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2017 NATIONAL TRAINING WORKSHOP FOR CWA 303(d) LISTING & TMDL STAFF

MAKING THE IMPOSSIBLE POSSIBLE

National Conservation Training Center
Shepherdstown, West Virginia
May 31 – June 2, 2017

FINAL PROJECT REPORT
&
TRAINING WORKSHOP PROCEEDINGS

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

ACKNOWLEDGMENTS

The Environmental Law Institute (ELI) gratefully acknowledges the Watershed Branch of the U.S. Environmental Protection Agency, Office of Wetlands, Oceans and Watersheds, for its support of this important project, undertaken pursuant to Cooperative Agreement No. X7-83592801-0. Special thanks go to Branch Chief Jim Havard and our excellent Program Officer, Holly Arrigoni.

ELI is particularly indebted to the members of our dedicated Workshop Planning Group, whose time, insights, and enthusiasm have made this training workshop possible: Tabatha Adkins, Judy Bloom, Helen Bresler, Gracy Danois, Amy Feingold, Julian Gonzalez, Jasper Hobbs, Traci Iott, Will Isenberg, Joe Long, Bruce Perkins, Joe Schmees, Nancy Schuldt, and Taimur Shaikh. Thank you!

The organizers also wish to thank everyone else who presented material at the workshop, or who has otherwise volunteered knowledge and time to developing the event: Fred Andes, Dwight Atkinson, Jeff Berckes, Andy Bock, Shane Bowe, Sol Brich, Wade Cantrell, Chris Carlson, Ruth Chemerys, James Courneya, David Croxton, Jason Cruz, Cyd Curtis, Britt Dean, Alexandra Dunn, Katie Flahive, Trevor Flynn, Jason Gildea, John Goodin, Adam Griggs, Kimberly Groff, Duncan Hughes, Laura Johnson, Jeff LaFleur, Selena Medrano, Eric Monschein, Jesse Neyens, Doug Norton, Sue Norton, Carol Peterson, Mindy S. Ramsey, Erin Rasnake, Shera Reems, Jill Reinhart, Molly Rippke, Kiki Schneider, Kate Schofield, Jeff Seltzer, Laura Shumway, Roy Simon, Bruce Sims, Jason Sutter, Chad Watts, Dave Werbach, Forrest Westall, Alan Wittmuss, and Dwane Young.

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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 2, 2017, the Environmental Law Institute (ELI) convened the *2017 National Training Workshop for CWA 303(d) Listing and TMDL Staff: Making the Impossible Possible.* This event, supported through a cooperative agreement with the U.S. Environmental Protection Agency (EPA), brought together Clean Water Act (CWA) Section 303(d) listing and TMDL officials from 49 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 Bishop Paiute Tribe, the Confederated Tribes of the Umatilla Indian Reservation, the Fond du Lac Band of Lake Superior Chippewa, the Grand Portage Reservation, the Red Lake Band of Chippewa Indians, and the Ute Mountain Ute Tribe. The assembled participants learned about progress being made in implementing key program responsibilities, often with the CWA 303(d) Program Vision as the backdrop.[1] They presented on and discussed methods for addressing particularly complicated pollutants and sources of pollution, the CWA 303(d) TAS rule and its potential application, innovations in TMDL development and urban water restoration, and improved integration with the Nonpoint Source Program. Participants also gained insights into engagement through sessions with stakeholders from various sectors and across the country, as well as greater personal familiarity with colleagues from other jurisdictions, representatives of EPA Headquarters and the EPA regions, a representative of the U.S. Geological Survey (USGS), a representative of the Association of Clean Water Administrators (ACWA), and two representatives of the New England Interstate Water Pollution Control Commission (NEIWPCC).

As with similar CWA 303(d) events of national scope convened in the spring of most years since 2008, ELI 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 workshop attuned to the needs of program implementers in the states, tribes, and territories, ELI assembled a Workshop Planning Group (WPG). For six months, the WPG worked through a highly participatory process to develop, shape, and refine the workshop objectives and agenda, the structure and focus of workshop sessions, and the course materials.

