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2022 NATIONAL TRAINING WORKSHOP ON WATER QUALITY DATA, ASSESSMENT, AND PLANS

BUILDING ON 50 YEARS OF CHANGE, RESILIENCE, AND PROGRESS

May 31 – June 3, 2022

FINAL PROJECT REPORT
&
TRAINING WORKSHOP PROCEEDINGS

This project is made possible through a cooperative agreement with the United States Environmental Protection Agency

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ELI staff contributing to this project are Adam Schempp, Georgia Ray, Heather Luedke, Amy Reed, Margaret Badding, Madison Calhoun, Colin Gipson-Tansil, Chandler Randol, Sarah Roth, and Elissa Torres-Soto.

Except where specifically noted, the views expressed in the materials prepared and assembled by ELI should not be attributed to the U.S. EPA, or to other federal, state, tribal, or territorial 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 May 31 through June 3, 2022, the Environmental Law Institute (ELI) convened the *2022 National Training Workshop on Water Quality Data, Assessment, and Plans: Building on 50 Years of Change, Resilience, and Progress*. This event, supported through a cooperative agreement with the U.S. Environmental Protection Agency (EPA), virtually brought together Clean Water Act (CWA) Section 303(d) listing and TMDL officials from all 50 states, the District of Columbia, American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, Puerto Rico, and the U.S. Virgin Islands as well as water quality professionals from the Bad River Band of Lake Superior Tribe of Chippewa Indians, Buena Vista Rancheria of Me-Wuk Indians, Cahto Tribe of Laytonville, Chemehuevi Indian Tribe, Chickahominy Indian Tribe, Chicken Ranch Rancheria of Me-Wuk Indians of California, Citizen Potawatomi Nation, Comanche Nation, Curyung Tribal Council, Elk Valley Rancheria, Federated Indians of Graton Rancheria, Fond du Lac Band of Lake Superior Chippewa, Gila River Indian Community, Grand Traverse Band of Ottawa and Chippewa Indians, Hoopa Valley Tribe, Iowa Tribe of Oklahoma, Kaibab Paiute Tribe, Kickapoo Tribe in Kansas, La Jolla Band of Luiseño Indians, Lac du Flambeau Band of Lake Superior Chippewa Indians, Little River Band of Ottawa Indians, Lone Pine Paiute-Shoshone Reservation, Manzanita Band of the Kumeyaay Nation, Miccosukee Tribe of Indians of Florida, Middletown Rancheria of Pomo Indians, Mississippi Band of Choctaw Indians, Morongo Band of Mission Indians, Nooksack Indian Tribe, Pechanga Band of Indians, Picayune Rancheria of the Chukchansi Indians, Pinoleville Pomo Nation, Pokagon Band of Potawatomi, Red Lake Nation, Sag Chip Tribe, San Pasqual Band of Indians, Santa Ynez Band of Chumash Indians, Santee Sioux Nation of Nebraska, Sherwood Valley Band of Pomo Indians, Skokomish Tribe, Snoqualmie Indian Tribe, Soboba Band of Luiseño Indians, Southern Ute Indian Tribe, Susanville Indian Rancheria, Table Mountain Rancheria, Timbisha Shoshone Tribe, Upper Sioux Community, and Winnebago Tribe of Nebraska.

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 five months, the WPG worked through a highly participatory process to develop, shape, and refine the workshop objectives and agenda, the structure and focus of workshop sessions, and the course materials.

Over the four days of the training workshop, participants learned about and contributed to the process for developing the next iteration of the CWA 303(d) Program Vision; methods of communicating, especially regarding water quality progress and climate change; and ideas and methods for better integrating environmental justice and climate change considerations into water quality data management, assessment, TMDLs, and restoration and protection activities. Participants also learned how to improve continuity and program resilience through staff transitions and learned about opportunities for accessing and leveraging water quality data. In addition, many of them gained technical skills 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. Through presentations and breakout groups, participants also gained greater personal familiarity with colleagues from other jurisdictions, representatives of EPA Headquarters and the 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 *2022 National Training Workshop on Water Quality Data, Assessment, and Plans*, the fourteenth national CWA 303(d) training workshop and fourth national water quality data management training workshop. He expressed disappointment that the training workshop was virtual again, but he celebrated its expansive reach, with all 50 states, nearly 50 tribes, all 5 inhabited U.S. territories, the District of Columbia, all 10 EPA regions, and more than 650 registrants present. Mr. Schempp encouraged the participants to give their all throughout the week by asking questions and sharing their experiences. For the purpose of peer-to-peer learning, he introduced unique virtual features meant to reproduce in-person benefits, including a virtual reception and virtual networking spaces between sessions.

Mr. Schempp offered thanks to EPA for supporting the training workshop, in particular: Jim Havard, Eric Monschein, Dwane Young, Jesse Boorman-Padgett, Wendy Reid, and program officers Rosaura Conde and Cynthia Johnson. He also thanked members of the Workshop Planning Group for helping to put the event together: Ashley Beranek of Wisconsin, Kayla Bowe and Shane Bowe of the Red Lake Nation, Rich Cochran of Tennessee, Heather Husband of North Dakota, Traci Iott of Connecticut, Will Isenberg of Virginia, Jason Jones of Arizona, Kristy Fortman of EPA Region 8, Jill Fullagar of EPA Region 10, Chelsea Paxson of EPA Region 7, Richard Wooster of EPA Region 6, Courtney Botelho of NEIWPCC. Mr. Schempp gave special thanks to Jasper Hobbs of ACWA for running some of this year's breakouts. He then introduced John Goodin for his opening remarks.

John Goodin, Director of the Office of Wetlands, Oceans, and Watersheds (OWOW) at EPA Headquarters, began his remarks by welcoming everyone to the largest and most diverse gathering in the training workshop's history. He expressed his disappointment that the event was again entirely virtual but lauded the increased accessibility that the format offered. Mr. Goodin then shared his optimism about the future of the CWA 303(d) Program, explaining that, as the ten years of the first Vision to remake the program comes to a close, there is much to be proud of. He highlighted the pending "Vision 2.0", which he characterized as an updated framework that makes use of foundational objectives and recognizes the new challenges of the day.

Mr. Goodin reflected on a recent trip to Sicily and his visit to the Duomo, a building in the ancient town of Siracusa. He explained that the location originally was a gathering spot for the Phoenician people more than 2,000 years ago, that the Greeks raised a Temple to Athena there at the base, that the Romans later walled in the columns, that the Normans added mosaics, and the Spanish subsequently adorned the exterior with sculptures. He added that an earthquake knocked much of it to the ground, but it was rebuilt and restored in the 1700s. Mr. Goodin likened this history of the Duomo to the efforts to reinvent the CWA 303(d) Program, using foundational materials, adding supports, taking away the obsolete, and even rebuilding after significant external events. He noted

that the 2022 Draft Vision Memo was built on the foundation of the 2013 Vision Memo, retaining elements like long-term planning and prioritization, and moving towards restoration and successful implementation with enhanced engagement, coordination with stakeholders, integration among programs, greater overall buy-in, and adaptive management.

Mr. Goodin suggested that each state, territory, and tribe capitalize on the moment to identify the issues important to their citizenry and focus on those priorities. He added that the EPA, similarly, was gearing up to better understand the continuously evolving needs for the program, with a particular focus on climate change, environmental justice, tribal engagement, and program capacity building, all of which appear in the Focus Areas of the draft Vision Memo.

Mr. Goodin then reflected on the progress under Vision 1.0. He started by noting that states went through the helpful exercise of identifying and submitting long-term priorities, with many of them engaging the public and other state programs in the process. He added that states were over three quarters of the way to putting Vision 1.0 priority plans in place. Mr. Goodin then highlighted a couple of EPA-produced tools, explaining that that at least 11 states had used the Recovery Potential Screening (RPS) tool to establish their original Vision priorities, and Watershed Index Online had recently added enhanced climate and environmental justice-related indicators.

Mr. Goodin then noted several specific State accomplishments. He referenced Connecticut's extensive prioritization process, which ultimately focused on developing nutrient TMDLs for lakes impaired by harmful algal blooms. He added that, for its first such TMDL, for Bantam Lake, the State spent several years developing a weight of evidence approach for setting numeric phosphorus and nitrogen lake criteria, the approach included developing the TMDL in concert with a nonpoint source watershed-based plan that will implement the TMDL, and the process was shared with the public (who participated enthusiastically). Mr. Goodin also referenced Rhode Island's prioritization of the City of Newport's water supply ponds for nutrient TMDL development and the State's innovative TMDL approach designed to reduce chlorination by-products in the finished drinking water, which were caused by algal blooms. He explained that the State set stringent site-specific phosphorus criteria for the nine ponds and overcame years of resistance from the some in doing so. Mr. Goodin then praised Kansas for completing virtually 100 percent of the priority TMDLs to which they had committed in their Vision plan, where priority was given to 16 HUC 8s impaired by nutrients, predominantly total phosphorus. He noted that adherence to the prioritization schedule had resulted in investment and improvements in discharging facilities and best management practices throughout the 16 HUC 8s. Mr. Goodin also applauded Wisconsin for their efforts on big TMDL projects, including the completion of the complicated Upper Fox and the Wisconsin River TMDLs. He added that, since the State modeled the entirety of the systems in detail, Wisconsin already knows what needs to be done in the water segments not listed as impaired and thus can implement actions to either improve or maintain loadings, and the State has several accepted protection plans.

Mr. Goodin then turned his focus to the national effort, particularly on data and information management. He noted that the use of electronic data and information for clean water programs has advanced significantly, and the CWA 303(d) programs are well positioned for the future. Mr. Goodin said that electronic data capture has enabled better collaboration between states and EPA, that data are being made available more transparently to the public, and that data are being made available in a way that allows them to be used for many different purposes. He explained that it used to take six months to a year before final data would be available to the public; now it takes

two to four weeks. Mr. Goodin added that CWA 303(d) listing and TMDL data are some of the most requested data sets within EPA's Office of Water and are needed and used by many other programs. He emphasized that, not only has the CWA 303(d) Program improved its processes, but it has enabled others to build upon what it has done. He added that this information and program experience is also helping to shape a new Vision for the program, ushering in new opportunities.

Mr. Goodin took a moment to applaud the improvements in timely reporting. He noted that states, territories, and EPA jointly made a major push to promote timely and well-supported Integrated Reports with CWA 303(d) lists by April of 2022. Mr. Goodin explained that, among other benefits, timely submittal of impaired waters lists will help states and EPA report on water quality status for the 50th Anniversary of the Clean Water Act in the fall. To date, he said, 28 impaired waters lists have been submitted to EPA for the 2022 cycle, and of those lists, 22 were submitted by April 1. He added that EPA has already taken action on 23 of the 28 lists. Mr. Goodin noted that this is over five times more than states had submitted in the last reporting cycle. He also said that states have caught up on their electronic reporting, with every state in the country having submitted at least once to ATTAINS, highlighting that the program is well positioned to engage in the Internet of Water.

Mr. Goodin emphasized that all of these successes are a result of the dedicated achievements of people, many of whom compose the session's audience, championing the efforts to identify water quality challenges, figuring out creative and effective ways to address them, and implementing the needed fixes. Mr. Goodin thanked the many staff who have built the program up layer after layer. He also thanked the ACWA Watersheds Subcommittee leadership for their commitment through the years to seeing the program grow. Mr. Goodin also thanked key architects of the 2022-2032 Vision: Rosaura Conde, Amy Feingold, Jim Havard, Eric Monschein, and Dwane Young of the EPA; Traci Iott of Connecticut; Heather Husband recently of North Dakota; Rich Cochran of Tennessee; Kevin Kirsch of Wisconsin; Cam McNutt of North Carolina; Kathy Stecker of Maryland; and Nancy Schuldt and Kari Hedin of the Fond du Lac Band of Lake Superior Chippewa. Mr. Goodin also thanked EPA's cooperative agreement partners Jasper Hobbs of ACWA and Adam Schempp of ELI, and made special mention of Tom Stiles of Kansas, Jeff Berkes recently of Iowa, Traci Iott, Eric Monschein, and Jim Havard, who were key founders and/or implementers of the first Vision.

Mr. Goodin concluded his remarks by announcing his retirement. He expressed how much he will miss working with everyone and working on the critical mission to protect and restore water quality in this country. He promised to cheer on the Vision and data, but most importantly to cheer on everyone working in this area, and he wished everyone a dynamic, productive, and learning filled week.

Mr. Schempp thanked Mr. Goodin for his opening remarks and all he has done for the program, recognizing Mr. Goodin's instrumental work with the first Vision and his founding of this training workshop. Mr. Schempp then detailed the structure and organization of the sessions that week, explaining that, like the 2020 and 2021 workshops, this virtual workshop had been set up so as to imitate an in-person workshop as closely as possible, with breakouts and plenaries. He noted that many sessions would be recorded to enable participants to watch the sessions across drastically different time zones but that, in order to encourage robust and frank discussion, some sessions would not be recorded. To this end, he added, the recordings would be accessible for only a few weeks following the event. Mr. Schempp noted some of the backstops in place to minimize

technical difficulties, but he acknowledged that there likely still would be issues. He asked for participants' patience, understanding, and (should the opportunity arise) assistance. He also recommended that participants use ELI's website for the training workshop, which he noted contains most of the presentations and materials from the event.

Mr. Schempp then walked through the agenda for the training workshop. He described how the first session would provide broad updates on several issues and areas, including Integrated Report submissions, the 2022-2032 303(d) Program Vision, incorporating climate change considerations into program work, and where the program has been and where it is going with water quality data management. Mr. Schempp then noted that the second session would focus on different aspects of progress toward more open and available data, and what that can mean for data analysis. He explained that the three sessions on the second day are related, starting with examples from four states and a tribe of practices and materials that have helped with program resilience and continuity through staffing transitions; then (through a panel discussion) experiences from two states and a tribe regarding the benefits of a diverse staff and accepting workplace, as well as ways of getting there; and finally an overview as well as state and EPA examples of ways to include environmental justice considerations in program work. Mr. Schempp then said that the diversity of topics covered by the breakout sessions on Thursday and Friday was intended to allow tailoring of the training workshop's content to the individual participants' needs and interests. He added that the final session would focus on examples of communicating progress toward and even achieving water quality restoration, as well as some opportunities and resources available now and ones in the works.

For the training workshop wrap-up, Mr. Schempp invited submissions of poetry, to carry on John Goodin's long tradition of using haikus to summarize the week's proceedings. Continuing a more recent tradition, he also invited participants to send a photo of a waterbody near them that reminds them of why they do this work, with the pictures being compiled into a montage to make the large group a little more personal. Mr. Schempp also invited participants to use the Wonder platform to join in virtually replicating the traditional bonfire gathering on the second night of the training workshop and networking opportunities between sessions.

Mr. Schempp concluded the welcome by discussing ways to make the most of the virtual workshop format. He encouraged attendees to participate actively in the sessions, acknowledging the limitations of convening virtually but expressing his hope that participants would ask questions, share experiences, and voice opinions using the available technology. He also made suggestions for utilizing the technology to ensure efficiency under time constraints.

Mr. Schempp then turned to the first session by introducing Dwane Young.

Session 1: National Updates

This session featured five presenters and was moderated by Adam Schempp of ELI.

(1) **Dwane Young, Chief of the Water Data Integration Branch at EPA Headquarters**

Mr. Young began his remarks with a significant recent success story: the number of lists that have been submitted on time. Showing a graph of outstanding lists starting in October 2018, he reported that, after partnerships and discussions for improvement in late 2020 and early 2021, the number of outstanding lists declined to nine in March 2022, compared to 35 in May 2020. He applauded the States for getting caught up and submitting lists on time, the best record he had seen in 20 years.

Mr. Young then celebrated the fact that every State had submitted to ATTAINS at least once, as of the end of 2021. He thanked participants for embracing electronic reporting, working with EPA and being patient through updates and modifications. He admired the electronic submittal map, which for the first time was all-green, indicating that all states had submitted.

The last of Mr. Young's slides showed the time between when States submit their data and when data are available to the public on EPA's websites (How's My Waterway). He noted that what used to take EPA between six months and two years to do now only takes two to four weeks. Mr. Young then explained that, to make data available to the public, EPA collects data, turns it into data for EPA's system, processes the geospatial data, and asks States to do quality checks on the result. Now, he added, States can submit on April 1 and the data are available before the end of April. He highlighted the improvements in terms of transparency, data availability, and public engagement.

Mr. Young concluded with his thoughts on next steps. He mentioned raising his children as a good analogy for where the program stands. He said that he is at a point where he has stopped hoping for great things for himself and started to hope for great things for his kids as he looks at their futures and capabilities. Like his children, who inspire him, Mr. Young said he is excited about the possibilities of all the data systems he has helped to develop. He said that the CWA 303(d) community is on the edge of greatness and well positioned for what is coming next, including the Internet of Water.

(2) Jim Havard, Chief of the Watershed Branch of the Office of Wetlands, Oceans, and Watersheds at EPA Headquarters

Mr. Havard thanked everyone responsible for the training workshop and looked ahead to the unceasing, challenging, invigorating, and rewarding task of restoring and protecting water quality. He prefaced his remarks with a send-off to Mr. Goodin. Mr. Havard celebrated Mr. Goodin's role as a key architect of Vision 1.0 and as a longstanding speaker at this event. Mr. Havard admired Mr. Goodin's emphasis in a prior year on relationships and his concept of spatial and temporal ecological edges where distinct habitats come together, much like the CWA 303(d) program which bridges standards and implementation. He also highlighted Mr. Goodin's focus in a recent year on the necessity of endurance—in the face of challenges, resource management, creativity, leadership and a holistic approach are key to success—and this year on the importance of building on successes and learning from experiences.

Mr. Havard then turned to Vision 1.0 and 2.0, noting that they are both about strategic use of resources by prioritizing issues that matter most to the State and public, assessing progress, finding strategies to integrate with existing programs, and using the best tools. Mr. Havard said

that Vision 1.0 had good success: all States went through a long-term prioritization exercise, and most enhanced engagement with their public and integration with other programs. Noting that they were three quarters of the way towards achieving long-term priorities, he encouraged a strong finish.

