted that the legislation, along with the clarifications and refinements in the agreement, effectively have provided the shared vision for the collaboration. Mr. Lowenfish noted that, since NRCS offers voluntary assistance, people have to want what the agency can provide. As a result, he added, NRCS needs to look at more than just the resource, to the "win" for the landowner, such as the operation, yield, or expenses. Mr. Lowenfish said that, with the Great Lakes Restoration Initiative focus and funding, NRCS has been able to invest in demonstration farms, showcasing new practices and conservation systems to other potential adopters – again building demand for what NRCS can provide. Ms. Johnson emphasized that a successful collaboration may not have completely successful results, but establishing a vision in the beginning provides a common understanding as to the objectives and the benefit to the partners and beyond, which prompts commitment and allows for assessment through the life of the effort.

Another participant asked whether a durable collaboration can start from the bottom and rise up to leadership, or whether it must be top-down. Mr. Lowenfish said that it can go from the bottom up, though it is important to have the leadership on board. He referenced the fact that political leadership changes in the agencies, and it can be very helpful to have staff from multiple partner entities communicating the benefits of the collaboration to that leadership. Mr. Lowenfish also emphasized the value of having documentation, whether a vision or process, to help with continuity during staff turnover. Mr. Lerner noted that he is in a partnership branch at EPA, and he feels as though everyone on the team is good at making partnerships, so relying on the leaders is not necessary, nor is it efficient. He also mentioned the value of co-location, explaining that their office has staff from EPA, Forest Service, Fish and Wildlife Service, and others, which facilitates relationships. Mr. Dean said that the buy-in of high-level leadership is not always necessary, but advocates are vital. He told the story of how, when he took over the Resilient Nation Partnership Network, there were 80 partners and no real idea what they were strategically using it for, and leveraging it properly would take time. He explained that his supervisor fought leadership for months, and now the Network is over 1,600 organizations; the advocacy was vital to the bottom-up efforts. Ms. Carlson reiterated that, in the Forest Service, the soil and water staff are not in charge of much of what happens on the ground, and if they want to get something done, they need to talk with colleagues in timber harvests, grazing, mining, etc. She added that leadership cannot be on top of everything, so it is important for staff to take the initiative where they are to create the collaborations internally and externally to get the job done, and then, hopefully, as it gets to leadership, they will support it.

Mr. Schempp asked the panel what lessons they have learned about sharing data across agencies, including keys to doing that efficiently and effectively given the technological and administrative challenges to doing so. Ms. Odell said that she sees two main ways of sharing data: (1) directly to an individual or a group, so one knows how the data will be used, the desired format, etc. and (2) publishing data, making it open to anyone, which has become more common among federal agencies since the passage of the Open Government Data Act and other momentum related to data sharing and open data. She added that the second one is very powerful, but from the standpoint of someone collecting the data, this approach can be challenging given the uncertainties around how people will use the data, the format needed, etc. Ms. Odell said that, when sharing data, FAIR (findable, accessible, interoperable, and reusable) is important to keep in mind. For example, she elaborated, are the data findable in a catalogue or webpages optimized for search engines;

accessible online; available in an interoperable, standardized, machine-readable format; and documented with metadata to be reusable? She acknowledged that documenting metadata in particular is very difficult and time-consuming. She noted that much of her role involves working with data stewards to do the metadata work when the information is fresh, making it easier to share the data later. Mr. Lerner echoed much of what Ms. Odell said, highlighting the importance of clear, agreed-upon protocols and procedures for data sharing as well as establishing clear deadlines as to when the data are processed and released, which follows the suggestion of being a professional nudge. He added that it is important to make sure that the information is publicly accessible to ensure transparency. Mr. Lerner noted that so much of data management is done in R and Python to document the process, capturing metadata.

Continuing the answers, Mr. Dean noted that FEMA has been working on the future of flood risk data and, flipping the question, their biggest effort is to know the audience. He explained that there are many people who want to use flood risk data, and many who do not use it. When doing listening sessions, he recounted, he wanted to know why people were not using flood risk data and how it could be delivered in a way that will make it useful. Mr. Dean said that there are different user groups, and in the case of flood risk data, there are some people who want FEMA to tell them exactly what should be done, others who know the flood risk data but want to add to it with local data, and then there are the super users. He emphasized that none of those people get data the same way, and it is important to recognize that when considering the ways in which the data are made available. Ms. Schuldt said that, in EPA Region 5, there are 35 tribes with monitoring programs, and when using CWA Section 106 money to collect data, there are reporting requirements, including the quality assurance and metadata. For small programs like tribal water programs with significant staff turnover, she continued, those requirements have been a huge hurdle. She noted that they have taken advantage of the National Environmental Information Exchange Network funding and created a Region 5 tribal consortium, with a contractor, to develop a regional tribal water quality database. Ms. Schuldt said that several rounds of funding and ten years later, more than 30 tribes in the region are using that database, fulfilling the reporting requirement of getting the data migrated into WQX, at a level that was not possible before. She added that there is hands-on technical support to keep it sustainable as the tribes experience staff turnover, and the database gives them control to do regional analysis. Mr. Lowenfish noted that challenges in sharing NRCS data is not simply a technology issue, or a willingness or partnership issue; it is a legal issue, with laws preventing the agency from sharing those data with anyone who isn't helping to deliver USDA financial or technical assistance. He added that state agencies and other partners can have that role, but those data are then for a specific purpose, not general use. From this point, he highlighted how vital it is to explain communication restrictions and other inabilities that an agency has in order to have a productive conversation.

Session 3: Data Resources and Communication Tools

This session featured four presentations followed by a question-and-answer period facilitated by Shelly Thawley of the Water Data Integration Branch at EPA Headquarters. The presenters identified ways in which EPA and states are using data application resources and communication tools in program activities to better leverage data and communicate impact to a wide and diverse audience. The presentation slides from this session can be found here.

(1) Kiki Schneider, IT Specialist, Water Data Integration Branch at EPA Headquarters

Ms. Schneider began her presentation by explaining that she revealed a prototype of How's My Waterway at this workshop four years earlier, adding that many in the room were there and provided feedback. She noted that the tool has been publicly available online for three years. She explained that many additions to How's My Waterway have been made since June 2020, but most of that has happened in the prior ten months. Since some of the participants were not familiar with the tool, Ms. Schneider said that she would start with a brief overview before focusing on the new features. She noted that How's My Waterway is "map-centric" and allows everyone to learn about their water quality. She added that EPA intended for the tool to make it easier for state, territorial, and tribal staff to do their jobs and for students and teachers to become educated on water quality. Ms. Schneider explained that the tool provides a picture of water quality at three different levels: community, state, and national, noting that the community level has the most data. She said that the data come from twelve different databases at EPA and other federal agencies, pulled in through web services, so no data are stored or refreshed in How's My Waterway, just reflected there. Ms. Schneider described the objective of the tool as inspiring people to take action to restore and protect their waters and allowing states, tribes, territories, and EPA to communicate the progress made on their restoration and protection efforts. Expanding on the sources of data for How's My Waterway, she noted that the tool started with only three databases (ECHO, ATTAINS, and the Water Quality Portal), with nine more having been added since then, the Cyanobacteria Assessment Network (CyAN) algal bloom data being the most recent addition.

Ms. Schneider then spoke about the tool's newest features. She started with new map features, including: the "surrounding features widget," which provides users the ability to turn on four different layers (USGS sensors, permitted dischargers, assessed waterbodies, and monitoring locations from the Water Quality Portal) outside of the HUC12 selected, negating the need to do another search to see information on nearby areas; the "portable map widget," which allows users the ability to export selected layers to their personal ArcGIS Online account; the "permitted dischargers" feature, which allows users to look at the general permits, including nonpoint source permits, and to filter the permitted dischargers by permit component, with data supplied by ECHO; and Monitoring Tab enhancements, including the addition of a date slider that enables users to see the date range of all the data for the selected watershed as well as monitoring report pages where data can be viewed as a chart and downloaded by characteristic group.

Ms. Schneider then spoke about the new cyanobacteria data in How's My Waterway, NASA satellite data from the CyAN API at EPA. She noted that it relays cyanobacterial bloom data for over 2,000 of the largest lakes and reservoirs in the U.S. She explained that the data can be viewed as a chart of a waterbody's estimated concentrations from the prior week. Ms. Schneider also highlighted the recent addition of CWA 319 watershed plans from the GRTS database, allowing users to access the files directly from How's My Waterway. She then explained that How's My Waterway now has eighteen tribal pages, housed with the state and territorial pages, that allow users to access the list of waterbodies and monitoring stations and monitoring report pages as well as to view cultural uses that have been added by the tribe in ATTAINS. She also referenced the Educators Page that features lesson plans and videos for educators. Ms. Schneider concluded by providing demonstrations of how to use several of the new features that she had mentioned.

Ms. Thawley noted that How's My Waterway has become one of the most visited webpages on the EPA website, and the interactions that they have had with the education community have been very productive, hopefully encouraging the next generation of water quality specialists.

(2) Alex Porteous, Ecologist, Water Data Integration Branch at EPA Headquarters

Mr. Porteous provided brief background on the Internet of Water, which he said was developed after 2016-2017 roundtable discussions centered on federal leadership advancing water data management and infrastructure. He noted that the 2017 report by the Aspen Institute entitled *The Internet of Water: Sharing and Integrating Water Data for Sustainability* helped to document the need for the Internet of Water and led to several recommendations, including to enable and increase open and discoverable water data, integrate existing public water data with tools to facilitate connections from data producers to users, and to connect regional data sharing communities. Mr. Porteous added that the National Internet of Water Coalition is now led by the Lincoln Institute. He explained that, where the rubber meets the road for this concept, and where EPA has been heavily involved, is in answering common questions about water, like whether the water is safe to drink, whether it is safe to swim in, whether the fish are safe to eat, and what is being done to fix or protect the water. He framed the Internet of Water as methodology for how to approach the science behind answering those common questions.

Mr. Porteous then laid out the four principles that came out of the 2016-2017 discussions:
1. Standards, creating consistent data quality;
2. Metadata, promoting efficiency and secondary uses;
3. Common hydrography, enhancing data indexing and making possible the layering of information to provide a more complete story about a particular location; and
4. Discoverable and searchable, supporting distribution, equitable data access, and reproducibility.

He pointed to How's My Waterway; WQX, especially the data standards; and ATTAINS and Water Quality Portal web services, creating water data stewards at the product ownership level, as prime examples of implementing the principles of the Internet of Water.

Mr. Porteous went on to highlight two EPA case studies that underscore the need for Internet of Water consistency. He first spoke about the Advanced Water Mapping and Analytics initiative, which he described as an interagency workgroup (EPA, USGS, NOAA, USFWS, and the Army Corps of Engineers) partnering to align water resource interests of different agencies and accelerate improvements to hydrographic data. He framed this initiative as interagency collaboration to support the framework datasets of NHD and the National Wetlands Inventory. Mr. Porteous then described the Office of Water (OW) and Office of Land and Emergency Management (OLEM) Agency Priority Goal (APG) as a relatively rare cross-media APG, seeking to clean-up contaminated sites and invest in water infrastructure to enhance the livability and economic vitality of overburdened and underserved communities. He framed the APG as reflecting the J40 equity-based approach to targeting technical assistance. He explained that the initiative was designed to promote collaboration between OW and OLEM in communities where there were both water and land and emergency management projects to facilitate a joint approach to creating greater outreach to communities through environmental remediation projects. Mr. Porteous said that the pilot communities were identified through a web map screening tool using EJScreen and over forty programmatic datasets from OW and OLEM in a curated layer list. Mr. Porteous expressed excitement over

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being able to create such a practical tool in a short amount of time using the principles of the Internet of Water. He concluded his presentation by emphasizing that water data are foundational to all programmatic activities and inform the daily decisions of water resource managers. He added that the Internet of Water and its principles are a way to provide those data in a consistent and impactful way. Mr. Porteous also stressed the importance of ensuring that data submitted to EPA are not just going into a black box but are leveraged across EPA applications and federal partners as well as packaged up for the public in a consistent way.

Ms. Thawley reiterated the importance of the Internet of Water as a way to describe program work using common language and ultimately to communicate that work more broadly.

(3) Cristina Mullin, Biologist, Water Data Integration Branch at EPA Headquarters

Dr. Mullin began her presentation on a variety of tools that support efficient and reproducible water quality assessments by noting that she would be covering past progress and the future vision for those tools. She emphasized the importance of common terms for building interoperability between the many different systems being used. Dr. Mullin then provided background on terms used to describe water quality standards information, to provide context for the rest of the presentation, especially the part about EPA's Criteria Search Tool. She explained that water quality standards are made of three components:
1. Criteria, which are the limits on magnitude, duration, and frequency for specific parameters that support the waterbody's designated uses, and parameters can be chemical (e.g., concentrations of substances) or physical (e.g., temperature, flow conditions, or clarity);
2. Designated uses, which are the expressed goals for using the waterbody, including support of aquatic life, human health, and recreational uses; and
3. Antidegradation requirements, which provide a framework for maintaining and protecting water quality that already has been achieved.

Dr. Mullin shared that EPA has been developing and maintaining data resources and tools for decades as part of the previous Water Quality Framework and now the Internet of Water. She identified the objective of this work being the facilitation of efficient and reproducible water quality assessments and streamlined electronic reporting of water conditions. Dr. Mullin said that this goal of streamlining water quality assessment and reporting already has started to become a reality through development and integration of new and existing data systems. She noted that, in the past, water quality monitoring data and waterbody conditions information were not standardized or stored in centralized locations and could not be easily shared, used, or summarized at the national scale. She added that information was buried in documents, spreadsheets, and PDFs. Dr. Mullin explained that these once-hard-to-find data are now discoverable and queryable from centralized systems and have proven to be much more valuable in this format. She said that, conceptually, this applies to all kinds of water data, from water monitoring samples, to results from assessments regarding conditions, to water quality standards information.

Dr. Mullin noted that, today, multiple data resources exist to support these data types. The Water Quality Portal, she continued, is another good example of collaboration between agencies (EPA and USGS), and it is the largest water quality warehouse in the U.S. She added that the Water Quality Portal contains 400 million water quality records from over a million locations nationally and over 1,000 data providers, including every state, territory, and over

100 tribes and nations. Dr. Mullin then turned her focus to ATTAINS, explaining that it allows states to store information about the conditions of surface waters, including which ones are meeting and not meeting water quality standards for their specified designated uses.

More recently, Dr. Mullin said, EPA's Office of Science and Technology developed the Criteria Search Tool, which provides water quality standards information in effect under the Clean Water Act for most states, territories, and authorized tribes in a standardized and queryable format. She suggested that the tool has opened new doors and that it could be a key missing piece to produce more efficient and reproducible assessments. Dr. Mullin noted that the tool is still under development and does not currently include narrative standards, duration, frequency, or methodologies information, but it does point users to the exact page of documents where that information can be found. She added that each state, territory, and authorized tribe has a webpage with additional details and documents. Dr. Mullin explained that, so far, the tool has been implemented with a modest scope, although it can build over time, and it includes criteria magnitude values organized by parameters and each state's direct application to the designated uses or indirect application to a specific waterbody, all other waters, or a class of waters for that parameter. She also noted that EPA's national recommended water quality criteria are included, and the tool is continuously updated with new and revised water quality standards.

Dr. Mullin then provided an example of a search in the Criteria Search Tool for all parameters applicable to a specified use within a jurisdiction, using aquatic life use in the Pueblo of Tesuque. She said that one also can search for all the different criteria magnitude values that apply, depending on the use for a specific parameter, employing as an example mercury criteria that apply to aquatic life use for different classes of water in Connecticut. Turning to a different function, Dr. Mullin noted that one could look at the same information across all states, territories, and recognized tribes included in the tool; for example, searching for dissolved oxygen criterion magnitude values across the board, or for specific magnitude values or specific applications. She added that the tool can be helpful in some cases for criteria development, providing examples easily. She encouraged all participants to see what is represented for their respective states, territories, and tribes, and she invited feedback, highlighting that the tool is still in development.

Dr. Mullin talked about some of the integration challenges, such as the many synonymous names for specific designated uses or parameters, varying between states and across ATTAINS, the Water Quality Portal, and the Criteria Search Tool. She added that what historically has worked for one system may not work well for another system. This, she explained, makes harmonizing use and parameter synonyms very difficult, but she said that they are collaborating across EPA and leveraging their Substance Registry System and Office of Water Internet of Water Workgroup to work on developing crosswalks. Dr. Mullin suggested that, if fully connected in the future, water quality standards information from the Criteria Search Tool could be mappable and searchable alongside Water Quality Portal monitoring data and ATTAINS water quality conditions information. She noted that this would allow the public and environmental professionals to easily view an impairment decision alongside associated monitoring data and water quality standards information that were used to make that decision, possibly in a tool like How's My Waterway.

Combined, Dr. Mullin explained, these data resources laid the foundation for the development of other tools, such as Tools for Automated Data Analysis (TADA). She noted that TADA encompasses an R package for programmers and an R Shiny application for non-programmers, all currently under development, and new features are added every month. She said that TADA is designed to help organizations more efficiently compile and assess Water Quality Portal data collected from surface water monitoring sites. Dr. Mullin highlighted that, once finished, TADA is intended to help meet certain user requirements such as data discovery and cleaning, Water Quality Portal site and ATTAINS assessment unit integration, criteria and methodologies integration, and assessment unit use parameter level analyses in a format compatible with ATTAINS. She added that many states have similar tools that work for them internally, but EPA is trying to develop flexible tools that will be accessible for use by other organizations.

In conclusion, Dr. Mullin emphasized that all of the data resources and tools, including WQX, ATTAINS, the Water Quality Portal, the Criteria Search Tool, TADA, and How's My Waterway, have dramatically improved workflows, freeing personnel previously involved in data process steps like aggregation and compilation to instead focus on things like data analysis and policy implementation. She added that the information contained in these data systems and tools is regularly used to make Clean Water Act decisions, such as whether the water is fishable or swimmable. Dr. Mullin said that it not only informs the public but informs studies and advancements in academia and informs EPA actions, such as compliance monitoring and the establishment of permits and water quality standards. To make the tools as effective as possible, she encouraged everyone to work together and follow the Internet of Water principles for data sharing.

Ms. Thawley noted the interest that the Criteria Search Tool has garnered, including in the huge data mining effort that went into developing it and concern about the time stamps, various versions, and challenge of keeping all this information timely. She reiterated Dr. Mullin's call for review and feedback, adding that it is still a fresh tool. A participant asked how often the Criteria Search Tool is updated and how standards that are calculated values are handled. Ms. Thawley prefaced the response with the fact that the tool is not theirs, just one that they thought could be a missing piece of the puzzle, so she encouraged participants to view the Office of Science and Technology's methodology, adding that they have been receptive to suggested improvements to the process. Dr. Mullin added that the Office of Science and Technology does their best to update the tool whenever EPA approves a new water quality standard, but she again emphasized the value of more reviewers. With regard to calculated criteria, Dr. Mullin explained that the tool will note that the value is calculated and point to a PDF with the equation for the calculation. A virtual participant commented that the Criteria Search Tool opens the door to water quality standards monitorization, but the success of ATTAINS was dependent on buy-in and participation from states, and the fact that states own and upload their own data. She asked whether the Office of Science and Technology considered moving to that approach for the Criteria Search Tool. Dr. Mullin responded that this approach had not been considered yet, but she agreed that the success of the tool will depend on collaboration between states and the EPA Regions. Dr. Mullin noted that she would take the suggestion to the Office of Science and Technology.

(4) Alan Ochoa Rodriguez, Integrated Report Coordinator, Utah Department of Environmental Quality

Mr. Ochoa Rodriguez explained that he would be providing an overview of some of the mapping tools that they use in Utah, specifically Leaflet and Google My Maps. He noted that they use the Leaflet R package for site validations for Integrated Report assessments and to display the Integrated Report results to the public. He said that they use Google My Maps primarily to inform the public of Harmful Algal Bloom and Waterborne Pathogen advisories. Mr. Ochoa Rodriguez described Google My Maps as a web-based interactive mapping tool that allows the user to create custom maps with custom icons, colors, lines, and shapes. He added that it is very user-friendly, for the public and whoever is managing the map. He explained that, when users click on a point on the map, they will see a list of information on the waterbody and details on the advisory (whatever the manager of the map wants to include). Mr. Ochoa Rodriguez highlighted as one of the biggest benefits of Google My Maps the fact that a map can be developed in a couple of hours, with the ability to import many file types, including .csv files and Excel files. He added that a downside to the tool is that updates must be done manually. He mentioned that they monitor for harmful algal blooms and waterborne pathogens in some waterbodies on a weekly basis, which results in frequent manual updates. Even then, he explained, it is easy to make the updates.

Mr. Ochoa Rodriguez then turned to site validations for the Integrated Report, noting that they use a combination of Leaflet and Shiny. He said that Leaflet is a R package for creating custom maps with custom shape files, layers, and basemaps, on which data can be overlayed. Shiny R package, he continued, is used to create interactive web applications that respond to user input, a feature that he identified as key. He added that it is used to create dashboards that help visualize, explore, and interact with the data in many different ways. Mr. Ochoa Rodriguez explained that they have an internal app that they use for the site validations, employing Shiny and Leaflet to import data in an Excel file and display it via a map. He demonstrated a drop-down menu on the map with options for different flags applied to the data, including review needed, accepted, rejected, and further review. He emphasized that these menus simplify the process of data exploration – instead of being overwhelmed with thousands of monitoring location sites, they can focus on narrow areas for specific issues or patterns. Mr. Ochoa Rodriguez then demonstrated a second drop-down menu with different reasons that sites were flagged. He explained that the data they imported was run through a R function that ran a series of attributes, spatial, and duplicate checks, rejecting sites based on unassessed site types, duplicated latitude and longitude, or the monitoring location type not matching the assessment unit type. He added that, being able to filter through multiple options dynamically changes what options they will see and allows them to really narrow down to weird case scenarios.

Mr. Ochoa Rodriguez detailed some of the features of Leaflet, including the ability to add basemaps, such as the option of a topographic or satellite map, and to add custom layers, such as an assessment units layer that shows the boundaries of all of the assessment units in the state. He noted that another major benefit of using Shiny and Leaflet together is the ability to see via the Leaflet map what is going on and to manipulate the data directly in the dashboard via Shiny. He provided an example of how the data can be manipulated in the dashboard. Mr. Ochoa Rodriguez then talked about how they use Leaflet to publicly display Integrated Report results. He showed a map of Utah with assessment units color-coded by the category, from fully supporting in green to not supporting and a TMDL required in red. He noted that Leaflet

offers the option to add pop-ups, and in the map he was showing, the pop-ups provide details about the category and any parameters for which the waterbody is impaired. He stressed that the map has been a "game changer" for sharing the results of the Integrated Report – instead of having to manually review the results to answer questions from the public, they can simply direct people to the map. Mr. Ochoa Rodriguez added that the map is easily updated because the code that created the map simply reads a .csv file, so they just need to change the .csv file to accomplish the update.

In conclusion, Mr. Ochoa Rodriguez identified some challenges and lessons learned. For Google My Maps, he said that, with the benefits of an intuitive design and a speedy development process are the downsides of being limited to points and lines, not being able to filter, needing to work with small datasets because of the inability to filter, and the need to perform updates manually. He added that Google My Maps is great for simple static maps. Mr. Ochoa Rodriguez noted that the biggest benefit of Leaflet is the ability to pair it with other R packages and tools, allowing for the filtering of data and working with large datasets. He also noted that Leaflet is open source, with many resources available to create any map. Yet, he added, it requires a longer development time and some R knowledge.

A participant commented that one of the biggest challenges that he thinks many agencies might have with R-Shiny is the fact that there are two services, an internal enterprise service that tends to be more expensive and the cloud service. He added that, in his state, they have tried since 2019 to get R-Shiny, and they still do not have it, so he asked Mr. Ochoa Rodriguez which pathway Utah used to get R-Shiny. Mr. Ochoa Rodriguez said that he did not know, but the app that they use is an internal one, so they can run it locally. He also noted that the map that they display publicly is just an HTML widget hosted on GitHub pages. Ms. Thawley added that EPA also has struggled with getting R-Shiny available in a publicly accessible way. She said that they have had it internally for many years and have moved to cloud.gov for that kind of hosting.