The three-day training workshop was successful by the metrics of sharing useful information, generating new ideas, and building new relationships. Distinct takeaway messages emerged and are identified in Part II of this report. The bulk of the report, Part III, contains a detailed, session-by-session summary of event proceedings. Appendices to the report include the training workshop agenda, a list of participants, a full compilation of participant evaluations and comments, and information about ELI's companion website. ELI continues to build on the momentum and enthusiasm generated by this and the prior years' training workshops through an ELI-administered website for CWA 303(d) programs and through a listserv dedicated to state, tribal, and territorial professionals and designed to increase and enhance interactions among programs.

[1] https://www.epa.gov/sites/production/files/2015-07/documents/vision_303d_program_dec_2013.pdf.

II. THEMES AND OTHER TAKEAWAYS

From the perspective of ELI staff in attendance, the following are significant themes, points, and observations that emerged over the course of the training workshop. They are not presented in a specific order, nor are they intended to reflect complete agreement among participants.

The science is key.

- Models are not perfectly accurate, but they can be very useful.
- A good stress-response relationship helps establish targets for designated uses.
- Probabilistic modeling can help identify the most likely stressors in a watershed at the outset of the TMDL process.

TMDLs, from process to product, can be a means of engagement and integration.

- An executive summary improves the accessibility of a TMDL for stakeholders and the public.
- Directly involving other relevant programs in the TMDL development process can ensure product consistency, improve the depth and breadth of data on which the TMDL relies, and lay better groundwork for TMDL implementation.
- While time-consuming to develop, a TMDL calculator is much cheaper to run than a single-scenario model, and it is simple enough to use that it can empower stakeholders to take charge of their own process.

Involve stakeholders as early in the process as possible.

Effective solutions usually take time.

- Widespread implementation often is not possible, but successful projects can breed interest by others and expand an effort organically.
- Relationships are not always easy to establish, but they are fundamental to building trust, understanding one another, communicating efficiently, and even being able to agree to disagree.
- Attending meetings and making phone calls are good ways to build relationships.

Collaborations commonly are critical to successful implementation and worth the effort.

- It is impossible to be everywhere and know everyone, and a government representative is not always the right messenger.

- The biggest successes tend to occur when a local "champion" makes it his or her job to communicate and initiate discussion.

- Working with local partners who have good relationships with stakeholders is often an efficient means of effectively reaching the desired audience.

- It can help to be selective in whom from an organization to contact, since some staff (e.g., educational and outreach directors) may be more receptive.

- The nonpoint source program is a good starting point for connecting with local partners.

- Providing stakeholders a role in restoration, ideally one that allows them to see improvements firsthand, can help sustain and even improve their engagement.

The message matters.

- People are more likely to engage when the focus is on specific, tangible issues.

- Outreach should highlight reasons that the audience should care, how the issue affects them, and incentives for addressing the problem.

- Framing a message in terms of financial implications can be particularly effective in attracting stakeholder attention and prompting action.

- Messaging should be consistent across partners and agencies.

Water quality problems should be more clearly, but concisely explained.

- For pollutants that are not inherently bad, such as nutrients, it is important to identify how, when, and why they may adversely affect designated uses.

- It is important to clarify that listing a water does not mean that it has no utility for the public, rather that it might not be able to be used for all of the things for which the public normally would expect or want to use it.

- The public should know what sources are outside a jurisdiction's authority, drawing attention to the impacts of those sources and limitations on solutions.

- Interactive maps and social media are widely accessible and succinct communication tools.

Sharing data is important, because data that are hard to find are effectively unavailable.

The Water Quality Framework and ATTAINS are the result of extensive collaborative efforts and will continue to be a product of the community.

- The Water Quality Framework was developed to streamline water quality assessment and reporting while providing a more complete picture of the nation's water quality.