Mr. Havard said that roughly 30 States had produced non-TMDL restoration plans ("alternatives" under WQ27 and Vision 1.0), totaling approximately 700 assessment units, and 9 states had produced protection plans, totaling approximately 2,000 assessment units. He also noted that EPA had partnered with ELI to develop compendia regarding non-TMDL restoration plans, communication, protection, and evaluating the water quality effects of TMDL implementation. New trainings and a new cooperative agreement, he added, are in place to allow for further stakeholder engagement, development of success stories, and promotion of work with Tribes.

Mr. Havard echoed Mr. Goodin and Mr. Young's thanks for on-time submissions this listing cycle, noting that EPA already was taking action on 23 lists. Mr. Havard emphasized the importance of early engagement between States, EPA Regions, and EPA Headquarters. After listing the States that had submitted their lists, he expressed hopes for continued efforts to submit lists before the 50th anniversary of the Clean Water Act. Mr. Havard also applauded the timeliness of EPA action, stemming from coordinated efforts from States, EPA Regions, the Watershed Branch, and the Water Data Integration Branch. He said this attention to timeliness had tremendously reduced a backlog of action on lists and TMDLs.

Mr. Havard then highlighted the bipartisan infrastructure bill, which offers a funding opportunity because of increases in state revolving funds (SRFs). He mentioned the resulting increase in CWA 604(b) funding, with funding levels practically doubled for water quality management planning grants, including activities related to development and implementation of TMDLs. Mr. Havard also thanked Mr. Young and his team for their work on data and analysis, as efficiencies from ATTAINS had greatly contributed to on-time list submission. Mr. Havard observed significant progress in How's My Waterway and other data tools and recommended case-by-case evaluation of data using these tools.

Transitioning to partnerships, a new goal in Vision 2.0 that includes both engagement and integration, Mr. Havard mentioned working with the Office of Standards and Technology (OST) to develop implementation materials for various new CWA 304(a) recommended criteria. He added that the EPA Headquarters CWA 303(d) Program had assisted OST as developed a draft water quality standards rule for Indian country waters. Mr. Havard identified the Nonpoint Source Program as another place of integration. He noted that EPA was developing a hazard mitigation workshop for July, with participation from Nonpoint Source Program staff. He also referenced the two previously held workshops on stakeholder engagement sessions earlier in the year, as well as the compendium on approaches to engagement.

Another key theme that Mr. Havard emphasized was investing in people, diversity, and continuity. He explained that EPA is working on an introductory TMDL course, Foundations, and a Watershed Academy module on environmental justice. Also, in addition to environmental justice, Vision 2.0 includes a Tribal focus area, and several sessions in this training workshop address Tribal issues. Continuing on the topic of education, Mr. Havard

highlighted the Watershed Academy, which led 5 webcasts with 800 people in the prior year and covered topics like climate change, plastic pollution, water quality data tools, and hazard mitigation. He added that the Watershed Academy, run out of EPA's Watershed Branch, had released new modules on the history of the Clean Water Act and on nonpoint sources, which get 100 views per month. He said that the Watershed Academy is gaining popularity among students and the general public.

Mr. Havard emphasized the importance of adaptation amidst the strategic use of resources. He noted that Vision 2.0 will continue to heavily rely on State prioritization, with States having flexibility in key priorities and in determining which tools are most important to them. Mr. Havard then talked about the Healthy Watersheds Program which focuses on protection. In July 2020, he explained, EPA and ELI released a compendium of State approaches to protection, along with white papers addressing how Clean Water SRF and Drinking Water SRF funds can be used for protection purposes. Mr. Havard added that the Nonpoint Source Branch completed its Healthy Watershed Compendium Grant Program, which has led to projects protecting over one million acres of land and five thousand stream miles. He also highlighted that new protection elements had been added to How's My Waterway and this July EPA would be bringing together CWA 303(d) and 319 program staff to discuss watershed protection.

Mr. Havard said that he looked forward to hearing Ms. Iott's and Ms. Conde's presentations on Vision 2.0 content and updates, thanking Ms. Conde for strong leadership on the Vision and Ms. Feingold for her great assistance. He also thanked several representative from States, Tribes, ELI, ACWA, and EPA Regions for their leadership and collaboration on Vision 2.0. In conclusion, Mr. Havard reflected on great vignettes of success from Vision 1.0: States took on more challenging TMDLs, improved community buy-in, enhanced integration with other programs, and developed synergies to allow watershed-scale analysis, including modeling work that promotes protection in conjunction with TMDLs.

(3) **Rosaura Conde, Environmental Protection Specialist, Office of Wetlands, Oceans, and Watersheds at EPA Headquarters, and Traci Iott, Supervising Environmental Analyst, Connecticut Department of Energy and Environmental Protection**

Ms. Conde and Ms. Iott began their presentation by explaining the value of crafting a future-oriented vision and expressing gratitude for the chance to work on the 2022-2032 CWA 303(d) Program Vision, highlighting the partnerships with State, Tribal, Territorial, ELI, and EPA staff. Ms. Conde displayed a graphic depicting the Vision process and where the CWA 303(d) Program was in it: at the end of the first cycle and beginning of the next one. The graphic showed a cycle with four boxes: **vision**, **strategy**, **execute**, and **success**. Ms. Conde said that the **vision** box represents laying out what the Vision is and the steps toward achieving it; the **strategy** box represents long-term planning and prioritization; the **execute** box represents plan development and completion of the work, whether TMDLs, other restoration plans, or protection plans; and the **success** box represents the analysis of what was accomplished and what lessons to take into the next cycle. Ms. Conde explained that the CWA 303(d) Program was back at the vision phase, drafting Vision 2.0, and they have learned much from reflecting on the successes of Vision 1.0. She expressed excitement about the analysis and recommendations that ACWA provided EPA and in continuing the pattern of programmatic self-reflection.

Ms. Conde then provided an overview of EPA's timeline for the development and release of Vision 2.0. She explained that the timeline depicted only the work in the previous year and does not do justice to the entire effort, which started well before that time. Ms. Conde noted that they were still on track for a September 2022 release of a memo outlining Vision 2.0. Referencing the timeline, she highlighted the October 2021 drafting summit with staff from States and Tribes as well as several events in the spring of 2022 that presented Vision concepts to stakeholders. She added that Tribes have been more meaningfully involved in this process than the last one and expressed hope that it continues.

Diving into the Vision content, Ms. Conde compared the six Vision 1.0 goals with the draft Vision 2.0 goals and focus areas. She used color coding in her presentation to track how goals from the first Vision have evolved in the draft Vision 2.0; for example, the Prioritization Goal became the Planning and Prioritization Goal, since prioritization focuses on the process of long-term planning just as much as the outcome. With regard to the Assessment Goal, Ms. Conde said that it evolved into the Data and Analysis Goal, noting that the broadened goal allows more thinking about how the role of data and analysis can be enhanced in more than just the assessment of waterbodies, including listing, the development of TMDLs and other plans, and plan implementation. She noted that the Protection Goal retained its name, but she emphasized the significant growth in that area, adding that EPA has learned much just by including it as a goal. Ms. Conde then explained that the Alternatives Goal evolved into the broader Restoration Goal, which includes TMDLs and everything that is meant to bring waterbodies back into attainment of water quality standards. Finally, she detailed the merging of the Engagement and Integration Goals into the Partnerships Goal, which entails looking internally to build relationships within one's jurisdiction and communicating externally to get others involved.

Ms. Conde also highlighted the focus areas, which are new in the draft Vision 2.0: environmental justice, climate change, tribal engagement, and program capacity building. She explained that elements of the four focus areas already are occurring, within EPA and some States, Tribes, and Territories, but that there is power in naming them and giving them special focus.

Ms. Conde invited participants to reflect on their accomplishments over the prior ten years. She also encouraged participants to think about how they might reorganize and reapproach the communication of accomplishments. Ms. Conde emphasized the importance of verbalizing success to stakeholders and others, not just for bragging, but as a powerful tool. She then reminded everyone that progress does not look the same in all places and contexts and that what is most important is looking at oneself to think about to build on one's own successes and continue to grow in that environment.

Ms. Conde concluded her remarks by reflecting on successes in developing engagement from an EPA Headquarters perspective. She reiterated how powerful naming the goal was on the Agency's ability to organize around it. Ms. Conde reflected that an important element of engagement is effective communication and learning to talk about her program, which opens many doors. She was especially proud of the partnership with ELI to develop a compendium on communication approaches to clean water, which was linked in her presentation.

Ms. Iott then led the second half of the presentation, focusing on program implementation, but she began by acknowledging that many of the workshop participants either were new to the CWA 30(d) Program or work in another program and may be confused about the excitement and cheerleading regarding the Vision. She explained how important Vision 1.0 was in setting the CWA 303(d) Program on a new course within the confines of existing statutory and regulatory requirements. Ms. Iott emphasized that the first Vision was a collaborative effort, brought to bear by EPA in coordination with States. She encouraged the audience to not just sit back and watch, but to be active participants in the move towards Vision 2.0. Ms. Iott said that State successes came with partnerships, both with EPA staff, who saw funding opportunities and helped develop new approaches, and with communities. She labeled the Vision a team-based approach and emphasized that the success of water quality restoration and protection is dependent on engagement and collaboration with the public, partners, and EPA.

Ms. Iott proceeded to talk about planning. Prior to Vision 1.0, she explained, national progress was driven by consent decrees and the pace of TMDL development, but taking a longer view of program priorities and articulating larger goals is critical to success because otherwise it is easy to be pulled in too many directions. Ms. Iott added that even short-term projects should be framed within a long-term vision in order to develop new approaches and deal with bigger issues. While TMDL pace might decline, she continued, States and Territories can truly target the right efforts.

Ms. Iott highlighted that the Vision lets each State and Territory chart their own path, looking for new routes and approaches to develop water quality restoration and protection. She noted the creativity and flexibility that has been exhibited toward these ends. She gave kudos to EPA, admitting that it is easier to administer a national program when everyone operates the same widget, but allowing everyone to create their own vision and plan makes the oversight and equity across the programs harder. Along those lines, Ms. Iott lauded the Vision's attention to protection planning and the development of "alternative" restoration plans, and the flexibility and creativity that has surrounded them since. She appreciated that EPA stepped up, as did State, Territories, and Tribes.

Referencing the metaphor of the CWA 303(d) Program as a bridge between implementation programs and water quality standards and data, Ms. Iott emphasized the importance of collaboration with partners on both sides, but especially data providers, who are improving the program through data access and use, and with the Nonpoint Source Program. Ms. Iott then challenged the participants to share their knowledge, including lessons learned, throughout the week. She also encouraged the participants to take time to listen, noting her own experience bringing what she learned from these events back to her State. Ms. Iott emphasized that none of the participants work in a vacuum and all are reaching for the same goal of stewarding water resources. She called on the participants to dive in, engage, participate, share their perspectives, ask questions, and connect.

(4) Stephanie Santell, Climate Advisor, Office of Policy at EPA Headquarters

Ms. Santell began by thanking the prior presenters for setting up her presentation well by sharing both the challenges and incredible opportunities ahead. As a former member of the Watershed Branch, Ms. Santell said that she appreciated how the CWA 303(d) Program looks at water quality restoration and protection in a holistic way, building on water quality

standards, thinking about permitting and implementation, and engaging the community. She said the program is a great mechanism for doing this type of cross-cutting work and has been making strides in this area.

Turning to the content of her presentation, Ms. Santell explained that 20 national programs and regional offices of EPA were instructed to develop a Climate Adaptation Implementation Plan under EPA's 2021 Climate Adaptation Action Plan and Policy Statement on Climate Adaptation, as well as Executive Order 14008. She noted that EPA's plan laid out priorities, including integrating adaptation into rulemaking and enforcement; consulting and partnering with States, Tribes, Territories, and stakeholders to increase their adaptive capacity; advancing environmental justice; and implementing measures to protect facilities, infrastructure, and program implementation processes against climate change. Ms. Santell said that the Agency is identifying adaptation strategies that are informed by the best available science on programmatic vulnerabilities and that will deliver co-benefits—greenhouse gas mitigation, national security, public health, job creation—all central to a resilient future.

Ms. Santell clarified that the OW Climate Adaptation Implementation Plan will span fiscal year 2022 to fiscal year 2026 and contains five specific sections that must be included in all national and regional implementation plans: designation of a senior career leader to oversee climate adaptation activities; a climate vulnerability assessment for the office's programs; actions that will be taken to support the five priorities identified in the Climate Adaptation Implementation Plan; a training plan for staff; and identification of research needs related to climate science. Ms. Santell added that, outside of these plans, there is additonal flexibility to craft content around programmatic and partner priorities. She highlighted that all plans are slated by be finalized by the summer of 2022. She also offered participants points of contact, for those interested in connecting with EPA regions, each of which are doing their own individual plans spanning multiple environmental media.

Ms. Santell then moved onto draft priority actions. She explained that the priority actions fall under three main goals and have specific objectives that address core vulnerabilities identified with programs and partners. She expressed optimism in leveraging federal resources to promote adaptation strategies and help build resilience. Ms. Santell put out a call for input and partnership with States, Tribes, and Territories, to make sure the actions support needs in vulnerable communities across the country. She emphasized that the draft priority actions were still under development, and that they would be refined based on feedback before the final version is released in the summer.

The first goal that Ms. Santell presented was improving the climate resilience of America's water infrastructure, both green and gray. She stressed that climate change threatens essential drinking water, wastewater, and stormwater systems across the country unequally, especially impacting disadvantaged communities with inadequate infrastructure. Ms. Santell added that, through the bipartisan infrastructure bill, EPA and State/Tribal partners have a transformational opportunity to modernize and build new infrastructure to withstand climate risks. Under this goal, she said that the Office of Water is looking to advance climate objectives in grant and loan programs, technical assistance programs, and resilient infrastructure solutions.

Ms. Santell emphasized that infrastructure, funding, and finance programs, like state revolving funds and core grant programs, should appropriately address climate change in both guidance and process. She also highlighted the value of new climate tools and resources in the Office of Water's technical assistance program that help projects have planning, assessment, and design assistance when applying for federal funding. Another aspect of technical assistance that she referenced was an unprecedented program to help underserved communities apply for state revolving fund dollars by providing information and tools to address climate risks, identify adaptation solutions, and navigate grant/loan applications. Ms. Santell also mentioned the Creating Resilient Water Utilities Initiative, which will be scaling up tools, technical support, and training to help utility providers assess and plan for climate risks. Lastly, under the first goal, she said that the Office of Water would be encouraging adoption of green infrastructure and nature-based solutions to improve climate resilience, water quality, and access to natural spaces. She pointed to the state revolving fund green project reserve, geographic programs, nonpoint source programs, and partnerships to help advance that objective.

Ms. Santell introduced the second goal as protecting the nation's waters from the impacts of a changing climate. She noted that inland waterways, coastlines, offshore waters, and wetlands all provide important climate benefits, but they and the communities reliant on them are vulnerable to stressors amplified by climate change. Ms. Santell presented the Office of Water's plans to integrate climate considerations through Clean Water Act and Safe Drinking Water Act programs, to make sure that they can operate effectively under both short- and long-term impacts of climate change. She explained that the actions under the second goal would help advance more holistic approaches to adaptation, as well as encourage investments in ecosystem protection, restoration, and research/data that support sound water management decisions.

Referencing the first draft priority action under the second goal, advancing a "climate-ready" National Pollutant Discharge Elimination System Program, Ms. Santell said that many regulatory programs operate under the assumption of stationarity and that it is imperative to make sure the programs can adapt and that co-regulators have data tools and technical support to make climate-informed decisions, from the derivation of water quality standards to the implementation of TMDLs. Another draft action under the second goal mentioned by Ms. Santell was emphasizing investments and planning, especially in light of the more than $1.8 billion in new funding under BIL, as well as capacity building, ecosystem restoration, and other activities to help build watershed and community level resilience. She said that leveraging BIL's funding can support National Estuary Programs, Geographic Programs, and environmental managers. Ms. Santell framed the last draft action as an example of how the Agency uses science-based data to outline priorities and guide work on harmful algal blooms (HABs). She previewed the Office of Water's strategic plan to better understand and mitigate the impact of HABs on drinking water supplies, ecological health, and economies, as HAB formation increases with warmer water.

For the third goal, advancing the adaptive capacity of the water sector and the climate knowledge of all communities and decisionmakers, Ms. Santell stressed that the Office of Water can play an important role in ensuring the latest climate data, science, and information are accessible and usable for all stakeholders in preparing for climate change. Ms. Santell outlined the office's plan to work internally and with external partners to incorporate climate data, information, and best practices into outreach, decision support tools, and other resources

mentioned earlier while addressing barriers to information discovery and usability. She explained that the primary objectives of the third goal aim to help community partners make informed choices based on climate risk and impact.

Ms. Santell noted as one of the draft actions for the third goal improving accessibility and transparency of water, climate, land use, and other data to the public through interactive online mapping platforms like How's My Waterway. She said that everyone working from the same set of information can help support climate-informed decision making across programs and ensure more collaborative, holistic decisions. Ms. Santell also said that the Office of Water was looking at partnership programs as delivery mechanisms that could get data, tools, and support to folks on the ground; for example, the Urban Waters Federal Partnership would be helping underserved urban communities understand climate impacts and learn about successful adaptation practices. She also emphasized that working with and honoring tribal partners requires embracing Indigenous Traditional Ecological Knowledge (ITEK) acquired by tribes and indigenous people through their direct contact with the environment. She said this knowledge is important to understanding how Indian Country will be uniquely impacted by climate change as well as informing EPA's broader understanding of ecological systems. She affirmed that the Office of Water will be working with tribes and indigenous partners in advancing these collaborations.

In conclusion, Ms. Santell said the Climate Adaptation Implementation Plan would continue to be refined based on internal and stakeholder feedback. She emphasized that future iterations would be opportunities for continued discussion and partner input. Ms. Santell also identified some of the ways, through many different programs, that EPA will continue to address climate change beyond the Climate Adaptation Implementation Plan; for example, monitoring and assessment, TMDLs, innovative financing, watershed protection, and partnership programs. She added that these mechanisms would be covered in a forthcoming companion document.