Another participant commented that her state's water quality standards triennial review was approved within the prior month, and she wanted to know who is responsible for informing EPA that the Criteria Search Tool needs to be updated. She added that their standards are on EPA's website, but the tool is not reflecting the new standards. Ms. Thawley responded that it is EPA's responsibility, but she identified as an action item for her and her colleagues to learn more about the Office of Science and Technology's process for this tool, to be able to answer these types of questions more completely. She added that the Office of Science and Technology has a refresh schedule, but she thinks that it is roughly every six months. The participant commented that her state has been pointing people to EPA's website, waiting for EPA to post the new standards, and now they are posted there, but people using this tool will not get accurate information. Ms. Thawley remarked that her office has not been suggesting that people use the Criteria Search Tool operationally because it is not theirs, and they are still trying to figure out how to integrate it into a bigger system with its caveats like this issue. She added that the Office of Science and Technology is receptive to this kind of feedback, but there just needs to be a process for getting suggestions to them.

Yet another participant asked Dr. Mullin what remains to be developed in the Criteria Search Tool and when it is expected to be finished. Dr. Mullin reiterated that the tool is not theirs, rather that of the Office of Science and Technology, but some of the things that they have heard or discussed that might be helpful to include in the future are magnitude values, frequency information, and

equations for standards being in the tool rather than in a referenced document. She said that there are opportunities to build on it over time, but before adding new things, there is a desire to nail down the process for updating the tool. Ms. Thawley explained that the concept for the Criteria Search tool began with a recognition by the Office of Science and Technology that there is substantial information tucked away in documents, and they were trying to make accessing it more convenient. Since then, she added, they have learned of the more interesting uses that could be made of those compiled data. She explained that the Office of Science and Technology is in a position to address some of these requests, but she highlighted that they did not start this endeavor with this use case in mind, so this really is just getting started. The participant who asked the question added that her state is working on a public-facing criteria search tool, suggesting that it would be productive to connect her state's staff with EPA staff, to which Ms. Thawley agreed.

The same participant then asked for a high-level overview of how TADA differs from ATTAINS. Dr. Mullin replied by explaining that ATTAINS is where decisions about whether waterbodies meet or do not meet water quality standards go; it is basically the last piece of the assessment process: sharing those determinations in a standardized format. She then clarified that TADA is more of an analysis toolbox, helping to create tools that make repetitive or common analysis processes more efficient and easier to do, using R programming or R-Shiny for non-programmers. As of the moment, she continued, TADA includes things like data wrangling, quality assurance and control, data reorganizing, unit conversions, and addressing synonyms in the Water Quality Portal for different parameters such as nutrients. The participant then asked whether TADA is just internal for EPA, to which Dr. Mullin responded that it is not, that it is available through a public EPA GitHub account, so people can access the R package now. She encouraged everyone to do so and use it. She also referenced the R-Shiny application for the early steps just mentioned, available through cloud.gov, adding that it is still in development, and they would appreciate feedback. Ms. Thawley noted that this is a community-development effort, an innovative approach for EPA; it is all out there for people to not only access and test but to contribute code, if so inclined.

Another participant complimented all of the work on the Criteria Search Tool, highlighting how much it advances the opportunities over what was previously possible. He then asked how the synonym issue (different names for effectively the same criteria or pollutants) can be addressed, and once addressed, whether the intent is to ensure that the same criteria/pollutants will link up in How's My Waterway, ATTAINS, etc. so that there is a through-line from start to finish. Dr. Mullin said that this is the vision, but she acknowledged the challenges. She noted that much work has gone into a national term for designated uses that would have a slightly different terminology in the actual state, tribal, or territorial water quality standards documentation, but added that the Criteria Search Tool developers in the Office of Science and Technology have done a good job of creating that generalized term and making that available in the Criteria Search Tool. The benefit of having a national term for each use, she continued, is that a query for that use would yield all synonymous designated uses/parameters across states and tribes. Dr. Mullin clarified that all this is just within the Criteria Search Tool, but they also are working on a crosswalk between designated uses submitted in ATTAINS and the uses in the Criteria Search Tool. When ready, she said that they will solicit feedback from states and tribes on this crosswalk. The participant then commented that the update frequency for water quality standards seems to be driven by the Water Quality Standards Actions Tracking Application (WATA), EPA's system for tracking water quality standards submissions, and noted that there should be an opportunity to check for updates more frequently through that tool.

Session 4: Incorporating Climate Change and Environmental Justice Considerations into Program Activities

This session featured four presentations followed by a question-and-answer period facilitated by Adam Schempp of ELI. The presenters identified ways that EPA and states are making progress toward incorporating climate change and environmental justice into program activities. Mr. Schempp framed the discussion by noting how prominent climate change and environmental justice are in the Vision. He also highlighted that climate change and environmental justice overlap in numerous ways, from impacts to tools and approaches, and while the presentations would cover the two topics separately, the question-and-answer period after the presentations would address them in tandem. The presentation slides and materials from this session can be found here.

(1) Dylan Laird, Biologist, Watershed Branch at EPA Headquarters

Mr. Laird began with an outline of his presentation, which he said would review the structures that EPA has been using to develop the plans and activities regarding climate change for the CWA 303(d) Program as well as key items on which EPA has been working, including the *2024 Integrated Reporting Memorandum* (2024 IR Memo) and the draft climate/TMDL white paper. He explained that there were two relevant executive orders in 2021, with the *Executive Order on Tackling the Climate Crisis at Home and Abroad* more directly leading to EPA's Climate Adaptation Action Plan of October 2021. Mr. Laird highlighted Goal 1 of that plan, Tackle the Climate Crisis, specifically Objective 1.2, which provides quantitative metrics to assess impact. He reminded participants that last year, during the virtual workshop, Stephanie Santell of EPA Headquarters spoke about the plan's development, which he noted has since been finalized as the *Office of Water 2022-2026 Climate Adaptation Implementation Plan*, which has three goals: 1) improve the climate resilience of America's water infrastructure, 2) protect the nation's waters from the impacts of a changing climate, and 3) advance the adaptative capacity of the water sector and climate knowledge of all communities and decision-makers.

Mr. Laird expanded on EPA's objectives and priority actions aimed at advancing a climate-ready CWA 303(d) Program, including assessment, listing, and TMDLs. He explained that, in FY22, EPA accomplished all of its objectives – completing the Vision climate focus area, developing the draft 2024 IR Memo, developing the draft document to support the consideration of climate change in developing and implementing TMDLs, and holding a national training and stakeholder meeting covering multiple climate-related CWA 303(d) topics. He added that EPA has issued the 2024 IR Memo, which includes a discussion of climate change considerations, and plans to release the finalized document to support the consideration of climate change in developing and implementing TMDLs soon. Mr. Laird also highlighted ELI's compendium of approaches to incorporating climate change into the CWA 303(d) Program as a resource. He then expounded on the Vision document, noting that many of the more significant efforts currently underway stem from the Vision's emphasis on incorporating the impacts of climate change in CWA 303(d) activities. Mr. Laird also thanked everyone for their input on the 2024 IR Memo and explained that certain detail on considering climate change was moved to the appendices so as not to overburden the main body of the text. He listed the primary concepts regarding climate addressed in the Memo: climate change impacts on attainment of water quality standards (criteria and uses), vulnerable communities and populations, coordination with monitoring programs, assembling data and information,

evaluating/weighting data and information, appropriate uses of category 4c, and identifying priorities for TMDL development.

Mr. Laird then turned to the draft climate/TMDL white paper, describing its purpose as providing a resource for how to start thinking about climate change in TMDLs. He acknowledged that it will not cover every situation, but hopefully serves as a good starting point. He explained that the process of drafting the document has been lengthy, including modeler and state input, with rounds of restructuring to focus and expand on the specifics of what the intended users would find most important. He thanked everyone involved, naming Richard Wooster, Kristy Fortman, and James Hogan. Mr. Laird explained that the document consists of three major sections (prioritization, TMDL development, and implementation), adding that public engagement is featured throughout, with two sections on adaptive management. He concluded by clarifying that the document would go out for state and tribal review promptly.

(2) Mike Kruse, Environmental Program Supervisor (TMDLs), Missouri Department of National Resources

Mr. Kruse explained that he would be focusing on "thinking" about climate change because they are not doing anything specific yet with their TMDLs regarding climate, but it is on their mind. He clarified that their focus in this area has been in extending the service life of TMDLs, to make them useful longer. He noted that this focus stems from their recent efforts to revise many consent-decree TMDLs, which required a lot of work. Mr. Kruse said that they did the revisions because of NPDES permitting issues, to find the right water quality targets, and to target the correct impairment, not for any climate reasons. Yet, he continued, they learned that land-use did not change much but flow regimes, precipitation, and Climate Normals did change. Mr. Kruse noted that the process confirmed to his team the importance of reviewing old TMDLs to ensure that they reflect current conditions and still protect water quality standards, especially in light of climate change. He emphasized that, given the lengthy revision process and sheer number of existing TMDLs, it is important to consider climate change when developing loading allocations to extend the longevity of TMDLs.

Mr. Kruse then provided a quick overview of the climate change impacts on the State of Missouri over the past century: roughly one degree Fahrenheit of warming; increased frequency of flooding; and annual precipitation that increased by 5 to 10 percent, with a 35 percent increase during the four wettest days of the year and the cresting of floods being 8 to 10 feet higher than in the past. He added that, according to EPA, rainfall is expected to intensify in the spring, and more severe droughts are expected in the summer over the next century.

Mr. Kruse explained that, when developing TMDLs, one must consider the seasonality of the water quality standards, critical conditions for impairment and for loading, and that modeling data assumptions often are based on seasonality. He noted that criteria (e.g., ammonia, bacteria, nutrients) also vary depending on temperature or season. Mr. Kruse emphasized that the data point to a merging of the seasons; for example, the high temperatures of the summer extending further into the fall than expected. He said that, in his state, they often target critical low flow conditions in the TMDLs, but the flows can be lower than what was calculated and occurring at different times than expected. Mr. Kruse added that, for nonpoint source contributions and loading to streams and lakes, they typically use an average precipitation, but they are finding

that rainfall intensity might be a more significant indicator than average annual precipitation – when storms are more intense, there is more erosion and loading. He also said that benthic algae and cyanobacteria are not usually a problem in the winter, but they are present, and with warming water, they have more of a head start for the summer than before.

As a demonstration of their thinking, Mr. Kruse talked about how his department is developing their first TMDL to target their numeric nutrient criteria for lakes, specifically the factors that the modelers are taking into consideration. He said that they are using a BATHTUB model with the criteria for chlorophyll a. The BATHTUB model would be informed using inputs derived from a separate watershed model. Historically, he continued, they would input the annual precipitation into the watershed model but now are experimenting using values calculated with considerations of intensity. So, where they had in the past put annual data, they now put daily precipitation data, so significant effort went into that change. Mr. Kruse said that this helps to link the size of the storm with the amount of loading, which has them considering if data trends could be used to estimate future loading and allocations for TMDLs. He concluded by expanding on other departmental considerations to address climate change, including limiting the period of flow data to 20 years to be more representative of current conditions and using 15-year Climate Normal data instead of 30-year.

(3) Molly Rippke, Aquatic Biology Specialist, Michigan Department of Environment, Great Lakes, and Energy

Ms. Rippke began her presentation by highlighting the two TMDLs about which she would talk, both of which were recently approved by EPA and mention climate: the statewide *E. coli* TMDL and the Ford and Belleville Lakes Phosphorus TMDL. She spoke to how the statewide *E. coli* TMDL had climate resiliency built in because they wanted the TMDL to be flexible to minimize the need for future revisions. She explained that Michigan's *E. coli* TMDLs are always concentration-based rather than load-based, although people can request that the department develops loads, which makes it applicable under all flow conditions. Ms. Rippke noted that the target is the water quality standard, and the pathogen standard (*E. coli*) applies to all waters of the state and is protective of public health year-round for partial body contact. She emphasized that this is important since people recreate in those waters late into the fall and early in the spring, and manure spills (which commonly occur at those times of the year) may not trigger the narrative standard but the *E. coli* concentrations still could be very high. Ms. Rippke emphasized that the total body contact season (May to October) is probably sufficient for the foreseeable future, and, for this reason, the TMDL goals will not need to be revised because of climate change. Nevertheless, she added, climate change will impact *E. coli* concentration in Michigan, and critical conditions such as very low and very high flow will be more frequent.

Next, Ms. Rippke enumerated Michigan's climate change impacts since 1951, including an increase in average temperature of 2.3 degrees Fahrenheit; 16 days of frost-free season extension, which could expand agricultural production; a 14 percent increase in total precipitation; and a 35 percent increase in heavy precipitation events. She noted that the statewide *E. coli* TMDL includes a section labeled "Planning for Change" that provides these facts of climate change and discusses how critical conditions and low flows might be impacted, as well as how land-cover in Michigan is changing. They were able to incorporate climate change in the TMDL in a non-controversial way, she added, because they only addressed past

and present changes and did not make any projections about future impacts or the causes of climate change. Ms. Rippke then spoke to how agricultural land is expanding northward due to warming, pointing to increased numbers of Concentrated Animal Feeding Operations and how that land-cover use change would impact *E. coli* and nutrients. She explained that areas with land-cover changes are expected to experience diminished forest cover, leading to a loss in natural areas to 'soak up' and filter pollutants; a loss of riparian buffers; an increase in manure land-application and chemical fertilizer use; and a lower water table in the summer, due to field tiles and the potential increase in irrigation.

Ms. Rippke then explained that the Ford and Belleville Lakes Phosphorus TMDL was developed in 1996 to address nuisance algae and harmful algal blooms, with minor revisions in 2004, and a court-ordered revision in 2019 that considered climate change. She explained that the previous goal was 50 micrograms per liter coming into the chain of lakes and an in-lake goal of 30 micrograms per liter for the most downstream lake of Belleville. She added that the loading capacity to meet this goal (NPDES wasteload allocations) was implemented from April to September only, which, in 1996, was thought to be sufficient to address the problem. Ms. Rippke displayed pictures of algal blooms in 2012 and 2018 and concluded that the TMDL was not helping the problem. She noted that, although the phosphorus decreased from 1994 to 2018, with the TMDL goal of 50 micrograms per liter being met during many seasons, they were still having the blooms, so the goal was not appropriate. She added that the goal for Belleville Lake was never met, and there was no in-lake phosphorus decrease. Ms. Rippke said that the 2019 revision was meant to be more protective of both lakes, making the summer TMDL goal for both of them 30 micrograms per liter and lowering accordingly the wasteload allocations previously based on the old inlet goal. She explained that the revisions also replaced the seasonal load allocation with a year-round load allocation, due to uncertainties and complexities in the lake system and, using climate projections, an expected increase in the algal growing season. She added that a 2022 statewide report on harmful algal blooms backs those assumptions, with data showing more algal blooms in October and in the fall season and early spring overall. Ms. Rippke concluded with a quote from *Climate Change in the Great Lakes Region*, "More storm activity and flooding will likely increase the risk of watershed contamination and water-borne illnesses, while warmer surface waters amplify the risk of toxic algal bloom and fish contamination." She said that they are already seeing this happen, and they will need to be thinking about it in future TMDLs.

Following Ms. Rippke's presentation, Mr. Schempp opened the floor to questions from participants to the three presenters. Mr. Kruse was asked whether his department considered changing the climate and flow timeframes for data to ten years for each to really emphasize current information. Mr. Kruse responded that his department did not consider going down to ten years, explaining that weather is variable and that one season in that period might skew the data, adding that the 20-year period allowed his department to capture a wider set of data to establish trends and account for anomalies that may not be due to climate change.

A participant noted that implementation of the Chesapeake Bay TMDL has been accounting for 2025 climate conditions, including identifying additional reductions in her state's Watershed Implementation Plan, adding that she expects similar results with any consideration of climate change. Thus, she inquired as to whether anyone is considering a "climate change margin of safety" rather than trying to calculate for each waterbody what the impact of climate change will be over the next five or ten years. Mr. Laird noted that the draft paper that he referenced has some

pieces on margin of safety. He added that climate change has been addressed in margins of safety in some cases, and the approach one could take depends on the scenario being addressed. He added that including a margin of safety for climate change limits allocations based on projections rather than current conditions, which can be a vulnerability in some cases.

Another participant asked Mr. Kruse whether the department used steady-state (single scenario) models to conduct an analysis of meteorological data (flow and rainfall). Mr. Kruse replied in the affirmative, to which the participant suggested that it might be easier to use a hydrodynamic model that can take into account all of the fluctuation in order to analyze dry years versus wet years, as well as other considerations. The participant explained that her state was close to having lakes meet all of their standards for nutrient TMDLs, but there were really intense storms in 2019, and every single lake "blew its standards." She added that it will take years for the lakes to get back to where they were before those storms. Mr. Kruse noted that his state has considered other models but that many factors go into their decision, including staff expertise and funding limitations for getting the necessary data.

A virtual participant asked Ms. Rippke about how Michigan will address the additional load of the reactive phosphorus contribution from the expansion of agricultural fields. Ms. Rippke explained that Michigan has narrative criteria (not numeric criteria) and added that she believes there will be a focus on nutrients in the state's new Vision. She also noted that they are developing a nuisance conditions app but reiterated that the state is just beginning the process of addressing phosphorus, with very few phosphorus TMDLs in Michigan thus far.

Another participant asked Mr. Kruse if the modeler was comparing the sensitivity of the increased frequency and the duration of the high-powered storms with the original data to see which parameters were changing drastically. Mr. Kruse responded that there was some of that analysis, but not much, adding that the modeling is still in draft stages and up for discussion, although the process is stagnant because that modeler recently left for another position.

Yet another participant asked Ms. Rippke if nitrogen was included in the analysis for the lake TMDL. Ms. Rippke responded that it was not included in the TMDL, as far as she was aware, since phosphorus was the limiting nutrient. Mr. Schempp then asked participants to hold remaining questions and welcomed Sara Schwartz to the podium for her presentation.

(4) Sara Schwartz, Biologist, Watershed Branch at EPA Headquarters

Ms. Schwartz explained that her presentation would provide an overview of environmental justice-relevant resources specific to the CWA 303(d) Program, starting with relatively new resources, then resources in development, and finally resources that might be good to have on one's radar. She noted that the *2022-2032 Vision for the Clean Water Act Section 303(d) Program*, released in September, included environmental justice as a focus area to continue making progress on the integration of environmental justice into the program. She added that environmental justice also was incorporated into the Vision's Partnership Goal directly by recognizing the need for fair and meaningful involvement, especially for underrepresented communities and those with environmental justice concerns, and also by emphasizing the importance of building and maintaining trust with local champions and respecting local knowledge and cultural values. Ms. Schwartz then mentioned that the 2024 IR Memo has a section on environmental justice, both in the body of the memo and in the appendix. She

explained that the body of the memo outlines foundational concepts of environmental justice and how it is relevant to regulatory requirements, such as assembling and evaluating all existing and readily available water quality data and information. She added that the appendix provides ideas on how to strive toward integrating environmental justice into the program over time through planning and prioritization and meaningful outreach and engagement. She noted that, relatedly, the memo has sections on participatory science, both in the body and as an appendix, which include a focus on decreasing barriers to submitting data and information and decreasing barriers to using participatory science data and information.

Ms. Schwartz then talked about the environmental justice compendium published by ELI in December, which drew from registration responses and in-session discussions of state, territorial, and tribal staff at relevant workshops to highlight approaches to incorporating environmental justice considerations into CWA 303(d) listing and TMDL development and implementation. She added that this resource is a great way to see what has been going on with counterparts across the country. Ms. Schwartz pivoted to discuss Watershed Index Online, a data library of watershed indicators for managers and community members to help evaluate, compare, and prioritize watersheds for a user-defined purpose. She explained that, a few years earlier, EPA added environmental justice-relevant indicators, including demographic indicators from EPA's EJScreen Tool, as well as potential exposure to pollution and environmental hazards. Lastly, Ms. Schwartz mentioned a webcast that EPA hosted through the Watershed Academy a few months earlier, where eight panelists from universities, watershed groups, and state environmental departments talked about projects where they have been able integrate environmental justice into water quality management projects. She added that the webcast recording is available on the landing page of the Watershed Academy website, which she highlighted as a great resource, with online learning modules and recordings of webcasts on a range of watershed management topics.

Turning to resources in development, Ms. Schwartz shared two online learning modules that will be hosted through the Watershed Academy and a state pilot project that the CWA 319 Program has been leading with Kentucky, adding that the latter will have many lessons learned relevant to the CWA 303(d) Program. She explained that EPA has been working with ten programs across the Clean Water Act and the Office of Environmental Justice to develop two online learning modules focused on water equity challenges and opportunities within the framework of Clean Water Act programs, with one module for the general public and the other for practitioners implementing the Clean Water Act programs. Ms. Schwartz noted that the learning objective for the general public module is to learn what tools and resources a community member can use to advance environmental justice in water management, whereas the learning objective for the practitioners module is to learn about existing approaches and additional ideas to integrate environmental justice into their work, as well as what equity looks like in the implementation of Clean Water Act programs. She said that both modules will include introductory language on the Clean Water Act and environmental justice, as well as some discussion on tribes as sovereign entities that determine if they have environmental justice concerns. She then showed a slide depicting the public module landing page on "Opportunities," which she explained showcases ways in which the public can be engaged in the programs, including through submitting public comment, attending public meetings and hearings, submitting data and information, volunteering, and reporting a violation. Ms. Schwartz noted that, for practitioners, the information will be offered in a different format, since practitioners will be able to go directly to the program of interest, which uses a who,

what, when, where, and why framework, and uses a case studies map highlighting examples for each of the programs across the country, where available. For the audience's reference, she shared a list of programs included in the module: water quality standards, monitoring, CWA 303(d) listing and TMDLs, 319/nonpoint source management, CWA 404 permitting, CWA 401 certification, 402/National Pollution Discharge Elimination System, Clean Water State Revolving Fund, Urban Waters, and the National Estuary Program.

Ms. Schwartz then talked about the pilot project that the CWA 319 Program is leading with the State of Kentucky, which is focused on how to select areas for nonpoint source work using a combination of ecological condition, environmental stressor, and social vulnerability indicators. She said that she is characterizing the project as a potential resource because it will offer a template for other states to use, adding that the CWA 303(d) Program at EPA also would like to explore how it can learn from the pilot. Ms. Schwartz noted that the project used the Recovery Potential Screening (RPS) tool for the analysis, which she described as a custom Excel spreadsheet that rank-orders HUC12 watersheds suited for restoration based on whatever indicators the user prioritizes. She said that, in the case of this project, some of those indicators were percent impaired waters, percent low-income population, percent unassessed waters, and percent forested land cover. Ms. Schwartz revealed that the end result was a tool allowing Kentucky to filter for and visualize areas with higher ecological stress and social vulnerabilities specific to indicators that they had put into the analysis. She added that a report with lessons learned was forthcoming and that Kentucky intends to incorporate the tool into their program planning. She noted that similar pilots with California and West Virginia are underway.

Ms. Schwartz concluded her presentation by highlighting other key resources, for awareness. The first resource she noted was the White House's new *Executive Order on Revitalizing Our Nation's Commitment to Environmental Justice for All*, which she framed as significant because it supplements the foundational 1994 executive order with updated definitions of "communities with EJ concerns," including noting the role of climate change impacts, cumulative impacts, and systemic barriers and calls on federal agencies to make publicly available environmental justice strategic plans every four years. The next resource that Ms. Schwartz mentioned was EPA's *Legal Tools to Advance Environmental Justice*, which is a compilation of legal authorities available to EPA and its partners for identifying and addressing disproportionate impacts of pollution. She added that an updated version of this resource was released in May of 2022, and a Cumulative Impacts Addendum was released in January of 2023; both, she explained, have sections specific to the CWA 303(d) Program. Ms. Schwartz also noted that EPA's How's My Waterway tool now has a layer that pulls from the EPA EJScreen Tool, when searching at the community level. Lastly, she said that EPA announced in April the formation of 17 technical assistance centers – the Thriving Communities Technical Assistance Centers – that will work with underserved communities across the country to provide training and other assistance to build capacity for navigating federal grant applications, writing grant proposals, and effectively managing grant funding. She added that the centers will offer guidance on community engagement, meeting facilitation, and translation and interpretation services for limited English speaking participants. She encouraged participants to look into the centers and see how the centers might help support implementation of their water quality restoration and protection efforts.