- EPA staff will be incorporating GRTS into the Water Quality Framework next. NPDES information likely will follow, potentially with RCRA and other water quality-relevant information after that.

- ATTAINS has many new features for uploading data and reporting, to make it easier to use and more informative.

CWA 303(d) TAS offers eligible tribes an opportunity to develop lists of impaired waters, establish priority rankings for those waters, and develop TMDLs for those waters.

- This authority can aid tribes in highlighting and addressing water quality problems on their lands in ways that they otherwise could not.

- The CWA 303(d) TAS rule establishes application procedures for eligible tribes and review procedures for EPA. The review of submitted applications occurs at the regional level.

- While a groundswell of applications is unlikely, some tribes will be applying.

States, tribes, and territories would benefit from:

- A compilation of chloride reduction practices from around the country as well as the development of a program focused on addressing chlorides.

- A discussion forum and resource center for tools, examples of TMDLs (notably statewide TMDLs), and other materials regarding bacteria.

- An explanation of how different statewide TMDLs have been developed and structured.

There are key steps that do or could help address particularly difficult water quality challenges.

- A good early step, especially when addressing bacteria impairments, is to closely review the standards, so that effort is focused on what really has value.

- Collecting pre-mining data clarifies the pre-existing conditions and provides a better base for subsequent management.

- Working beyond one's silo, especially for multi-media problems like mercury and PCBs, is important for effective implementation.

- Since salt is hard to control once it is on the ground, source control, including salt applicator training or a certification program, chloride TMDLs, or limited liability for winter maintenance, is critical.

- A nationally backed state nutrient certification program could help reduce nutrient impairments.

- It is important to communicate well the details of the goals and progress toward them, particularly for biological goals in urban environments.

Stormwater presents unique challenges that require innovative strategies.

- Stormwater and spikes during wet weather conditions create a problem for monitoring, the implementation and applicability of standards, and determining of "success."

- The water quality impacts of stormwater can be effectively addressed through direct public investment, incentives, and regulations, and ideally through a combination of these approaches.

- Allowing a percentage of required stormwater retention to be accomplished off site provides flexibility and accommodates trading.

- Examples of successful implementation, such as reduced beach closure days resulting from stormwater best management practices, help the public better understand the problems and solutions and lead people to be more willing to pay for those solutions.

The efforts to date to integrate TMDLs and nine-element watershed plans have yielded several lessons.

- Stakeholder engagement is important.

- There are pros and cons to developing a watershed plan before a TMDL, and a TMDL before a watershed plan.

- When trying to develop a TMDL or nine-element watershed plan from one or more documents, one should cross-reference the elements of the desired product with the information available in the existing documents, identify what information is missing, and discuss with EPA what of that missing information must be gathered and included.

- "Watershed Management Plan 'Light'" can be particularly useful where TMDLs already exist or in watersheds that have active stakeholder groups but no capacity to develop complete nine-element watershed plans.

When revising the organization of TMDLs, it can be helpful to consider examples from other states, compare the list of components from EPA guidelines to those of the state's current TMDLs, and be in regular communication with EPA.

III. 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 to this report.

Welcome, Introductions, and Training Workshop Overview

Adam Schempp of ELI opened the ninth CWA 303(d) training workshop, and simultaneously the first National Water Quality Data Management Training Workshop, by welcoming the many participants of both workshops from across the country, including staff from all fifty states, the District of Columbia, five territories, six tribes, all ten EPA regions, EPA Headquarters, the New England Interstate Water Pollution Control Commission (NEIWPCC), the Association of Clean Water Administrators (ACWA), and the United States Geological Survey (USGS). Mr. Schempp emphasized that at the heart of the training workshops is the engagement of the participants, both inside and outside the classroom, and he urged everyone to make the most of the opportunity. A complete list of participants of this training workshop, including their affiliations and contact information, is provided in Appendix 2 of this report.