(5) Dylan Laird, Biologist, EPA Headquarters

Mr. Laird started by explaining that he would be highlighting some of the great past, current, and upcoming projects that address how climate considerations can be integrated into CWA 303(d) Program activities. He noted that past training workshop sessions had been essential platforms for considering how to tackle impacts from climate change. He recalled a discussion in an evening session of the last in-person training workshop regarding early ideas about the intersection between climate and the program. Since then, Mr. Laird said, thinking about climate change has come a long way, as indicated by the many breakouts related to this area in 2021. He added that those breakouts covered a wide variety of climate change topics, including climate impacts on assessment and TMDLs as well as prioritizing waters in light of climate change. He noted his enthusiasm for seeing those conversations continue in the subsequent week.

Mr. Laird then expanded on Ms. Conde's preview of the climate change focus area in the draft Vision 2.0. He said that it highlights a number of opportunities for the CWA 303(d) Program, including considering the impact of climate change when identifying impaired and threatened waters; utilizing tools and resources that support prioritization of waters particularly susceptible to changing conditions; considering the impact of changing conditions on TMDLs and other plans; building the program's capacity to be robust and adaptive; targeting resources

and staff capacity towards areas/communities most impacted by changing climate conditions; and engaging with public and other stakeholders using available public processes for transparency. Mr. Laird then mentioned efforts to develop a resource addressing climate and TMDLs, in response to input regarding a need for direction, clarity, and unified messaging in this area. He explained that EPA was in the early stages of developing a white-paper or memo that provides non-prescriptive information to support consideration of climate change during TMDL prioritization, development, and implementation. He warned that changing climate conditions have the potential to impact nearly every aspect of a TMDL, requiring a wide variety of approaches depending on many factors.

Mr. Laird highlighted a stakeholder workshop convened by ELI in April on climate change and the CWA 303(d) Program, which addressed climate-related efforts in the program with a diverse group of stakeholders. In addition to covering the draft Vision and other activities, he explained, a significant portion of the workshop was dedicated to open discussion in order to answer questions and get feedback. Mr. Laird also mentioned ELI's Climate Change Compendium, in development with the support of EPA, which highlights various approaches that States, Territories, and Tribes have taken to include climate change considerations in listing, TMDL development and implementation, and related activities and products.

Mr. Laird then referenced the biennial integrated reporting memo, noting that the 2022 memo encourages considering climate change in TMDLs planned for development. He added that EPA is considering the inclusion of additional topics in 2024, such as impacts on pollutant loadings from climate-related influences like increased temperatures, flashier floods, and increased drought.

The next resource Mr. Laird mentioned was a paper in the Journal of Water and Climate Change that was developed in collaboration with the Office of Research and Development and Nonpoint Source Program and intended to help communities and watershed decisionmakers consider climate when determining how to meet water quality goals. He said that the first part of the paper is a literature review examining climate change impacts on practices to mitigate urban stormwater, agriculture, and forestry. Based on that information, he added, qualitative inferences are made about the resilience of different types of water quality management practices. Mr. Laird defined resilience in this context as two factors: a sensitivity of water quality management practices to climate change drivers and adaptability as that change occurs. He gave the example of a green roof, which is sensitive to climate as temperature and precipitation changes but is considered more adaptable because different species can match new climate conditions.

Mr. Laird then briefly highlighted two technical resources. First, the data library Watershed Index Online (WSIO), which he said includes hundreds of indicators that can be used to evaluate, compare, and prioritize watersheds for user-defined purposes anywhere across the contiguous U.S. He noted that, in 2021, the library was updated with new indicators relevant to climate for use in vulnerability assessments. Second, Mr. Laird explained that EPA's RPS Tool pulls indicators from the WSIO and other sources to allow the comparison of watersheds based on characteristics users prioritize. He added that the RPS Tool can be used for decisions like which watersheds are prioritized for plan development and prioritization of activities to address nonpoint source pollution.

Mr. Laird concluded his remarks by highlighting a partnership between the CWA 303(d) Program and the Nonpoint Source Program to develop a curriculum for hazard mitigation and water quality State staff to better coordinate on activities such as flood insurance discounts for implementing TMDLs and restoration plans for stormwater pollution. Mr. Laird said that the Nonpoint Source Program had done a few pilot workshops with hazard mitigation and water quality managers and was developing self-paced modules to accompany the curriculum, adding that the CWA 303(d) Program had shared materials with State partners through an ACWA Watersheds webinar.

Session 2: Data and Analysis

This session featured five presentations followed by a question-and-answer period facilitated by Adam Schempp of ELI. The presenters identified ways that States and EPA are making progress toward more open and available data, in accordance with the new Vision's Data and Analysis goal, and concluded with a presentation on the Internet of Water.

(1) Garrett Stillings, Biologist, Monitoring and Analysis Branch at EPA Headquarters

Mr. Stillings began his presentation on state-scale probability surveys by observing how these surveys can strengthen States' CWA 305(b) reports, by enabling States to attain 100 percent reporting on the quality of their waters, stressing the statutory requirement to analyze all navigable waters. He explained how probability surveys allow for the extrapolation of information from a subset of the sample, pointing out that this methodology is less time-consuming and more cost-effective than a census. Mr. Stillings described how probability surveys can provide comprehensive statements about statewide water quality conditions, in line with CWA 305(b) reporting; provide additions and context to the CWA 303(d) list and reference waterbodies; and help inform monitoring priorities.

Next, Mr. Stillings summarized the five key components of a probability survey. He said that the first step is securing funding, suggesting that States can use Section 106 allocations and/or leverage National Aquatic Resource Survey (NARS) site allocation with State intensification. Mr. Stillings took time to explain the term "intensification," which refers to additional sites or special indicators of interest which an entity wants to sample in conjunction with a NARS survey to complete a desired statistical survey, and he noted that if NARS does not incorporate current sites, he could incorporate them upon request.

Mr. Stillings noted that the second step of a probability survey is survey design. He described how developing a design involves defining a target population and creating a sample frame. He mentioned that this step can be incorporated into NARS, but that states also are able to develop their own surveys outside NARS. He announced the availability of a new survey design tool in the EPA app, which he described as an easy-to-use interface for point, aerial, or linear resources.

Then Mr. Stillings detailed the third and fourth steps in a probability survey: data collection and analysis. He said that when working through NARS, data collection is very easy and involves using an iPad app to upload things directly to the database, where it can be analyzed and sent directly back to the user. Mr. Stillings noted the importance of data quality control

checks. Next, he provided an overview of the data analysis phase of a probability survey and identified some tools that can help with population estimates. He used screenshots to briefly demonstrate an R shiny tool developed by EPA (NARS Population Estimate Calculation Tool v. 2.0), which is available to States.

Lastly, Mr. Stillings gave a brief overview of the fifth and final step of a probability survey, which is reporting. He explained the process for reporting survey results in ATTAINS using several screenshots from ATTAINS to help participants follow along. He noted that results can be published automatically to How's My Waterway for public viewing. Mr. Stillings concluded by inviting States to contact him directly by email for survey support.

(2) Jason Jones, Monitoring and Assessment Coordinator, Arizona Department of Environmental Quality

Mr. Jones began his presentation on the value of published data with an example that all participants would understand: digital maps. He projected a Google Maps image illustrating alternative routes from Arizona to Pennsylvania, demonstrating how published data (e.g., about travel times) can be used to support decisions (e.g., whether to drive or fly). He noted how we used to have to contact organizations individually for the data that they gathered, but now we have tools that make it easier.

The first part of Mr. Jones' presentation focused on the value of the Water Quality Portal. He related that, in his experience, assessments that used to take up to 13 months can now be completed in as little as 12 minutes. Mr. Jones used a visual timeline to show how the time needed for each step in the process has been drastically reduced compared to the "old way" – for example, gathering data, which used to take 3 months, now can take under 10 minutes, and formatting data, which used to take 6 months for Arizona, now takes less than 1 minute. He described how R can be used to automate much of the "assess" step, bringing it from months to minutes.

Mr. Jones emphasized that reducing the time of each step in the assessment process helps States submit their assessments on time. He explained that, even where an assessment results in an "inconclusive," these tools allow the State to parse the details and determine what is needed to turn it into an "attaining" or "impaired" decision. Mr. Jones noted that Arizona has saved $400,000 in lab fees and completed more decisions by addressing inconclusives with this surgical precision. He concluded his comments on the Water Quality Portal by summarizing its benefits: it saves employee time and agency money; it allows Clean Water Act assessments to be completed timelier; and it reduces the number of inconclusives.

Next, Mr. Jones turned to the idea of maximizing the value of the rest of the Clean Water Act. He reminded participants that not all public data are the same, and that "good" data are discoverable, searchable, and useful. Mr. Jones opined that while the Water Quality Portal is discoverable and searchable, it could be more useful – for example, the majority of the USGS data does not include detection levels, and the harmful algal bloom data could be made more useful. He noted that How's My Waterway's integrated data are generally discoverable, searchable, and useful, adding that the more integrated and useful we make the rest of our data systems, the more valuable they will become.

Before moving to the next speaker, Mr. Schempp directed two questions from participants to Mr. Jones. One participant asked how Arizona handles organizations with data that do not submit them to the Water Quality Portal. Mr. Jones responded that the State adds the information to the database if an organization cannot. Another participant asked Mr. Jones to describe Arizona's water quality standards and how they are applied in the R application. Mr. Jones provided a brief description of the scope and format of the code, and he expressed willingness to share the information, which is publicly available and transparent.

(3) Emily Cira, Biologist, Watershed Branch at EPA Headquarters

Ms. Cira's presentation focused on new and recently updated resources for data use in the CWA 303(d) Program. She began by describing the WSIO, a free, publicly available data library with over 400 watershed indicators measuring a wide variety of ecological, stressor, and social characteristics of watersheds across the contiguous United States. Ms. Cira explained that the WSIO is regularly updated with new indicators – e.g., projected changes in precipitation and low-income populations, which were added in 2021 –and is at the HUC 12 scale.

Ms. Cira provided general instructions for accessing WSIO data and highlighted two tools to help apply the data. She described how the first tool, known as the WSIO Tool, draws indicators from the WSIO data library and incorporates additional online maps. She next briefly described the RPS tool as a custom-loaded excel spreadsheet with all the data needed for States and Territories, adding that more information on the RPS tool would be provided in one of the breakout sessions later in the training workshop.

Next, Ms. Cira drew participants' attention to a new resource from the Environmental Law Institute: Evaluating the Water Quality Effects of TMDL Implementation: How States Have Done It and the Lessons Learned. She provided a brief overview of the contents and methodology, which included questionnaire responses, follow-up interviews, and an independent literature review. Ms. Cira noted that the compendium highlights the diversity of approached used across States, identifies resources, and distills lessons learned. She invited participants to learn more about the compendium from Mr. Schempp during an upcoming session.

(4) Dwane Young, Chief, Water Data Integration Branch at EPA Headquarters

Mr. Young began his presentation on supporting an improved modeling framework by explaining that, while he generally would focus on what EPA and States are doing and what has been done, his presentation also would move into the realm of what is possible using NHDPlus. He explained how NHDPlus brings together the National Hydrography Dataset (NHD) with watershed boundaries and elevation data, tying the landscape to the hydrology. It is the NHD-plus numerous precalculated value added attributes (VAAs) used to analyze upstream and downstream effects and to characterize individual catchments. Mr. Young noted that high resolution data can be turned into standardized resolution. He highlighted NHDPlusVFGen, which combines a visibility filter, an NHD attribute that can be used to filter for spatial resolution, and generalization, a tool to recreate a navigable NHDPlus network, resulting in a common hydrography solution for medium resolution users (with an additional crosswalk table providing a direct link to NHDPlusHR).

Mr. Young reflected on how EPA embraced the value of a common "hydrofabric" (hydrologically connected data) over 20 years ago by referencing impaired waters to the Reach File 3 and saw the value in using HUCs as "reporting units" to summarize data. He recalled how all of those data were re-indexed to NHD when it became available—with assessed waters, water quality standards, permitted facilities, fish consumption advisories, and other things being added—and then migrated to NHDPlus. He emphasized that making maps for visualization was the initial use case.

Next, Mr. Young described the creation of VAAs. He explained that there is a lot of data associated with NHDPlus, divided at the catchment scale but also cumulated upstream. He described how a group has been using this methodology to calculate hundreds of different characteristics for each catchment. He displayed graphics from the Index of Watershed Integrity and StreamCat, which he said is being integrated into overall data.

He considered the question, "Could we/should we attribute our data to the NHDPlus catchments in a similar way to what StreamCat has already done? If so, what would those attributes be?" By way of illustration, he used the example of figuring out the number of bacteria in a certain water segment and then calculating that for the entire water system—with that dataset then being leveraged by someone who is running a model.

Mr. Young concluded with the idea that, while it is merely a possibility, this type of work could be the natural next step for the program in terms of data interoperability and thinking about how to connect all the water quality pieces together. He posed two questions for consideration: what are the most critical data sets to summarize, and would States and Tribes be interested in exploring this further?

Following the presentation, Mr. Schempp directed questions from workshop participants to Mr. Young. One participant asked whether soil types are included in the NHDPlus model, and Mr. Young replied that Streamcat has the STATSGO data. Another participant asked whether NHDPlus can be linked to USGS StreamStats, and Mr. Young answered that it can. When asked about expanding these datasets to cover Hawaii and Alaska, Mr. Young responded that Hawaii should be covered but that Alaska is a bit more challenging.

(5) Peter Colohan, Director, Internet of Water Initiative

Mr. Colohan began by introducing the philosophy behind the Internet of Water (IOW), which is "all about better water data management." He laid out the key principles guiding the IOW project, including that discoverable, accessible, and useable data lead to new information and insights and can lead to improved decision making, which leads to better water management outcomes and ultimately to healthy communities and ecosystems. Mr. Colohan posited that better water data lead to efficiency, sustainability, and resilience; that modern data infrastructure can aid in the usefulness of water data; and that data equity is necessary for water equity. He stated that all water data made for the public good should be findable, accessible, interoperable, and reusable. He affirmed the importance of security and privacy, noting that modern mechanisms like tiered access for authorized users can help mitigate risks associated with data sharing. He explained that the ideals of interoperability, efficiency, sharing, equity,

and secondary use of data are promoted through standardization of data, metadata, and exchange standards.

Turning to the question of who is responsible for water data, Mr. Colohan proposed a division of responsibilities between producers and users. He said that control over data is best maintained by data producers, who are responsible for sharing data of known quality and documenting essential metadata. Data users, on the other hand, are responsible for determining whether data are appropriate for their specific purposes and uses. Mr. Colohan explained that when everyone "holds" the data through federated, distributed systems of interoperable public water data, and there is generally scalability and flexibility to meet the diverse needs of data producers and users.

Next, Mr. Colohan provided a brief history of the IOW. He described it as a philanthropic project built on place-based collaborative water data projects, common standards, and essential new technologies. He said it started in 2018 at Duke's Nicholas Institute, and that after a three-year startup phase, the IOW Coalition was formed. He explained that it currently is led by the Center for Geospatial Solutions at the Lincoln Institute of Land Policy, with partners including Duke, the Western States Water Council, the Water Data Collaborative, and the Consortium of Universities for the Advancement of Hydrologic Sciences, Inc.

Mr. Colohan then gave some examples of place-based projects in the startup phase, including the Freshwater Harmful Algal Blooms Monitoring and Notification System in California, where IOW helped develop a methodology for the state to ingest data from community groups and Tribes. Another example he offered was from New Mexico, where managers need information about groundwater wells in order to manage the river in the Lower Pecos Valley; there, IOW's improved data management and decision support has allowed an accelerated timeline for data collection.

Mr. Colohan highlighted the IOW's common standards and peer-to-peer network, citing over 200 members in 46 States that have learned how to share and exchange water data. He described the "Data Hubs" as structured sources of managed water data that exist regionally. Mr. Colohan posited that the more that water data can be organized, the better, noting that water data can be managed both geographically and thematically. He expressed his wish that people be able to find all relevant data sources for a certain waterbody and described how Geoconnex "brings it all together," offering a search index for water data from all organizations. He explained that this is in line with an emerging federal initiative—in which EPA has been involved—that is trying to move toward a future where data are well organized.

Mr. Colohan concluded by inviting everyone to join the IOW initiative. He noted that everyone gathers information from searches and apps, and water data need to be in that realm of receiving data and searchability. Mr. Colohan opined that all people collecting water data should be doing so with the most modern approach available, and that it should be possible to immediately get data about the safety of one's water – but that it will only be possible if everyone works toward this same goal.

Following Mr. Colohan's presentation, Mr. Schempp provided another opportunity for questions. The first question was whether Arizona uses any continuous monitoring data, and Mr. Jones replied that the State had just gotten into continuous monitoring and was not as advanced as some

other States. Another participant asked whether there was a plan at EPA to extract ambient environmental data. Mr. Young answered that they have been engaging with other offices for quite some time on this issue; for example, Superfund data collected pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) is incorporated into the Water Quality Exchange (WQX) to some extent. He also noted that NPDES is undergoing a redesign, after which there should be better integration.

The next participant question was about the general public's perception that data offered online is recent, and how programs can articulate the temporal gap to the public without overcomplicating dashboards and maps. Mr. Jones explained that Arizona's dashboard allows users to zoom in for more information about the data. Mr. Colohan added that this is partially why IOW keeps things "as close to the producer as possible." He suggested that the public should be treated as one audience and water regulators as a different audience when building databases, allowing such things to be implicit as necessary. Ms. Cira also responded, saying that, for WSIO, there were similar discussions about how much detail to provide, and it was decided that information about data source and year would be included in the data source itself but not in the name.

Another participant asked whether there were any efforts to create standard Quality Assurance Project Plans (QAPPs) that volunteers and water quality organizations could use to gather data. Mr. Colohan responded that the Water Data Collaborative is trying to develop "one QAPP to rule them all" that would create this level of uniformity. Mr. Jones explained that Arizona has a "credible data rule" to ensure that volunteers meet minimum requirements in order for data to get through. The next participant question was whether any of the presenters had faced challenges using shinyapps.io in situations where the amount of data was too much for the app to handle. Mr. Jones answered that, yes, Arizona has had that problem, so they treat the dashboard as digested data, focusing on the waterbody assessment level. Mr. Colohan suggested reaching out to info@internetofwater.org for help, which might include the prioritization of datasets.