Mr. Schempp then invited questions from the participants. One participant asked Ms. Rippke how the statewide TMDL approach went and whether there was pushback on the concentration-based

approach. Ms. Rippke explained that the idea was the result of a 17-year backlog of *E. coli* TMDLs; every time they would monitor a new waterbody, it would be impaired, and they would put it on the list. She noted that the state has a core document and adds waters to it every two years with the IR. She noted that some of the Southeast Michigan communities pushed back on the statewide approach, which she found interesting given that those communities already had older TMDLs, and that, in the end, some of the older TMDLs were incorporated into the statewide *E. coli* TMDL, with the benefit being not having to revise the TMDLs. Ms. Rippke added that the statewide approach has saved the state significant resources and allowed them to focus on fixing some of the problems. Another participant asked, because the TMDL is concentration-based, whether Ms. Rippke's program used the equation concentration Q times the standard so that it does have a load. Ms. Rippke responded in the affirmative, adding that her program had worked closely with EPA Region 5 to ensure that they had checked all of the boxes and that the TMDL has an appendix which explains how loads could be calculated for lakes, rivers, and beaches with examples.

Mr. Schempp then turned to the participants and encouraged them to share their experiences and insights with regard to incorporating climate change and/or environmental justice into their work, whether TMDL planning or development, assessment and listing, or data issues. One participant volunteered that his department was in the middle of revising a metals and organics TMDL, and most of the substantial comments revolved around climate change. He noted that these responses led the program to work with EPA and Tetra Tech to conduct a climate change analysis and investigate whether climate change had affected the TMDL, which would lead to a decision of whether to revise the TMDL allocations. He explained that they leveraged much of the work done on the Chesapeake Bay TMDL and looked at the forecasting scenarios for 2035-2055, analyzing changes in sea level rise, air temperature, and rainfall intensity and annual amounts for potential differences between the TMDL allocation and the forecasted climate change scenarios in the 2035-2055 period. He said that they found very little to have changed, which dissuaded the program from amending the TMDL allocations. He added that what it did do was lead them to add a section in the TMDL report that documents this analysis, as well as an appendix to support it.

Another participant noted that, in her state, they began to include climate change and environmental justice in their draft TMDLs and are working on bacteria TMDLs, with a statewide approach that is concentration-based for bacteria, and some nutrient loading TMDLs. She clarified that her state was not changing wasteload and load allocations, rather adding a map of environmental justice areas within the TMDL plan area and asking those doing implementation to consider implementing in those environmental justice areas first. Thus, she added, their program has been trying to highlight environmental justice considerations and make suggestions, but they have not changed the mechanics of the TMDL. She said that they are including much more information on climate change in some of the newer TMDLs, but similar to their approach to environmental justice, they are not changing wasteload and load allocations. She noted that the models that her state is developing for embayment TMDLs, load-based not concentration-based, include a climate scenario founded on conditions projected for 2050. She explained that the actual loads will be founded on current conditions but that the models will be run for 2050 and discussions regarding future changes and planning for future implementation challenges will be included.

Yet another participant explained that, relating to climate change and from the assessment perspective, his state has a Fish Thermal Index, which allows them to identify temperature impairments. Conversely, from a protection standpoint, he added, they intend to use that tool as a way to redesignate streams; warm-water fish streams could be redesignated cold-water fish

streams to establish a protective threshold, and monitoring through time would help to ensure that those streams stay cool. He also noted that, from an antidegradation standpoint, his state does not have much methodology assessing antidegradation special protection uses, but that they are developing a chemical assessment method that should measure change through time.

A participant offered a word of caution regarding the use of environmental justice indicators on maps to target certain areas, emphasizing that the decision should make sense for the pollutant of concern. She explained that her program was looking at restoring a watershed with no nearby communities with environmental justice concerns, but the river is a drinking water source for such communities outside the watershed, leading her to emphasize the importance of looking at who is using the water and not simply who is around it.

A virtual participant asked whether TMDL programs will have access to climate modeling in the newly established Integrated Climate Sciences Division and Regional Climate Assistance Network. Ms. Schwartz mentioned that EPA has a workgroup that meets monthly with all water programs across all the different offices at Headquarters and the Regions, and that the newly established office has been involved and probably will speak to how programs can tap into those resources. Another virtual participant requested that EPA offer more trainings on how to use EJScreen. Ms. Schwartz noted that EPA has been doing office hours that are open to the public, adding that she would relay the message that there is desire for more training.

A participant expressed concern that, because of the focus in the Nonpoint Source Program on success stories, efforts to work on more complicated matters, potentially in and with communities with environmental justice concerns, may not be prioritized, which would diametrically oppose environmental justice objectives. Another participant asked Mr. Kruse whether his department has gauged the reaction of regulated communities to potentially setting more stringent TMDLs through what amounts to projections into the future. Mr. Kruse responded that they have been thinking about it, and the department's typical process to gauge responses is through public notice. He noted that the agricultural community has voiced the most opposition to TMDLs, even though nonpoint sources are not regulated in Missouri, due largely to the state's focus on *E. coli* TMDLs. Mr. Kruse said that he expects the approach to climate change to raise some eyebrows, and while it does not change their regulatory authority, it likely will lead them to improve their outreach and engagement. He added that, in general, not just for climate change, they are trying to improve their communication with stakeholders.

Yet another participant mentioned that the Pacific Islands are incredibly susceptible to the impacts of climate change but that they are new to considering climate change in their TMDLs. She asked for suggestions on how to tackle climate change through TMDLs. Mr. Laird responded by expressing that EPA has been grappling with this question and, while TMDLs may not always be the best tool to tackle root causes of climate change, they can help programs and waterways to mitigate impacts and be more resilient in the face of climate change effects. He referenced an Office of Research and Development paper on climate-ready BMPs that can help to build resilience to climate conditions. Mr. Laird framed TMDLs as a way to bolster resilience to some of the impacts of climate change. Ms. Schwartz reiterated that the paper Mr. Laird mentioned is a good starting point and added that their program and many EPA programs have been trying to build relationships with FEMA and other hazard mitigation professionals to identify synergies when it comes to hazard mitigation and water quality planning, fuse resources together, and be proactive. A participant supported the focus on hazard mitigation as a place to work proactively to build

resilience, especially to water quantity problems such as floods, and then working in the pollution aspects. Ms. Schwartz said that she would be happy to share more on the topic, including identifying EPA resources outside of the CWA 303(d) Program, and referenced a workshop last summer that shared examples of how TMDL programs have worked with hazard mitigation professionals. A virtual participant emphasized the importance of protection and pollution prevention with regard to climate change.

A participant built off Mr. Kruse's comment on the challenges of working on nonpoint sources with TMDLs by noting that another state developed a joint TMDL and watershed-based plan. He then asked whether other jurisdictions were considering that approach or were in the process of developing TMDLs in concert with watershed-based plans. Ms. Rippke noted that Michigan has one example of it, on which she gave a presentation at this workshop a few years earlier, the Bad Axe TMDL, which is a joint phosphorus, *E. coli*, and watershed management plan that was developed in collaboration with EPA to ensure that it met the nine elements of watershed management planning. Mr. Kruse said that they have attempted a similar approach several times, not as one document but as simultaneous efforts, with the groups interested, and that the TMDL could meet the goals for CWA 319. Yet, he lamented that the timing had not quite worked out, since CWA 319 usually got ahead of the TMDL. He added that, in those situations, what his department has done lately is develop an advance restoration plan with the intent of later turning it into a TMDL, if necessary. A participant noted that his state has one example, what they call a "hybrid TMDL," explaining that stakeholders wanted to do a watershed-based plan to address a phosphorus impairment, so they coordinated to develop this type of a TMDL, which he said will be their model moving forward when they have engagement from stakeholders. Another participant explained that her state modified their lake TMDL, which is a statewide approach with a core document and individual TMDL documents, adding that the first TMDL they did included an addendum that is a nonpoint source plan. She said that, what they have set up for the individual TMDLs, in case the development of the TMDL is going to be at a different pace than the potential development of a nonpoint source plan, is the inclusion of all nine elements in the core document, which is a statewide document, providing implementation options, identifying grant options, and covering schedules at a very high level. She added that this was done in coordination with their nonpoint source program and the EPA Region. She noted that the TMDL for a specific waterbody goes into more detail and fills in gaps based on specifics of the watershed, and there is a crosswalk in the core document detailing where the nine elements are. She suggested that nonpoint source or watershed groups seeking to implement the plan can look at the TMDL and know that they do not need to do all nine elements, just fill in the identified gaps, which should help facilitate their ability to get to a nonpoint source plan more efficiently and cost-effectively.

Session 5: Breakouts II

This session consisted of eight breakouts, each focusing on a different topic. ELI staff selected the topics based on responses in the registration materials and then, with the help of the WPG and staff of the Water Data Integration Branch, developed the respective agendas, including speakers, facilitators, and discussion questions. Most of the presentation slides and materials from breakouts that had them can be found here.

- Litigation on Assessment/Listing and TMDLs

  This breakout provided a summary of recent and pending federal CWA 303(d) listing and TMDL litigation and the potential impacts of recent decisions. Jasper Hobbs of ACWA moderated the breakout, and the presentation was delivered by Chris Creech, Tom Glazer, Alec Mullee, Elise M. O'Dea, and Andrea Priest of the EPA Office of General Counsel.

- Treatment in the Same Manner as a State (TAS) Authority for CWA 303(d): Adoption and Implementation

  This breakout covered the basics of obtaining CWA 303(d) TAS as well as the coordination and capacity important for obtaining and implementing that authority, including the use of ATTAINS. Adam Schempp of ELI moderated the breakout, with Jill Fullagar of EPA Region 10 and Dylan Laird of EPA Headquarters providing presentations, followed by facilitated discussion led by Nancy Schuldt of the Fond du Lac Band.

- Examples of Water Quality Assessment Tools

  This breakout detailed the purpose, function, and results of tools used in different states for various aspects of water quality assessment and for reporting that information to the public. Emily Cira of EPA Headquarters moderated the breakout, and the presentations were delivered by Mackenzie Moore of Arizona, Skip Feeney of Colorado, Katie McKone of Kentucky, Matthew Wood of New Hampshire, and Bongghi Hong of North Carolina.

- Integrating Protection with Watershed-based Planning

  This breakout built off discussions from the 2022 CWA 303(d)/319 Protection Learning Exchange by highlighting the role that TMDLs and watershed plans can play as critical guides for targeting and implementing both restoration and protection activities to achieve water quality goals. It featured two watershed planning case studies (Kansas TMDL Program and the Delaware River Watershed Initiative), followed by a facilitated discussion on practical approaches for integrating protection alongside restoration to maintain healthy waters and help ensure restoration success. Sara Schwartz of EPA Headquarters moderated the breakout, and the presentations were delivered by Dane Boring of Kansas, Steve Epting of EPA Headquarters, and Abby Weinberg of the Open Space Institute.

- Automation and the Use of R for TMDL Development

  This breakout provided examples of ways that states have been automating different parts of the TMDL development process, from prioritization to data analysis and beyond. It focused on the role and value of these automations more than the technical details of the R code, Python scripts, etc. Amy Reed of ELI moderated the breakout, and the presentations were delivered by Mikayla Baker of Arizona, Traci Iott of Connecticut, Lucas Graunke of New Mexico, and Ruth Briland of Ohio.

- Introduction to Using Open Source R Tools for Automated Data Analysis (TADA) to Retrieve, Wrangle, and Clean WQP Data (Beginner R User)

  This hands-on training provided a primer on R scripting to discover, organize, and filter Water Quality Portal data. It began with an overview of R, the TADA R package, and the first in a series of TADA R Shiny applications (which require little to no user interaction with R). Participants then explored the TADA R package on a dataset of interest. The demonstration and instruction were led by Cristina Mullin of EPA Headquarters.

- Introduction to Using Open Source R Tools for Automated Data Analysis (TADA) to Retrieve, Wrangle, and Clean WQP Data (Intermediate+ R User)

  This hands-on training covered how TADA can complement existing scripting workflows to discover, organize, and filter Water Quality Portal data. It began with an overview of the TADA R package and the first in a series of TADA R Shiny applications. Participants then explored the TADA R package on a dataset of interest. The demonstration and instruction were led by Elise Hinman, an ORISE Fellow at EPA Headquarters.

- How to Answer Common Questions with Available Data Tools

  This breakout covered how to use ATTAINS reports, ATTAINS web services, and the geospatial service to answer common questions about the data. Demonstrations were led by Jesse Boorman-Padgett and Wendy Reid of EPA Headquarters.

Regional Meetings

This session consisted of ten regional meetings, one for each EPA Region, each including the state, tribal, territorial, and EPA participants from that region. Prior to the training workshop, ELI collected discussion topic preferences from each of the state, tribal, and territorial participants as part of the registration process and communicated those preferences to EPA Regional staff to aid in the development of meeting agendas.

Session 6: Breakouts III

This session consisted of six breakouts, each focusing on a different topic. ELI staff selected the topics based on responses in the registration materials and then, with the help of the WPG and staff of the Water Data Integration Branch, developed the respective agendas, including speakers, facilitators, and discussion questions. Most of the presentation slides and materials from breakouts that had them can be found here.

- Protection of Downstream Water Quality Standards through TMDLs

  This breakout showcased various approaches to protecting downstream waters, their designated uses and associated water quality criteria, in the development and implementation of TMDLs. The breakout was moderated by Dave Werbach of EPA Region 5, and presentations were delivered by Elizabeth Booth of Georgia, Andrea Conine and Cassandra Davis of New York, Jeremy Reiman of Washington, and Kevin Kirsch of Wisconsin.

- HABs: Criteria, When to Measure, and How to Tie it Back to a Pollutant

  This discussion-based breakout began with the various criteria that have been used to reflect HABs in listing decisions, followed by surrogate conditions that could be informative, monitoring strategies that are used, and what tools and information are needed moving forward. The breakout was moderated by Tina Laidlaw of EPA Region 8.

- Stormwater and TMDLs: Examples of Approaches

  This breakout detailed various ways that states have considered stormwater in TMDL development and implementation, including the use of different databases,

models, tools, and calculations connecting stormwater to a variety of impacts and activities. The breakout was moderated by Barbara Bennett of Colorado, and presentations were delivered by Traci Iott of Connecticut and Andrea Plevan of Minnesota.

- Category 4C: Process and Examples of Successful Restoration

  This breakout highlighted different ways that states have used Category 4C of the Integrated Report as well as outcomes to date and lessons learned. Presentations were delivered by Blake Towarnicki of Montana, Cam McNutt of North Carolina, Lesley Merrick of Oregon, Dustin Shull of Pennsylvania, and Kristy Fortman of EPA Region 8.

- Finding and Using Data from the Water Quality Portal

  This hands-on breakout provided tips and tricks for using the Water Quality Portal (WQP). It explored how to use the WQP to find and access datasets using a variety of available methods. It covered building and saving queries that return data, downloading data profiles, and relating those profiles to build rich datasets. It also highlighted the forthcoming WQP data profiles that will fully support WQX 3.0 metadata and discussed what changes to expect. In addition, it detailed how to use the WQP web services to retrieve data and import them directly into data exploration programs such as Excel, Google Sheets, R, and ArcGIS Online. Lastly, it showed participants how to use the WQP summary services to help identify where certain data exist. The demonstration and instruction were led by Adam Griggs of EPA Headquarters.

- Tracking Changing Assessment Units and Updates on NHD+

  This breakout started with a couple of examples of how states have tracked changing assessment units (AUs), e.g., merged AUs and split AUs, including what methods were used to do so and what lessons were learned. The second half of the breakout consisted of an overview by EPA Headquarters staff of updates on NHD+. Presentations were delivered by Mikayla Baker of Arizona, Cleo Baker of Virginia, and Jesse Boorman-Padgett and Shelly Thawley of EPA Headquarters.

Session 7: Prioritization and Planning

This session featured three presentations. It provided an overview and state examples of CWA 303(d) prioritization and planning as well as broader water quality restoration and protection efforts and considerations. Slides from most of the presentations of this session can be found here.

(1) Teagan Rostock, Biologist, Watershed Branch at EPA Headquarters

Ms. Rostock began the session with an overview of Prioritization Frameworks, which she described as the foundation for state, tribal, and territorial implementation of Vision Goals. She explained that a Prioritization Framework is a planning document that serves two purposes: 1) to describe long-term Vision priorities and a rationale for selecting those priorities; and 2) to outline a general strategy for implementing the Vision Goals.

Focusing on the first of those purposes, Ms. Rostock noted that the Prioritization Framework should explain how the state, tribe, or territory established its long-term planning objectives and Vision priorities in a written rationale. She added that the details of these long-term Vision

priorities may range from narrative explanations of the geographic priority area(s), pollutant(s), etc., to specific Vision priority waters or watersheds. In addition, she said that it is anticipated that states, authorized tribes, and territories, also would later identify and communicate specific waterbodies to be addressed over shorter increments. Ms. Rostock then explained that the second purpose of the Prioritization Framework, outlining a general strategy for implementing the Vision Goals, is intended to encourage states, territories, and authorized tribes to identify broad water quality objectives and actions across programs that could make progress towards those objectives.

In conclusion, Ms. Rostock provided several process suggestions for development and use of the Prioritization Frameworks. The first suggestion was for states, territories, and authorized tribes to work with their EPA regions in developing the frameworks. Her second suggestion was for states and territories to use the 2024 Integrated Report public participation process to develop and share (either by incorporation or reference) their Prioritization Frameworks. Her third suggestion was for states and territories to use their Integrated Reports to report on the progress towards development of TMDLs, other restoration plans, and protection plans. Ms. Rostock then welcomed Ashley Beranek and Kevin Kirsch to the podium.

(2) Ashley Beranek, Surface Water Assessments Coordinator, and Kevin Kirsch, Water Resource Engineer and TMDL Development Coordinator, at the Wisconsin Department of Natural Resources

Ms. Beranek began the presentation by explaining that it would focus on how the first iteration of the Vision helped to secure Wisconsin's CWA 303(d) Program and how they are using the current iteration of the Vision to identify future priorities. She explained that the state's prioritization under the first Vision was built on their nutrient strategies, with TP and TSS as their main goals. Ms. Beranek added that their goals also were informed by the 2014 Healthy Waters Assessments.

Mr. Kirsch reiterated that their Prioritization Framework for the first Vision was essential to completing the TMDLs that they did in that ten-year period, given the changing focus from administration to administration in the state. He explained that their CWA 303(d) Program was able to leverage the commitment to EPA under the Vision to complete the TMDLs and not lose CWA 319 funding. Mr. Kirsch noted that progress was able to continue also because Wisconsin's Prioritization Framework and the biggest TMDL on which they were working had gone through public comment periods and received widespread bipartisan support, and the state had invested significant resources into the development of that TMDL. Of additional support, he added, was the concern over constructive submission and what might happen if the program was effectively abandoned.

On the listing side of the program, Ms. Beranek explained that the total number of listings was increasing each cycle due to new criteria and increased assessment efficacy from technological improvements. She noted that some of the factors that Mr. Kirsch had mentioned also helped ensure the efficacy of her work when the results were not what was politically desirable.

In conclusion, Ms. Beranek detailed the state's prioritization process for the second iteration of the Vision, indicating that they worked with nonpoint source and wastewater professionals and incorporated climate change considerations. Mr. Kirsch added that they have included

environmental justice and healthy waters considerations at the HUC12 scale. Mr. Kirsch and Ms. Beranek then welcomed Barbara Bennett to speak.

(3) Barbara Bennett, Watershed Analysis and Implementation Support Workgroup Lead at the Colorado Department of Public Health and Environment

Ms. Bennett began her remarks by explaining that she would be providing an overview of Colorado's approach to prioritization for the second iteration of the Vision, with an emphasis on the role of cross-program coordination, climate change, and environmental justice considerations. She summarized the overall goal of the state's prioritization as: "prioritize waters where TMDLs can provide needed analysis to promote effective pollution control and improve water quality where public health and aquatic life are most impacted."

Ms. Bennett started with cross-program coordination, noting that her department has sought to align priorities and resources as well as to optimize timing across programs and with other partners. She added that the programs collaborate internally, identify monitoring or modeling opportunities, and avoid duplication of effort. Ms. Bennett continued by outlining Colorado's ten-year water quality roadmap, last published in 2017, which provides a timeline for revisions to water quality standards, helping staff to coordinate as changes in standards impact listings and TMDLs. She said that her team is gaining much from coordination, notably by strengthening their planning timeline.

Ms. Bennett went on to explain how Nonpoint Source Program priorities inform where TMDLs are most implementable, citing as examples the priorities of nutrients, selenium, wildfires and flooding, disproportionately impacted communities, and unregulated stormwater runoff management due to urban development. She added that some long-term trends, including a decreasing trend in funding for abandoned mines and reclamation projects, due to litigation risks, and an increasing trend in funding for agricultural BMP projects and wildfire and flood projects, are informative for implementation opportunities.

When thinking about the impacts of climate change, Ms. Bennett noted that wildfires are increasing in Colorado, stakeholder interest is high, and there are growing opportunities to partner with federal and state agencies. She added that Colorado adopted numeric sediment criteria in 2014, and there is an opportunity to build modeling capacity for TMDL staff, all of which supports the development of sediment TMDLs. Ms. Bennett contended that, after wildfires, TMDLs can address significant parts of the watershed that were not remediated during the emergency mitigation process. She held that this approach presents great opportunity for her program. She also noted that Colorado is exploring temperature TMDLs for the second iteration of the Vision, with more than 70 streams and lakes on the CWA 303(d) list for temperature.

Ms. Bennett then talked about the role of environmental justice in the state's prioritization efforts. She said that a useful environmental justice mapping tool, Colorado EnviroScreen, identifies areas with environmental inequities using health and environmental indicators. Ms. Bennett explained that the tool can produce a numeric score based on factors such as cumulative environmental exposures from air pollution and drinking water; proximity to hazardous waste facilities, mines, and oil and gas facilities; proximity to impaired streams and rivers; and health indicators like asthma rates, cancer prevalence, life expectancy, and low birth

weight. She added that Colorado EnviroScreen is reflective of the public health and environmental divisions being housed in the same agency. Ms. Bennett displayed a screenshot of where TMDLs have been completed in the state overlaying EnviroScreen scores, noting that the vast majority of TMDLs have been completed in mountain areas and emphasized that her team should work in other geographic areas, perhaps prioritizing TMDLs for pathogens and looking at wadable streams where local children play. She emphasized the importance of mitigating health risks and focusing on urban streams and watersheds with environmental justice disparities.

Ms. Bennett concluded her presentation by recapping the changes in Colorado's priorities for the second iteration of the Vision: less focus on abandoned mine impacts and high-altitude streams (metals impairments), more focus on watersheds with environmental justice disparities, more focus on implementable TMDLs, and incorporation of modeling to support implementation. She also identified anticipated challenges, including new pollutants (temperature), urban stormwater, intermittent and ephemeral stream hydrology, and indicator compounds (*E. coli*).

Training Workshop Wrap-Up

Mr. Schempp thanked everyone who helped make the event possible, including EPA, the Workshop Planning Group, speakers, moderators, his ELI colleagues, and the participants for their attention and contributions. He then invited Beth MacBlane of NEIWPCC and Jasper Hobbs of ACWA to share what their organizations have on the horizon, followed by Stacey Yonce and Jim Havard of EPA Headquarters, and then Dustin Shull and Nancy Schuldt to provide closing remarks.

(1) Beth MacBlane, Information Officer at NEIWPCC

Ms. MacBlane began by introducing herself and NEIWPCC, noting that it is a regional commission that works with the New England States and New York State. She said that NEIWPCC holds a National CWA 303(d) Restoring Our Impaired Waters webinar series that is focused on key program topics such as climate change, environmental justice, and state-tribe communications. She encouraged participants to look at the NEIWPCC virtual library and YouTube channel and to apply to be a presenter for future webinars. Ms. MacBlane then mentioned NEIWPCC's multi-media CWA 303(d) Success Story Project aimed at disseminating CWA 303(d) success stories to inspire other programs and to raise public awareness and support for future clean water work. She explained that they use a variety of media tools to highlight success stories, including Story Maps, infographics, flyers, and social media campaigns. Ms. MacBlane also highlighted the Clean Water Pod – which was launched on the fiftieth anniversary of the Clean Water Act – as part of that project and urged participants to listen to season one of the podcast and share it with their networks. She concluded by offering that season two will dive into success stories about nutrients and welcomed participants to reach out to her or Jeff Berckes with any questions. She then thanked EPA, as both of the aforementioned projects have been made possible through cooperative agreements with that agency.