Mr. Schempp then expressed thanks to the many people who helped plan each of the training workshops and introduced the two keynote speakers.

John Goodin, Acting Director of the Office of Wetlands, Oceans, and Watersheds at EPA Headquarters, began by emphasizing the importance of the state-tribe-federal relationship, especially for this issue and in these times. He noted that he would highlight that point in his remarks by focusing on the role of these training workshops and by providing some observations regarding the new Administration.

Mr. Goodin said that this annual gathering in Shepherdstown is a personal point of pride for him, adding that, as he reflects on his career, it is near the top of the list of things (in which he has had a hand) that he thinks are really important. Mr. Goodin expressed his pleasure with its expansion. He noted that the training workshops started in the 2000s, when there was participation by far fewer states and EPA regions and no representation from tribes or territories. He added that the training workshop started with a focus on TMDLs but has since expanded to cover CWA 303(d) listing and data management, as well as collaboration with the Nonpoint Source Program, Monitoring Program, other agencies, and non-governmental parties.

Mr. Goodin explained that the training workshop was the incubator for the New Vision, specifically referencing a session of the 2012 training workshop in which a large sheet of paper with the word "pace" on it was crumpled up and tossed aside, as the start of conversations about how to most effectively move forward with TMDLs as precursors to water quality restoration. Out of that discussion, he continued, came the foundational concepts of the New Vision, and subsequent training workshops have provided the opportunity to check in, to talk about the tough issues and the hot topics of the day.

Mr. Goodin emphasized that, for him, the annual gathering is about more than just the subject matter; it also is about relationships, personal and professional, across programs. Echoing Mr. Schempp's earlier statement about the importance of conversation, he noted: "You cannot do good work with people you do not know, and you cannot do your best work with people you do not know well." Mr. Goodin said that the participants might find the right help to advance a project, catch up on their kids, or enjoy fantastic smoked salmon from an Alaskan colleague, and all of these face-to-face interactions strengthen the collective program. He added that it is about being able to talk with someone, and there is no better way to foster those relationships than to meet in person regularly.

Mr. Goodin then highlighted the content of the two training workshops for this year. He noted that the past few years of the CWA 303(d) training workshop have focused on various components of the Vision, and this one focuses on implementation, by bringing external stakeholders to talk about improving communication and by homing in on particularly difficult issues such as nutrients, bacteria, and chlorides. Simultaneously, he added, the data training is bringing together those in the data realm "who make our work possible" to share tools and build on their skills.

Mr. Goodin concluded his comments with a few observations regarding the new administration that he hoped would be helpful to the participants in the coming days and weeks. He said that there were roughly 40 political appointees in EPA Headquarters at that time, and none in the regions, suggesting a growing need within EPA to ensure that there is effective communication between Headquarters and the regions. He asked for patience with EPA staff while the agency gets as organized and efficient as possible. Mr. Goodin noted that a vast majority of the new appointees are attorneys, which is a particular lens through which the agency's issues are viewed. He added that he has been coordinating with the Office of General Counsel regarding ways to communicate with the new team that make sense to them and advance fundamental aspects of the program. Mr. Goodin also highlighted that an Assistant Administrator for Water had not yet been nominated, meaning that a senior advisor was reporting directly to the Administrator on water issues and a cascade of acting positions was in effect. Lastly, Mr. Goodin explained that, while there is a budget for EPA activities through FY17, the FY18 budget has yet to be passed into law, which will necessitate flexibility and patience.

Amongst these uncertainties, Mr. Goodin stressed the importance of data. He explained that, regardless of who the decision-makers are and whether focusing on the program level or particular issues and work, the underlying data is fundamental. Mr. Goodin emphasized the need to stay true to the data and make data-based recommendations. He added: "We owe it as public servants to make sure that we have the best information and can talk intelligently about implications and options, and then make sure that the information is known and presented. That is why the combination of our data and program folks here is so important. Thank you so much for your participation"

Alexandra Dunn, Executive Director and General Counsel of the Environmental Council of the States (ECOS), began her comments with some background, explaining that she works with state commissioners daily in navigating these times of change. Ms. Dunn praised the value of a sounding board of commissioners from across the country, with geographic and political

diversity. She added that territories can be ECOS members and, while ECOS does not represent tribes, it collaborates with them.