A participant commented that Mr. Young had presented a good initiative and could add trend analysis and include forecasting using artificial intelligence. Another participant asked how the IOW will work with other agencies; would it come directly from agencies or from different groups? Mr. Colohan said the answer was "both/and," noting that data can be pushed to different hubs or can come from individual groups themselves. He said that the federal government is working toward open web standards for all of its sources. Mr. Colohan added that it can be more efficient to work through a hub, but if you have a more sophisticated operation than that, work can be done directly. He noted that WQX and the Water Quality Portal already act as a hub within the IOW.

Session 3: Resilience and Continuity Despite Staff Turnover

This session featured five presentations followed by a question-and-answer period facilitated by Adam Schempp of ELI. The presenters identified strategies that States and Tribes have used to ease the process and minimize adverse consequences of staff transitions.

(1) Susanne Meidel, Water Quality Standards Coordinator, Maine Department of Environmental Protection

Ms. Meidel began her presentation on succession planning by identifying the main reasons why it is important. She highlighted that many long-term staff are reaching retirement age, that documentation is often lacking, and compiling resources is a time intensive process. She added that losing institutional knowledge is damaging and onboarding new staff needs an orderly process to reduce losses in productivity and prepare new employees to succeed. Ms. Meidel noted that their succession plan was developed by the Bureau Director with Division Directors in approximately nine months and consisted of a comprehensive list of items, including: monthly task lists, contacts, work plans, internal and external reports, policy memos, QAPPs/SOPs, and electronic and paper records.

Next, Ms. Meidel summarized keys to their succession planning. She said that the entire staff contributed, with individual employees being given tasks to be completed at different times to help move the process along. Ms. Meidel explained that every current staff member compiled documentation for their work area to ensure that nothing was omitted. She added that a cross-training requirement ensures that more than one person knows any particular thing.

Ms. Meidel then detailed the lessons they learned from the succession planning initiative. First, she said that the succession planning was targeted to new staff, so it was important to be clear; avoid acronyms that new staff may not know; and identify organizational contacts, history, and mission. Second, Ms. Meidel advised participants to customize the information included, omitting items that are not relevant and adding new sections as necessary, and to keep in mind that some programs will have more information than others. Third, she suggested updating that information on an annual basis.

Ms. Meidel concluded by explaining that, although the time commitment for succession planning was extensive, clear organization and scheduling enabled program staff to meet deadlines. She emphasized that the utility of the initiative depends on how current, clear, comprehensive, and organized the documentation is.

(2) Barbara Bennett, Watershed Analysis and Implementation Support Workgroup Leader, Colorado Department of Public Health and the Environment

Ms. Bennett started her presentation by noting that she had been working in the TMDL branch for a year and trained another person very quickly after she started. She added that Colorado's TMDL team had extensive staff turnover and that she joined the team while many TMDLs were in progress. Ms. Bennett explained that her presentation centered on what was done well and what could have been done better when onboarding new staff members and offboarding retiring staff members.

Ms. Bennett first focused on onboarding and training new employees. She said that new staff were greeted with a Google folder full of documents to read, from EPA, from the State, and from other parties, adding that the documents included the organizational chart, file structure, as well as other resources. Ms. Bennett highlighted that having all resources in one place was extremely helpful. She then summarized the process of training new employees, which consisted of a number of training videos and standard operating procedures for internal

processes, weekly TMDL team meetings to get new staff up to speed, and external trainings provided by EPA, ACWA, and NEMA. Ms. Bennett emphasized the importance of inviting new staff to public meetings to learn about the Water Quality Control Division, Colorado's unique voluntary incentive programs, and broader programmatic goals.

Next, Ms. Bennett turned to the process of offboarding. She reminded participants that the most helpful step to take when an employee is leaving is to document for each project the project folder location and save all emails, maps, meeting notes, and project status summaries. Ms. Bennett then spoke to tools that could be used to support continuity on TMDLs. She highlighted the importance of having a simple and consistent file structure, a TMDL template that captures the most up-to-date information and decisions, a TMDL work plan noting all steps in TMDL development, and sampling and analysis plans.

Ms. Bennett transitioned to address stakeholder engagement, reminding participants that turnover also occurs among stakeholder organizations. She explained that, in these instances, the organizations have not changed, but the staff representing them have, and for that reason, some outreach needs to be repeated. Ms. Bennett suggested creating an up-to-date slide deck that can be built upon after each meeting to track stakeholder turnover and outreach efforts. She also recommended repeating outreach after a delay in a TMDL and sharing outreach history at the beginning of every public meeting.

Ms. Bennett then expressed her support for a team approach to TMDL development. She explained that TMDL writers used to work independently but that the new team approach facilitates consistency, good decision making, and institutional knowledge sharing, and thus is more resilient during staff transitions. Furthermore, Ms. Bennett noted that the team approach improves staff morale and gives staff members the opportunity to tailor their work in line with their own interests and growth goals. She clarified that there is still a lead scientist that directs the team, while other staff members help with discrete tasks and with making big decisions. She also described the RACI (Responsible Accountable Consulted Informed) matrix they use.

In conclusion, Ms. Bennett suggested that participants be prepared to lose work time when there is staff turnover, even if teams can minimize set-back time, and she emphasized the value of retaining current staff.

Before moving to the next speaker, Mr. Schempp directed two questions from participants to Ms. Bennett. One participant asked how cumbersome it was to update the binder with new information, particularly information that is external to the group. Ms. Bennett responded that the process is time intensive, but there are different people that are in charge of different updates, and her team has tried to be strategic about making sure multiple people know how to update the system. Another participant asked Ms. Bennett to explain how they use the accountable element in RACI. Ms. Bennett said that the accountable individual is the TMDL lead and that every TMDL has only one lead. She added that other staff members can contribute work but will not be accountable in RACI.

(3) Heidi Henderson, TMDL and Assessment Team Supervisor, New Mexico Environment Department

Ms. Henderson began her presentation with context, explaining that New Mexico's Surface Water Quality Bureau has three technical programs: Monitoring, Assessment, and Standards; Point Source Regulation; and Watershed Protection. She added that the Monitoring, Assessment, and Standards Section consisted of a Program Manager, a Monitoring Team of six staff members, a Standards and Reporting Team of three staff members, and a TMDL and Assessment Team of four staff members. Ms. Henderson noted that the Department lost two staff and hired two new staff in the prior two years and that staff leave for a variety of reasons, both temporary (medical and parental leave) and permanent (retirement and position change), and leave with different levels of notice. She asserted that it is essential for the Department to make temporary leave as easy as possible and that having a set plan in place allows for work to continue even if short notice is provided and enables staff to leave knowing that their work will continue in their absence.

Next, Ms. Henderson explained that mandatory telework during the pandemic underscored the importance of electronic data storage, retrieval, sharing, archiving, and having shared files on the internal drive and/or on the website. She also highlighted that the organization of files and resources facilitates staff transition. Ms. Henderson then identified key documents for a smooth transition, including staff transition memos and lists of standard operating procedures, Water Quality Management Plans and Continuing Planning Processes, listing methodologies, assessment rationales, and required and recommended trainings.

Ms. Henderson drew participants' attention to Trello, a web-based workflow and project management tool which teams can use to allow numerous individuals on a large project to work on and track tasks. She described how Trello offers workspaces, boards, lists, and cards to breakdown project deliverables. Ms. Henderson said that her team used Trello to curate two primary deliverables: CWA 303(d)/305(d) Integrated Reports and TMDLs. She referred to Trello Templates as a critical tool when training new staff and also when existing staff leave so that the remaining staff are clear where a project stands. She recommended that all participants learn more about Trello and framed it as a great method of maintaining core documents and ensuring that staff attend trainings.

(4) Kimberly Miller, Environmental Specialist II, Morongo Band of Mission Indians Environmental Protection Department

Ms. Miller started her presentation with an overview of the structure of the Morongo Environmental Protection Department, which has six full time staff members for the Tribal Water Program, Tribal Air Program, and Pollution Prevention Program, and Kimberly is the only full-time staff member in the Water Program. She outlined the Department's primary objectives: to protect Morongo's air, water, and land and to fulfill EPA's Strategic Plan, the national strategy for protecting human health and the environment.

Ms. Miller reflected on how to advance important work with a small department, especially when staff is specialized and there is limited back-up. She explained that the Department previously used program binders but then moved to collaborating on an electronic drive, which is easier to get up-to-date and is available to everyone, facilitating organizational coordination.

Ms. Miller noted that carrying out standard operating procedures was a large part of keeping the Department running. She added that the Department created a centralized table of contents for all staff to access, covering regular tasks for each program. She recommended making standard operating procedures simple but sufficiently detailed for staff to be able to carry out tasks with limited training or knowledge.

Next, Ms. Miller emphasized the importance of cross-training and how, especially in a smaller department, it is essential for at least two staff members to have familiarity with primary tasks. She noted that it helps mitigate brief work interruptions, is useful for temporary leave, and is important for training new staff when there is turnover. Ms. Miller concluded by underscoring the utility of having basic training plans for new hires, a basic program schedule, and weekly department meetings. She also advised participants to work on introducing new staff to other people in similar positions at different tribes.

(5) Jodi Gardberg, Manager of the Watershed Protection Section, Utah Department of Environmental Quality

Ms. Gardberg began her remarks by explaining that they recently hired a new staff member and spent the first two days explaining how nonpoint source fits in with the broader framework. She added that they then focused on how her section fits in with the other sections in the division and how the division fits into the Department of Environmental Quality more broadly. Ms. Gardberg then explained how the new hire had a series of 30-minute introductions with relevant partners, to start building those relationships. She said that, with the new paradigm of telework, explicit introductions early on are more important than ever.

A participant asked whether any of the panelists use their continuous planning document to help with staff turnover and continuity. Ms. Henderson replied that their Continuing Planning Processes are part of their efforts to create a smooth transition, adding that New Mexico is committed to updating it more regularly. Another participant asked what level of staff initiated the organization systems discussed by the presenters. Ms. Meidel noted that, in Maine, the effort was initiated management because some staff were about to retire. She reiterated that the actual work was done by staff. Ms. Henderson said that, in New Mexico, the work was staff-driven and that management requested a presentation. Ms. Bennett explained that all of the tools in Colorado that she referenced were developed by staff. Ms. Gardberg noted that, in Utah, the effort had been initiated by a combination of management and staff. Ms. Miller said that management kickstarted the effort when people were coming and going, but staff bolstered it.

A participant explained that their agency still had important historical documents on paper and then asked whether any of the panelists had had success getting resources to support digitization. Ms. Meidel strongly encouraged everyone to convert paper records to electronic records, adding that they had done so, with an administrative assistant in the State's Northern Office doing much of the work. Ms. Miller noted that they also had someone take on this endeavor and that it took a while, spread over the course of a year. Ms. Gardberg said that Utah had done it ten years earlier, with the documents being stored in the database system that also does workflow. Ms. Henderson explained that their administrative records mostly exist as paper files and follow record retention policy.

A participant asked how much the panelists communicate and engage with Human Resources for succession planning, to which Ms. Meidel replied "no engagement" and Ms. Gardberg said that Human Resources only gets involved in the hiring process.

Session 4: Staff Diversity and Culture

In this session, facilitated by Adam Schempp of ELI, State and Tribal staff explained the importance of a diverse staff and welcoming workplace culture in a panel discussion format. The panel consisted of:

- **Riley Spielman, Diversity, Equity and Inclusion Consultant at the Minnesota Pollution Control Agency**
- **Shane Bowe, Water Resources Director of the Red Lake Department of Natural Resources**
- **Eric Trum of the Montana Department of Environmental Quality**

The panelists provided examples of trainings, policies, and outreach tools to support diversity in their organizations.

Mr. Schempp began the session with four prepared questions before moving to participant questions. His first question to the panel was why diversity on staff is important. Mx. Spielman answered by differentiating the terms "diversity," "equity," and "inclusion." While the traditional sense of "diversity" includes categories of race, gender, and sexual orientation, they explained, "diversity" goes far beyond this list to include components such as education level, geographic location, body shape/size, and hobbies. They also noted that equity, inclusion, and a sense of belonging are also important. Mx. Spielman added that organizations should move beyond numerical diversity, which looks at demographics and quotas, and into transformational diversity. They explained that transformational diversity occurs by creating a sense of belonging for diverse staff, allowing staff to bring their authentic selves to work without fear of judgement, which ultimately encourages one's desire to stay at the job. Mx. Spielman emphasized that diverse hiring is only half of the story; the other half is creating an inclusive atmosphere to retain diverse staff. They added that diversity increases an organization's ability to meet different stakeholder needs. Citing their own organization, Mx. Spielman observed that increased diversity in State government translated to increased community confidence and more effective cross-cultural communication. They also highlighted that diverse teams make more innovative and creative solutions and provide better services because of the range of perspectives included. Mx. Spielman said that working with people different from oneself encourages teams to prepare more thoroughly, work harder to consider arguments, and adapt better to changing demographics. They reiterated that diversity is not just opening the door but changing the culture.

Mr. Bowe noted that he would be speaking from his experience and challenges working for a closed reservation Tribe but not being a member of the Tribe. He said that racial diversity has helped the organization in a few ways. He explained that, in the fifteen years he had been working at the department, they had slowly added Tribal members to the staff, resulting in at least half of the staff being Tribal members at that point. Mr. Bowe said that professional-level Tribal members have the ability to communicate with the community in ways that he never will have, both because of cultural differences and because of the community's deep-seated distrust of government. He clarified that, while there are some areas of cultural difference that he feels he could traverse, there are others in which doing so would be inappropriate. For example, Mr. Bowe noted that one of his

colleagues was able to communicate and work with the community in ways that he had been trying and failing to do for a decade; this hydrologist was able to speak to the Tribal Council in a less formal way and facilitate the sharing of information which otherwise would not happen. Mr. Bowe emphasized that, for these reasons, bringing Tribal members onto staff was part of the department's duty. Mr. Bowe also referenced the advantage of some staff members being from Red Lake's surrounding communities. He said that having people from the neighboring farm community, including himself, had been valuable for communicating with farmers off the reservation. Mr. Bowe ended his response by highlighting the importance of diversity in individual conversations, bringing staff from the surrounding community and from the Tribe to a meeting, not just in-office composition.

Mr. Trum echoed Mx. Spielman's comments about expanding the definition of diversity, especially in Montana where there is a general lack of racial/ethnic diversity. He said that bringing an authentic self to work is critical for creating team cohesion.

A participant comment highlighted the importance of diversity in management as well as staff, and Mx. Spielman agreed that demographics of the population represented by an agency should be reflected within the agency, especially in senior leadership. They added that lack of diversity in senior leadership makes it more difficult to receive and retain diverse staff. Mr. Bowe noted that this has been an area of weakness for his department, because it has been much harder to recruit and retain Tribal members in professional-level positions than in Technician-level positions.

Mr. Schempp then asked the panelists what their State or Tribe has done to create an inclusive workplace. Mr. Trum reiterated that setting up an inclusive culture in the workplace is the first step. He added that a flexible work policy can engage more rural communities and people unable to move to Helena. He also referenced a staff-led effort to develop a wellness committee focusing on physical and mental health issues, noting that the committee has put on several trainings, had a civil rights coordinator guest speaker, and is sponsoring a mental illness crisis training. Mr. Trum acknowledged that these trainings are not mandatory and that the department could do more to make sure that those who could benefit the most from the trainings have access. He said that the wellness committee also developed a mentorship program to pair new staff with more experienced staff. As another aspect of creating an inclusive and supportive workplace, Mr. Trum suggested that staff travel to rural areas in teams to ensure safety and inclusivity in conversations. He added that some of the responsibilities for diversity are more incumbent on managers and supervisors.

Mr. Bowe lamented that his department has not done much to create an inclusive environment aside from standard measures required by law. He said that, although his small program has done a good job of trying to improve diversity, the organization can be unwelcoming at times, and they all still have a lot of work to do.

A participant asked what Minnesota has done so that people can be their authentic selves. Mx. Spielman responded that the Minnesota Pollution Control Agency addressed the issue primarily from an angle of education: the agency has developed programs to further their progress on the Intercultural Development Inventory Continuum, which is an assessment tool gauging one's cultural competency. Mx. Spielman explained the agency's Inclusion, Diversity, and Equity in Action (IDEA) plan, in which all staff are required complete four diversity credits. They said that these credits can be obtained by attending different educational opportunities put on throughout the month, such as podcasts, trainings, and discussions, and this program helps staff build allyship

and become more culturally competent. Mx. Spielman then talked about the agency's equity committee, which is composed of both staff and management and assesses the inclusiveness of programs, services, and policies. Other initiatives they mentioned included revamping the employee orientation, with more information on diversity, equity, and inclusion (DEI), and establishing informal affinity groups – including BIPOC, EWD, LGBTQI, etc. – that meet over lunch to discuss concerns and build support. Mx. Spielman said that the equity committee developed recommendations for hirers during the hiring process to combat unconscious bias and produced an anonymous institutional barriers survey for people to share their experiences. Mx. Spielman then emphasized the shared responsibility of maintaining DEI, even if it is not explicit in the job description.

Mr. Schempp asked the panelists how their State or Tribe has sought to increase the diversity of the staff. Mr. Bowe said that the Red Lake Tribe has a longstanding Tribal preference in hiring, but this effort mostly helped with only technician-level staff. He added that the department has instead moved toward outreach with a nearby Tribal college, which provides a potential pool for professional-level staff.

Mx. Spielman seconded Mr. Bowe's response, emphasizing the importance of forming relationships with community-based organizations and recruiting from local schools. Right now, Mx. Spielman said, the Minnesota Pollution Control Agency is recruiting from historically black colleges and universities, has a Minnesota Urban Scholars Program, and has an IDEC program which provides opportunity for underrepresented college students to pursue environmental careers. They emphasized that these partnerships, in addition to fellowships, mentorships, and internships targeting young, diverse populations, can reduce institutional barriers.