(2) Jasper Hobbs, Environmental Program Manager at ACWA

Mr. Hobbs began by introducing himself and explained his role as coordinator of the ACWA Watersheds Committee, a forum for all CWA 303(d) staff. He noted that the Watersheds Committee holds calls on the fourth Thursday of every month, as a platform for gathering case studies, facilitating information sharing, enabling EPA to provide updates, and offering states and territories the opportunity to share feedback to EPA. Mr. Hobbs explained that, in addition to the committee calls, ACWA periodically receives and disseminates questions from state and territorial staff, facilitating additional resource and experience sharing. He welcomed participants to reach out to him or Traci Iott of Connecticut with any questions or new ideas. Mr. Hobbs also noted the other committees that ACWA has, including the standards group, nutrients group, nonpoint source group, and environmental justice group. In conclusion, he highlighted upcoming ACWA events, including ACWA's Annual Meeting, which occurs in August of each year, and the annual Water Quality Modeling Workshop, which takes place in the fall.

(3) Stacey Yonce, Acting Manager of the Water Data Integration Branch at EPA Headquarters

Ms. Yonce began her remarks by noting that this was the first of these workshops that she had attended, and she appreciated how welcome everyone made her feel. She said that, in addition to hearing participants' discussions and feedback during the sessions, she had the opportunity to talk to many of the participants over the week. Ms. Yonce emphasized her appreciation for the opportunity to learn from everyone's knowledge and experience in this program, specifically with regard to water quality data. She highlighted a consistent message that she heard from those conversations: how much and how quickly data management has changed, how much progress has been made, and that the rate of change will continue.

Ms. Yonce added that, as technology and the science of data management evolve, the Water Data Integration Branch sees many opportunities for greater efficiencies in their systems. She said that the Branch will continue to pursue these opportunities, as resources allow, prioritizing the work that will realize the greatest value for all partners and customers across the country when they submit data to and manage data in WQX and ATTAINS. Ms. Yonce then highlighted some progress made during the week of the workshop, noting some firsts: the first group of users to test out Expert Query, a new way to search data from ATTAINS, and the first hands-on demonstration of the web application component of TADA. She added that the web application uses R Shiny and is intended for a broad audience, and it was developed based on ideas and suggestions that were first articulated at this workshop back in 2019. Ms. Yonce also noted that, during the week, an additional tribe submitted data to the ATTAINS system, bringing the total number of tribes to 20, and she mentioned that 12 more are planned for the next year. In conclusion, she said that the most important development this week was hearing questions and suggestions from the participants about their systems. She thanked everyone who attended the Office Hours and the prior night's discussion about how to better integrate the CWA 303(d) programs and ATTAINS, noting that they learned much from those conversations and promise to take that feedback into their discussions as they plan for next year and beyond.

(4) Jim Havard, Chief of the Watershed Branch at EPA Headquarters

Mr. Havard emphasized his appreciation to all participants and noted how much he enjoyed the event being in person. He said that participants also relayed to him how important the in-person format is, as it allows for "side" conversations and team building. He took a moment to thank those who participated remotely for all the virtual input as well. Mr. Havard then highlighted the value of this year's workshop being a joint event with the Water Data Integration Branch, noting that it is a key interface for achieving efficiencies in the CWA 303(d) Program, enhancing public awareness and the usability of data and information, ensuring that assessment tools are applied in the context of overall program requirements, and making information available and accessible to all.

Mr. Havard said that there were so many thoughts and observations over the week that he would not try to capture them all in his summary, but he wanted to highlight a few items. He started with a suggestion from the Interagency Collaboration panel: "be persistent, annoying, but likable." He added that he sees such an approach in people who are very successful. Mr. Havard also referenced the recommendation of having dedicated staff for collaboration and coordination. He then relayed that one participant suggested that, when stakeholders raise concerns about listing and TMDL matters, it is helpful to get them involved in the monitoring process. Mr. Havard also said that participants suggested that environmental justice be a priority, value, and understanding for the whole team and not just one person responsible for environmental justice, in order for it to be embedded in the program. He added that, when working on environmental justice, staff should be ensuring that the sovereign status and unique rights of tribes and considerations of tribes are incorporated appropriately. He also emphasized the importance of protecting downstream water quality standards, particularly as they concern tribes, noting that one of the presentations in that session emphasized the value of understanding what these downstream standards are in advance of doing a TMDL or other CWA 303(d) work.

Mr. Havard expressed appreciation for the presentations on Prioritization Frameworks, which he identified as very important next steps. He highlighted Wisconsin's coverage of both the listing and TMDL contexts in Prioritization Frameworks as well as Colorado's reference to "implementable TMDLs," which he noted is a key part of the Vision. Mr. Havard explained that the Prioritization Frameworks, due in April, consist of two core components: what planning is expected for the next ten years and how to integrate the Goals of the Vision into the program generally. He noted that the CWA 303(d) Program is the middle of the Clean Water Act scheme, making it important to lay out the groundwork for the program and how it works with partners for the next ten years. He added that many participants had communicated ways of discussing priorities, including climate, environmental justice, nutrients, and working with the monitoring program to ensure long-term monitoring plans.

Mr. Havard then restated a key message from the Interagency Collaboration panel, that people need to see how collaboration helps themselves, how it is in their self-interest. He urged participants to remember what their work provides to other programs, namely their expertise in core functions: assembling and evaluating all the data to make the essential impairment decisions and providing the "math and the path" to water quality restoration and protection. Mr. Havard emphasized that others need that work to be done. He also noted the powerful data and tools that the program can provide, such as Story Maps on prioritizing work, Recovery

Potential Screening, and making other information available to the public and engaging stakeholders. Mr. Havard said that many partners often have similar missions, explaining that NRCS, FEMA, and land management agencies all have water quality protection in their missions, adding that it is important to remember that they need to achieve their results, too.

He concluded his remarks by laying out key upcoming dates, notably that the 2024 Integrated Reports are due on April 1. He added that there is significant work being done, like early engagement between EPA and the states, with a key role for data management. He noted that tribal consultation will be important while EPA prepares for and reviews state CWA 303(d) lists. Mr. Havard then emphasized the TMDL Foundations course, which was drafted and will be piloted soon with non-EPA staff, to get it ready for release. He said that it will be great for promoting continuity and building capacity. He also referenced the draft white paper on considering climate in the context of TMDLs, noting that it is not a prescriptive document or a checklist, but rather a set of considerations for how to tell the story of how climate change is taken into account; the considerations are based on EPA experiences and conversations with state staff. Mr. Havard also mentioned that the environmental justice module of the Watershed Academy is in the works, and they will be collaborating with ACWA to share it and get feedback on it later in the year. He then reiterated his thanks to everyone for all the fantastic input throughout the week.

(5) Dustin Shull, Environmental Group Manager, Pennsylvania Department of Environmental Protection

Mr. Shull began his remarks by thanking all participants, EPA, and ELI, noting that the workshop had been the most productive, engaging one that he has attended. He added as proof the fact that he was losing his voice. Mr. Shull suggested that a reason why this year's workshop was so successful was the combining of CWA 303(d) and data staff. He noted that, years ago, the data group met in one place at NCTC and the CWA 303(d) group met in another place, with occasional overlap. Mr. Shull said that he found that arrangement to be confusing, adding that he came from a monitoring program before working on assessments, and he did not understand why there was a separation between data and the program itself. He emphasized how beneficial he has found the integration of the two to be. He said that he has seen data as the main theme throughout the week, whether in talking about TMDLs, the Integrated Report, or even water quality standards. Mr. Shull suggested that "data" is the common thread that binds all participants together. He said it makes him think of a quote from a Sherlock Holmes story: "'Data! data! data!' he cried impatiently. 'I can't make bricks without clay.'"

Mr. Shull acknowledged that it is not all about data, though; "data" is one part that is incorporated into a larger whole. He highlighted the importance of communication, between the participants and out to their respective communities. He added that the communication makes the work done by participants meaningful to other people, whether the public, regulators, or legislators. Mr. Shull also highlighted the role of technology, leveraging resources like R and R Shiny with data and communications to be more successful. He stressed that this is a fantastic strategy moving forward.

Mr. Shull concluded his remarks with a charge and a reminder. He challenged participants, after they return home, to reach out to someone they connected with during the week, whether about data, communications, or technology. He acknowledged that he has failed to do this time

and again but added that carrying forward the connections established at this workshop makes for a stronger team. Mr. Shull then encouraged the participants to always remember why they do this work, adding that, in his mind, those reasons are the protection of the environment, working with and protecting communities, and leaving something good for the next generation.

(6) Nancy Schuldt, Water Projects Coordinator, Fond du Lac Band of Lake Superior Chippewa

Ms. Schuldt began by expressing how honored she was to be invited to give closing remarks and how much she has gained out of the workshops over the years. She agreed with prior comments made about there being something particularly special this year. Ms. Schuldt highlighted two things from the first day that stuck with her: when Jeff Berckes noted that all of his guests on the Clean Water Pod tended to have a "passion for the resource;" and later that day, in the Environmental Justice session, when Queen Quet shared a song and the language of her people, the Gullah/Geechee, providing a reminder that what this group would call a watershed or a HUC code is actually a living cultural environment. Ms. Schuldt then noted, in the effort to digest all that has been said, experienced, and learned over the week and figure out how to capture that energy and those ideas for use in the workplace, that it is important for this collection of "science nerds," "data geeks," and "policy wonks," herself included, to acknowledge that they are not simply stewards of the environment but are themselves in relation with the environment. She added that the natural world – Mother Earth, water, the winged ones, the swimmers, the four-leggeds, the plant medicines and foods – is all connected. Ms. Schuldt encouraged participants to recognize and even celebrate the sacredness and spiritual dimension of their relation with the natural world. She added that it is always right to put the health and sustainability of the resource first. Ms. Schuldt said that it has been a rare and valuable gift to her to be able to do this kind of work in a place where the waters are still really healthy, to be able to emphasize protection and not restoration. She also highlighted that the work done today will have a profound impact on future generations, adding that the photos that have been shared of participants' children are a great reminder of what is really important in the work done by this group. In conclusion, Ms. Schuldt urged participants to give themselves some space and some grace to celebrate their connections and all their relations. She expressed her many thanks, chi-miigwech, and the valediction of giga-waabamin, until we meet again.

ENVIRONMENTAL LAW INSTITUTE®

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2023 NATIONAL TRAINING WORKSHOP ON WATER QUALITY DATA, ASSESSMENT, AND PLANS

COLLABORATING AND INNOVATING TOGETHER

National Conservation Training Center
Shepherdstown, West Virginia
June 21-23, 2023

TRAINING WORKSHOP AGENDA

PURPOSE OF THE TRAINING WORKSHOP

To provide state, tribal, and territorial water quality and data program staff with an opportunity to continue to learn about and develop collaboration, coordination, and communication approaches that improve programmatic understanding, processes, and outcomes

WORKSHOP OBJECTIVES

- Re-establish connections and build new ones among state, tribal, and territorial staff and with EPA Regional and Headquarters staff, enhancing the network of water quality data management, listing, and TMDL professionals
- Improve the coordination between water quality data management efforts and CWA 303(d) Program activities
- Learn about and contribute to approaches to the Focus Areas of the 2022-2032 CWA 303(d) Vision
- Learn about and share approaches to collaboratively prioritizing waterbodies for plan development
- Develop technical skills and programmatic acumen
- Learn about and contribute to the ideas and methods for better incorporating environmental justice and climate change considerations into water quality data management, assessment, and restoration and protection activities
- Learn about and contribute to approaches to communicating with and collaborating with a wide range of partners
- Receive updates on research, materials, tools, and legal developments relevant to the CWA 303(d) Program

OUTPUTS

- A final report summarizing the proceedings of the training workshop, to serve as a reference and assist program personnel in achieving programmatic requirements
- A companion website for this training workshop that contains the materials, presentation slides, and participant list for use during the event and as a reference afterwards

Tuesday, June 20   *Arrival, Check-In, and Registration*

2:00 pm – 8:00 pm   NCTC Check-In and Training Workshop Registration
                           Main Lodge

5:30 pm – 7:30 pm   Dinner (Open)
                           Commons Dining Room

8:00 pm – 9:00 pm   Informal Welcome
                           Rachel Carson & Ding Darling Lodges, Lounge Area

Wednesday, June 21   *Training Workshop Day 1*

6:30 am – 9:00 am   Breakfast (Open)
                           Commons Dining Room

                           [From 8:00am to 8:30am in the back of the Dining Room, there is an
                           opportunity for participants to ask questions about getting around
                           NCTC, the agenda, and making the most of the week.]

9:00 am – 10:00 am   **Welcome**
                           Auditorium

                           Greeting
                                                              Adam Schempp, ELI
                           Introduction
                                                              Jim Havard, EPA HQ
                                                              Stacey Yonce, EPA HQ
                           Clean Water Pod
                                                              Jeff Berckes, Flip the Field
                           Overview of the Agenda
                                                              Adam Schempp, ELI

10:00 am – 10:30 am   Morning Break

10:30 am – 12:00 pm	**Session #1**
	Breakouts I
	Breakout Rooms, Various Locations

This session consists of six breakouts, each focusing on a different topic. In-person participants are registered for specific breakouts based on their topic preferences expressed prior to the training workshop.

- How to Assess/List Waters and Develop TMDLs with Narrative Nutrient Criteria
  Auditorium
- Environmental Justice: Achieving Meaningful Involvement
  107 Instructional East
- Advance Restoration Plans/5R and 4B Plans: Examples and EPA's Expectations
  201 Instructional East
- Evaluating TMDL Effectiveness: Getting the Necessary Data through Existing Means
  154 Instructional West
- ATTAINS: A Secret Sauce Training (intermediate to advanced)
  105 Instructional East
- Continuous Data Management Options and Tools
  111 Instructional East

| 12:00 pm – 1:00 pm | Lunch |
| | Commons Dining Room |

1:00 pm – 1:30 pm	**Keynote Address**
	Auditorium
	Bruno Pigott, EPA HQ

1:30 pm – 3:00 pm	**Session #2**
	Interagency Collaboration
	Auditorium

This session brings together staff of multiple federal agencies and a tribe to share lessons learned from cooperation, including keys to building and maintaining relationships, how to identify opportunities for collaboration, and effective means of sharing data.
- *Bonita Johnson, EPA Region 4* (moderator)
- *Allison Odell, U.S. Bureau of Reclamation*
- *Jeffrey Lerner, EPA Chesapeake Bay Program*
- *Bradley Dean, Federal Emergency Management Agency*
- *Nancy Schuldt, Fond du Lac Band*
- *Joan Carlson, U.S. Forest Service*
- *Martin Lowenfish, Natural Resources Conservation Service*

3:00 pm – 3:30 pm	Afternoon Break

3:30 pm – 5:00 pm **Session #3**
Data Resources and Communication Tools*^
Auditorium

What's New with How's My Waterway

Kiki Schneider, EPA HQ

The Internet of Water at EPA

Alex Porteous, EPA HQ

Data and Tools to Support Efficient & Reproducible Water
 Quality Assessments

Cristina Mullin, EPA HQ

Mapping Tools: Leaflet and My Maps

Alan Ochoa Rodriguez, UT

5:30 pm – 7:00 pm Dinner (Open)
Commons Dining Room

7:00 pm – 10:00 pm Bonfire and Scavenger Hunt

Thursday, June 22   *Training Workshop Day 2*

6:30 am – 8:30 am Breakfast (Open)
Commons Dining Room

8:30 am – 10:00 am **Office Hours and Mentorship Groups Period (Open)**

Recovery Potential Screening Tool Office Hours
 Drop in for help from EPA staff on using the RPS tool, including
 for prioritization purposes.

111 Instructional East

Office Hours: Clean Water Act and Environmental Justice Modules
 Drop in to learn about and discuss with EPA staff the CWA 303(d)
 content for the forthcoming *CWA Through an Environmental
 Justice Lens* online learning modules for the Watershed Academy.
 These modules (one for practitioners and one catered to the general
 public) will highlight water equity challenges and opportunities in
 watershed management.

103 Instructional East

<u>Data Tools Office Hours</u>

Drop in for help from EPA staff on a wide range of data tools:

- ATTAINS: Assessment Total Maximum Daily Load (TMDL) Tracking and Implementation System
- GRTS: Section 319 Nonpoint Source Grants Reporting and Tracking System
- HMW: How's My Waterway
- IoW: Internet of Water
- NHD/NHDPlus/Geospatial: National Hydrography Dataset or NHDPlus or geospatial data related to one of the programs listed here
- TADA: Tools for Automated Data Analysis
- WQX/WQP: Water Quality eXchange/Water Quality Portal

G24 and G30 Instructional East

<u>Clean Water Pod Conversations</u>

Meet with Jeff Berckes to discuss the podcast and share success stories about nutrients as well as broader themes like Vision Goals and Focus Areas that could appear on the next season.

108 Instructional East

<u>Mentorship Roundtables (9:00 am – 10:00 am)</u>

105 and 107 Instructional East

10:00 am – 10:30 am   Morning Break

10:30 am – 12:00 pm   **Session #4**
Incorporating Climate Change and Environmental Justice Considerations into Program Activities
Auditorium

Climate Change and the 303(d) Program Updates
Dylan Laird, EPA HQ
Thinking About Climate Change (Extending the Service Life of Our TMDLs)
Mike Kruse, MO
Climate Preppers: Michigan Edition
Molly Rippke, MI
Environmental Justice and the 303(d) Program Updates
Sara Schwartz, EPA HQ

12:00 pm – 1:30 pm   Lunch
Commons Dining Room

1:30 pm – 3:00 pm	**Session #5** **Breakouts II** Breakout Rooms, Various Locations

This session consists of eight breakouts, each focusing on a different topic. In-person participants are registered for specific breakouts based on their topic preferences expressed prior to the training workshop.

- Litigation on Assessment/Listing and TMDLs
  161 Instructional West
- Treatment in the Same Manner as a State (TAS) Authority for CWA 303(d): Adoption and Implementation
  107 Instructional East
- Examples of Water Quality Assessment Tools
  111 Instructional East
- Integrating Protection with Watershed-based Planning
  201 Instructional East
- Automation and the Use of R for TMDL Development
  105 Instructional East
- Introduction to Using Open Source R Tools for Automated Data Analysis (TADA) to Retrieve, Wrangle, and Clean WQP Data (Beginner R User)
  G24 Instructional East
- Introduction to Using Open Source R Tools for Automated Data Analysis (TADA) to Retrieve, Wrangle, and Clean WQP Data (Intermediate+ R User)
  G30 Instructional East
- How to Answer Common Questions with Available Data Tools
  156 Instructional West

3:00 pm – 3:30 pm	Afternoon Break

3:30 pm – 5:00 pm	**Regional Meetings** Breakout Rooms, Various Locations

This session consists of ten regional meetings, one for each EPA Region, each including the state, tribal, territorial, and EPA participants from that region.

Region 1: *105 Instructional East*   Region 6: *111 Instructional East*
Region 2: *158 Instructional West*   Region 7: *152 Instructional West*
Region 3: *161 Instructional West*   Region 8: *103 Instructional East*
Region 4: *201 Instructional East*   Region 9: *107 Instructional East*
Region 5: *154 Instructional West*   Region 10: *101 Instructional East*

| 5:30 pm – 7:00 pm | Dinner (Open) |
| | Commons Dining Room |

7:30 pm – 8:30 pm   **Informal Evening Events**

- A Discussion about How to Better Integrate the CWA 303(d) Programs and ATTAINS
  Rachel Carson Lodge, Lounge Area
- How to Shine a Light on Your Work [tips on communications]
  Ding Darling Lodge, Lounge Area
- A Discussion about Prioritization Strategies and Experiences
  Murie Lodge, Lounge Area

Friday, June 23   *Training Workshop Day 3*

6:30 am – 8:30 am   Breakfast (Open)
                       Commons Dining Room

8:30 am – 10:00 am   **Session #6**
                       Breakouts III
                       Breakout Rooms, Various Locations

This session consists of six breakouts, each focusing on a different topic. In-person participants are registered for specific breakouts based on their topic preferences expressed prior to the training workshop.

- Protection of Downstream Water Quality Standards through TMDLs
  Auditorium
- HABs: Criteria, When to Measure, and How to Tie it Back to a Pollutant
  161 Instructional West
- Stormwater and TMDLs: Examples of Approaches
  107 Instructional East
- Category 4C: Process and Examples of Successful Restoration
  105 Instructional East
- Finding and Using Data from the Water Quality Portal
  G24 Instructional East
- Tracking Changing Assessment Units and Updates on NHD+
  201 Instructional East

10:00 am – 10:30 am   Morning Break

10:30 am – 11:30 am	**Session #7**
	Prioritization and Planning
	Auditorium

Introduction to the Prioritization and Planning Session
Teagan Rostock, EPA HQ
How Vision 1.0 Secured Wisconsin's Program and Using Vision 2.0 to Identify Future Priorities
Ashley Beranek and Kevin Kirsch, WI
How Cross-Program Coordination and Environmental Justice are Changing the Way Colorado Prioritizes TMDLs for Vision 2.0
Barbara Bennett, CO

| 11:30 am – 12:00 pm | **Training Workshop Wrap-Up** |
| | Auditorium |

Summary and Next Steps
Beth MacBlane, NEIWPCC
Jasper Hobbs, ACWA
Stacey Yonce, EPA HQ
Jim Havard, EPA HQ
Adam Schempp, ELI

Send-Off Remarks
Dustin Shull, PA
Nancy Schuldt, Fond du Lac Band

| 12:00 pm | Lunch |
| | Commons Dining Room |

| 1:00 pm | Departure of Shuttle Bus I for Dulles Airport |
| | Aldo Leopold Lodge, Parking Lot |

| 1:15 pm | Departure of Shuttle Bus II for Dulles Airport |
| | Ding Darling Lodge, Parking Lot |

APPENDIX 2:
COMPILATION OF TRAINING WORKSHOP
PARTICIPANT EVALUATIONS

A total of 176 workshop participants (including individuals who attended in person and ones who joined remotely) completed an anonymous Participant Evaluation Form following the 2023 National Training Workshop. The combined numerical results from the evaluations indicate an overall event rating of "Very Good-to-Excellent" across all categories. In addition to the numerical responses, we received many written comments, which also are reproduced here.

Scale: 5 = Excellent, 4 = Very Good, 3 = Satisfactory, 2 = Fair, 1 = Poor

A.   The Workshop—Overall

Information Presented
        5 (107)   **4** (56)   **3** (11)   **2** (2)   **1** (0)   **AVG: 4.52**

Workshop Materials
        5 (109)   **4** (49)   **3** (15)   **2** (0)   **1** (0)   **AVG**: **4.54**

Workshop Organization
        5 (136)   **4** (34)   **3** (5)   **2** (0)   **1** (0)   **AVG**: **4.75**

Group Interaction
        5 (112)   **4** (47)   **3** (7)   **2** (1)   **1** (1)   **AVG**: **4.60**

Session Facilitation
        5 (106)   **4** (59)   **3** (8)   **2** (1)   **1** (0)   **AVG**: **4.55**

Conference Facility/Platform
        5 (124)   **4** (24)   **3** (6)   **2** (0)   **1** (0)   **AVG**: **4.77**

Comments:
- Overall, great experience yet again. Much more of a useful workshop in person. Very much enjoyed hearing perspectives from all states, territories, and tribes, and getting to know some new faces and seeing some I've seen in the past.
- Would prefer more breakouts and fewer auditorium sessions. Loved the breakouts and wanted to attend more.
- More focused TMDL content and modeling challenges.
- Wed after lunch 1-3pm – breakout sessions probably would have been better than this; Thurs 8:30-10 drop in conflicted with mentorship roundtables. Too many people talking in small rooms for this – 6 tables. Could not hear; Speakers need to talk closer and directly into microphones or turn up the volume – hard to hear; Maybe turn down front lights in auditorium when there are slides up.