Ms. Dunn commented on the proposed federal budget before turning to her main remarks. She said that the budget requires storytelling, and there are two stories that could be read from it. One story, according to Ms. Dunn, illustrates an insurmountable situation stemming from the President's proposal to cut the EPA budget by 30 percent and state and tribal program funding by 40 percent. Another story, she explained, is that it is time to put EPA in its place. Both stories, she concluded, are compelling and headline-grabbing, but neither conveys where the states want to work with EPA, a key federal partner.

Expanding on that sentiment, Ms. Dunn referenced a comment by one of the previous presidents of ECOS in saying: "The hard work is done in the middle, in rooms where we talk about how things get done and how we work together." Rooms, she added, like this one. Ms. Dunn noted that states have been emphasizing the importance of a conversation about the state-EPA relationship; that red, blue, and purple states all want to be respected and to have a partner in EPA; and that EPA can do many things that the states cannot do individually. In short: "Together we are stronger." But, Ms. Dunn explained, the budget makes this complicated; it was done too early in the process, as if someone placed chapter six at the beginning of the book. She suggested that the ideal approach would start with an introduction about roles, responsibilities, and goals. Ms. Dunn added that, if Congressional action on the budget is delayed, there may be time to have some of these conversations and craft this introduction first. She encouraged the participants to continue to discuss and implement creative and solution-oriented approaches, to work with federal partners to get to the other side.

Ms. Dunn then focused her remarks on storytelling, emphasizing the important role of each participant as a storyteller. She explained that, when neighbors at a barbecue ask whether the water is getting any better, that is all they want to know; and we have to find a way to tell that story in a clear fashion. Ms. Dunn acknowledged the challenge of storytelling in the environmental arena, where stories of progress are often very long and complicated. She noted that there are different ways of telling long, complicated stories, formerly it was with many words, but more recently there is a reliance on infographics. In preparing her presentation, Ms. Dunn said that she researched how to tell such stories, and that the answer was not to avoid doing so, but rather to think about the story in bite-sized pieces. She added that much of what needs to be told concerns incremental progress. Conceding that those types of stories do not grab headlines, she emphasized the importance of first acknowledging that the story is complicated and then breaking it down, looking for moments with which people can engage.

Illustrating her point, Ms. Dunn shared her experience of driving to work and hearing about the release of the Chesapeake Bay Report Card on the radio. She celebrated upon learning that there was a 0.7 percent increase in eelgrass. Ms. Dunn explained that, although the recovery story of the Chesapeake Bay is a long one to tell, hearing the bite-sized news about the eelgrass engaged her emotionally. While the news about eelgrass might not hold the same meaning for everybody, she advised the participants to engage the public with her anecdote in mind: "Find ways to give a bite, then a snack, then a meal, and different people will have different levels of hunger."

Ms. Dunn concluded her comments by thanking the participants for everything they do and emphasizing the honor that they should feel in their roles as storytellers. She insisted that telling a long story should not be scary, that they should just ask how long the conversation partner has. Ms. Dunn added that, without stories, no one at the barbecue will know what is happening.

Session 1: Water Quality Framework

The intended outcomes of the first session were:

- Participants will better understand the changes that have been made to the Water Quality Framework, and the next phase of implementation under this effort.
- Participants will be familiar with how the Integrated Reporting process and performance measures will work in the new ATTAINS
- Participants will know what developments in water quality data management tools are on the horizon.