Mr. Schempp added that ELI received notable responses in the registration materials about how to advertise jobs to reach new audiences: in addition to diversifying advertising methods (such as using monster.com to reach veterans or Facebook and social media), organizations should consider the language and expectations described in the position listing. Mr. Schempp then asked the panelists the final prepared question, how their jurisdictions have supported interest- and skill-building in students to create a more diverse and qualified applicant pool down the road.

Mr. Bowe spoke highly of Red Lake's tiered mentoring internship program, which has helped address the aforementioned problems with professional staffing. He described the internship program as having one position for a high school student interested in natural resources, one for a Tribal college student, one for a local university student studying science, and one for a graduate student. He explained that these four tiers of interns work together on projects, and the program has given some Tribal members confidence to pursue higher education. Mr. Bowe applauded the program's ability to get interns comfortable with the work scenario at the agency, to give them mentors in the next stage of schooling, and to give them support from agency staff. Although the program is small, he said that the internship has been effective, and he expressed hopes to see it expanded throughout other areas of Red Lake. He added that that the internship remains small because of capacity issues and so that interns can do substantial meaningful work.

Mx. Spielman observed that the people who are affected by environmental injustice and racism often are not the same people who are working in the field of sustainability and environmental justice or in environmental justice educational programs. Mx. Spielman highlighted the importance

of closing this gap, which first requires identifying why the gap exists and what barriers are in place for certain demographics.

Mr. Trum spoke about work that his department does with partner organizations at the local level, such as watershed groups that are often led by women. He also noted the department's efforts to support these organizations to ensure that rural communities have a voice. He highlighted the Big Sky Watershed Corps, which is run by the Montana Conservation Corps, as a program that brings twenty to thirty recent graduates each year to communities across Montana, which Mr. Trum said helps increase diversity. However, he added that, as an AmeriCorps program, the graduates are not paid much and often must supplement their income, creating further barriers. Mr. Trum explained that there are efforts to diversify the program and support those people doing this work outside of internships. Mr. Schempp agreed that supporting individuals financially is critical to making internships truly available to people from all backgrounds. Mr. Trum added that the program has been successful in bringing increased capacity to the State of Montana and helping secure jobs, but the focus now should be on extending the opportunity to everyone, regardless of financial status.

Mr. Schempp then moved to questions from participants, starting with how the socioeconomic facet of identities can be engaged. Mx. Spielman encouraged looking at things intersectionally, which entails including all different aspects of identity and diversity rather than looking at facets individually. Access, geographical location, and resources all link to different aspects of diversity, including socioeconomic status, Mx. Spielman said. Mr. Trum referred back to the importance of proactive recruitment of diverse candidates, and Mx. Spielman added that education can be a key place for unconscious bias because of financial barriers to higher education.

Another participant asked about the lack of diversity in age, especially in upper management, and asked the panelists what they noticed in their jurisdictions regarding age diversity. Mr. Trum said that he saw a shift towards a new generation across the state and in partner organizations. Mx. Spielman added that organization structures may be changing from top-down leadership to collaborative leadership, which will result in a reframing of leadership and power dynamics. Mr. Bowe also said that, in his experience, there has been a large shift towards younger people and women moving into leadership positions.

Yet another participant asked the panelists what the biggest barrier is to furthering DEI initiatives at their respective organizations. Mx. Spielman answered by referring to time pressure, noting that people want to get engaged and see change, but DEI work often is placed at a lower priority than other things. Similarly, Mr. Bowe identified as challenges the lack of funding, time, and capacity, in addition to a resistant preexisting culture. Mr. Trum said that prioritization and time are both factors, and that DEI efforts require both individual and systemic work.

A participant asked how organizations support staff members who might be perceived as "other" during public interactions, to keep them comfortable and safe. Mr. Bowe responded that their agency tries to send out mixed staff members (Tribal and non-Tribal staff) to all interactions. Mr. Trum noted that his department also works in a minimum of pairs for field work and public meetings, and beyond that works to empower people to be themselves.

Another participant asked what team-building exercises can create cohesiveness. Mx. Spielman said that activities that require personal engagement outside of the work culture can be beneficial

in helping colleagues bring their full selves to work. Mr. Trum echoed the importance of creating different spaces for people to interact and being mindful of inclusivity even in those activities. For example, Mr. Trum said, provide alternatives to bar socials for those who don't drink. Mr. Bowe said that overnight activities like field work and trips provide good opportunities for socialization. He also suggested more informal approaches, like a staff run after work.

A participant commented that hiring platforms have keywords for elevating certain applicants, which can bury otherwise desirable candidates. He asked how agencies can help applicants successfully navigate the application process. Mr. Bowe said that, in his experience, the most diverse pool of applications comes from social media; for example, Facebook is a great way of reaching Tribal members.

Mr. Schempp noted that there were additional questions, but that the session time had ended. He thanked the panelists and encouraged the conversations to continue.

Session 5: Environmental Justice and Equity

This session featured three presentations followed by a question-and-answer period facilitated by Adam Schempp of ELI. It provided an overview, along with State and regional examples, of environmental justice considerations in CWA 303(d) activities and broader water quality restoration and protection efforts. Mr. Schempp began the session by summarizing the discussions at a stakeholder roundtable meeting held by ELI earlier in the year. He explained that the purpose of the event was to inform stakeholders about practices and methods for incorporating environmental justice into water quality analysis. Mr. Schempp added that the three presentations used to start that roundtable meeting were so effective that they are being delivered again in this session for this audience.

(1) Sara Schwartz, Biologist, EPA Headquarters

Ms. Schwartz began her presentation with some of the ongoing environmental justice projects in the CWA 303(d) Program, highlighting available resources and sharing the program's approach to integrating environmental justice into its work. She explained that this environmental justice work can be organized into three buckets reflecting different aspects of the program: assessment and the listing of impaired waters, TMDL prioritization, and TMDL development and implementation. Ms. Schwartz emphasized the importance of fair treatment and meaningful involvement in all three buckets. She also noted that there is environmental justice work happening on the organization-wide level as well, including Goal 2 of EPA's 2022-26 Strategic Plan (to take decisive actions to advance environmental justice and civil rights).

Ms. Schwartz then highlighted the fact that environmental justice is included as a Focus Area in the draft 2022-2023 Vision. She explained that Focus Areas are intended to address themes EPA is emphasizing for growth at the national program level, and States and Territories are encouraged to address these areas in the best manner they can according to their respective objectives. Ms. Schwartz noted that some topics considered for the environmental justice Focus Area include proactively communicating quality control practices for data usability, enhancing understanding of the quality of waterbodies near underserved communities, and

considering prioritizing TMDLs and restoration plans for development in areas most burdened by current/historical pollution.

Ms. Schwartz also highlighted that environmental justice was included as a relevant national topic in the 2022 Integrated Report memo and will be included again in the 2024 memo. She added that the 2024 memo will expand on the 2022 memo's information regarding prioritization of CWA 303(d) program work and will offer tips for more meaningful engagement in the assessment process, such as increased language accessibility, hybrid public meetings, and partnerships with trusted local leaders. Ms. Schwartz also noted that the memo will encourage better use of data from community groups in assessment processes, with transparency around the standards for usable data so that the public can meet those standards. In addition, she said that the memo will encourage States to actively share the output of their Integrated Reports with communities, to improve meaningful engagement with the program and the information. She explained that some states already had worked to make their Integrated Reports more meaningful to the public through interactive features like StoryMaps.

Then, Ms. Schwartz described how two technical EPA resources support the integration of environmental justice considerations into water quality planning. First she explained that the WSIO has new environmental justice-related indicators, in addition to its over 400 total indicators for watershed characteristics. She noted that there are three categories of indicators – community context, hazardous waste and wastewater, and water quality – which relate to social determinants of health and environmental justice. Ms. Schwartz added that community context indicators are pulled from EPA's EJSCREEN tool and indicate which communities may be more susceptible to pollutant exposure; hazardous waste indicators reflect potential exposure to pollution; and water quality indicators reflect the health of aquatic ecosystems and services. She said that these indicators were added because they were either requested by States or informed by a review of academic journals and government reports related to social determinants of health and environmental justice.

Ms. Schwartz identified the other resource as the RPS tool, which pulls environmental justice-relevant and other indicators from the WSIO for watershed comparison based on what the user prioritizes. She said that, for example, the tool can be used to determine which watershed should be prioritized for restoration plans and TMDLs and where resources should go for water quality monitoring. Ms. Schwartz noted that new indicators can help users include demographic and community context considerations when comparing watersheds. She added that EPA developed reference sheets for how each indicator was calculated and is in the process of developing fact sheets for how indicators can be used.

Ms. Schwartz next shared that EPA is in the process of developing two learning modules under the Watershed Academy that address environmental justice considerations under the Clean Water Act. She explained that one module will be directed towards the public and will contain information about tools and resources to advance environmental justice in water management while the other will be directed towards practitioners and focus on existing approaches and additional ideas for integrating environmental justice considerations into various activities.

At the end of her presentation, Ms. Schwartz provided some additional environmental justice resources. She noted that the EPA Collaborative Problem Solving Model offers a structure for working in partnership with communities disproportionately affected by environmental issues

and provides helpful tips for creating a community vision, consensus building and implementation, and more. Ms. Schwartz also highlighted an academic paper, written by EPA senior policy advisor Charles Lee, entitled *Confronting Disproportionate Impacts and Systemic Racism in Environmental Policy.* She explained that the paper outlines the steps for operationalizing environmental justice in programs and offers information on resources available to identify disproportionately affected communities, how to find qualitative and quantitative information on impacts, and how to make program processes more equitable. Ms. Schwartz concluded her remarks by referencing a collection of best practices for meaningful community engagement by Groundwork USA, which is a network of local organizations focused on equity and sustainability.

(2) Traci Iott, Supervising Environmental Analyst, Connecticut Department of Energy and Environmental Protection (CTDEEP)

Ms. Iott began her presentation by explaining that the CTDEEP had benefited from the development of an environmental equity policy and program office in 1993. She said that the equity program office focuses on making agency outreach more appropriate and inclusive through identification of cultural and language requirements as well as through public education. Ms. Iott added that the office had developed online materials on effective outreach, public meetings, permitting, waste cleanup, public participation plans, and community environmental benefit analysis plans. She highlighted that the office had developed a Connecticut-specific environmental justice mapping tool to evaluate how programming coincides with communities with environmental justice concerns. In addition, she mentioned that the Connecticut Equity and Environmental Justice Council was being created.

Ms. Iott then detailed ways that they were incorporating environmental justice into different parts of the CWA 303(d) Program, from planning to implementation. She noted that, when establishing the State's Vision 1.0 priorities for development of TMDLs and other plans, and after extensive engagement within the organization and with the public, CTDEEP created the Integrated Water Resource Management approach, which included consideration of environmental justice. Ms. Iott said that they used the RPS tool to identify watersheds that would address restoration of general watershed health, stormwater impacts, and nutrients. She also noted that they prioritized statewide coverage for bacteria impairments in order to support as many communities as possible. Ms. Iott then displayed a graphic providing example indicators for the RPS tool. She explained that they amended the tool, adding 88 Connecticut-specific indicators. In addition to indicators that deal with the ecological health of watersheds and stressors, she continued, CTDEEP used social indicators to determine what percent of watersheds were in areas with environmental justice concerns.

Ms. Iott stated that, as Vision 1.0 drew to a close, CTDEEP was rapidly trying to complete TMDLs and protection plans. To that end, she explained, they developed a series of maps that show the relationship between water quality assessment information and certain communities. Ms. Iott said that the maps contain key community landmarks, such as schools, and an overlay of Connecticut environmental justice screening layers, including distressed municipalities, low-income areas, and tribal areas. She provided two example maps to demonstrate how information about water quality is conveyed relative to the location of these areas.

Ms. Iott then spoke about the role of environmental justice in alternative restoration plans, offering two examples. For the Mill River, which was affected by discharge from a battery manufacturer and chromium plater, she noted that CTDEEP required ecological and human health risk assessments to evaluate potential impacts to the community. Ms. Iott said that CTDEEP had information from the local community showing that the water was used locally for subsistence and cultural practices, so subsistence fishing was factored into the risk assessments and risk-based clean-up goals. In this case, she added, the risk assessment and remediation process was the alternative restoration plan. Ms. Iott also referenced the Housatonic River, which was contaminated by a GE facility in Massachusetts, causing risk to both human and ecological health. Since the river is the tribal boundary for the Schaghticoke Tribal Nation, she said, CTDEEP considered whether any tribal practices would be impacted by the contamination. In addition, she noted that there was a greater than average fish consumption in the area. Ms. Iott explained that CTDEEP needed to distribute advisories in multiple languages against eating fish, and they coordinated with the environmental justice office to partner with trusted community leaders who could effectively and sensitively communicate that message. She added that, as the composition of the community changes, the signs need to be updated to include more languages as well as transition from text-based to pictorial-based communication.

Next, Ms. Iott mentioned a new project underway to document Connecticut waters and water resources that flow through tribal areas. She said that this information can be used to identify the relationship between state and tribal resources as well as the tribal area impacts associated with TMDL development.

Ms. Iott concluded her presentation by talking about non-CWA 303(d) programs that are trying to address environmental justice in Connecticut. She referenced CTDEEP's Nonpoint Source Program, which considers environmental justice concerns when distributing CWA 319 grants and participates in the Urban Waters Initiative Projects. She also mentioned the Long Island Sound Study (LISS), a partnership between EPA, Connecticut, and New York to address, among other things, substantial areas of hypoxia. LISS is part of the National Estuary Program, Ms. Iott added, and is trying to address environmental justice through a new workgroup and community education. Ms. Iott also highlighted the Monitoring and Assessment Program, which considers environmental justice as they evaluate where to do sampling to ensure sufficient coverage.

(3) Bonita Johnson, Senior Physical Scientist, Water Division Environmental Justice Lead, EPA Region 4

Ms. Johnson began her presentation by describing in two words the work being done in EPA Region 4 to better address environmental injustice: working collaboratively. She quickly highlighted relevant policies, beginning with Executive Order 12898 and the 1994 federal program under the Clinton Administration, extending to Executive Orders 13985 and 14008 under the Biden Administration. Focusing on Region 4, Ms. Johnson described the three-tiered Environmental Justice Advisory Council which was established to integrate environmental justice, climate justice, and equity into day-to-day operations. She explained that the tiers include the Environmental Justice Board composed of senior leadership; an Advisory Council representing all media; and "Tiger Teams" (ad hoc groups for special purposes) and other staff-led teams. Ms. Johnson noted that she led the Water Division's Environmental Justice

Workgroup, which is comprised of representatives from each branch and holds monthly meetings to develop processes, plans, and policies. She also noted that, in January, the workgroup formed their strategic plan, a fluid document that is modified as additional information comes out from the environmental justice action plan, national plan, environmental justice legal tools, and other sources.

Ms. Johnson then described three objectives in the national strategic plan related to environmental justice: to promote environmental justice and civil rights at the Federal, Tribal, State, and local levels; embed environmental justice and civil rights into EPA's programs, policies, and activities; and strengthen civil rights enforcement in communities with environmental justice concerns. She noted that the Environmental Justice Workgroup determined categories of activities, called Environmental Justice Investments, focused on meeting these objectives. The investments included capacity development/training, funding support, community focused technical assistance, identifying/targeting communities with environmental justice concerns, cross-programmatic collaborations, policy development and review, engagement/outreach, and tool development. As an example, Ms. Johnson mentioned developing the EJSCREEN standard operating procedure to target public water systems that potentially serve areas with environmental justice concerns. She emphasized that targeting was a big area of concern, so that they could identify if there are potential environmental justice areas that have been overlooked. Another example Ms. Johnson offered was working with the Florida Department of Environmental Protection Water Quality, Monitoring, TMDL, and Environmental Justice programs to develop approaches to integrate environmental justice into their monitoring and TMDL development decision-making processes. She also provided other examples, such as analytical assistance to inform watershed projects, providing technical support to the South River community and U.S. Fish and Wildlife Service on possible dam removal, aiding in the development of a Communication Plan for the Indian River Lagoon National Estuary Program to yield engagement opportunities for underserved communities, providing children's health presentations to children attending Title I schools, helping identify funding sources for resiliency and adaption plans, and targeting communities for resilience efforts using "socioeconomic" metrics and "social vulnerability" from various screening tools.

Ms. Johnson mentioned that she had been working with three particular coastal communities since the beginning of 2020, all of which share common issues: prone to storms, flooding, water quality issues, loss of economy and habitable houses, and engage in subsistence farming. She explained that focusing on sustainability includes economic and social access needs in addition to environmental needs. The first community that she described was AfricaTown, Alabama, where locally driven efforts yielded a collaborative using the environmental justice collaborative problem-solving model. Ms. Johnson then described North Port St. Joe, Florida, which suffers from pollution from a local paper mill as well as flooding, runoff, and unresolved contamination issues, compounded by a lack of overall investment in the area. She described her efforts within this community, forming a collaborative with a wide variety of partners to identify complaints, progress, and what still needed to be done. Ms. Johnson concluded with the green infrastructure work, including salt marshes, bioswales, and elevated roadways, planned for Saint Helena Island in collaboration with Queen Quet, Chieftess of the Gullah/Geechee Nation.

To recap her presentation, Ms. Johnson emphasized as opportunities for the integration of environmental justice into CWA 303(d) Program activities the utilization of EJSCREEN;

working with other programs to apply tools that will help identify and target focus areas (communities, waterbodies, unassessed waters, etc.); participating in community listening sessions; promoting citizen science; working collaboratively with outside entities and stakeholders to maximize data accessibility, information sharing, and resources; and coordinating across programs and divisions, other governmental departments and agencies, and nongovernmental entities to identify and achieve shared goals. Ms. Johnson emphasized that all of their work is collaborative and that inter-community communication allows for dissemination of lessons and ideas.

After Ms. Johnson's presentation, Mr. Schempp directed audience questions to the speakers. A participant asked Ms. Iott what factors Connecticut uses to define a "distressed municipality" and what metrics are used to define environmental justice areas for ranking priority. Ms. Iott said that she would have to look up those details but would provide the answers. Two participants asked Ms. Iott about solutions for water pollution in the Housatonic River; specifically, whether alternative options were offered for contaminated fish and whether there were suggested preparation methods to reduce pollution risks. Ms. Iott responded that fish consumption advisories have risk thresholds, so eliminating fish consumption is only a last resort. She added that fish advisories focus on minimizing risk while allowing consumption and divide guidance up for different demographics and different species. She said that clean-up targets are more stringent than fish consumption targets. Another participant asked Ms. Iott to expand on the environmental justice group with which she collaborates. Ms. Iott responded that the group is within state government and is staffed by Edith Pestana and Doris Johnson.