- Love NCTC and ELI as the organizer – outstanding job!
- Just an amazing experience. Really hope to be able to come back again next year! The campus/facility is perfect. A great blend of meeting spaces, informal spaces, and nature.
- The agenda and breakouts are a little hard to understand in the document. More description would help and/or a list of attendees for breakouts that is alphabetical.
- This is my first in-person training, and I really liked it! Lots of info, great collaboration, and really nice people.
- I really liked the addition of the mentorships.
- Hosting a hybrid meeting is difficult. I am not sure how successful it was from a virtual perspective, but I believe it worked here. There were a few changes in timing, but nothing that caused problems. I applaud ELI for rising to the occasion. I am so thankful to get to attend in person. You really cannot replace the social networking time and side discussions. ELI/Adam and those working with him are masters of organization! The scavenger hunt was fun!
- Fantastic facility. Directions are well explained. Food was great. Presentations were great. Organized very well.
- Virtual attendance only, but the facility is great having been there for 2 past meetings!
- First time attending the conference and it was amazing!
- Great conference. Only thing that I suggest changing is recording sessions and having virtual participation. It does allow for more participation, but I think you sacrifice open and honest discussions. On a couple of occasions, I did not speak up because the session was being recorded and I didn't know who was listening in on the virtual side.
- Everything was incredible! Great sessions and great organization. Thank you.
- It was an immersive experience.
- This was my first time at the workshop. I am pleased with how well everything was run. I know it was a lot of hard work, but you all did a stellar job. Thank you!
- I wish there had been more time for networking. I felt like everything was rushed and there could have been more breaks for networking. A later start time for sessions/presentation could have been helpful to allow for more networking in the am.
- Excellent meeting, thank you!!!
- Great workshop. The level of organization/facilitation made it entirely stress free even with the technology hiccups on Tuesday.
- Attended virtually so I cannot comment on group interaction or the NCTC
- My only suggestion is to allow more time for "office hours" and working closely with the technical staff on ATTAINS, WQX, and TADA. I hate to miss out on the large group sessions, but as these are recorded, that may be an opportunity to allow for extended office hours.
- This was an outstanding workshop. Everything was so well organized and clearly communicated from the very first email to the final farewell. Thank you for all your efforts!
- Presentations sometimes seemed too general and thrown together rather quickly. This might be at least in part due to too many presenters jammed into each time slot. I might have benefited from deeper, more technical, and more polished presentations, but perhaps this isn't the right venue.

- I would have liked a few more smaller breakout sessions. It was a bit hard to interact as such a large group in the auditorium
- Would appreciate all-gender bathrooms on campus. Shorter, more focused sessions, no longer than 1 hour without a break. 2 hours with no break is too long and difficult to focus. Also, would appreciate more case studies.
- Everything was mostly fantastic. The internet outage was quite stressful at first, but it all worked out just fine!
- Will explain score for info presented in individual sessions. Re: facility: of course, it is lovely, food choices are great, staff is amazing. My Verizon cell service was much improved. Internet was an issue. It just continuously kicked me on and off it when trying to use my work laptop. Ended up using my phone hotspot for time-sensitive work that had to be done.
- Thank you for all your work to create a great conference/training collaboration experience!
- Outstanding as always. Very happy the focus was not on the Vision.
- Some topics (prioritization, EJ, climate change) were overly repetitive.
- I love the NCTC facility especially because it encourages after hours socialization. That being said, something closer to the west coast would make travel easier. As it stands, we spend just as much (if not more) time traveling as in the conference.
- I was only able to participate online but was glad I was able to still attend. I definitely learned a lot and those of my coworkers that did attend in person said they learned a lot, were able to mingle and talk with other states, and brought back additional information to share with our group. I am greatly looking forward to spending time watching the other recorded sessions.
- Overall the workshop was very well presented and organized.
- This was a really special conference. I don't know if it was the theme, coming off of COVID, or just everyone's passion. But I came away with so many ideas to share, and it will likely be a true highlight of my entire year!
- Consider a voluntary, color coded, sticker system on nametags to denote experience level. There could be a color for mentor, meaning they are willing to have people approach them for questions/information. New folks could wear a color denoting they are new and welcome advice/introductions. Not that we don't already network, but the colors could provide a conversation starter. This should be voluntary. Stickers could be provided at check in and participants could just apply them as they wanted. No extra work for ELI staff to code the nametags.
- What an impressive venue!
- The projected slide was a bit hard to see at times -- maybe we can turn off some lights at the front of the room (especially in the auditorium) during presentations!
- Audio could have been better. It was sometimes hard to hear the speaker even when computer audio was at 100%.
- I would love to have extended office hours so there is time to pass by multiple rooms and the one-on-one interaction there is incredibly valuable. I felt more engaged in the breakout sessions than the large auditorium presentations, but I understand that would need more presenters. I would strongly recommend continuing to record/simulcast the

sessions so that online attendees are not excluded, and in-person attendees can watch the sessions they could not attend later.

- This was my first time at this conference, and I have less than 1 year experience working for my state in water quality. Overall, I found the information in the conference valuable. The most useful parts were the breakout sessions where state examples and approaches were presented in more detail. The whole-group sessions could have had better content and more engaging presentation.

- The smaller sessions (including office hours) were more helpful than the larger sessions held in the auditorium. I recommend limiting the auditorium sessions for the next conference.

- I'm not sure if it's just extra energy/effort because it's the first in person event post-covid, but this year's training felt much more collaborative than in previous years. I also liked the mix of assessment and data versus the traditionally separate tracks - it felt much more unified. Overall, I think this training workshop was excellent.

- NCTC is amazing and the workshop was flawlessly organized, I'm so impressed. Interacting with people was definitely the highlight.

- The conference was good, and I enjoyed learning from the other states. The breakouts and interactions are always the most valuable aspects of the meeting. The evening sessions are also valuable in this regard. I find the all participant large talks generally less valuable although I did appreciate the honesty of some of the presenters. I am less inclined towards the hybrid setup and would prefer an all in-person approach.

- I think it would have been great if we were able to have the bonfire without the rain, but it might have been nice to have a rain plan where everyone got together in the same location. I think having the social in two different locations (Murie and Carson) didn't allow for as much group interaction.

- Too many plenary sessions and not enough time for the breakout sessions. I would have liked to attend many more of the breakout sessions. Too much of a focus on EJ and climate change at the expense of time for all of the other elements in the 2024 IR guidance. Once again, GREAT JOB ELI organizing this event and taking care of each and every one of us as if we were each your highest priority!!!!!

- This was a great conference, and I am thankful that I had the opportunity to attend.

- Overall, the workshop was amazing. The site, in particular, requiring us all to eat meals together and remain isolation prevented groups from going off and leaving less experienced people (like me) behind as would occur for typically structured academic type meeting. That was absolutely key to my outcomes from the meeting (being a 1st time attendee). A bit more detail on individual presenters in the breakouts would have been helpful. Also, the informal "night" workshop was interesting, but the person who ran the one I attended seemed to just give a bit of info and then say "ok, you all go". I would suggest more training on session moderation and/or the development of specific themes/questions to make the session more useful. The person did fine, but it could have been a bit more interactive and less free-form for a bunch of rightfully tired staff members who were interested in having a drink. Maybe poll attendees for questions/discussion points prior and come prepared with background information? Not sure.

- I noticed there were several mistakes on the participant list re: people's title/offices. That's the only reason I put a 3 for materials.

- I attended online, so I have no real opinion on the conference facility and had no group interaction, although I had the opportunity to ask questions.
- I would have rated the workshop organization a 5 except that in the breakout session (specifically the regional session) that included online participants did not run very smoothly. In that specific session, there was a lot of technical difficulties (feedback from the microphone, volume of speakers too high, getting the online participants to see the presentation properly) and the flow of the meeting was rough. I think this meeting would have been better if it was for in-person attendees only.
- Great conference. Great location (journey is long!). Great presentations and materials. Great food. No complaints or recommendations - very good.
- This is probably the best conference I have been to. Having it in person again is wonderful since so much of what I get out if it is the informal interactions at meals and before/after sessions.
- Excellent workshop overall. There could be some improvement on the organization of the sessions, but I'll make that comment in the appropriate location.
- Wish we had an additional day--there were many concurrent sessions that would have been interesting but could only attend 1.
- This has been one of the Best, well-organized conferences I have ever been to. Congratulations to you and you staff, well done.
- Great to be back in person! Much more interaction and conversation this way. Great agenda! I wish I could have attended more sessions. I appreciate that many were recorded.
- This was my first time at the conference, and it was an amazing and invaluable experience! The NCTC campus is wonderful, and this was so well organized. It would be nice in future hybrid events for the presenter notes to be made available/more easily accessible during presentations, since they weren't due to Zoom screen sharing. Other than that minor note, everything was fantastic.
- I get more out of the breakout sessions. I would use the auditorium for more upcoming topics like the EPA tribal base line criteria that we found out about in our region breakout. Anyways more breakout sessions please.
- One thing that was kind of frustrating as a virtual attendee is the inability to react or unmute during presentations.
- I participated virtually. The moderators did a very good job interacting with the virtual group, and the microphones and camera worked well during the presentations.
- Attended virtually and want to say THANK YOU for all who organized it! It was great and I definitely would attend virtually next year if offered.
- Great administration of the conference
- I have really enjoyed this conference and learned a lot!
- I was a virtual participant, so Workshop Materials and Conference Facility DNA.
- There was much talk about incorporating environmental justice into TMDL development, however it did not seem like any minorities or tribal liaisons were at the conference. Having these groups actually present on how to interface with them would be highly beneficial. There is a bit of irony that we as state governments talk of inclusion, but always fail to help involve them into the conversation and planning.
- Just an amazing experience. Would love to come back. Thanks for all your hard work.

- It is my first time in the workshop and it will be very useful for the work I do.
- Online participation was great! The technology worked well and was great to tune in from afar. Thank you!
- Virtual attendee. Group interaction scored low because as a participant, there was not a way to see the names of other virtual participants in the sessions in zoom (this is different than teams where you can see people in the virtual room). The camera helped some for NCTC participants, but it was also hard to see who was physically in the room and asking questions. (But still appreciate the virtual option, just room for improvement).
- As a newbie to the conference, I was a little confused by the different types of events (breakout vs session vs workshop)
- Attended virtually. Didn't use the facilities.
- The Informal Welcome was really great. I had many great conversations with other states in the Ding Darling lodge.
- The audio at each online session varied. Sometime my speakers were at max volume to listen. Other times it was coming in fine. Other than that, I experienced no technical issues and found this conference successful and informative.

B.   Goals and Expectations

How effective was the workshop in satisfying the stated goals?
    5 (105)   **4** (60)   **3** (6)   **2** (0)   **1** (0)   **AVG: 4.57**

How successfully did the workshop meet your own expectations?
    5 (108)   **4** (52)   **3** (12)   **2** (0)   **1** (0)   **AVG: 4.55**

Comments:
- This year's workshop was beyond my expectation, as I have learned so many new programs, panel discussions were great, and all the breakout sessions were to the point of what would help in coming years.
- I am normally a critical person! Really! But, I love this conference. I am so glad to be able to expose my staff to the conference.
- Thought that the "deep dive" into assessment issues was available, but for TMDLs, it wasn't quite as present.
- Really enjoyed this workshop and very grateful for the opportunity to attend. Very well run, very worthwhile, absolutely wonderful campus. Thank you!
- I feel that the meeting was well coordinated and well thought out. It is challenging to cover materials that will be a benefit for all attendees, especially considering the diversity of this meeting.
- Exceeded expectations. You created a place where we could have all our needs met (Food, water, space to think, and shelter) so we could focus on why we were there. This allowed so much opportunity to engage with the other attendees and expand our thinking.
- Great learning opportunities and interesting/diverse presentations.
- Exceeded expectations.

- I expected to meet and network with contacts both within and outside of my region (R8) and was able to do this in multiple settings. From structured breakouts and office hours to informal lunches and walks. I am a newer staff member in my program and gained so much from listening to and speaking with more experienced individuals in a variety of roles.
- It was a great workshop. Like I stated before, it would have been absolutely perfect if we had more time/had more opportunities to interact, ask questions and have discussions in smaller groups
- The reconnection, collaboration, EJ and climate change objectives were well met. I felt like there is still some disconnect between the data and policy sides, where several sessions were kind of preaching to the choir but am not sure how to resolve that. A few sessions were not to the level of detail or in the weeds as much as I was hoping for.
- The amount of networking that took place was invaluable.
- Exceeded all of my expectations!
- Exceeded expectations in facility and organization. Very well hosted. However plenary sessions in large group were a little too broad and not very applicable.
- The workshop definitely helped facilitate connections between state, tribal, and EPA staff. That was very valuable. Regarding EJ, climate change, and planning and prioritization, I think the workshop hammered on these topics too much and too often with little meaningful content. We've all read the IR memo - we know what was in it. Just reiterating that in a boring slideshow is NOT helpful. What was helpful were the state case examples of how climate change, planning, and EJ were actually addressed. I would recommend in the future thinking about how to have more of the latter and less of the former. Also, I think rather than really pushing the concepts of EJ and climate change, what many of us need is more detailed support in that content. You're not going to get much meaningful change in incorporating climate change and EJ if people don't really understand why it's important, how it's relevant to our work, and how to address it. I also think that the workshop would have better met all goals if we had fewer large-group sessions and more breakout sessions. Even duplicating the breakout sessions (each session offered twice) would have been great. There were so many breakout sessions I wanted to attend but couldn't.
- The EPA regional meeting was very helpful but was too short. It would be great if the regional meeting was longer or multiple sessions were held.
- I believe the workshop met most if not all of its goals. I definitely feel better prepared for my job duties pertaining to 303d/integrated report because of this workshop.
- I thought the workshop was great. Well run and organized. The content was mixed. Meeting in person and getting to have important conversations, get to know people I work with, etc. was the most fulfilling part.
- I have come away energized and with new ideas for what is feasible.
- The content was great, but there are a lot of factors limiting our ability to implement these ideas (politics)
- Exceeded my expectations actually. I figured it'd be a lot of information I'd seen on calls and in other presentations, but it was more detailed with new information almost the entire time. Just awesome.
- I enjoyed the workshop
- I learned a lot!

- The workshop exceeded expectations. I very happy we didn't spend much time on the Vision. The Vision is important, but we've had too many conversations about it already.
- My expectations were surpassed! The sessions were informative and engaging and covered a wide variety of approaches for addressing CWA topics, environmental justice, and climate change that I cannot wait to bring back to Arizona.
- Thank you!
- I learned so much about 303(d) listing and TMDL's that I didn't know as a member of Standards and Assessment.
- This workshop is always a highlight because I find it incredibly useful learning how other states are approaching similar issues to what we're facing. It makes our work more efficient.

C.   Specific Sessions

Welcome
5 (76)   **4** (34)   **3** (6)   **2** (3)   **1** (0)   **AVG: 4.53**

Comments:
- I thought it was nice having everyone introduce themselves and helped us locate folks within our Region that I hadn't seen yet. Not sure how exactly this would work, but it would have been helpful to know who was participating online. Not just in the Welcome session, but throughout the training.
- Going around the room with introductions is a waste of time with such a large group. Just have a speaker give states like "all 50 states represented" "3 tribes and 2 territories represented" "100 EPA reps" here to give us an idea. We will actually meet and talk to people as conf goes on.
- Uninspiring and boring. Slides would have been more interesting. Need more excitement to kick off the meeting like in 2017.
- I don't think I ever heard a breakdown on how many states, territories, and tribes participated. I think that is really neat to know.
- The timing of presentations was good.
- Although it took a long time to go through the room, I think it was great to allow each person the chance to introduce themselves.
- Good speakers, positive and energizing start to conference
- Less introductions of random people (EPA HQ) and more description of the intent of the workshop would have been good.
- As a first-time attendee in-person, I found the welcome very informative and warm
- Very engaging!
- Helpful to hear about the goals for the clean water pod and get a lay-out of what to expect for the week.
- Overall, from the Introduction and many EPA-led whole-group sessions, the presentations were very dull. I would really encourage presenters to get feedback on their presentations and try to make the content more engaging. If it's costing thousands of $ for each person to be there, presentations need to be higher quality. Adam - you were always great though!

- I think the welcome session provided a good overview of things to be covered in the workshop as well as new/up and coming things from the EPA.
- Would have been nice to get some inspiring words, maybe slides or some type of interactive polling (would require technology/cell phones/wifi) with questions like is this your first time at this conference, first time at NCTC, how many years (with range choices) have you been in the program, what would you rate your experience level, etc (and then the results show on the screen as the people vote in real time) just to get everyone's attention and getting to know the audience some. Would be nice to have a relevant motivational person to bring in some energy and humor into opening the week.
- Inspiring!
- With a full room, never a bad thing to have a few slides up during the intros with key websites and other pertinent details. The same static slide for all the speakers could have been improved.
- More engaging big picture, inspirational talks would have been a good intro versus the programmatic overviews.

Session #1: Breakouts I

Overall Rating: **5** (73)   **4** (40)   **3** (8)   **2** (2)   **1** (0)   **AVG: 4.49**

How to Assess/List Waters and Develop TMDLs with Narrative Nutrient Criteria
            5 (19)   **4** (10)   **3** (1)   **2** (0)   **1** (0)   **AVG: 4.60**
Comments:
- Loved the presenters, but would have preferred a smaller format with more time for discussion.
- How to Assess/List Waters and Develop TMDLs with Narrative Nutrient Criteria was great! Very helpful and implementable tips!
- Really loved this one! The speakers had very concrete examples and clear presentations.
- I attended the narrative nutrients breakout. All of the presenters were fantastic and having a breakout dedicated to nutrients was great, since this is an issue Arizona is struggling with.
- Great session. My personal favorite as I work with nutrients. Great examples of implementation of narrative nutrient criteria.
- Very detailed presentation from CT.
- Good presentations and interesting to see how different agencies assess and write TMDLs for nutrients.

Environmental Justice: Achieving Meaningful Involvement
            5 (9)   **4** (2)   **3** (0)   **2** (0)   **1** (0)   **AVG: 4.81**
Comments:
- Great Q&A: Queen Quet was a great guest!
- Excellent, very good speakers especially Queen
- This session was very moving and eye opening.
- VERY powerful breakout on environmental justice. though the irony was not lost on me that EPA was speaking towards how we need to meet people where they are at, literally

physically, yet will not allow tribal liaisons to live in the state of the tribal nations they serve.

- One of the best sessions I participated in! Queen Quet was a fantastic speaker!
- I thought the speakers and conversation were quite interesting.
- The Meaningful Involvement panelists were great. They provided significant information for agencies engaging and communicating with communities with environmental justice concerns.

Advance Restoration Plans/5R and 4B Plans: Examples and EPA's Expectations
5 (9)   **4** (7)   **3** (1)   **2** (2)   **1** (0)   **AVG: 4.21**

Comments:
- Presentations were good examples of 2 very different approaches to ARPs. Many questions were about why an ARP should be or was done versus a TMDL or 4B. More emphasis on the differences between these in the first presentation would have helped.
- This presentation was great in explaining what the 5R and 4B categories were. The format of explaining the different categories (by Chris Hunter) and then moving into examples after (given by states) was great.
- Good presentation by EPA and some good examples from states.
- I would have liked a deeper and more technical presentation. Seems like the presentations were too general.
- Great info. Helped to have EPA clarify a few points and see state examples that were successfully accepted. A crosswalk/checklist for 4b acceptance would be a helpful addition to the handouts.
- I thought the presentations and examples presented were good. There is still generally confusion about EPA's expectations for these, though, even for regional and state staff that attended the session.
- I was hoping for more conversation on the bigger pictures of how ARPs could be used, but still useful. Discovered later some other states doing even more ARPs - Pennsylvania.
- ARP discussion was good.
- Breakout topic was ARPs. Session was great. Presentations went a little long, so unfortunately conversations cut short. But not necessarily a criticism.
- There was a lot of background chatter in the room that made it hard to hear at times. Some presentations were not screen shared with virtual participants
- Good, but would have been useful to discuss more rules of the road on how to select between TMDL and other action. Discussion of pro/con TMDL vs other plan would have been interesting

Evaluating TMDL Effectiveness: Getting the Necessary Data through Existing Means
5 (4)   **4** (4)   **3** (2)   **2** (0)   **1** (0)   **AVG: 4.20**

Comments:
- This was an excellent breakout. There was a sufficient variety of states and examples. The Q&A session turned into a very collaborative conversation. Another similar session would be helpful or maybe breakout by type of TMDL. We ran out of time.
- Hoping to utilize some of the Maryland SW implementation resources discussed. I found this session very useful.

- This breakout was great. The presentations were very helpful. There needed to be more time for group discussion.
- There were some good presentations, but nothing really new information-wise.

ATTAINS: A Secret Sauce Training (intermediate to advanced)
5 (6)　**4** (3)　**3** (2)　**2** (0)　**1** (0)　**AVG: 4.36**

Comments:
- Always learn something new, and I appreciate all the details on navigating through the ATTAINS UI
- Jesse and Wendy did a good job. This session was what I expected, and it had some helpful tips. Maybe we could do quick intros in these breakout sessions as well.
- I've heard the session with this title many times and am a DMC and still learned several new, really useful tools during this session. I would have loved for there to be more folks in attendance.
- I selected 4, because I had already viewed a similar presentation online and appreciated that recording being available/posted to SharePoint.
- Discussed How's My Waterway, using column filters in ATTAINS, and how to resolve issues with delisting using manual uploads but described as "intermediate to advanced"
- Really enjoyed this breakout. Those helpful tips were HUGE for me as a routine state user.

Continuous Data Management Options and Tools
5 (10)　**4** (9)　**3** (1)　**2** (0)　**1** (0)　**AVG: 4.45**

Comments:
- Not timed particularly well to get Q&A in, but very informational
- Continuous data breakout was informative
- It was so good! Thank you!!
- Would have appreciated having the recording for the continuous data management breakout.
- Very informative, more in-depth conversation of what to assess would have been good.
- The information presented was very helpful, but we ran short on time for comments/questions. Providing a list of links/resources discussed in the session would be helpful.
- I learned a lot but had some questions that we didn't get time to answer. I put them on a sticky note but not sure what the follow up plan was for that. Also would like to hear a bit more on the methodology that states use for assessing cont. data and not just how to find it. Also, does USGS submit cont. data to the portal? I've never seen it, but would be good to have - I usually have to reach out to someone and ask which gauges were in use during our POR
- Again, new and useful information throughout.
- Didn't like the recorded videos--was hard to follow

Session #2: Interagency Collaboration

5 (39) **4** (36) **3** (28) **2** (19) **1** (1) **AVG: 3.75**

Comments:

- Some excellent speakers, especially FEMA guy. Good treatment of the subject.
- Too much about large collaboration projects
- Please seat the panel members in the order of the projected list so we can remember who is who
- Tough to sit through after lunch
- Missed most of it, had to take care of some work commitments
- While the panel gave examples from personal experience, they maybe missed the mark on helping identify opportunities. How to look for best opportunities or maybe even situations to avoid.
- Not very useful, hard to understand, could have been shorter!
- It was difficult to follow this session. The size of the panel and the abstract nature of the material made it quote difficult to find it relatable or valuable.
- Bonita did a great job facilitating this session! Overall, it was lengthy but the time was well managed. I was drawn to the experiences when collaboration was not good. I think we need to think about how badly things can be derailed to keep us on track. We don't want to become complacent and isolated.
- The panel was diverse and presented really good info on challenges and ways to improve interagency collaboration.
- There is a wealth of information that we can use from representative of different programs in the TMDL development process. Great panel discussion!
- Session facilitation for the collaboration session in the auditorium on Wednesday could have been a little better prepared and the discussion panel could have been a little more diverse. I also think this session was a bit too long at 1.5 hrs.
- I felt like the structure of the facilitation for the panel could have been improved to enhance the information provided.
- This seemed to have good intentions, but the format and questions didn't give the states the chance to interact and learn a lot. More specific stories would have been better.
- I'm not sure why, but this session was not engaging to me. I found this to be the least favorite session I attended.
- Should have had state representatives. Did not seem relevant to my work and was a scattered presentation.
- The facilitator seemed a bit unprepared and could have been stronger at group facilitation, asking open ended questions to tease more out of the answers. A person with stronger facilitation skills should be doing this. The group could've been a bit more diverse. The session was a bit long. Keep it to an hour.
- I thought this session went a little long, and was very general in nature. Tips like "it's important to communicate and work together," are true, but not particularly helpful in any tangible way. I would have liked to see tribal members and representatives leading more of this discussion. I felt like the tribe on the panel hinted at more critical points but held back from sharing them. I think some space to allow for critical discussions could be healthy, but this won't happen unless it is encouraged by the organizers of this workshop. There is certainly helpful lessons, principles, and best practices to be shared in the

universe of "interagency collaboration," especially since that is a lot of what these programs entail (EPA - State relations are also interagency). I think getting into more specifics here, and hearing about the troubles could be instructive.