Dwane Young, EPA HQ: Overview of the Water Quality Framework and Demonstration of the ATTAINS Tool

Mr. Young began by explaining that, through his presentation, he hoped to provide the participants a better understanding of what the Water Quality Framework is and how it developed into its current form over the last few years. He noted that the states and EPA have been discussing for years how to improve Integrated Report data management practices, ideally reducing the significant burden on states while improving the benefits stemming from the process and products. Mr. Young said that, upon seeking to better understand how assessment decisions and the associated geospatial information are tracked and how assessment units are delineated, it was evident that a one-size-fits-all approach was infeasible. Starting in 2011, he added, they began to think about how to redesign the system in a manner that best streamlines the processes nationwide.

Mr. Young described efforts in 2012 and 2013 to collect feedback on the specific challenges that state agencies face in the reporting process. He noted that the general theme of the collected responses was that the process is inefficient, specifically: (1) the review and use of available data to make assessment decisions; (2) the preparation and submission of the Integrated Report (including data); (3) the preparation and refinement of a defensible assessment and listing methodology; and (4) responding to public comments. Mr. Young added that performance measures were in the middle of all of this, and they often involve numbers that do not relate to the underlying data. He also noted that states use different geospatial scales, making a uniform national approach difficult. EPA would lower the resolution of state data, but then the data would become unrecognizable to the states.

In their efforts to find a better approach, Mr. Young said that they undertook an Integrated Reporting georeferencing pilot. He explained that it was designed to reduce costs, improve timeliness, maintain data quality, and improve completeness when processing state data. Mr. Young detailed the catchment-based indexing approach, noting that it could tell two parts of the story: (1) the location of something in space; and (2) how water relates to other things

around it. He added that the use of catchments created consistency across and within states, eliminating the problem of assessment units changing over time, and allowing the integration of state data with the measures. According to Mr. Young, this approach also makes it easier to report back to Congress with underlying data, thus supporting transparency.

Mr. Young then gave an overview of the Water Quality Framework, which had the stated purpose of streamlining water quality assessment and reporting while providing a more complete picture of the nation's water quality. Connecting back to Ms. Dunn's speech, he emphasized that, from the local to the federal level, the Water Quality Framework is really about integrating data to tell a story to the public and Congress. Mr. Young added that it is more than just CWA 303(d) information; it is about bringing all of the stories together, from different programs and different stages of the process, to provide a more complete picture.

Mr. Young described the extensive state-federal collaboration behind the Water Quality Framework, including four workgroups (data modeling, new measures, assessment decisions, and how work flows between states and EPA) as well as a design team and support group. In addition, he highlighted the ATTAINS LEAN event in 2015, which focused on fine-tuning the replacement of the paper reporting process with an electronic one. He said that they also discussed how to integrate monitoring data and options to incorporate open source tools developed by states and EPA.

Mr. Young then returned to the theme of storytelling, noting that the goal of the Water Quality Framework is to pair state data with data from other programs, national surveys, etc. to tell the full story. He challenged the participants to think about bites, snacks, and meals that they would like to provide in sharing their water quality story.

For the remainder of his presentation, Mr. Young gave a live demonstration of ATTAINS. He explained that they had a very preliminary version of ATTAINS for last year's training workshop, and the goal for this year was to have a functioning system. He noted that the system is close to being finished, but there was one fix that needed to be made regarding TMDLs before it launched. Mr. Young added that they have been releasing a new version every month, and that will continue through March 2018, but that it should not stop anyone from inputting data when the final system is released in September 2017, as the updates will not affect data. He reiterated that ATTAINS is not an EPA system, rather the result of an extensive collaborative process and owned by the community.