Mr. Schempp directed the final question to all of the presenters: what efforts are in place to identify specific pollutants with environmental justice links, which could inform priorities and pollution prevention efforts. Ms. Johnson pointed to a new workgroup on environmental justice indicators, which found that bacteria and fishing-related pollutants have been mentioned with environmental justice links. Ms. Iott added that anything persistent that would impact fishing is a concern, but so too are different kinds of potential exposure, including direct contact with environmental materials and bacteria affecting recreational activities.

Session 6: Breakouts I

This session consisted of seven 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. Presentation slides and materials from each breakout that had them can be found here.

- ATTAINS: A Training on Entering Actions

  This training, intended for individuals who are responsible for entering Action data (e.g., TMDLs, 4b plans, other restoration or protection plans) in ATTAINS, focused on how to enter an Action into ATTAINS, including how to get credit under the CWA 303(d) measure and how to associate the Actions with assessments, to put an assessment unit/parameter combination into EPA Category 4(a), 4(b), or 5(a), depending on the type of Action. Demonstrations were led by Selena Medrano of EPA Region 6 and Wendy Reid of EPA Headquarters.

- General Data Management Tips

  This training conveyed best practices for working with water quality assessment data and how to manage them in tools such as Microsoft Access. Demonstrations were led by Adam Griggs, Laura Shumway, and Dwane Young of EPA Headquarters.

- How to Manage GIS Data

  This breakout, intended for individuals responsible for managing GIS data for assessment units in ATTAINS, included demonstrations on how to create assessment unit geometries from the National Hydrography Dataset (NHD) as well as a discussion on how states, tribes, and territories currently manage their GIS data. Demonstrations were led by Jesse Boorman-Padgett and Shelly Thawley of EPA Headquarters.

- How Tribes Can Use the CWA to Protect Their Water Resources

  This breakout started with an overview of authorities, resources, and initiatives stemming from the Clean Water Act that can aid tribes in the protection of their waters, including but not limited to Treatment in the Same Manner as a State (TAS), and was followed by a panel of staff from different tribes relaying their experiences with those authorities, resources, and initiatives. Jim Havard of EPA Headquarters delivered the presentation, and the panel consisted of Seth Book of the Skokomish Tribe, Kari Hedin of the Fond du Lac Band of Lake Superior Chippewa, Kerstien McMurl of the Iowa Tribe of Oklahoma, Kimberly Miller of the Morongo Band of Mission Indians, and Rachel Vaughn of the Southern Ute Indian Tribe.

- Litigation on CWA 303(d) Listing and TMDLs

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

- Climate Change and TMDLs: Theory and Practice

  This breakout began with EPA's evaluation of how the potential impacts of climate change can be incorporated within TMDLs and then detailed an example from Michigan prior to facilitated discussion on how climate change considerations could be incorporated into the calculation of loading capacity, the margin of safety, and implementation plans. Adam Schempp of ELI moderated the breakout, and presentations were delivered by James Hogan of EPA Headquarters and Molly Rippke of Michigan.

- An Introduction to Long-Term Planning and Prioritization Tools

  This breakout provided overviews of the Recovery Potential Screening Tool and StreamCat Data, what they offer, how they work, and how they can be used for long-term planning and prioritization. Presentations were delivered by Emily Cira, Ryan Hill, and Marc Weber of EPA Headquarters; Luisa Riato, an ORISE Fellow at the EPA Office of Research and Development; and Andy Somor of Cadmus.

Session 7: Breakouts II

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. Presentation slides and materials from each breakout that had them can be found here.

- ATTAINS and How's My Waterway: A Secret Sauce Training

  This training, intended for individuals responsible for entering and/or reviewing data in ATTAINS, provided various tips and tricks for navigating ATTAINS and How's My Waterway, dealing with common problems, and generally making the life of an ATTAINS user a little easier. Demonstrations were led by Jesse Boorman-Padgett and Dwane Young of EPA Headquarters.
- The Basics of Assessment

  This interactive breakout addressed considerations for analyzing data such as quality assurance, how to find readily available data to supplement analysis, and how to compare data against criteria. The presentations and interactive exercises were delivered by Selena Medrano of EPA Region 6 and Laura Shumway of EPA Headquarters.
- How Continuous Monitoring Data Are Being Used in Assessments

  This breakout provided examples of state practices, methodologies, and protocols (including data management and quality assurance/quality control) for using continuous monitoring data in water quality assessments. Cristina Mullin of EPA Headquarters moderated the breakout, and the presentations were delivered by Biswarup (Roop) Guha of New Jersey, Mark Hoger of Pennsylvania, and Meredith Zeigler of New Mexico.
- State-Tribal Collaboration in Solving Water Quality Problems

  This breakout began with examples of how states and tribes have worked together on different water quality objectives, and means used to accomplish them, prior to a facilitated discussion on approaches and lessons. Shane Bowe of the Red Lake Band moderated the breakout, and the examples were provided by Oliver Grah of the Nooksack Indian Tribe and Kari Hedin of the Fond du Lac Band of Lake Superior Chippewa.
- Modeling Approaches for Considering Climate Change

  This breakout provided examples of methods and considerations for addressing climate change and its effects in modeling for water quality analyses. Jasper Hobbs of ACWA moderated the breakout, and the presentations were delivered by James Kardouni of Washington, Kevin Kirsch of Wisconsin, and Lew Linker of the EPA Chesapeake Bay Office.
- Evaluating the Effectiveness of TMDLs and Other Restoration Plans

  This breakout provided an overview, with examples, of approaches to evaluating the effectiveness of water quality restoration plans, as well as available materials and other resources on the subject. Emily Cira of EPA Headquarters moderated the breakout, and the presentations were delivered by Angie Brown of Indiana, Scott Collyard and Ben Rau of Washington, Cyd Curtis of EPA Headquarters, Adam Schempp of ELI, and Paul Thomas of EPA Region 5.

Session 8: Breakouts III

This session consisted of seven 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. Presentation slides and materials from each breakout that had them can be found here.

- Water Quality Exchange (WQX) Ladders

  This breakout explored practical methods to get more data submitted through WQX and how to find resources to better support data sharing. Presentations were delivered by Jason Jones and Meghan Smart of Arizona and Adam Griggs of EPA Headquarters.
- Deeper Dive on Web Services

  This training, intended for ATTAINS users who are familiar with web services, detailed the different types of ATTAINS services available and how to use them to pull data and create maps. Demonstrations were led by Jesse Boorman-Padgett and Dwane Young of EPA Headquarters.
- Automation Tools in Support of Assessments: Data Harmonization

  This breakout provided a general overview of the scope of automation tools already being developed and used across the country to support assessments, and EPA's vision to develop open source tools to support assessments, followed by a deeper dive into the new automated WQX QA/QC service for data submissions and how EPA's draft R package, Tools for Automated Data Assessment (TADA), can be used to support automated Water Quality Portal (WQP) data discovery and harmonization. Presentations were delivered by Kevin Christian, Cristina Mullin, and Shelly Thawley of EPA Headquarters.
- Pursuing Treatment in the Same Manner as a State (TAS) Authority for CWA 303(d)

  This breakout explained the basics of obtaining CWA 303(d) TAS, identified reasons for doing it and what to expect, and provided an opportunity to discuss potential challenges to and strategies for exercising CWA 303(d) TAS authority. Dylan Laird of EPA Headquarters delivered the main presentation, and Kayla Bowe and Shane Bowe of the Red Lake Band and Kari Hedin of the Fond du Lac Band moderated the breakout.
- The Draft CWA 303(d) Vision: Materials and Trainings for Implementation

  This breakout identified materials and trainings that can help implementation, especially for the focus areas of climate change, environmental justice, and tribal engagement. The discussions were facilitated by Rich Cochran of Tennessee, Jasper Hobbs of ACWA, and Rosaura Conde and Teagan Rostock of EPA Headquarters.
- TMDL Revisions: Examples and Lessons

  This breakout explored selected state experiences with TMDL revisions, from the reasons for wanting to modify TMDLs to the processes, results, and takeaways. The breakout was moderated by Chris Hunter of EPA Headquarters, and presentations were delivered by Jim Bloom of Oregon, Ansel Bubel of Florida, and Mike Kruse of Missouri.

- Communicating about Climate Change: Breaking It Down to Basics in the Water Quality Context

  This breakout, appreciating that climate change can be an unwieldy and intimidating issue, but one that has significant impacts on water quality, explored how the specific impacts can create communication opportunities and more productively define the challenges ahead. Kristy Fortman of EPA Region 8 and Adam Schempp of ELI moderated the breakout.

Session 9: Communicating Success

This session, which featured six presenters, previewed NEIWPCC's efforts to capture success stories in a forthcoming project, followed by state examples of communicating progress and accomplishments in water quality and then an overview of How's My Waterway as a tool for communicating success. The session concluded with a question-and-answer period facilitated by Courtney Botelho.

(1) Courtney Botelho, Environmental Analyst at NEIWPCC, and Jeff Berckes, founder of Flip the Field

Ms. Botelho began the session by introducing NEIWPCC, an interstate organization based out of Massachusetts. She then gave a quick overview of what was to come in the session before ceding the virtual podium to Mr. Berckes. Mr. Berckes then introduced himself, touching on his previous experience with the Iowa Department of Natural Resources and his current company Flip the Field, which is working in the communications space. Mr. Berckes commended John Goodin and his role in facilitating good communication for the CWA 303(d) program, including through these training workshops, which he said have made great strides in communications among EPA, State, Tribal, and Territorial staff. Yet, noted Mr. Berckes, the biggest challenge remains communicating success stories and complex science issues with the outside world. This, he explained, is what the NEIWPCC Success Stories project tries to address. Mr. Berckes offered many benefits of communicating CWA 303(d) successes, including garnering goodwill, proliferating key concepts, encouraging innovation through disseminated ideas, and inspiring community participation.

Mr. Berckes then detailed specific aspects of the Success Stories project. He talked at length about the podcast, a medium which with he has experience. Mr. Berckes noted their plan for five-seasons of a clean water podcast, starting with a focus on the 50th anniversary of the Clean Water Act in season one. Mr. Berckes solicited suggestions of good speakers from other CWA programs to invite onto the podcast to explain things like permitting and water quality standards. He added that the subsequent seasons would have themes determined by the steering committee and work group.

Next, Ms. Botelho explained another aspect of the project, the creation of templates for communication products. She said that the templates would be designed to be replicated by states and include best use guidelines, content suggestions, layout, graphics, and storytelling elements. Ms. Botelho noted that the templates could be used for programs of all sizes to experiment with different communication products, such as Story Maps, data visualization, dashboards, social media campaigns, and potentially videos. Mr. Berckes added that the

templates could multiply the impact of projects, especially for those who may not have the biggest budgets.

Ms. Botelho acknowledged the flexibility in the exact products, since significant input would be provided by the working group. Mr. Berckes concluded their remarks by inviting participants to contact them if interested in being involved.

(2) Beverly Anderson-Abbs, Senior Environmental Scientist, California State Water Resources Control Board

Ms. Anderson-Abbs began her presentation with an overview of the California State Water Resources Control Board's extensive performance reporting, which had been taking place for 14 years. She explained that the reports contained mostly output measures, including the number of inspections and permits. More recently, following fiscal year 2011, she added, the Board worked with the State's regional boards to develop Water Quality Report Cards, which focused on TMDL projects and environmental outcomes of implemented programs. Ms. Anderson-Abbs noted that the Board had produced to date 259 Water Quality Report Cards, covering data analysis for 185 projects. She said that the report cards are posted on the performance report website, which offers ways to view the report cards by year and provides summaries of report card findings.

Ms. Anderson-Abbs clarified that the report cards take roughly six months to produce. She said the template, which has been in use since 2012, includes information about beneficial uses affected, which pollutants are being analyzed, and what programs are being used to implement the TMDL, among other things. She also noted that the body of the template includes a brief summary of the project, basic water quality outcomes, and a map/data display of some kind. Ms. Anderson-Abbs explained that the State's regional boards submit the draft report cards to her, to which she offers detailed comments and edits, trying to, via a single round of editing, pare down the information into very concise summaries of the projects. She said that she also helps make maps and charts ADA-compliant, which can be difficult with the cards, and, using the ADA-compliant Word template, converts the cards into an accessible PDF format.

Ms. Anderson-Abbs then demonstrated her work with tools such as Tableau and Power BI, which offer more interactive features than a static PDF. For example, she showed a report card for algae in the Ventura River, highlighting that the interactive graph allows for clearer visualization of data within stream segments. Ms. Anderson-Abbs noted that interactive tools have the added benefit of allowing regular data updates when connected to a database. Conversely, she said, PDFs are easy to print and hand out during meetings as project summaries.

Ms. Anderson-Abbs added that the Board had recently explored using Story Maps, which can convey a more comprehensive narrative about data and offer predictions about what is coming. Although the simple, one-page summary is lost, she explained, it is still possible to print a simplified version of the map. Ms. Anderson-Abbs concluded her comments by showing participants where to find different cards and card summaries on the Board's website, noting that the website allows filtering by State regional board and status of cards.

A participant asked if the State had temperature data along with algal bloom data for the Ventura River. Ms. Anderson-Abbs responded that they were not provided temperature data in that case, but such data could be added when using a format like Tableau or Power BI.

(3) Lisa Bernard, Senior Environmental Scientist, North Coast Regional Water Quality Control Board

Ms. Bernard expanded on Ms. Anderson-Abbs' presentation by providing more detailed insight into the different styles of Water Quality Report Cards. Ms. Bernard explained that she works with Ms. Anderson-Abbs to report TMDL progress and post report cards on the website. She expressed enthusiasm that the State has opened up different options for reporting on TMDLs, because each approach has utility for different reasons.

Ms. Bernard first displayed the classic report card style, which is created in Word and has a robust template. She highlighted its familiarity, accessibility, and concision as key benefits, adding that the Board knows exactly what kind of information needs to be pulled from their databases to populate a card, and the public can easily understand what is being communicated. Ms. Bernard explained that the classic report cards make it easy to locate information on pollutant-water body pairs, the sources of impairment for a given waterbody, and the progress towards TMDL goals. She also noted that they are most effective when there is a sufficient amount of water quality data to assess progress towards recovering beneficial uses.

In comparison, Ms. Bernard said that the Story Map approach, albeit slightly newer to the Board, can draw more people in and offers flexibility to convey a variety of information. She emphasized that these report cards can pair pollutant and source information with photos or other media, and they accommodate but do not require water quality data and trends. Ms. Bernard gave the example of the North Coast's focus on stewardship and coordination efforts, key information which can be conveyed with a Story Map but not through the classic version. Although newer technology, like tools from ESRI and through Tableau, may require more training to master, Ms. Bernard assured the audience that it would not be too much more difficult than creating a PowerPoint.

Ms. Bernard then offered examples of each style, beginning with a water quality report card in the classic style. The example was for temperature conditions within the Lower Eel River. She noted that the classic style gives information about key actions taken, data trends collected, and ongoing steps and activities as well as compares and contrasts historical conditions of riparian cover. Ms. Bernard highlighted that the report card also specifies which HUC 12s are included, the primary contact for the project, implementation actions conducted, and funding information. She then explained that they had found there to be too much information to convey in the classic style, so they created a Story Map. In the new format, she continued, key information like beneficial uses and data display is retained, while additional map details, background information, photos of the river, and interactive features (such as sliding the cursor between historical and current images for a more direct comparison) can be added. She also noted that the Story Map report card, which was created in ArcGIS, can be converted into a downloadable and printable PDF.

To conclude her presentation, Ms. Bernard showcased another report card that illustrates the flexibility of Story Maps. She explained that, at the time the Elk River report card was created,

there was not enough data to tell a comprehensive story about water quality conditions, but the report card has been updated to show the hard work of the water quality stewardship program since 2016. She noted that the report card contains historical perspectives, interactive maps, and an embedded YouTube video.

(4) Kristen Dieterman, Watershed Project Manager, Minnesota Pollution Control Agency (MPCA) (filling in for Emily Zanon)

Ms. Dieterman introduced her presentation as a show-and-tell of how the MPCA communicates the work they do and some of their successes. She emphasized the importance of communication in her work. Because she and many of her co-workers are scientists who have not been specifically trained in communication, she added, they have had to develop skills on the job. Ms. Dieterman said that communication is critical to engaging partners and the public and gaining their support and trust. For example, she explained, in 2008, Minnesotans voted to increase taxes to provide more funding for clean water activities, something that would not have been possible without significant communication efforts. Ms. Dieterman noted that the ways the MPCA has communicated has changed over time, from reports on the agency webpage and standard press releases to more creative methods, such as watershed web pages, Story Maps, YouTube, Facebook, and (still importantly) face-to-face conversations.

Moving into the show-and-tell portion, Ms. Dieterman talked about the We Are Water program, a face-to-face traveling exhibit hosted by local organizations in public spaces like libraries and parks. The program is a collaboration between the MPCA and the Humanities Center and offers an interactive opportunity for locals to connect with water in their community. Ms. Dieterman noted that the exhibit was located at that time in a town on the banks of Lake Pepin, providing basic information about the watershed, Lake Pepin history, unique watershed trivia, water quality issues, and potential solutions for mitigating pollution. She then spoke about utilizing YouTube to share recorded meetings, adding time markers for ease of use, and connecting with local partners who are also on the platform. Ms. Dieterman played videos about Powderhorn Lake and the Whitewater Farmer-led Council to demonstrate some of the videos on the MPCA website.

Ms. Dieterman concluded with key take-aways. She explained that the goal of these efforts should be effective and engaging communication, which can be measured through views, reactions, and comments. She recommended incorporating into their professional worlds daily-use platforms with which users are comfortable, rather than re-inventing the wheel. Relying on a trusted circle, according to Ms. Dieterman, is useful for soliciting feedback. Finally, she suggested leveraging funding to support communication and engagement.