- Maybe it was due to the incredible lunch, but I did not find this session very informative or interesting.
- I would have liked to see more state interagency collaboration, between the agricultural departments and environmental departments. There could almost be a session dedicated to federal and then state.
- I got very little out of this. Maybe there were too many panelists talking about too many different things.
- I appreciate the intent behind this session, but it was hard to sit through for several reasons. 1) it was right after lunch (for which 1 hour wasn't long enough). It would be better to have engaging sessions, such as roundtables or discussions after lunch so people don't fall asleep. 2) I felt it was negative and low energy on the part of the panelists. There were few concrete examples of successful collaboration and I came away from the session very discouraged. It seemed like some of the panelists did not have anything to contribute at all/didn't want to be there. I also sympathize with them in this regard; 1.5 hours is a long time to sit on stage. The only reason I gave this session as high as a 2 was because Bonita Johnson was an awesome, upbeat moderator with excellent questions (and it wasn't her fault they received poor/low energy/negative responses from the panelists). This was the low point of the conference for me.
- Not enough audience participation. Responses were too vague and high level. Specific examples would be better.
- Too general, seemed vague. Appreciate more focused topics. Session too long.
- This session was good, and I got some useful information from it. I particularly appreciated the contributions from Bradley Dean with FEMA. However, the session was a bit slow and long for right after lunch.
- Helpful conversation but the session was too long after lunch and I had trouble staying attentive.
- I heard many folks say they loved the FEMA speaker's perspective and even heard him quoted several times.
- Excellent panel and facilitation--it was clear that a lot of thought went into this. I took a ton of notes and heard from others that they thought this was exceptionally well done.
- Again, good examples of efforts. Also, at least some of the panelists were willing to acknowledge errors or how improvements could be made.
- Seemed to target the managers/supervisors in the room. Wasn't very useful or interactive.
- I don't find facilitated panel discussions incredibly helpful. There should have been more time for questions from the attendees. Also, I'm not sure how other agencies are run, but there is little guidance on how to collaborate from a subordinate level. The people on the panel are all leads of some sort.
- Fantastic!! This was so interesting and I loved the collaborative way it was presented. So much great information! I would have liked to see a representative that was more at a staff level instead of supervisory. Even as a staffer, I am constantly trying to find ways to collaborate with fellow colleagues and it would have been nice to have that perspective too.
- Some interesting information, but not exceptionally useful.

- Good stories of what worked and what didn't.
- FEMA contact was well learned on this topic.
- I felt like the format of open discussion with a moderator was not helpful for this subject. Instead of a panel, I would've preferred individual presentations featuring more concrete examples.
- In my work, I am never working with people at the level of the people speaking. I am working with people at lower levels of management. So, why weren't these people on the panel? Nancy Schuldt and Jeff Lerner were more along the lines of people I might collaborate with. It just felt like what the higher ups had to say was not very detailed, not very relevant to the issues I deal with. It might have been better to have several case studies where multiple collaborators on the same project share how they had successful collaboration, rather than just a Q&A. I felt like a lot of the responses were too generic/broad.
- The presenters were good and offered some interesting insight, but this session was too long.
- Having the panel seated in order matching the name list on the slide would help with remembering who is who. Otherwise, I liked the "informal" approach - it really felt like a conversation between the panel and attendees.
- This session could have been good if it had not been an hour and a half or right after another session with no break and all right after lunch. Facilitator and panel were good, just went wayyy too long.
- I didn't actually get a whole lot out of this, but it was a nice idea.
- Although the content and discussion was good, this session could have been shorter. 1.5 hours was a bit much.
- A lot of talking, not a lot actually said. Not sure who in the audience would be so unfamiliar with the idea of collaboration that this session was even necessary. Should have been one 30-minute presentation at most.
- The session was good overall. The inclusion of more states would have been helpful. The tribe's comments were good and a reminder of areas that can be improved upon. Bonita did a good job as moderator.
- Sounds great in theory, but has been difficult in practice for us
- Presented an ivory tower view from the highest level of management in the various agencies without much context.
- This session was too long and not especially engaging.
- I get that when you bring in names from other agencies, you can't just put them in a single breakout. They likely "need" a plenary session. The moderator did a good job, and the information was interesting. I did jot down some ideas, but overall this was a bit overview to be useful as "training". I think this topic would have been more effective as a breakout with training on specific approaches to collaboration. But, having a single breakout with that type of "firepower" from other agencies isn't really feasible. NOTE: I may be a bit harsh given that the rest of the workshop was so very good. This "2" is a comparative score since the rest of the workshop was so over the top amazing.
- This session had so much potential, but I thought the discussion topics were too high level without any concrete examples or case studies. And I wished there were less federal agency representatives and more state and tribal representatives.

- Great examples
- Mostly relevant conversation, but this may have been better served as a breakout for interested parties.
- Would have been better to have presentations and deep dive into great examples of partnerships and lessons learned
- This session was good, but I wish the conversation was tied more to 303(d)
- This panel was informative and the panelists had great examples of successes and shortcomings with collaboration efforts. The variety of perspectives was also good.
- Thank you!
- I felt like it went a little long
- A bit more background from speakers would have been good.
- This was highly informative and interesting. The moderator did an exceptional job keeping the conversation going. That was a quick 1.5 hours. The panelists were all knowledgeable and contributed greatly.
- A bit long
- I expected more from this conversation. Did not flow well and lot of points that most people know, but are hard to actually do. More discussion on the "doing" would have helped. Also, more distinction between short-term (say few years on a TMDL) vs large long term established efforts (40 years bay program) would have been helpful.
- I always attend these type of sessions hoping to get tips on how to make connections for interagency collaboration but often still feel uninformed. Don't really know how to change it though

Session #3: Data Resources and Communication Tools
<div align="center">5 (54)   4 (37)   3 (14)   2 (5)   1 (0) AVG: 4.27</div>

Comments:
- Loved all the data content
- Great session, especially liked the Mapping Tools presentation from Utah
- Make EPA presentations more engaging
- OK
- HMW could have been an entire breakout
- On whole group sessions it might be good to assume that some people are not bringing a huge knowledge base w/ them on some of this stuff. These presentations seemed out of order – still not 100% sure what the internet of water is exactly
- The best session. Very interesting tools and discussions. Engaging speakers, wanted to see even more showcased. These people are awesome.
- Learned about some great new tools I wasn't aware of!
- These sessions are essential to share information. There are so many data and tools out there for the public to see. It is good to know how our data is displayed and provided, so we can make sure things are up to date and consistent.
- Good topics related to use of available and emerging data sources and tools to present data to internal and external consumers of that data.
- This was a great intro to resources available and becoming available and I appreciated that there were opportunities to learn more about them in following days. A beneficial breakout would be states stepping through how they have used them.

- Found this to be kind of boring. Again, maybe there were too many presenters jammed into one timeslot, so we only scratched the surface on any on program. Perhaps we would have done just as well to have a handout describing what the programs were.
- I really enjoyed this session. Most of the presenters were well organized engaging speakers with great information on available data tools.
- Great state presentation. EPA examples shown to a broad audience should've been vetted with the states first, state examples were incorrect and were frustrating to states involved.
- I felt and heard a few others say this session was too general and was redundant. It seemed like Kiki explained things really well and then the Internet of Water section repeated a lot of what Kiki said. Switching the order of the presentations may have resolved that, so the HMW one was kind of set up by the IOW one. This may have been better as a session focused on the policy folks since to the data side it was information we were all well familiar with.
- Alas, just not my thing.
- This information was mostly redundant for me, and I didn't gain much from the session. More information about the upcoming TADA package would have been welcomed.
- This was really helpful although I still don't understand what the Internet of Water is and what the point is.
- Too broad of topics, need more details and an example explanation of what TADA actually does
- This session was somewhat helpful in seeing what is being worked on. Alex & Cristina's presentations felt dull and I did not keep my attention. Again, maybe it would be helpful to think about how to make these talks more engaging. If people aren't engaged, they're not going to learn, no matter how much content is in your slides.
- Try to encourage presenters to be more engaging with their presentation. Some were hard to follow because the speaker wasn't engaging.
- It was helpful to see the updates to How's My Waterway and interesting to see what tools are being developed. I remain skeptical of the term the internet of water.
- Meh, didn't really get much from this session.
- There seems to be an over emphasis on How's My Waterway. It's an admittedly impressive and useful tool, but not sure how much more time needs to be spent introducing it to this crowd.
- Of the big auditorium talks, this was likely the best. I only give a 4 since it was difficult to ask questions.   NOTE: The talk from EPA about the fate of NHD+ in the last breakout likely would have been a good topic for an "auditorium" talk (in my opinion).
- I learned some useful information in this session. I had trouble hearing some of the speakers though.
- Great insight on the updates to the data tools and EPA work--would have liked a deeper dive into some of those tools like How's My Waterway
- Thank you!
- Almost too broad. Some of the PPTs could have done better with more info. Don't assume that everyone knows where these websites are and have looked at them before.
- Maybe I missed the sections where presentations discussed ways to use the data collected by the tools. What are we collecting data for? Have we "communicated" the data in the

most effective ways? Have data been integrated with information that people need to restore and protect water resources?

Office Hours and Mentorship Groups
5 (46)   4 (21)   3 (17)   2 (2)   1 (1)   **AVG: 4.25**

Comments:
- Listing/assessment/IR – we had a good discussion, not everyone have specific questions but it was useful
- Mentorship provided interesting conversation, but since it overlapped with office hours, I was unable to stay very long
- One on one is great but did not have time to go to a different room/building
- TMDL table great concept
- Needed more time on Data Tools
- Very helpful to me for a specific question I had
- Just a little more structure here might be helpful
- Excellent breakout
- Data tools – staff was very knowledgeable, and all my questions were answered. Can we have 2 office hours sessions next time?
- CWA and EJ module – I think this may have been on me, but this session was not what I was expecting. But I think I maybe didn't have enough background info! I wish I had seen Sarah's presentation first. I was expecting to learn more about EJ, since I have limited knowledge about the topic.
- A coworker made a good point: if possible, this should be done on a Friday once there has been another day of training so people have more to ask about.
- CWA + EJ modules – excellent comments from the group and it was good to get a sneak peek of the documents used to inform the EJ modules in Watershed Academy
- Participants shared current issues with hiring new employees – it has become challenging. Funding support – "infrastructure bill" may provide some needed support and will be discussing with Agency programs on how to tap into this new resource.
- Liked not having mentors identified. Good conversations in the small groups. Good way to learn from each other.
- I attended the TMDL mentorship group. I was really excited for this session but our mentors didn't show up so we had to combine with other tables and it become so crowded that it felt some of us were lost in the shuffle. Loved the idea just needed more mentors!
- I would suggest having a forced break in the middle (or forced breaks every 15 minutes) to allow people to shift groups/tables. I felt like I was stuck at my table because nobody else was moving around. The break should be optional, but something concrete (rather than, "feel free to move whenever you want")
- Clean water pod. Good discussion with Jeff. I liked this but may consider having it as an after-hours thing or on the arrival day. Think there is more benefit to having a breakout session during this time.
- TMDL. Great opportunity to really connect with other states and discuss a specific topic.
- None of these really appealed to me.
- The mentorship group could have been facilitated a little bit tighter, possibly. I found myself in a group that spoke mostly about state-specific issues that did not really apply to

me. While it is helpful to hear about the state perspective, I thought having more questions guide the discussion could ensure that we covered diverse ground. I think there is potential for the mentorship, though, but maybe it can be more topic-based - "collaborating on nutrient issues," or "working on an interstate TMDL," etc. Getting people together with perspectives on these specific challenges could be really helpful.

- Mentorship Group - TMDL and Other Restoration Plans - We ran out of time here too. A breakout on AEP examples by region would be a helpful topic
- Clean Water Act and Environmental Justice Modules- liked the open discussion and the feedback given on the HQ documents concerning EJ and the 303(d) program
- This was very beneficial for networking and facilitating conversation that happens organically during the lunches/dinners. I could see a benefit of having an additional evening office hours/mentorship group.
- Saw the RPS tool. It looks like it could be useful.
- I really liked participating in the mentorship roundtables. I think how it went depends on the mentors/other folks at your table, but mine had some really engaging interesting mentors with good ideas, and good conversation topics. This was one of the highlights of the conference for me and I came away inspired and with a lot of great ideas.
- Prompt questions were not in packet but sent via email. It would've been helpful to have them available at the tables because most everything else was in the folders, except this.
- Attended mentorship group. Would like to see an LGBT focused track in the future, perhaps as a lunch option on Day 1.
- Mentorship Roundtables - I liked the mentorship tables and thought they were a great way to connect with people for a shared topic.
- Data Tools: several people attended and were able to get their questions answered. As a DMC I was helping to answer questions and felt like I had a meaningful discussion and demo with a new ATTAINS user.
- I thought this was helpful and a great way to connect people. If possible, consider avoiding putting states at tables with EPA folks in their region so that everyone can benefit from different perspectives (outside of their region).
- Mentor - Surprised by the energy the new staff had. Lots of good questions and discussion between states, not just EPA handing down wisdom. Very good session.
- The mentorship group was useful for understanding the organizational structure within multiple state's programs.
- I stopped in to talk about TADA and had the most helpful conversation with Elise Hinman. Not only did I learn more about the tool, but we shared other perspectives about data management and assessment units and I came away with some really helpful tips!
- I got more out of the mentor roundtable from other states than the assigned "mentor". Our mentor is certainly knowledgeable, but wasn't the best communicator or teacher. They spent most of the time telling long winded stories making it difficult to ask questions or move on to a new topic. I sat with my hand up to ask a question for several minutes and he didn't even notice until someone finally said "Kristi has a question." But networking with other States was very helpful. I would like a States roundtable session next time broken out by topic. I would have gotten more out of this session without the mentor.
- Tribal issues mentorship. Very good collaboration on sharing ideas for data analysis and assessment processes with AWQMS and a large range of other topics.

- "Recovery Potential Screening Tool Office Hours" and Mentorship Roundtables.   Great! For the mentorship roundtables, I would've appreciated some more guiding questions for each specific topic. Maybe next time, it could be more of a mixer, and a there could be a timer for each table/topic.
- TADA tools. 1 on 1 instruction was immensely informative.
- Mentorship. There was no mentor at my table. So, I joined another table with like 15 people. It was just a discussion session and didn't really feel like any kind of mentorship. I'm not sure what kind of guidance the mentors got. I think it could have been helpful to have specific topics/questions to start off with and then leave the second half of time for Q&A or discussion on other things. It just felt very unstructured, and I didn't really get much out of it.
- Recovery Potential Screening Tool office hours. There should be more opportunities like this at the conference.
- Data Tools; I think the office hours may have been more effective if held closer to the end. I'm still new to a lot of this, so I didn't have specific questions (yet). Because of this, I don't feel I was able to fully take advantage. Whereas if I had already participated in Breakouts II, I may have had more specific questions to be answered.
- TMDLs - this was a great conversation with lots of people. Clarified ideas, picked up new ideas, heard from other programs. I could have stayed here twice as long.
- It was helpful to hear about common problems and some approaches to them.
- Were there specific people designated as the mentees? Maybe some questions as examples. It was kind of hard to hear people since there were several groups in the same room
- Having a session similar to the mentorship roundtables but for all may be good.
- I went to office hours, but it wasn't what I was looking for (a place to ask specific questions). I was happy to see other colleagues getting great help, and see it as extremely useful (even if not for me). The mentorship talk I went to on Career Development was awesome. Great advice. Great moderation by the mentors. And, a great discussion. I got a lot out of it being with a state agency for only 2 years.
- I think the office hours are a great idea. It gives us a chance to meet with EPA staff without having to track them down in the meeting.
- TADA Office Hours/Management Mentorship. Data tools and mentorship roundtables co-occurring made things a little difficult. For example, I wanted to learn more about certain data tools, but only had 30 minutes before a mentorship session started that I had to go to.
- I liked the discussion in small group setting like this. It was comfortable, cathartic, and informative for me. Hearing from more senior members that had worked for multiple states, EPA, private sector, and elsewhere helped form my view of a career path in this field since my state has stalled on pay and has no hopes of doing better.
- I attended the mentorship group on environmental justice and climate change. I loved the opportunity to engage with other folks, especially as someone who is fairly young and new to this work. We had some great conversations and having a smaller space to talk about specific issues was really wonderful.
- I felt like we could have a little more direction on the conversation topics. I was in the EJ and climate change group.

- Career - Good time to meet others and hear what's going on for them. Spread this out into more rooms - almost too loud in the room to really hear what people were saying.

Session #4: Incorporating Climate Change and Environmental Justice Considerations into Program Activities
5 (51)   **4** (43)   **3** (20)   **2** (7)   **1** (1)   **AVG: 4.11**

Comments:
- Good ideas presented
- HQ climate talk was unnecessary – would have been useful to relate to what white paper said. Two state talks were very good. HQ EJ talk was good
- Make EPA presentations more engaging
- OK
- Still seems very broad and mostly vague. Good examples but could maybe use a little more structured guidance for states who haven't incorporated these topics just yet
- Great sessions, great ideas. Missouri guy was awesome.
- Very informative for this presentation format.
- These are both important/emerging issues. I appreciate all who shared.
- I thought it was good intro but a little light on the EJ part of the topic. Sara did a great job, and the other presenters as well, but a little more detail on prepping for climate change approaches taken/on the horizon and what EJ considerations are involved would have been good to include too.
- Very informative and may be helpful to look into monitoring/assessment information to incorporate both climate change and EJ in the 2026 IR cycle.
- would love to hear more from the American Samoa people about climate change there, and EJ in rural & conservative areas
- Would have liked to have seen both of these topics in breakout sessions. Would like to have dug into more details with EPA and other states.
- Not disregarding the fact that the climate has changed and will continue to change but the "science" behind today's politically driven climate change is questionable. We address what is occurring in the US but there is never any mention of how impacts from other over-polluting countries impact the climate globally. In addition, there was talk of recommending only using a period of record of 10 years for weather. Even 30 years is not enough. Weather is unpredictable and a period of record should look at the whole picture. Also, environmental impacts are not only restricted to EJ areas, and air and water impacts know no boundaries. Eventually, negative impacts will affect everybody as the air circulates and the water flows and seeps. All issues should be addressed from the most dire to the least.
- The climate change discussions were more helpful than the EJ but these two topics seem to be something that the states are wrestling with at the same time as the EPA. Future topics for more detailed discussions
- Very relevant to actions we will need to be taking in future TMDLs. Good concepts to incorporate in new TMDLs
- Presentations were kind of boring. Again, maybe too many presenters in one time spot leading to only superficial presentations.

- Great presentations. Especially enjoyed the states presentations with info about how to consider and directly incorporate EJ and climate change into TMDLs. Good concrete examples are super helpful and gave me lots of good ideas for our program.
- Would like to see more specific examples of incorporating climate change in TMDLs/TMDL implementation in a bigger way (e.g., one word in document language).
- Ok. Noticed this topic being integrated throughout other presentations. Could be done earlier in the session to set the stage/context for when other topics mention this.
- I wish that more could have been said about the examples in the white paper to get people thinking about the possibilities.
- Again, some very good examples of what can be done regarding consideration of climate change. Wish there had been more detail on the upcoming white paper - missed opportunity to start the discussion and direction the EPA wants to go.
- Not much practical advice for including climate change into our work was given. I didn't get much from this.
- I was preparing for this to be one of my least favorite sessions since these are such high level topics and very tough to incorporate into my day to day work, but I was really pleasantly surprised by the talks and how there were real tips, ideas, and focus on logical integration that was really helpful! I came away with a sense of understanding how I can actually start to work on Climate Change and EJ slowly but surely in our IR cycle this year.
- Interesting and hopefully useful information. Specifically MO discussed variable LA in TMDLs to account for change and MI looked at LULC over time in response to climate change.
- Too broad, not very case-study specific
- The talks by Mike Kruse and Molly Ripple were excellent. Really engaging presentations with specific examples of how they started addressing climate change. Sara Schwartz's talk was not very engaging and, again, just felt like another EPA person pushing something I'm not sure they really felt was important. I think EJ needs people to really emphasize WHY this is important. Not everyone understands why. That's the first step to getting meaningful change on this front.
- In general, the information presented was useful.
- State presenters were great.
- The topic is a good one. I think the presenters got a bit too deep into the details of what their organizations were doing rather than try to link what they were doing to the larger question and talk about how what they were doing could be applied more broadly. But it's a hard topic, and we are all still figuring out something concrete to say.
- There are historic and current impairments that need to be addressed, not sure if adding more into the mix to make it more complicated is the right use of resources.
- Good mix of states and EPA.
- These topics are presented as one-size-fits-all for all EPA regions and states. I think we've lost the forest through the trees with these topics. Clearly there are areas where these topics are very real and should be a very high priority (e.g., climate change in American Samoa and EJ in some areas of the more populated states). At the same time, EJ and climate change may not be a high priority in many areas given all the other

priorities that states need to address. I wish the message would have been more focused on a targeted approach where these issues are, in fact, a priority.

- Excellent mix of speakers who were highly engaging. A very thoughtful and important topic and discussion.
- Some great stories, and better than the collaboration session, but again, it was more overview than "training". It was also focused more on climate change.   First - I want to say that I didn't go to the EJ breakouts, so and likely I missed a lot of the training on EJ there. So, maybe what I suggest all happened, and I'm sorry if it did. For this "plenary", I think the EJ topics are too often presented as "this is important (which I realize not everyone believes and needs to be said)" rather than providing us transferable tools to implement them (again, maybe this was in the breakouts). Covering EJ at a meeting is very, very difficult (I've organized international meetings including this topic), so this isn't meant as a criticism. I helped organize the Symposium on Urbanization and Stream Ecology (SUSE) for 3 cycles (SUSE3-SUSE5) and was chair of one meeting; www.urbanstreamecology.org. These meetings, especially SUSE5, tried desperately to cover socio-environmental topics and provide training. From that experience, I suggest bringing in social scientists to give us specific, empirically based, information and tools to develop real solutions in addition to success stories from colleagues. There is a world of science out there that many of us are not exposed to regularly. The SUSE organizers struggled with this (and still do) since the social science realm rarely overlaps with ecology (academic and regulatory). It is a big challenge. I suggest looking to the organization SESYNC as a possible source of speakers and training (as one example). Also consider adding community stakeholders to panels on this. We did this for SUSE5 (www.urbanstreamecology.org), and it was seemed to be powerful and informative for the attendees as part of big presentations (I can provide our post-meeting polling if interested). That SUSE was organized around case-studies, which went into great detail about all topics including EJ, which is a bit different. Regardless, I think the power of their voice would work in any meeting. Just a thought.
- I have mixed reviews on this session. Dylan Laird did a great job overviewing resources to incorporate climate change, but the examples from Missouri and Michigan missed the mark. And I wish there was more EJ worked into the whole workshop.
- Learned a lot here!
- Good explanations and ideas
- Once again, my State got some good ideas from other States on how to address these EPA goals.
- These topics still seem a bit nebulous; however, there were some tangible examples of incorporating climate change and EJ into the 303(d) program.
- I received lots of good feedback from my presentation in this session. I hope people found it useful and informative. The responses to Adam's prompt asking the audience about their experiences provided very useful info.
- I loved this session. Hearing about how these complicated topics are being tackled by other states gave me new ideas on how Arizona may be able to integrate them into our work. It was also nice to be able to open it up to the audience at the end and hear what others not presenting were doing.
- Thank you!

- This felt a bit like it missed the mark. Sara should have been given more time to more extensively go over what EPA is doing.
- Really informative, great group of speakers.
- Greater facilitated discussion in the room would have been interesting.
- Lacked specific real time examples to connect to, case studies would have been better.