A participant asked how the Farmer-led Council referenced in the video was formed. Ms. Dieterman explained that it was an initiative formed through communication with local landowners and producers. Another attendee asked how people heard about the YouTube videos. Ms. Dieterman said they were shared on the MPCA webpage and posted to social media.

(5) Kiki Schneider, IT Specialist, EPA Headquarters

Ms. Schneider noted that the objective of her remarks was to explain how to communicate successes through How's My Waterway and ATTAINS and to detail future plans for both

platforms. She said that How's My Waterway provides the public with user-friendly, meaningful information that can inspire others to take action to restore and protect their waterways. Ms. Schneider added that it communicates progress that States, Tribes, and EPA are making in water quality. She explained that the platform pulls data from government databases and provides an opportunity for governments to post additional materials; for example, California posted a YouTube video of a hearing, and Pennsylvania posted Story Maps featuring Integrated Reports.

Ms. Schneider said that ATTAINS allows States to enter metrics about water and a brief summary of the State's water quality program, an option that will soon be available to Tribes. She added that there is a new feature in How's My Waterway that displays assessment documents on the waterbody report page, which Tennessee has utilized. Ms. Schneider explained that this can be accomplished by uploading documents in the ATTAINS database on the assessment tab. She mentioned that Tribes suggested adding audio files of pronunciation of waterbodies in their native languages on their pages, so she is in the process of developing that function on the waterbody report page. She also said that Tribes' pages will soon be added to How's My Waterway.

Ms. Schneider concluded by giving a live demonstration of How's My Waterway, showing how to use the State (and soon, Tribal) tab. She highlighted where to find links and metrics and showed how to add/edit metrics in ATTAINS on the administration panel. Ms. Schneider spoke about future plans for a national map to show, geographically, where success stories are.

A participant asked Ms. Dieterman how the MPCA creates videos. Ms. Dieterman answered that they have used contractors thus far. Another participant asked what type of outreach activities Minnesota has done with the general public for stormwater pollution prevention. Ms. Dieterman said that communications staff has posted on social media for weekly or monthly campaigns, which include stormwater and climate change. Yet another participant asked which other tools of communication Ms. Dieterman would like to see the MPCA use, to which she responded that the Story Maps were especially useful and that the MPCA has been using Tableau a lot. She also said that they were taking advantage of every opportunity for in-person communication in tandem with developing videos communicating unique resources.

Ms. Botelho asked about the process of learning Tableau, a program that seems intimidating. Ms. Anderson-Abbs responded that she leans more toward Power BI, because it is similar to Excel, and thus seems less clunky than Tableau. Ms. Anderson-Abbs mentioned that Tableau has a steep learning curve but is easy to use after learning, adding that neither platform is perfect, and which to use depends on what the organization wants to get from it.

Another participant asked the presenters which groups their agencies' communications staff are tied to, and both Ms. Anderson-Abbs and Ms. Dieterman answered that their respective organizations have a special communications group or department. Ms. Dieterman added that using Facebook Live has been very beneficial for reaching a large audience. Relatedly, a participant asked which communication methods are particularly effective, and how to get younger generations interested in success stories. Ms. Anderson-Abbs said that Twitter has been successful to a point, but it requires a following to be effective. She suggested Facebook as a better avenue because it is more widely used, but she said that the most important thing to do is to just keep putting out information by any means available. Mr. Berckes said that YouTube is a

rather ubiquitous and universal medium for communication, with livestream capabilities, and most organizations likely have their own channels already. Ms. Dieterman mentioned the importance of tying communication into people's daily lives rather than hyper-focusing on the organization's interests, a point with which Ms. Anderson-Abbs agreed. Ms. Botelho affirmed the responses of the presenters, making a final comment about visiting college campuses to engage the younger generation. Ms. Dieterman mentioned Canva, a free design tool, in response to a question about easy-to-use tools for organizations without a communications team. Another participant asked about navigating tight State controls on social media, and how to promote social media to people in the organization's agency. Mr. Berckes suggested boosting support through co-workers.

Wrap-Up and Send Off

Mr. Schempp thanked everyone who helped make the event possible, including the EPA, the Workshop Planning Group, speakers, moderators, the ELI team, and the participants for their attention and contributions. Then he transitioned to future plans for ELI. He mentioned three more compendia on State, Territorial, and Tribal practices that were in development, focusing on climate change, environmental justice, and evaluating the water quality effects of TMDL implementation. Mr. Schempp also noted July's virtual workshop focusing on connections between the CWA 303(d) Program and hazard mitigation planning. Then, continuing a recent, pandemic-prompted tradition, he shared a slideshow of photos from participants, this year showcasing waterbodies that remind the participants of why they do this work. Mr. Schempp also shared two winning poems submitted by participants over the course of the week. Before closing the conference, Mr. Schempp invited Jasper Hobbs of ACWA and Courtney Botelho of NEIWPCC to share what their organizations have on the horizon, followed by Jim Havard and Dwane Young of EPA Headquarters, Traci Iott of Connecticut, and Kayla Bowe of the Red Lake Band to share closing remarks.

(1) Jasper Hobbs, Environmental Program Manager, ACWA

Mr. Hobbs began by introducing himself and ACWA, noting that the membership of ACWA is made up of States and Territories, and the organization acts as a conduit between those members and EPA. He explained that ACWA had been working with EPA on Vision 2.0 mostly via its Watersheds Committee, which meets monthly to discuss a variety of topics. Mr. Hobbs encouraged the participants to email him to get involved with that committee. He then previewed a few upcoming conferences, including the annual meeting taking place in Memphis from August 3 to 5 and the Modeling Workshop in Chicago the week of September 19. Mr. Hobbs also called on the participants to use the templates for Story Maps of clean water success stories, which he noted would be used to kick off ACWA's initiative surrounding the 50th anniversary of the Clean Water Act.

(2) Courtney Botelho, Environmental Analyst at NEIWPCC

Ms. Botelho focused on several national-scale efforts of NEIWPCC, beginning with two cooperative agreements with EPA: the Success Stories effort and the National Webinar Series. She encouraged anyone interested in either project to email her. Ms. Botelho also highlighted

the State Revolving Fund workshop to be held July 27 to 29 and noted that registration opened for the HAB symposium of October 23 to 25.

(3) Jim Havard, Chief of the Watershed Branch of the Office of Wetlands, Oceans, and Watersheds at EPA Headquarters

Mr. Havard began his remarks by applauding the photo montage and mentioning the upcoming 50th anniversary of the Clean Water Act. Mr. Havard expressed his excitement for the next 50 years and the new cooperative agreement with ELI for the next five years of this training workshop. He anticipated the next one to be in Shepherdstown, West Virginia in a hybrid format. Mr. Havard mentioned that Vision 1.0 would be wrapped up by the end of the summer and that the Integrated Reporting memo would be sent in 2023 with key topics of climate change, environmental justice, participatory science, tribal engagement, and trash. He added that EPA planned to share a draft of that memo later in 2022 with States, Territories, and Tribes for input. Mr. Havard concluded by thanking ELI; ACWA; NEIWPCC; and State, Tribal, Territorial, and EPA members of the Workshop Planning Group.

(4) Dwane Young, Chief of the Water Data Integration Branch at EPA Headquarters

Mr. Young echoed the thanks for all the work in planning and executing the week's event. He then highlighted the new tools and enhancements coming to How's My Waterway, ATTAINS, WQX, and more. Mr. Young mentioned that the group is well positioned to engage with these updates. Noting that these remarks were his last official act as Chief of the Water Data Integration Branch, he offered some parting reflections and advice.

Mr. Young described his entrance into the program in 2001, the same year the first Integrated Reporting guidance was issued. As a contractor, he was tasked with capturing new information that would be coming in through these new Integrated Reports, which presented him with the opportunity to attend a meeting in New England. During the meeting, explained Mr. Young, he overhead a comment to his boss that he was too shy and awkward to be a good fit. In 2005, when he joined EPA, his hiring manager told him that he would not be able "to drive the boat." Reflecting on these two events, Mr. Young said that all of the projects and activities he helped build were far less important than the people he got to know over the past 20 years. Even though ATTAINS, the Assessment Database (ADB), and How's My Waterway were great outcomes, he explained that he was most grateful for going through those struggles with his colleagues, and he thanked them for supporting him over those years.

In closing, Mr. Young offered parting advice to the next group of leaders to not let others' visions of them limit their visions of themselves. He encouraged everyone to keep pushing for what they wanted, and to take advantage of change because it can come with opportunities for people to step up and do amazing things.

(5) Traci Iott, Supervising Environmental Analyst, Connecticut Department of Energy and Environmental Protection

Ms. Iott first wished Mr. Young well in his new endeavors, celebrating his leadership and enthusiasm for a technical and challenging program and thanking him for his partnership and

collaboration. She then offered thanks to the ELI team, contributors, and participants for another successful training workshop.

Ms. Iott reflected on the path of change that started ten years ago with charting a course for the CWA 303(d) Program. With good intentions, deep thinking, planning, creativity and new tools for protection and restoration, the team developed new ways to support water quality goals, including online platforms and data management systems. She said that the close of Vision 1.0 was not an ending but rather like a relay race, and it is now time to pass the baton off to Vision 2.0. Assessing the long-term efforts of the CWA 303(d) Program, Ms. Iott emphasized how proud she is of everyone for engaging with the awesome responsibility and opportunity of being effective stewards of the environment. She said that she looks forward to how the CWA 303(d) community will continue to grow through expanded partnerships, new approaches, and new tools under the new Vision.

Ms. Iott called the participants to not rest, but to prepare themselves for the next leg of the race and its associated challenges. As important as it is to develop plans for water quality restoration and protection, Ms. Iott said that it is also essential to grow in introspection, creativity, and engagement through new approaches and pathways. Ms. Iott highlighted the need to engage on challenges of environmental justice, climate change, and better collaboration between 303(d) programs across all jurisdictions and with the public. She also suggested being creative in developing new approaches to problems and building resilient and robust platforms to train new staff. None of this should be rushed, Ms. Iott explained. She told participants to give themselves time to think and create, because long-term planning is critical for allocating resources and working on complex issues. She encouraged the participants to communicate with EPA, who are good supporters. Ms. Iott concluded her remarks by requesting that the participants not to lose sight of the connections they have made and to continue to stand tall and build each other up in collaboration. Once again, she thanked everyone for their work on Vision 1.0 and exhorted the group to get ready to grab the baton for the second leg of the race.

(6) Kayla Bowe, Biologist, Red Lake Department of Natural Resources

Ms. Bowe began by noting the record attendance of the training workshop, with over 650 people and nearly 50 Tribes represented. She highlighted the importance of partnerships and collaboration, which is especially valuable in Tribal water programs with few staffers. Reflecting on her work over the prior fifteen years, she celebrated the improvement in state-tribal relations through data sharing, data collaboration, and mutual respect. Ms. Bowe highlighted the value of Tribal liaisons and encouraging more States to create such a position. She also emphasized personal relationships between State staff and Tribal counterparts. She added that having a single point of contact for Tribal staff can help in navigating large, complicated State agencies, but in the absence of such a contact, Regional EPA staff also could make good connection points. Finally, although no Tribe had yet taken on a CWA 303(d) Program, Ms. Bowe said that States could assist Tribes in assessments, data sharing, and TMDL development, among other things. She closed her remarks by thanking the participants and expressed her excitement for next year.

Mr. Schempp wrapped up the training workshop by thanking EPA for supporting the event; the WPG for steering its development; and the presenters, facilitators, moderators, and scribes for making it run well. He then, once again, thanked the participants for their time and efforts.

APPENDIX 1: TRAINING WORKSHOP AGENDA

ENVIRONMENTAL LAW INSTITUTE®

AN INDEPENDENT, NON-PARTISAN ENVIRONMENTAL EDUCATION AND POLICY RESEARCH CENTER.

2022 NATIONAL TRAINING WORKSHOP ON WATER QUALITY DATA, ASSESSMENT, AND PLANS

BUILDING ON 50 YEARS OF CHANGE, RESILIENCE, AND PROGRESS

May 31 – June 3, 2022

VIRTUAL TRAINING WORKSHOP AGENDA

This project is made possible through a cooperative agreement with the United States Environmental Protection Agency

PURPOSE OF THE TRAINING WORKSHOP

To provide state, tribal, and territorial water quality and data program staff with an opportunity, in advance of the 50th anniversary of the Clean Water Act, to learn lessons from each other's experiences and discuss what is ahead

WORKSHOP OBJECTIVES

- Learn about and contribute to the **ideas and methods for better integrating environmental justice and climate change considerations** into water quality data management, assessment, TMDLs, and restoration and protection activities
- Learn about opportunities for **accessing and leveraging water quality data**
- Develop **technical skills** in water quality data management, assessment, CWA 303(d) listing, and TMDL development
- Learn about and contribute to the **process for developing** the next iteration of the CWA 303(d) Program Vision
- Receive **updates on research, materials, tools, and legal developments** relevant to the CWA 303(d) Program
- Learn about and contribute to **methods of communicating**, especially regarding water quality progress and climate change
- Learn steps that new and established staff can take to **improve continuity and program resilience** through staff transitions
- Expand and improve **communication among the states, tribes, and territories and with EPA Regions and Headquarters** by enhancing the network of water quality data management, listing, and TMDL professionals

OUTPUT

A final report summarizing the proceedings of the training workshop, to serve as a reference and assist program personnel in achieving the objectives of the Clean Water Act

AGENDA

(All Times Eastern Daylight)

Tuesday, May 31

1:00 pm – 1:30 pm	**Welcome**
1:30 pm – 3:00 pm	**Session 1: National Updates** EPA and state staff will provide overviews of progress made and what is ahead regarding data management tools, Integrated Report submissions, the 2022 CWA 303(d) Program Vision, and incorporating climate change considerations into program work.
3:00 pm – 3:30 pm	Break
3:30 pm – 5:00 pm	**Session 2: Data and Analysis** EPA and state staff will identify different aspects of progress toward more open and available data, including the role of statistical surveys, the value of having published data in consistent formats, updates to EPA-published watershed-based data sets, and ideas for how to improve frameworks on which models rely. Peter Colohan of the Lincoln Institute will close the session with an overview of the Internet of Water.

Wednesday, June 1

1:00 pm – 2:15 pm	**Session 3: Resilience and Continuity Despite Staff Turnover** State and tribal staff will identify ways in which new and established professionals can minimize the impact of staffing transitions, through examples of plans, approaches, and day-to-day activities as well as nationally available resources.
2:15 pm – 3:00 pm	**Session 4: Staff Diversity and Culture** State and tribal staff will explain the impact and importance of a diverse staff and accepting workplace as well as provide examples of trainings, hiring policies, targeted outreach for internships and jobs, and support for interest- and skill-building in this area of work among a diverse collection of people.
3:00 pm – 3:30 pm	Break
3:30 pm – 4:30 pm	**Session 5: Environmental Justice and Equity** EPA and state staff will provide an overview and specific examples of ways in which CWA 303(d) activities, and water quality restoration and protection generally, are including environmental justice considerations.
4:30 pm – 5:30 pm	Virtual Reception

Thursday, June 2

Various Times — **Regional Breakouts**

1:30 pm – 3:00 pm — **Session 6: Breakouts I**

Training workshop participants will attend one of the following webinars. More information about each breakout is available on page 5 below.

- ATTAINS: A Training on Entering Actions (beginner to intermediate)
- General Data Management Tips (intermediate)
- How to Manage GIS Data
- How Tribes Can Use the CWA to Protect Their Water Resources
- Litigation on CWA 303(d) Listing and TMDLs
- Climate Change and TMDLs: Theory and Practice
- An Introduction to Long-Term Planning and Prioritization Tools

3:00 pm – 3:30 pm — Break

3:30 pm – 5:00 pm — **Session 7: Breakouts II**

Training workshop participants will attend one of the following webinars. More information about each breakout is available on page 6 below.

- ATTAINS and How's My Waterway: A Secret Sauce Training (intermediate to advanced)
- The Basics of Assessment
- How Continuous Monitoring Data Are Being Used in Assessments
- State-Tribal Collaboration in Solving Water Quality Problems
- Modeling Approaches for Considering Climate Change
- Evaluating the Effectiveness of TMDLs and Other Restoration Plans

Various Times — **Regional Breakouts**

Friday, June 3

1:00 pm – 2:30 pm — **Session 8: Breakouts III**

Training workshop participants will attend one of the following webinars. More information about each breakout is available on page 7 below.

- Water Quality Exchange (WQX) Ladders (beginner to intermediate)
- Deeper Dive on Web Services (advanced)
- Automation Tools in Support of Assessments: Data Harmonization

- Pursuing Treatment in the Same Manner as a State (TAS) Authority for CWA 303(d)
- The Draft CWA 303(d) Vision: Materials and Trainings for Implementation
- TMDL Revisions: Examples and Lessons
- Communicating about Climate Change: Breaking It Down to Basics in the Water Quality Context

2:30 pm – 3:00 pm Break

3:00 pm – 4:30 pm **Session 9: Communicating Success**
A preview of NEIWPCC's forthcoming project to capture success stories will be followed by state examples of communicating progress and accomplishments in water quality and opportunities for communicating success through How's My Waterway.

4:30 pm – 5:00 pm **Wrap-Up and Send Off**

APPENDIX 2:
COMPILATION OF TRAINING WORKSHOP PARTICIPANT EVALUATIONS

A total of forty-four workshop participants completed an anonymous Participant Evaluation Form following the 2022 National Training Workshop. The combined numerical results from the evaluations indicate an overall event rating of "Very Good-to-Excellent," across all categories except group interaction. In addition to the numerical responses, we received many written comments, which are reproduced here. Further feedback on the individual components of the workshop is included as well.

Participant Evaluation Form: Compilation

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

A. The Workshop—Overall

Information Presented
5 (21) **4** (19) **3** (3) **2** (0) **1** (1) **AVG: 4.34**

Workshop Materials
5 (20) **4** (17) **3** (3) **2** (3) **1** (1) **AVG: 4.18**

Workshop Organization
5 (32) **4** (8) **3** (3) **2** (1) **1** (0) **AVG: 4.61**

Group Interaction
5 (8) **4** (15) **3** (16) **2** (4) **1** (1) **AVG: 3.57**

Session Facilitation
5 (23) **4** (18) **3** (1) **2** (2) **1** (0) **AVG: 4.41**

Videoconference Platform and Technology (GoTo/Zoom)
5 (18) **4** (19) **3** (5) **2** (0) **1** (2) **AVG: 4.16**

Comments:

- The workshop was extremely well-organized with the session links bringing you straight to the conference and minimal technical difficulties. Facilitation was excellent and all the state and tribal panels were helpful. I experienced the most benefit from being able to relate to the other practitioners who worked through common challenges. Group interaction is difficult to accomplish with a virtual format but, there was no lack of opportunity to participate. It often seemed that the presenters went long so that there was not enough time for all the questions. Workshop materials in the chat were not often referenced so, while they were there, it was up to the presenter to point them out and

explain their relevance - and that did not happen in each talk. EPA staff should be more cognizant of how their tools and guidance come across to the states and tribes. It was difficult to know which role an EPA staff person was representing during a presentation (regulator, co-regulator, technical support?) and how their information should be interpreted. Luckily, during a regional break-out we were able to get a better understanding of EPA's presentation context.

- Organizers this year did a great job of trying to make times work for all time zones. As someone working in the PNW I was so happy to have a lunch break built in each day, with networking opportunities for those who didn't have the break fall at lunchtime. I also really appreciate the effort to include topics that were interesting and relevant to tribes in each session, as in the past it has felt very state focused. I was really impressed with the climate change discussion group, there was so much conversation and sharing of ideas. One improvement for next year, could you add music to the end of the week slideshow? The silence was intense haha.
- The technology was smoother this year (no need to sign up in advance for break-out sessions). Great annual opportunity to keep a pulse on what is happening across the country and things that I need to start paying attention to more.
- Enjoyed it, learned some things, good to see everyone. About as good as it can be in virtual format.
- Good content and presentations, but didn't think it was quite as good as previous years.
- Great job everyone! So much goes into this workshop and it shows. I'll just add to the above, I would love to find a better user experience platform at least one where we can see who else is in the room and see questions.
- Note that I did glean a few pieces of helpful information from the workshop. However, of the many workshops that I have attended over the years, this one provided the least value to me or my program. None of this information will help me solve any water quality issues or complete my work tasks.
- Really informative and provided many great insights into how we can improve our process. It was a good opportunity to see how other states and EPA suggest approaching things.
- I think the workshop needs improvement to the overall level of content. I think organizing sessions into two targeted audiences would benefit everyone more equally - "new to CWA IR" and "familiar/expert on CWA."
- I am thankful for the workshop being virtual as a way to protect our health.
- Thanks for the virtual option, 50/50 if I'll be able to attend next year if it's in person.
- The workshop covered a lot of very good information, was well organized and easy to access. the Go To platform is not great.
- Hope we can meet in person next year!
- Not a fan of GoToWebinar. Sound often cuts out briefly (not the only one with this issue) and it is a confusing platform
- Glad you recorded breakout sessions so we can do more than one
- I found it to be informative
- Organization and overall workshop was outstanding as always – ELI and in particular Adam do an amazing job!

- Looking forward to in person! Also continuation of the things we discussed, such as Region Wide meetings between stakeholders would be SOOOOOO helpful
- Great job! The Go To platform isn't as familiar as others, but seemed to work fine.
- Workshop was great and loved the content this year. Excited to have it back in person.
- So well organized, thoughtful audience, relevant and informative topics. Good job!
- Well planned and executed workshop.
- The first two days felt like high level overviews and weren't all that useful to me. The breakout sessions were full of great information and examples.
- Continue to share examples from different states
- I didn't care for GoTo, a number of the features that seem to be available didn't show up in my version (no camera view options, no chat), and also I couldn't join several sessions and had to use a personal computer. Is Teams an option? It works great albeit in smaller meetings not big groups like we have. I liked the Bonfire networking session, but very few people used it.
- The workshop was organized extremely well. The moderator did a great job in the Q&A session to compile the questions for time efficiency.

B. Goals, Outcomes, and Expectations

How effective was the workshop in satisfying the stated goals and intended session outcomes?

5 (22) **4** (17) **3** (6) **2** (0) **1** (0) **AVG: 4.36**

How successfully did the workshop meet your own expectations?

5 (19) **4** (17) **3** (5) **2** (3) **1** (0) **AVG: 4.18**

Comments:

- I hope all of the people new to this event (there must have been hundreds) made some connections.
- The workshop requires a large time commitment and doing it remotely is more difficult than in-person as it's much easier to get side-tracked and multi-task during sessions, which reduces the ability of the workshop to satisfy participant expectations. Not ELI or EPA's fault, just a participant problem. I'm very much looking forward to being in-person again next year.
- My expectations from the workshop were met.
- Some sessions were better than others.
- The breakouts were more useful to me than the full group sessions. Maybe more breakouts and less large group sessions in the future. The breakouts were amazing, and I will be going back to listen to several recordings of sessions that I missed!
- I would have liked to see more of a discussion on how to implement pollution prevention programs to stop the pollution from leaving its source. Prevention is super cheap to deal with vs clean-up. Partnering with pollution prevention programs, how to enforce the right to healthy drinking water resources by removing exemptions of the polluters.

C. Specific Sessions

Welcome

Rating: **5** (13) **4** (20) **3** (9) **2** (1) **1** (0) **AVG: 4.05**

- Very appreciative of John Goodin's time and role with this Program. Nice to hear him one more time in this platform before his retirement.
- I think it's hard to have a welcome session virtually. It was easy for me to feel like I could be doing better things with my time. I was not patient with high level generalizations.

Session #1: National Updates

Rating: **5** (8) **4** (28) **3** (8) **2** (0) **1** (0) **AVG: 4.0**

- Informative.
- Perhaps a bit too many speakers on this session, but informative.
- Again, this was mostly too high level and generalized for me to feel that I took much away from it.

Session #2: Data and Analysis

Rating: **5** (19) **4** (18) **3** (7) **2** (0) **1** (0) **AVG: 4.27**

- Informative.
- Really liked the speakers in this session and the challenge to keep improving our tools and find creative ways to do this.
- The River Runner demo was amazing!
- It was good to know about resources and what others were doing. These are big questions/problems, and some of the presentations glossed over that and made it seem like things are solved, even though they are not or not for most people. I was not impressed by the Internet of Water.
- This was great!
- The visual presentation of the data analysis in the maps has come a long way. A picture says a thousand words.

Session #3: Resilience and Continuity Despite Staff Turnover

Rating: **5** (19) **4** (17) **3** (6) **2** (2) **1** (0) **AVG: 4.20**

- Informative.
- I think this was a very practical session and lent itself well to sharing information on processes, which we often don't discuss.
- Inspiring - we can do it!
- This was the first time I've heard people talk about this very real challenge; I appreciated the speakers' perspectives and advice.
- Lots of helpful examples here.
- Very pertinent to our organization, good info!
- As a manager, I found this very helpful, and this is an important topic to assure the programs can continue through changes that will eventually happen.
- We learned some ideas on how to develop some SOPs, Records/Data management to keep programs moving forward.
- Good information on how to prevent lapse of information when staff turnover occurs.

Session #4: Staff Diversity and Culture

Rating: **5** (14) **4** (15) **3** (13) **2** (2) **1** (1) **AVG: 3.87**

- Awesome.
- This was the surprise for me for the week. I thought this discussion was very enjoyable and the perspectives quite different.
- Wow, we are so behind in our state…. More diversity in the presenters would have been good.
- I think as a group we really need to hire someone to give a training on this topic. It's not fair to make individuals of color do all of the heavy lifting on this topic, or to try and single them out, but it's not a very effective session when all of the panelists are white. I appreciated that one of the panelists did this for a job and had some things to say, and the example from the reservation was interesting...but that didn't necessarily make the speaker a good panelist. My vote would be for an actual training by an expert in the topic.
- I know this is an important topic, but I have a hard time relating to it.
- This is really good, as we need to be inclusive in addressing watershed issues.
- I was not impressed with the discussions regarding outreach. There were no clear answers regarding where they chose to pick their applicant pool. There was no indication if they travelled to the most diverse communities/public schools/universities to promote ecosystem health and awareness to build a pool of future candidates that could have been today's job applicants. There seemed to a lot of reluctance to discuss the topic, which I interpreted the reaction to be they were reluctant to actually get out into the diverse communities. "Promoting" diversity from a lot of Caucasian upper management/program management and staff is a bit of a stretch when they demonstrate their unwillingness to get out of their comfort zone.

Session #5: Environmental Justice and Equity

Rating: **5** (13) **4** (18) **3** (11) **2** (2) **1** (1) **AVG: 3.89**

- Informative.
- Glad to see this information all shared in one place.
- This session was interesting. I think there is a lot more we all need to know and a lot of answers no one has. I appreciated hearing what people had been doing. I also think we might benefit from some professional/expert advice on this topic if we're going to take it seriously and actually incorporate it into our programs.
- I know this is an important topic, but I have a hard time relating to it.
- Again, this training is timely and very important.
- Environmental justice and equity is hard to achieve when there are some polluting exemptions that are still in place (fracking, oil drilling, mining, transfer stations in low income neighborhoods, etc.)

Session #6: Breakouts I

<u>ATTAINS: A Training on Entering Actions</u>

Rating: **5** **4** **3** **2** **1** **AVG: NO RESPONSES**

<u>General Data Management Tips</u>

Rating: **5** (1) **4** (4) **3** (1) **2** (0) **1** (0) **AVG: 4.0**

How to Manage GIS Data

Rating: **5** (1) **4** (1) **3** (1) **2** (0) **1** (0) **AVG: 4.0**

How Tribes Can Use the CWA to Protect Their Water Resources

Rating: **5** (3) **4** (3) **3** (3) **2** (0) **1** (0) **AVG: 4.0**

- Glad to be a presenter at this session to share work and to see what others are doing in Indian Country.
- Same comment as for Environmental Justice and Equity: Protection of water quality is hard to achieve when there are some polluting exemptions that are still in place (fracking, oil drilling, mining, transfer stations in low-income neighborhoods, etc.), and the pollutants travel onto the Tribes' lands.

Litigation on CWA 303(d) Listing and TMDLs

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

- Helpful and interesting info. Less wordy slides would be more helpful and easier to follow.
- Great, a lot to take in. Would be even more helpful if each case could be summarized along with clear explanation of what states should or shouldn't do. This is an important session that should always be included.
- So much information, yet the best way to digest it is in this group. For future sessions, I would suggest providing a quick intro for folks that are really unfamiliar with litigation in general, also perhaps some key takeaways (with states/tribes/territories in mind) at the end of each segment.
- Very helpful information.
- There was a lot of interesting information in this session, and I'm glad I attended. It would have been helpful if the presenters could have done a little less reading off the slides and a little more translation into plain English.

Climate Change and TMDLs: Theory and Practice

Rating: **5** (5) **4** (4) **3** (1) **2** (0) **1** (0) **AVG: 4.4**

- Very informative, and will need more guidelines from EPA
- Practical and helpful. Especially appreciated Molly Rippke's presentation.

An Introduction to Long-Term Planning and Prioritization Tools

Rating: **5** (2) **4** (4) **3** (1) **2** (0) **1** (0) **AVG: 4.14**

- Information & presentations good. Would have been good to have a few more tools discussed.

Session #7: Breakouts II

ATTAINS and How's My Waterway: A Secret Sauce Training

Rating: **5** (1) **4** (2) **3** (1) **2** (0) **1** (0) **AVG: 4.0**

The Basics of Assessment

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

- Excellent, so good! Want more!
- Good mix of presenting and interaction.

How Continuous Monitoring Data Are Being Used in Assessments

Rating: **5** (5) **4** (4) **3** (1) **2** (0) **1** (0) **AVG: 4.4**

- Very experienced practitioners, good information.
- Very interesting.

State-Tribal Collaboration in Solving Water Quality Problems

Rating: **5** (2) **4** (2) **3** (2) **2** (0) **1** (0) **AVG: 4.0**

- Good to see examples of this from other tribes.

Modeling Approaches for Considering Climate Change

Rating: **5** (3) **4** (1) **3** (2) **2** (0) **1** (0) **AVG: 4.17**

- Very informative, and will need more guidelines from EPA
- In the data presented, I did not see the connection between increased water vapor in the atmosphere to increase in surface temperature, increase in drought, increase in storm intensity and flood force, increase in wind velocity and duration, decrease in snowpack, and etc. Someone said that the models they use do account for increased water vapor, but I didn't really see any mention of the effect of increased water vapor on the continued heating of the oceans. Water vapor is a thick insulating layer that holds all of the heat created during the daylight hours to stay trapped to the earth's surface and become absorbed by the oceans creating more water vapor. If we do not develop ways to decrease the heat created during the daylight hours, the oceans will continue to warm.
- Too detailed for my level.

Evaluating the Effectiveness of TMDLs and Other Restoration Plans

Rating: **5** (4) **4** (5) **3** (0) **2** (2) **1** (0) **AVG: 4.0**

- Would have liked to have seen more discussion of interim measures besides pollutant of concern responsible for original listing. There was some, but we can be more creative.
- One of the speakers rambled on and on and on, but otherwise it was OK
- This was very interesting. It was really helpful to see what other programs are doing.

Session #8: Breakouts III

Water Quality Exchange (WQX) Ladders

Rating: **5** (1) **4** (2) **3** (2) **2** (0) **1** (0) **AVG: 3.8**

Deeper Dive on Web Services

Rating: **5** (1) **4** (1) **3** (0) **2** (0) **1** (0) **AVG: 4.5**

Automation Tools in Support of Assessments: Data Harmonization

Rating: **5** (3) **4** (3) **3** (1) **2** (0) **1** (0) **AVG: 4.29**

- Woah, head exploding, this was amazing and so incredibly useful.
- Important work but my current management regime works and much training is need to implement. That being said this is the direction I want my program to work towards.

Pursuing Treatment in the Same Manner as a State (TAS) Authority for CWA 303(d)

Rating: **5** (3) **4** (1) **3** (0) **2** (0) **1** (0) **AVG: 4.75**

The Draft CWA 303(d) Vision: Materials and Trainings for Implementation

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

- I liked the small group discussion portion - really helped to hear some different ideas
- I really liked having the opportunity to have a dialogue on capacity building generally. We had mostly staff that is starting up. Would suggest having an open forum like this each year. Doesn't have to be solely on Vision, but worked well for that purpose. Hope participants felt similarly that their time was well spent.
- Thanks for the opportunity to ask questions in a smaller setting.
- I did learn some things I wanted to know by asking questions in the breakout rooms. Otherwise, it was more general than I would have liked. I was hoping for more concrete information that would help me write my program's vision: examples of how to begin, different approaches, etc.
- The ability to interact and ask questions was good. I would shorten the introductions and perhaps have more examples ready to share about how states have prepared. Could help spark more discussion/questions

TMDL Revisions: Examples and Lessons

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

- Gave us some points to consider for Vision - 2.0
- Mike Kruse should be recruited to be ACWA Watersheds Committee co-chair. Chris Hunter is very pleasant and should speak for EPA as often as possible. This session probably needed more EPA and more interactive discussion.
- Intros took more than 20 minutes - suggest not doing intros
- EPA presentation was the most interesting one for me.

Communicating about Climate Change: Breaking it Down to Basics in the Water Quality Context

Rating: **5** (7) **4** (1) **3** (0) **2** (1) **1** (0) **AVG: 4.56**

- This was a great discussion on how to talk about the science so that the average person can understand.
- This one might have been my favorite, it's just nice to talk to people about their personal experiences.
- Excellent discussion.

Session #9: Communicating Success

Rating: **5** (16) **4** (20) **3** (9) **2** (1) **1** (1) **AVG: 4.04**

- Maybe we needed a professional trainer instead of state examples? Why are we communicating? Who are we communicating with? What are the steps in a communication campaign, and how are they related to our work?
- Good session and hoping good ideas come out of this interaction.
- Unfortunately had to miss this and haven't had time to watch recording; gave a 'very good' rating because I expect it was very good.
- I missed this session. I would make the suggestion to add and "NA" option to the ratings above.
- Not super relevant to what I work on.
- Very important to show others success in a succinct way and "where they are at"
- Became extremely discouraged when I asked how outreach is done to the general public because I am looking for new ideas. Not one presenter answered the question. Huge disconnect between the general public and the programs.

Wrap-Up and Send Off

Rating: **5** (17) **4** (16) **3** (8) **2** (1) **1** (0) **AVG: 4.17**

- Inspired
- Nice photos, poems, and remarks.
- So sad to see Dwane Young go... but glad to have been able to hear his remarks. All of it resonated with me.
- Unfortunately had to miss this and haven't had time to watch recording; gave a 'very good' rating because I expect it was very good.
- The send off was well thought and of course, the video is awesome.
- I missed this session. I would make the suggestion to add and "NA" option to the ratings above.
- Thank you for this workshop; I found it very helpful.
- It was good to see Jeff back.

Other Comments or Suggestions

- We had several people from Illinois EPA - BOW Programs participate in this year's workshop.
- Overall, the workshop was extremely informative and well organized. The presentations demonstrated how far programs have come, and how much more work is still needed. Thank you.
- Session moderators with Zoom sessions really need to mute everyone but the speaker. All of the Zoom sessions I was in had problems with people not realizing they are not muted. We had a region 4 breakout and it was great, but it would have been better if the discussion topics were shared ahead of time. Other than that it was really smooth and it is clear you all have learned a lot about how to do this over the last couple of years. The ease of connecting to sessions, the materials, everything was really great.
- Thank you!! Hope to see you in person next year!
- Thank you Adam and ELI team!

- It would be good to include an option in the survey for "N/A" or "did not attend". I was unable to attend some sessions but do plan to follow up and watch the recordings.
- Hoping for a return to Shepherdstown next year - in-person is much better for this kind of intense workshop where a lot of meeting and learning occurs outside of the 'classroom'.
- Keep up the good and hard work. The suggestion of having a hybrid format should be further explored.
- Thank you for all the hard work!

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 2022 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.