Session #5: Breakouts II

Overall Rating: **5** (60) **4** (46) **3** (12) **2** (1) **1** (0) **AVG: 4.38**

Litigation on Assessment/Listing and TMDLs
        5 (10) **4** (9) **3** (4) **2** (1) **1** (0) **AVG: 4.16**
Comments:
- Always so good to help us understand what might be coming down the line. Speeches were all concise – my favorite year so far.
- Very good, a great level of information, but slides were hard to read. Type was too small and color contrast difficult. Would have rather had presenters in person. A little strange.
- Information was helpful; lots of information was presented, but felt a little rushed to try to get through everything
- Because the presenters were all virtual, I felt this meeting was less engaging. Suggest having all presenters present in-person.
- Extremely valuable session.
- Dropped out of the Zoom and was unable to get back in.
- Not enough time for state questions and EPA legal answers were long when a quick answer would've helped. A summary takeaway slide would help- here's what you need to know for the next year. here's what will impact you and how.
- Always a critical topic. Always helps to remind us what is needed and tips to better processes and decisions.
- Incredible, learned a lot
- The only thing that would have improved this breakout would have been having the presenters in the room.
- This is always a very informative presentation that also provides tips for staying out of trouble (i.e., maintaining a good administrative record and thoughtfully responding to public comments). I would recommend including this topic in one of the plenary sessions every year. Everyone should hear this information.
- In-person speakers would be great, but this was still very informative.
- It was very interesting but sometimes the presenters got extremely law heavy (having to state exact laws) that the point of what they were saying got lost.
- Very difficult to hear audience questions
- Seems very similar to previous presentations on topic - would like to dig deeper into details on a few important cases rather than broad overview.
- Great session! Learned a lot. Thank you for having such a session.
- Too much of the lawyers just summarizing cases. Needed more context and implications. Why is the case important, what are the implications if the case is won or lost. Are we trying to settle or litigate a case, why or why not?

<u>Treatment in the Same Manner as a State (TAS) Authority for CWA 303(d): Adoption and Implementation</u>

5 (1)   **4** (3)   **3** (0)   **2** (0)   **1** (0)   **AVG: 4.25**

Comments:
- Found it interesting. Will be more useful once we have a tribe go through the process and we can discuss lessons learned.
- I enjoyed this session, as well, but it lacked information about how to fund the program, which is what most of the tribes present seemed interested in. It's difficult to ask people to do more work with no money.

<u>Examples of Water Quality Assessment Tools</u>

5 (5)   **4** (7)   **3** (1)   **2** (0)   **1** (0)   **AVG: 4.30**

Comments:
- Inspiring to see how other states are using various tools for assessment and showing data to the public on GIS online maps.
- Always inspiring but totally unattainable given our existing system and resource limitations, so ultimately not very useful
- Great presentations. One of my favorite breakouts/sessions. Lots of time for questions afterwards which was super helpful. Made some contacts, got some ideas. :)
- This session was extremely eye-opening. The EPA or another agency should figure out how to acquire or duplicate the tools displayed by CO and NM, and push those out to states ASAP.
- I presented in the Examples of Water Quality Assessment Tools. Despite 30 or so people assigned to this breakout, only about 10 people attended.   May want to reconsider holding this type of discussion next year, as it does not seem too popular.
- This should have been a plenary session--very informative. AZ has a great tool.
- I presented at the assessment tools breakout session. Someone had printed out our presentations with the speakers notes, but having a way to be able to access those within the presentation would be more ideal. The hybrid presentation is great to offer for those not able to attend in-person, so if that's not possible because of Zoom, no worries!

<u>Integrating Protection with Watershed-based Planning</u>

5 (6)   **4** (8)   **3** (0)   **2** (0)   **1** (0)   **AVG: 4.42**

Comments:
- This subject needs follow up with regions if "protection plans" will be acknowledged by EPA as part of future 5R
- I actually saw a well-done presentation about how land preservations agencies can be useful. I may try to incorporate this into my work.
- I learned some things in this section and it helped in other informal conversations that took place later.

<u>Automation and the Use of R for TMDL Development</u>

5 (8)   **4** (4)   **3** (1)   **2** (0)   **1** (0)   **AVG: 4.53**

Comments:
- I found this was my favorite presentation as I learned a ton from it.

- This session was a little over my head as I'm just learning R, but very insightful nonetheless.
- Good session. Had a lot of new ideas for people to think through for their programs.
- Automation and Use of R for TMDLs was good. It was at a nice high level which allowed you to see a variety of efforts.
- Wow! The states who presented are doing AMAZING things. Really impressive. I look forward to reaching out to them in the future for guidance.
- I would have liked a hands-on work session.

Introduction to Using Open Source R Tools for Automated Data Analysis (TADA) to Retrieve, Wrangle, and Clean WQP Data (Beginner R User)
5 (6)   **4** (5)   **3** (2)   **2** (0)   **1** (0)   **AVG: 4.30**
Comments:
- Some technical difficulties in the beginner TADA session, but the hosts were knowledgeable and willing to help
- The only issue was that not all computers were able to initially load TADA.
- This was good, but I wish we had gone a little further into coding
- Being able to play with the R Shiny version with someone there to answer questions was very helpful. It was very good to break the session into beginner & intermediate. I would have been hopelessly lost in the intermediate class.
- TADA. This tool shows a lot of promise, and it was good to test out the draft tool.

Introduction to Using Open Source R Tools for Automated Data Analysis (TADA) to Retrieve, Wrangle, and Clean WQP Data (Intermediate+ R User)
5 (5)   **4** (1)   **3** (0)   **2** (0)   **1** (0)   **AVG: 4.83**
Comments:
- Really excellent
- TADA intermediate was great! Such a useful well written tool. And easy to use. A powerhouse.
- Elise Hinman's TADA breakout session was really fantastic and well prepared.
- So good! Thank you! Loved the opportunity to go through TADA with the developers
- This was a great hands-on session! I will be using TADA in the near future and it was extremely valuable to me to have the instructor there to walk through the process of using Module 1. PLEASE include more of these types of session with TADA in the future.
- After the morning session with TADA, I switched my session and decided to come to this one to learn more about TADA. It was amazing and now I am really excited about the tool and can't wait to use it! My only complaint is that it was really hard to choose which breakout this session because as someone involved with data and the IR, I really wanted to go Water Quality Assessment Tools, TADA, and answering common questions with available data tools and they were all at the same time.
- I found it interesting to see what these tools can do. I think it would have been helpful to have more guidance in using the tool during the session. I can use and read R code, but it always takes a little while to figure out what someone's is trying to do especially with a dataset that isn't yours.

- I really enjoyed this session and feel like I got a lot out of it. TADA seems like a really promising tool that would make data analysis more efficient and more uniform. The workshop had a great balance between information and hands-on experience guided by a very well written vignette. I feel like I could revisit this sessions content in the future and actually know what I'm doing thanks to the vignette and content provided.

<u>How to Answer Common Questions with Available Data Tools</u>
<div align="center">5 (3)   4 (1)   3 (0)   2 (0)   1 (0)   AVG: 4.75</div>

Comments:
- Wendy and Jesse did a great job explaining the tools we can use to answer some common questions and we got to see the Dev stage of the Expert Query tool. Yay! Happy that is coming back.
- I had a difficult time deciding which of these breakouts I wanted to participate in! A lot of great topics. This session was great!
- The slides were great and the information about which tool provides which information was very helpful. In the future, if asking people to test out a new tool like expert query, consider providing some instructions (e.g., for newer people)--such as, can you find the answers to these specific questions using expert query, etc. to give people ideas about the type of questions the tool was built to answer.

Regional Meetings

Overall Rating: **5** (41)   **4** (40)   **3** (24)   **2** (10)   **1** (5)   **AVG: 3.85**

<u>Region 1</u>
<div align="center">5 (3)   4 (3)   3 (1)   2 (0)   1 (1)   AVG: 3.87</div>

Comments:
- Awesome. Great opportunity to really connect with our region partners.
- It was great to talk with EPA staff and other counterparts in the region and get more aligned, on the same page, and up to speed with each other.
- I was not able to attend this meeting as Region 1 also held an informal "Data" meeting at the same time. For smaller states where staff do both data management and assessments it would be good to hold these at different times.
- R1, ATTAINS sub group, good ideas / concern sharing
- R1 had good discussion.

<u>Region 2</u>
<div align="center">5 (3)   4 (2)   3 (1)   2 (0)   1 (0)   AVG: 4.33</div>

Comments:
- Region 2 had some early issues setting up the Zoom meeting. I think the regional breakout link was shared with virtual participants, but not the in-person Region 2 team (though it's possible it was somewhere buried in my email). I think having this link in a very accessible place would have been better - maybe next year ELI can reshare it ahead of the breakouts. We also weren't aware that we would need ELI to sign into the Zoom account on the computer in the breakout room in order to set up the virtual call. This is probably because we opted to use ELI's Zoom line. I just didn't expect that, so I

mistakenly hooked up my computer to the HDMI and camera and then had to reconfigure it back to the computer in the room. Besides the technical difficulties, the breakout was good and it was helpful to have our HQ liaison in the room with us. Also I was a fan of sharing the agendas for all breakouts among the participants.
- It was great to facilitate a discussion with the Region
- R2 – very well facilitated

Region 3

<div align="center">

5 (3)   **4** (4)   **3** (5)   **2** (1)   **1** (0)   **AVG: 3.69**

</div>

Comments:
- A great opportunity to share and collaborate.
- Would have preferred less structured agenda
- Found this useful to identify potential for states to share data and collaborate on research efforts.
- I didn't like that we had the virtual component for this. The people online couldn't see us or hear us well, and I think it took away from our session. I think it would be better to have it recorded for virtual attendees to watch later if it needs to be recorded at all. Our region also had a packed agenda with specific questions for our introductions, so I felt like we didn't get any time to discuss or troubleshoot. Maybe we could have an offshoot of the Region Breakouts one year too and separate IR and TMDL folks so that we can troubleshoot with our counterparts. I would have really liked to talk more about assessment methodologies and things that are part of my everyday more than overarching/high level things. I feel like for many of us, the daily grind, tech skills, ways of dealing with citizen data, models to use, those sorts of things really make a difference and it would be nice to have time to discuss more. I feel like we try to cover way too much in our short time, and it might need to be split out. Maybe start with the whole group- with quick introductions, name, what you work on, favorite water body? Then split into IR, Standards, TMDL, Data. I know there would be some overlap and not everyone can be everywhere at once, but at least then we can all divide and conquer individual things and then maybe come back together as a big group again to share lessons learned?
- People went over their allotted time limits and the time limits were not enforced so we never got to hear from the EPA - just the other states in the region. Several of our EPA R3 people were virtual so we didn't get to interact with them at all.
- I'm not sure how to fix this, but it seems like it would be better to have an ELI representative moderate these discussions. The Region takes the lead on the agenda and topics, which doesn't leave the states time to discuss what they really want to talk about.
- Too structured. Didn't get to everything, and no time for discussion. Would have been better if less formal.
- Excellent stuff presented but there's never enough to cover all the amazing stuff happening in R3
- EPA Region 3 – states all talked, but didn't hear from EPA about much. It is good for states to share, but EPA should be prepared to say more. Honestly, they may have planned to but ran out of time. States didn't keep sharing to 5 minutes. Some more than doubled their time.

- R3 – was well organized and facilitated by the EPA lady. Gave 4 questions previously for states to think about before the meeting. Then only 2 formal presentations. Need to hear more from EPA about new things or upcoming changes.

Region 4

5 (5)   **4** (1)   **3** (1)   **2** (4)   **1** (0)   **AVG: 3.63**

Comments:
- Felt a little challenging to keep everyone engaged in hybrid meeting (in person and virtual attendees); seemed like some topics maybe weren't of highest interest to all states
- We had a good meeting, but in the future maybe it should just be for in person attendees. It was hard to include the people online without breaking the flow of the conversation in the room.
- A little hard to hear for the online folks. Still happy to have the chance to attend online.
- Not sure how the "seed" questions were selected. It seemed that that the same few states (people) contributed to the discussions. Need to ask more engaging "seed" questions, or request that group come up with one-three topics at the beginning of the session, or just go around the room and have participants share experiences related to just one topic.
- The Region 4 meeting was well attended with thought-provoking topics and excellent participation by states who shared examples of their work, including plans to integrate EJ.
- Region 4 meeting participant engagement was not equitable and felt a more formal process to allow sharing would have prevented dominance and increased participation. A majority of the participants did not share.
- EPA R4 – it would be helpful to have the moderator in person and not online. One person took over the conversation to end collaboration.
- Region 4 – would recommend not doing simulcast for regional meetings next year
- Region 4 – this didn't seem as productive as it could have been. It might be helpful for the moderator to be in person and be a little more structured so that one person doesn't dominate conversation.
- R4 – hybrid format did not work well and tends to limit discussion. Also the group was too large for discussion. Suggest doing sub-breakouts of 6-8 people. Or, R3 seems to have had a productive meeting just going around the states and each one report on successes / challenges / activities.

Region 5

5 (3)   **4** (4)   **3** (2)   **2** (0)   **1** (0)   **AVG: 4.11**

Comments:
- Had hoped the states would have been more engaged - many new people, so think they were trying to learn
- It was helpful to have someone from headquarters there when discussing the vision, etc.
- R5 - good discussion from the states, always worthwhile to have face-to-face time.
- 5 - sometimes we get bogged down on topics that don't apply to everyone
- One or two people dominated the discussion, which didn't leave much space for others to participate.

- More time for just open-ended discussion would have been better. Perhaps give each state and tribe a few minutes to throw out issues they are facing, successes, etc.
- Always great to talk with R5, whether it is TMDL, IR-Report, ATTAINS or Vision 2.0 and get some guidance and interpretation of memo from US EPA HQ

Region 6

5 (1) **4** (3) **3** (0) **2** (3) **1** (0) **AVG: 3.28**

Comments:
- Region 6. No firm agenda. We had 3 tribal reps at NCTC but we did not make it to the tribal agenda item unfortunately. Hopefully R6 reaches out afterwards because I encouraged the tribal reps to ask some of their questions during the regional meeting, but we didn't get there
- Region 6. No agenda given. A meeting to discuss having more meetings because EPA will be sending out a survey to evaluate interactions sounds like someone dropped the ball. Asked questions that illustrated the disconnect between EPA and states. Ex: EPA question: Would we be open to using outside data? State answer: We've been using outside data for the last three IR cycles that I know of.
- R6 - somewhat disorganized
- Region 6. Could not hear most of the discussion.

Region 7

5 (3) **4** (4) **3** (0) **2** (0) **1** (0) **AVG: 4.42**

Comments:
- Most people I discussed the meeting with felt like they got something out of it. It was difficult to make this meeting feel inclusive for tribal members who do not implement 303(d), so that is a challenge to consider in the future.
- Audio issues made it very difficult to hear/follow along as a virtual attendee

Region 8

5 (2) **4** (2) **3** (2) **2** (0) **1** (1) **AVG: 3.57**

Comments:
- Region 8. I think everyone was pretty tired and not interested in participating. Maybe regional Happy Hours or another more informal activity would be more effective
- EPA Region 8. This was a very poor use of our time together. For many of us who were at the TMDL R8 conference in March this year, this was a repeat of what we covered there. The structure and content of the session made it feel like EPA was the schoolteacher and they were testing each state/tribe on their planning strategy. This was one of the most uncomfortable meetings I've been in. Again, rather than just going around the room over and over and asking what each state's plan was, the time could have been used to better educate our region on what the specific climate change or EJ issues are. Or share specific examples of how CC or EJ had been addressed. Or some kind of team/connection building activity. Would really have loved to see this time be more valuable to everyone there.
- Region 8 – some A/V issues

<u>Region 9</u>

        5 (0)   **4** (1)   **3** (3)   **2** (0)   **1** (0)   **AVG: 3.25**

Comments:
- Region 9. It was somewhat difficult with many attendees online.
- EPA region 9 Meeting: It was hard for the online participants to hear anything. If there is a way that we can make the vocals a little louder for those online, I think that would be the best.
- Region 9 - A more beneficial meeting would be with other tropical islands. Many of the issues Region 9 face (e.g. HABS) are not issues in our state.

<u>Region 10</u>

        5 (0)   **4** (3)   **3** (1)   **2** (0)   **1** (0)   **AVG: 3.75**

Comments:
- Region 10. These are okay but I think we can have these types of meetings via virtual meetings at other times. Would rather have breakout sessions during this time.
- R10: I felt the conversation was good, but was likely very difficult for the folks on the phone since we couldn't get either the video or audio to work. We couldn't sign into Teams on the large screen to have the room video and had to use a cell phone for the audio. I think if we could get those issues worked out it would be better. I was facilitating and am not great with technology and wasn't sure what we were supposed to be doing to get hooked up. We didn't have an IT person for 10 min or so and didn't know one was coming so tried (unsuccessfully) to get it started. Turns out there were tech problems that couldn't be fixed by the IT support either. Perhaps just a 10 min orientation for the facilitators the night before about what to plug in where, etc, would have been helpful, since I'm sure IT support was spread thin.

Informal Evening Events

        5 (56)   **4** (17)   **3** (12)   **2** (3)   **1** (0)   **AVG: 4.43**

Comments:
- Finally we are back! We missed the "networking" exchanging ideas, learning new way of doing stuff without doing "Zoom" – leaving meeting!! There is no replacement for live in person discussion, looks like we are all happy this happened. Thank you!!
- Share a light – great – jeff is always really good at making information interesting – good discussion.
- Bummer about bonfire?! Sessions were useful but don't need them every night
- Recommendation to conduct EJ – helpful.
- ATTAINS, kind of useful but I think more for EPA than participants
- Shining a light on your work – great discussion
- All were good. Attended Rachel Carson social events, bonfire, and ATTAINS session
- The how to shine a light on your work event was great! Lots of discussions with states on how to best present data to the public.
- Went to the communication one - it was very social media focused
- Murie Lodge - Adam did a great job facilitating. The participants were a bit spread out though and it was hard to hear everybody.

- All. These are great and was able to have conversations with a variety of states about their programs.
- Didn't attend - too tired.
- A Discussion about prioritization strategies and experiences. This was a great topic. I think a lot came out of the side conversations after as well. I think this particular topic had a lot of regional differences.
- How to better integrate CWA 303(d) and ATTAINS - I found this informal setting super helpful as it brought together people working on similar tasks to be able to ask them questions and their experience.
- ATTAINS discussion. Good input and ideas. Also, good discussion with Regional staff on ATTAINS topics they are looking for.
- How to shine a light on your work. I liked the format and discussion for this one. Moving content to the evening helps to break up the day. You can only pay attention in consecutive meetings for so long.
- How to shine a light on your work. This was a good one! Good conversations, and lots of fun. Great facilitator.
- Prioritization. Great state examples.
- A Discussion about Prioritization Strategies and Experiences
- Loved the scavenger hunt and people's enthusiasm even in the rain. Helped to get familiar with campus and meet new people. Great clues.
- ATTAINS - I liked the informal and interactive set up for the ATTAINS discussion. I'm also excited about some of the improvements they're considering
- Really fun!
- A discussion about how to better integrate the CWA 303(d) programs and ATTAINS; the meeting was not what I had expected it to be based on the title, but I thought it was a great listening session to get information from the states and region about how to improve the program
- Prioritization - Session was just too much. Perfect example of the main Vision fault - a handful of states terribly overthinking the process.
- This ended up being more formal than it needed to be and a select few people dominated the dialogue. It would have been more beneficial to have open conversations with whomever we chose.
- Prioritization Discussions - Adam did a great job of leading the conversation. A lot of good ideas were discussed.
- Too bad for the rain. Otherwise, well-planned. Kudos to all the organizers.
- I attended in the evenings at my lodge common area.
- All of them! Loved the informal welcome night #1 to just chill and meet people. Had a blast with the scavenger hunt on #2 which was wonderful while it was raining and then we could enjoy the bonfire! ATTAINS #3 was wonderful and I loved being able to ask questions and contribute to the next decisions for ATTAINS! The drinks were wonderful as was the comradery. I did wish there was some downtime (I know the morning office hours were meant to be, but I was really interested to learn TADA) to explore the grounds or town. I know it was raining this year, but maybe getting there early on Tuesday for a tour of the campus or having one of the sessions be a field trip would be really fun!

- ATTAINS event. wish that scavenger hunt started a little later then the dinner time so I could have participated in that too! All informal events were useful and good structured networking time.
- Shine a light (well delivered and good points). Also allowed excellent social networking.
- How to Shine a Light on Your Work. I could hardly hear the presenter. Basically, also he just read off a list of recommendations. Not a bad speaker, but given the topic was effective communication, I was little a surprised that the communication wasn't effective. I think the setting could have been better. It was a big room and having more chairs moved together or a slightly smaller room might have helped.
- Shine a Light. I think the information and tips presented will be very beneficial for helping us tell our story in a positive light in a more engaging/meaningful way.
- Bonfire and music in Ding Darling - This is what I found to be most fruitful. Got to have a lot of one-on-one conversations and get to know colleagues. Need a whole afternoon of informal next time.
- Prioritization strategies - this was one of the best events of the whole training for me. The larger group discussion was helpful, but afterward when we broke off into small informal groups was incredibly helpful. I had some very forthright and honest conversations, got some things straightened out in my mind and got to vet some ideas with others who understood the questions. I could have gone to a second one of these.
- Murie Lodge Discussion about Prioritization Strategies. This session did not result in fair sharing amongst participants. Only a few participants shared and one was quite dominant. I suggest not having any structure for sharing and let the participants just talk casually during these informal evening events.
- As stated in the overview, the person running it did less moderation and more free-form. I feel like I could have learned a lot from them, but we just didn't get there due to the lack of structure. Please see the comments on the meeting overview for my specific thoughts.
- Prioritization strategies - this was really helpful. The smaller group size made discussion possible.
- CWA ATTAINS: It was nice to get all the ATTAINS-focused people in one room where we could all focus on ATTAINS issues.
- Did not attend, was working on a presentation.
- How to Better Integrate the CWA 303(d) Programs and ATTAINS--would have preferred this to happen not the last night. Everyone is tired, not that engaged, and it would have been nice to have a fun evening the last time we are together.
- The scavenger hunt was great!! Please do it again!! The informal networking ops each night are great.
- I attended the prioritization session. It was excellent! We veered a bit away from the primary subject, but the discussion it evolved into was still beneficial.
- Prioritization - great facilitation and lots of good ideas.
- I attended the ATTAINS session. It was informative and good to be able to both hear what changes are coming and give feedback to the ATTAINS folks.
- Appreciate the beverages and food! It is just hard to break into small groups of people having a conversation already - so that's probably on me!
- I was a virtual participant, so Informal Evening Events DNA
- Best way to connect with other people who do what we do or learn what they do.

Session #6: Breakouts III

Overall Rating: **5** (71)   **4** (31)   **3** (10)   **2** (1)   **1** (0)   **AVG: 4.56**

<u>Protection of Downstream Water Quality Standards through TMDLs</u>
                    5 (15)   **4** (6)   **3** (1)   **2** (0)   **1** (0)   **AVG: 4.63**
Comments:
- Good mix of presentations
- Very good examples from presenters
- Good discussion
- Content was very helpful
- Good information. The person from Georgia did interrupt both of the other speakers but otherwise it was a very informative session.
- Several good examples of specifics.
- This session was good. The state presentations were excellent. It would have been good to have someone from EPA speak to their expectations/interpretations for protecting downstream uses.
- Great presentations. Only downside were speaker(s) interrupting other presentations.
- It was a good experience to hear what is going on in different regions and what has worked.

<u>HABs: Criteria, When to Measure, and How to Tie it Back to a Pollutant</u>
                    5 (13)   **4** (3)   **3** (3)   **2** (0)   **1** (0)   **AVG: 4.52**
Comments:
- Lots of good and frank discussion among states about their approaches
- Great presentations & lively discussions, seems like this presentation was timely considering the relative age of HABs control efforts
- Great discussion; moderator did a great job.
- Great examples and how some states are using HABs data in listing.
- HABs was really interesting, and I really liked that room and how the tables were arranged so we were more in a conversation setting. I wish we had arranged the tables that way for our breakout so we could see each other. Very helpful information and again, I came away with really implementable tips!
- This was a useful session to narrow in on this specific topic. Really appreciated having it. I would have appreciated a little more time devoted to learning the rationale that states used when developing their assessment method decisions.
- I think the format was very informative, and I liked how it was basically one big discussion amongst everyone present. States with more experience shared and states with less experience asked questions and took notes about how to better work their programs.
- HABs assessment - great ideas, really informative
- HABs -- learned a lot. Great exchange of ideas and approaches.
- Good discussion, good example

Stormwater and TMDLs: Examples of Approaches

5 (6)   **4** (4)   **3** (1)   **2** (1)   **1** (0)   **AVG: 4.25**

Comments:
- Really excellent
- Another breakout where we ran out of time. Great presenters, and having an EPA region rep was helpful to relate some of the conversations between regions.
- Presentations did not seem memorable, but maybe it was just that I wasn't paying close attention.
- Great state examples and discussion
- This was a great start to this topic. In the future, more discussion on stormwater TMDLs for non-MS4 areas.
- There was a lot of interesting information, but they were success stories that my state could not reproduce. Discussions were limited to MS4s, and I was hoping for discussions on SW permits other than MS4s. I spoke with Traci Iott about continuing this topic and extending it to general stormwater permits. We are hoping to get something going through ACWA.
- I am very interested in trying to figure out more ideas for MS4 permits and stormwater and TMDLs. It was helpful to have a few examples of how others were doing this. I would have been interested in having even more examples.
- The discussion and presenters were great.

Category 4C: Process and Examples of Successful Restoration

5 (13)   **4** (7)   **3** (0)   **2** (0)   **1** (0)   **AVG: 4.65**

Comments:
- Great presenters and discussion. This could have gone longer!
- This was helpful to see the different ways people were using 4c listings.
- I would give this session a 6 if I could. It was SO HELPFUL. Really great presenters/content, and lots of time for discussions and questions which is always essential. This session was instrumental in helping me make some connections and find some help with challenges I've had re: 4c.
- Conversation was stimulating, however the EPA should have more input in the subject.
- Really great!!
- Lots of great conversation. Group wanted to continue discussion.
- We had a very good discussion. It was helpful to have a smaller group of people in the room. It allowed us to have a more open/natural conversation.
- Interesting to see the different state approaches.
- Presentations were good, but some too similar, and having four presenters used up most of the time. Would have liked more discussion.
- Helpful presentations! Only session I attended (virtually) that had a "fix" for technical difficulties! Great participant discussion! Camera kept track of people in the room who were speaking! Best session I attended for meeting the needs of the virtual audience.

<u>Finding and Using Data from the Water Quality Portal</u>
5 (9)   **4** (1)   **3** (0)   **2** (0)   **1** (0)   **AVG: 4.90**

Comments:
- Presentation kind of useful but actual portal exercise was much more useful
- So good! Needed more time for this session
- Water quality portal session was very useful. Need more data branch sessions at different times. Wanted to go to all.
- Excellent presentation. What I learned will greatly improve data use and assessments. Immediately useful!
- I felt like the session was very useful.
- Adam Griggs did a great job showing us all the bells and whistles of the WQP.
- Finding and Using WQP Data-extremely informative--would have made a good plenary--useful for the masses
- Learning more about the Water Quality Portal and some of the features it offers for querying water quality data was great. We had some issues with being able to switch between screens due to Zoom, but besides that it was a great session with no other technological hiccups, which is good since it was in one of the computer labs.

<u>Tracking Changing Assessment Units and Updates on NHD+</u>
5 (5)   **4** (6)   **3** (2)   **2** (0)   **1** (0)   **AVG: 4.23**

Comments:
- Very good info shared from a different perspective and the bombshell about the NHD High Res data being retired from maintenance. Whoa!
- One talk here from a state was too specific and involved in their process. I wasn't sure what takeaways there were for others. Maybe review more closely and recommend speakers focus on lessons learned or sharing info / tips that are helpful universally
- I may have misunderstood the intended topic, but I thought this would be a discussion of tracking changing assessment units in ATTAINS, so was a bit disappointed that wasn't the case.
- I didn't understand everything presented (and also why some of the information was presented)
- The second presentation wasn't very helpful and went on and on. The NHD update was great.
- I attended the tracking changing AUs and Updates on NHD+ breakout and it was very informative. The updates on NHD+ were very important and I feel like more people could've used the info!

Session #7: Prioritization and Planning
5 (67)   **4** (36)   **3** (14)   **2** (1)   **1** (0)   **AVG: 4.43**

Comments:
- Great examples from Wisconsin to build Vision 2.0 and Colorado's 10 year Water Quality Roadmap was really helpful to focus on "Implementable TMDLs" with support from the NPS Program
- Excellent topics and issues/challenges. Establishing priorities has many filters and considerations

- This session was one of the best because the presenters did a great job sharing how their experiences (good/bad) applied to any state/tribe/territory
- Wisconsin presentation was so informative. The best story/presentation of the workshop. Other presentations were useful too. Colorado presentation was informative
- Helpful perspectives
- WI presentation was great, CO not so much for us
- Seems like this content should be earlier in the conference but content was good.
- Very high level presenting; might have been the best session.
- I don't know much about Vision 2.0, but this session was interesting
- Great presentations by WI and CO!
- The presentation from Ashley Beranek and Kevin Kirsch was amazing. It was very interesting to hear what other states go through and how they find solutions to those difficult problems.
- Kevin Kirsch's presentation was GREAT. It really highlighted what a good partnership between State and EPA can do. I also really enjoyed Barbara Bennett's presentation and learned a lot of about how TMDLs can be tailored to think about climate change.
- Liked the Wisconsin presentation
- This session was probably the best. The speakers were great. The topics were very useful to where I am at with TMDL/Data, etc.
- It might have made sense to have the Vision Prioritization session a little earlier in the week, since this framework has implications on so many other discussions. At least in our regional breakout, our states were asking for a refresher on the Vision which then came on the last day.
- Another very informative session.
- Good speakers and examples - strong support for the Vision process.
- These presentations seemed to be more interesting and polished than others that I saw.
- Great presentations and presenters. Great topics. A really engaging, interesting and positive session for the conference to go out on a high note. I appreciate that!
- Great state examples.
- I particularly enjoyed the presentation from Wisconsin about how they collaborated with R5.
- I thought these were really excellent state presentations and stories that others could really benefit from.
- Appreciated the states' perspectives and the upbeat presentation from CO
- Interesting impacts on what the Vision can have when defending a program. Again, good discussion of examples.
- Over-repetition of the subject.
- Wish there was more time for questions.
- Again, I was really amazed with this one. I was also not looking forward to this and didn't want to hear anything else about the vision but I was pleasantly surprised with how helpful the sessions were, and it gave me a new appreciation for how the vision should/could work and really not just be a check in the box of requirements, but how we could tweak it and make it our own and actually get use for our State out of it! I loved this one!
- Again, a lot of interesting information, but not a lot of things I can take back to my state.

- I appreciated so much the hiccups story with Wisconsin, showing the good and bad of how EPA is helpful and the bumps in the road and how to manage them
- Very good. Really highlighted how each state may have to "forge" their own unique path; but EPA is there to help.
- Honestly, when this session came up and I saw the topic was planning and prioritization again, I rolled my eyes. There had just been so much of that presented already in ineffective ways. I was pleasantly surprised by these speakers though. Every speaker and the topics they presented were excellent and inspiring. Great session to end on!
- Presenters were great.
- This one didn't totally hit the mark for me. The presentations were either so broad to be mostly just an exact overview of what is written in documents, or so specific to a specific program that there was a lot of information that was unnecessary to me. I was wondering if a more effective way to address this would be a series of lightning talks. That way each presenter would just give a short talk with the pertinent information and we could have more examples from more people.
- It was good to see how the different states are approaching prioritization.
- A lot of these things are really not in our control
- It just seems like everyone is going to be really different. I didn't find this especially helpful.
- This was overview too, but to be honest, at the end of a long week, I really enjoyed the stories being told. The presenters from WI especially - just really fun.
- Great ground-truthing with how it really might be working in the program and the difficulties--engaging ppt and funny
- I was happy to learn that I am on the same page as many of the states who presented, and used similar factors for prioritization. I also appreciate the candor from Wisconsin. The honesty and ability to share real feelings to a friendly audience is one of the best things about this workshop. As government representatives we typically have to be very guarded about what we say.
- This session was a good final session! It felt like a good way to wrap up the week with everything we had discussed.
- Thank you.
- At this close to end of the conference - might be better to do more, short hot topic presentations. These presenters did a great job though!
- Excellent presentations
- Not my favorite, but only because it's less in my wheelhouse.

Training Workshop Wrap-Up
5 (67)   **4** (35)   **3** (9)   **2** (2)   **1** (1)   **AVG: 4.45**

Comments:
- Best conference I have attended. Thank you!
- Excellent!
- Very poignant and profound statements. I look forward to coming again.
- Wow! Concise! Inspiring! Raw! Real! Loved it.

- Better than the welcome session. A little more inspiring. Adam is always on point, ELI is great, Dustin from PA was inspiring. Thank you! And Nancy from Fond Du Lac, great closing!
- Send off remarks – great diversity Dustin and Nancy. Summary and next steps 5 people was not needed.
- All concluding remarks were great and left me feeling inspired.
- Information overload but didn't want it to end. So informative, collaborative, educational, and fun.
- Good timing on presentations.
- Not particularly memorable.
- Short and sweet, good summaries and wrap-up observations.
- Great summaries and send offs. thank you!
- Nice send-off. Appropriate to give a Tribal partner the closing remarks.
- It was great to hear from so many people from various organizations
- Short and sweet. No need to hear from EPA HQ.
- Well thought out and planned.
- This was also awesome! A good combination of higher level staff speaking but also a send off from our colleagues with a great challenge!! Maybe we can make a picture challenge or something next year to go along with the scavenger hunt? I really liked seeing Dustin's pictures at the end and maybe we could make people send in a picture of them doing/searching for something and pick a winner! Lots of fun! Or like a networking bingo throughout the week to try and meet different people from different regions and ask about different things!
- I traditionally skip the wrap-up because my high level of anxiety insists one hour is NOT enough time to get from the auditorium to lunch to the shuttle. It is enough time, but my anxiety says otherwise, so I just don't attend the wrap-up.
- Good wrap-up. Maybe one or two too many wrap-up speakers. I honestly don't remember a word that Japser, Stacey, or Jim said... But Dustin and Nancy's wrap-ups were motivating and had meaningful takeaways.
- One Wrap-up Summary is sufficient, having multiple presenters reiterating the same points is an inefficient use of time, especially when limited time allotted for lunch, check out, and meeting shuttle.
- Long
- Perfect as a wrap-up. Short, informative, and to the point. The two short presentations were inspiring with the proper amount of time used for this purpose (i.e., not a plenary - just a short, "now go and do it" message). Really liked it.
- Good roll up. Final speakers were good.
- Inspiring!
- Thank you for making it possible to attend virtually.

Other Comments or Suggestions

- Thank you to ELI and USEPA for coordinating this workshop. We hope to see you doing this workshop in future years to come, so that the new people to the training will have the benefit to communicate with those in the programs (TMDL, WQS, NPS, etc.)

- The scavenger hunt was a fun idea. I miss the music, and we have such amazingly talented folks. Hopefully the weather will be more cooperative next year.
- ELI Rocks
- As always, the time for side conversations and informal sessions is as valuable as the presentations
- This training was great and very valuable!
- Too much food! Good food though.
- Thank you. Such a great experience and wonderful learning opportunity. Being in the same place with so many dedicated environmental professionals from all over – amazing.
- My last time here as I'll be retiring next winter. Will recommend the workshops for my successor. Informal and formal evening sessions were great for meeting other professionals and making good connections. In-person is definitely better than remote!
- Breakout sessions useful – maybe more time on these and less on auditorium lectures. Facility/food and ELI coordination was great. Shuttle service appreciated.
- Consider just recording the presentations rather than live streaming in discussion heavy topics. Love the mentorship idea and could be expanded to have 2 sessions like this. This and the last few have been light on TMDLs. Maybe "data" vs "program" doesn't work well now? What about assessment / listing / data vs TMDL?
- Great food. Can the conference be Tues-Thurs and Mon + Friday be used for travel/social only? Might help people still have the following weekend off before next Monday workday.
- It was super annoying that the tea/coffee availability was limited to certain locations and only during break. Why not have tea/coffee available during sessions at all locations? Thank you for everything! Great workshop!
- More smaller breaks (10 min)
- I think we should rethink some of the simulcast sessions as it may keep the onsite folks from speaking freely
- Yes, it would be useful to continue to have virtual meetings, especially because it is often difficult to get travel approval for the states (and because only 2 people are funded through ELI to attend in person). Virtual breakout sessions could be improved by showing a slide that lists all talks in that session, especially for those breakouts where the individual talks are not listed in the agenda). Appreciate the effort and willingness to record the sessions too!
- Having a room near a lounge where evening events were held was somewhat disruptive when trying to go to sleep early. Perhaps there is a way for people who want to be up late socializing or are not light sleepers could volunteer to have the rooms on the first floor nearest to the lounges.
- It was a great experience! I enjoyed having time to chat with people from other states about the issues they are dealing with. In the future, I would love to see a session focused on how states have actually successfully implemented a TMDL/worked with the 319 program to delist impaired waters
- Workshop was very well organized and had some very helpful sessions. Was great to be back in person and have the opportunity for good discussions.   Facility is great.
- Make the name tags front and back. Oftentimes the lanyards would turn and we wouldn't be able to see the person's name or region. The food was amazing. Keep it all the same.

- I was reluctant at first to do the Scavenger Hunt in the rain, but am very happy I did it! Fun way to explore the grounds and bond with new people. All the social activities were an unexpected addition to the experience that made it really a very fun week, and almost guaranteed some level of networking and team building. It was nice to have the option to socialize each night. I felt bad that the lounges were so close to the rooms and the noise might have been disruptive to folks sleeping. Maybe some of these late-night hangouts could be in the commons or other spaces further from the rooms. I think the workshop was a little crammed, and given the amount of content, would have been more comfortably spaced if we had one more day, or even just an additional half day. Having more time in between sessions would have been best, since a lot of that time was spent talking to folks and getting across campus. Having a little time after the final session and dinner would have also been nice to decompress. Also, maybe ELI can promote some of the NCTC programs to us ahead of time - I heard the tree walk was great, and there was a bird walk Tuesday morning as well. I very much appreciate the staff at NCTC, the snacks in between sessions was a huge plus, and overall I was satisfied with the meals. And thanks to ELI for all the planning - I thought overall it was an excellent experience (my first), well-organized, and I look forward to next year!
- Other than the session/breakouts suggested in the comments above. It would be beneficial to have a breakout or workshop that goes over how different states structure their departments - what works and doesn't work and why - there were a lot of conversations that required clarification of the structure to frame understanding.
- I really like the idea of breakouts so that topics are broken out to specific issues groups of people may find more interesting. Also, a plenary/auditorium presentation that is more broad is hard to stay awake directly after lunch. Maybe a breakout session directly after lunch would motivate people to not pass out in smaller classrooms.
- One of the better conferences I've attended! Great job!!!
- One program note is that one hour for lunch is just not enough, especially for presenters that might be "tackled" with questions after the session and end up at the back of the lunch line. This only an issue on the first day, and 1.5 hour was plenty of time. One other issue that seemed to get better as the conference went on: recording presentations was very distracting on-screen for in-person folks. It seemed like the recording panel was not easily moved and so it blocked a lot of the PowerPoint titles/slide content, which was aggravating as an in-person attendee to not be able to read slides. I recognize the challenge of joint in-person and online conference, and think it was executed remarkably well other than this one issue. ELI staff was very good at quick problem solving/resolving tech glitches. Great job to all. I also wanted to say that the conference was really well organized and flowed very well. I thank you for all your hard work and for pulling it off -- it was one of the best conferences I have ever been to. Thanks all!
- Starting early on Friday threw me off. Would suggest keeping daily schedules the same-- either start all earlier or keep Friday's start the same time and it can just be a short day.
- Thanks for another great conference!
- I think this was overall a great conference and that we all really needed the face-to-face time with each other. It was well organized, and both ELI and NCTC staff think of everything.
- One of the best conferences I have attended on water quality data. Very well organized and administered.

- Thanks for all the work to make the presentations accessible to people off-site, too--I'm looking forward to being able to watch some of the recordings from the breakouts that I missed as well! Some of the classrooms were too cold, but I didn't say anything about it at the time.
- This year seemed to have a much better focus on examples that states have been implementing on various topics, and more "normal" examples. Much improvement over the years in states figuring out ideas and options; these will help those still figuring out what to do. Finally, kudos to Adam for yet another incredible performance. Whatever you pay him, it is not enough.
- Kudos and thank you to Adam Schempp and the organizing committee who went above and beyond to pay attention to every detail of program. They were reachable at all times and make the workshop a very pleasant and productive experience in every way. Thank you.
- I really appreciated ELI making online attendance to the live sessions as they were being recorded an option and recording the sessions so that I don't miss out and can rewatch most of the sessions. It was a great experience, and I would definitely appreciate the online attendance option continue being an option next year too.
- Really amazing week!! I wish it hadn't rained, but that can't be helped! I think it would be more helpful to have the Participant List organized a different way. I have met so many people that I am reaching out to already, but I am having trouble finding them if I can't remember which state they are from! But I do like that once I find their state, I can see who else was there from their state. So I'm not sure how this can be fixed.
- This conference is amazing, there's none like it. Just the comradery and sense of community this conference brings is special and makes it worthwhile.
- More breakout rooms rather than the large auditorium sessions is helpful. People are more likely to speak up and have meaningful discussions about how to mitigate real issues.
- Potentially add an evening event each night similar to the tree walk. But something loose and "different" to allow for more networking.
- Overall, this was a great conference. My two main recommendations for future conferences are: 1.) EPA presenters (or any presenter) - please make your talks more engaging. You have hundreds of people at your feet listening. Make it count. 2) Offer more breakout sessions and fewer whole-group sessions. You don't necessarily need more topics for breakout sessions. But, maybe could duplicate some of the breakout sessions (have them offered twice). I heard excellent things about many of the sessions I didn't attend and wanted to. Thanks!
- More smaller sessions.
- Need more time to interact with colleagues one on one. Longer breaks or maybe an afternoon of informal activities. Would be nice to get to explore the grounds and the area a bit more while having good discussions.
- This is a repeat of what I said above, but maybe better put here. A suggestion for next time would be to have more presenters giving shorter talks - like a lightning session. We need less information on the details of a particular state's situation and just the part that is the example of the topic and lessons/ramifications etc. And more examples is great. I got more examples in informal conversations, but they were chance.

- These are all facility issues and not something ELI can probably workout, but the drinking water, AC, and wifi (even when it was working) could use improvement.
- Really appreciated the shuttle between the airport and the NCTC and not having to Uber or rent a car to get there myself. The facility was GREAT. Too bad the weather wasn't nicer, but not much to be done about that.
- As stated above, I helped organized the Symposium on Urbanization and Stream Ecology (SUSE) for 3 cycles (SUSE3-SUSE5) and was chair of one meeting; www.urbanstreamecology.org. Feel free to reach out if you want me to connect you with the advisory board to discuss our experiences. SUSE5 (Austin TX) included many individuals outside academia (stakeholders, city gov't, state gov't, etc.) and SUSE4 (NC) was set up similar to this conference (one facility with several days of isolation for training/brainstorming). Bob Smith (MassDEP). Overall, the workshop was amazing - and any low scores were only because of how it compared to the rest of the meeting. It was all, honestly, pretty good. I very much hope I'm chosen to come back next year.
- Overall, I thought there could be more breaks throughout the workshop.
- This was an excellent workshop - definitely one of the best that I've attended in a long time (if not ever?). I appreciated the format - I think it was a good balance of presentations that involved everyone and breakout sessions that were more intimate and more encouraging of attendee participation. I've attended 2 or 3 of these online-only workshops since 2019 and this was the first in-person workshop (specific to this topic) that I've attended. I can't say enough about how much more I've been able to learn and take away from it than when the materials were presented online (I certainly acknowledge that ELI did a great job overcoming the challenges of the pandemic - this comment speaks to my style of learning rather than pointing out any shortcomings of online meetings). I really have to say that the in-person interactions between members of the other states were invaluable, and I appreciated the opportunities that were provided to encourage networking, including the scavenger hunt. The scavenger hunt was a brilliant and fun way to initiate communication among participants that otherwise might not have communicated with each other. I very much appreciated having options on what topics I was able to learn about in the breakout sessions. Being an 'assessments' person, I valued the opportunity to be able to learn about TMDLs as well as assessments and data management, as having an understanding of all of these are critical to my work. Overall, I think the topics presented and discussed were spot-on. Excellent planning and implementation by ELI et al.! Thank you.
- Greatly enjoyed Bruno Pigott's keynote address!
- This was the first time I attended in person, and I'm so glad I did. Thank you for facilitating this conference. It's excellent!
- I don't know a way around this, but the auditorium was too crowded when we were all together. It was really only difficult if you had to sit in the back. It was difficult to climb over people if you needed to get up for some reason. It was also sometimes hard to hear in the back. The last issue may be able to be solved by working on the sound a bit. There is no good way to deal with the crowd issue that I know of other than having fewer sessions where we all attend the same session. Note, I would rather deal with the crowd than drastically reduce the number of people who can attend. In closing, it was a great meeting. Thanks so much for all your efforts in making it happen.

- Have breakouts after lunch so we can talk more. It's hard to stay focused after a big lunch, sitting quietly in the auditorium for a long time. And the 1-hour lunch didn't work so well with so many people. Suggestions for sessions next year: 1) Litigation in a plenary. Everyone doesn't pick it as a breakout, but everyone needs to hear it. 2) "Overlisting." It's when EPA does not concur that a state has listed all of its impaired waters, and goes through a process to add waters to a state's 303(d) list. Could be from both EPA and state perspectives (sometimes a state welcomes it). EPA overview could include how often and where it's happened, and why.
- Adam rocks as always!
- This was the most useful and most comfortable professional conference I've been to! It's clear that a lot of work goes into planning, and it went really well. Detail: Can conference organizers request that participants not type furiously on laptops during sessions? It is distracting and makes it hard for me to follow the speaker. (And if someone really needs to work that badly, they should just leave the room!)
- The lodging and shuttle arrangements were excellent. Much easier this year. I appreciate it. Also, I saw Adam speed walking everywhere and doing so much. I appreciate all Adam does to facilitate this workshop.
- Thank you for making this available through a virtual option!
- So good! I learned a lot, met great contacts, had interesting and helpful conversations and enjoyed the setting.
- I am very glad that there was a virtual option! It is generally impractical for my group to have all of us go but I was very glad that I still got to sit in on talks though I was not able to attend in person.
- Was nice to expand the workshop online to those who couldn't attend in person.
- Virtual participant. Was well done and easy to use.
- Idea - presentation from states that don't have much funding - and presentation with those who do. How do you get to more funding? What do you do with little funding? More success stories broken out by region - give a bit more time to Region people to chat and get to know each other.
- The planning and implementation teams did a great job. This was the best training workshop. It was educational and fun despite the rain that impacted having the bonfire. It was wonderful to see so many new faces and the return of many seasoned ones. It was phenomenal!
- Please keep the virtual option. Travel is challenging for state employees and this allows for greater participation for at least most of the sessions. The Zoom platform worked well. Thanks for all of your organization and coordination!
- Appreciate the opportunity to join sessions virtually!
- As a virtual participant, I thought this worked extremely well. Audio and visual were clear, and ran very smoothly. Zoom webinar seemed to be a fine platform, and the facilitators were responsive to questions in the chat, which was appreciated. As someone who works on a program adjacent to 303(d), it doesn't always make sense for multiple folks from my office to attend, but virtual was a great way for me to see what they are working on and to listen into the leadership comments from EPA. I would recommend having at least the keynote sessions virtual in the future.
- I have never been in person but I like the virtual option since states can't afford to send everyone. For the most part, the speaker quality has been good, sometimes I couldn't hear

the person asking questions or if the speaker moved too far from the mic, but overall it seems to be going well.

- I would attend virtually again.
- Thank you!

APPENDIX 3:
TRAINING WORKSHOP WEB PORTAL &
ELI'S *CWA 303(d) PROGRAM RESOURCE CENTER*

ELI continues to maintain and make publicly available a companion website for this training workshop and past training workshops. Materials and presentations from the 2023 training workshop are available at http://www.eli.org/freshwater-ocean/cwa-303d-training-workshops.

Other resources that are relevant to the mission and work of state and territorial CWA 303(d) programs and tribal water quality programs are available at the Institute's *CWA 303(d) Program Resource Center*, at http://www.eli.org/freshwater-ocean/state-tmdl-program-resource-center.