Mr. Young highlighted some features of the new ATTAINS system, including an assessment units screen with robust search capability and an option for creating new assessment units. He also noted that the system automatically updates data as it is entered and will notify the submitter if the data is incorrect. Mr. Young pointed out that some of the features were added in response to past feedback, such as the ability to batch upload and to upload data from Excel spreadsheets. He added that it is now possible to enter TMDLs and other action items intended to help restore water quality, in order to communicate stories to the public. Mr. Young then outlined some of the reporting features, including a measures report, a comparative annual cycle report, and a cause summary report. He noted that all of these reports are automatically updated and the data are downloadable. In conclusion, Mr. Young

demonstrated the mapping capability of ATTAINS, which allows users to interact with data on a map, such as viewing all waterbodies that are impaired for metals.

To emphasize a few key messages for the participants regarding the Water Quality Framework, Mr. Young engaged in an adaptation of the game "Heads Up!":

- Who do you call when you have questions? *Regional Data Management Coordinators*
- What two things will be reported at the same time as the Integrated Report? These were streamlined as part of the LEAN exercise. *Assessment Decision and Geospatial Data*
- We report on these using information available in ATTAINS? *Performance Measures*
- When do we begin to transfer to the new ATTAINS system? *Today*

Mr. Young then fielded questions from the participants. A state participant asked about the possibility of adding state probabilistic modules, to which Mr. Young answered that they will be working on that next, and they anticipate it being built into the interface before March of 2018. Another state participant asked whether the Water Quality Framework will track CWA 319 projects, and Mr. Young answered that it will to a degree. He noted that ATTAINS is first and then the Grants Reporting and Tracking System (GRTS), that they don't yet know the harmony between the two, that states will not be entering CWA 319 information into ATTAINS, and that ATTAINS can capture those activities by allowing the input of actions, but the details will not be available. A third state participant asked whether they will incorporate NPDES or even RCRA and CERCLA information after incorporating GRTS. Mr. Young said that they have been discussing the inclusion of NPDES information with staff from that program, and he expects the necessary sharing of data to happen sooner rather than later. He also noted that the RCRA issue has been on his mind and that he would like to do that.

A state participant asked if ATTAINS could provide reports of trends over time. Mr. Young answered that trends are tough since it is hard to compare one cycle to another, but it is possible to view how many waters are in each category from one cycle to another. He suggested that trends on state-wide and national levels are better viewed through surveys. Another state participant asked if ATTAINS provides information about where water quality is good. Mr. Young responded in the affirmative, noting that a new feature of ATTAINS is the ability to report not just on bad parameters but also on waters that are meeting standards. A third state participant inquired about contents of the Integrated Report through ATTAINS and any new CWA 305(b) guidance. Mr. Young said that they have been identifying the minimum critical elements of the report but only have a draft outline to date. He added that it ultimately is a question for the regions, but that he sees no reason for assessment decisions to be included. He challenged the group to think about moving toward an all-electronic report of roughly 20 pages long.

A state participant asked if a node is still an option, and Mr. Young said that, yes, it is in development as part of the user interface. He added that the same experience will be available to those using the Exchange Network or the user interface. He also noted that they have submitted the schema of the data model to the governance review board and, once it is approved, it can be published and will be ready to use.

A federal participant inquired as to the extent to which his demonstration showed what will be available to the public. Mr. Young explained that everything that he showed is for government staff and that the public side is being developed. He added that, for the public side, they are reinventing it, with the staff tasked with its development being completely unfamiliar with the old system. He also pitched the informal evening session on Thursday focused on the public interface, with mock-ups to date and opportunities for input.

Key Points Raised:

- The Water Quality Framework and ATTAINS are the result of extensive collaborative efforts and will continue to be a product of the community.
- Catchment-based indexing allows the telling of two parts of the story: (1) the location of something in space; and (2) how water relates to other things around it.
- The use of catchments eliminates the problem of assessment units changing over time, allows the integration of state data with the measures, creates consistency across states, and makes it easier to report back to Congress.
- The Water Quality Framework was developed to streamline water quality assessment and reporting while providing a more complete picture of the nation's water quality.
- EPA staff will be incorporating GRTS into the Water Quality Framework next, likely NPDES information as well, and possibly RCRA and other water quality-relevant information after that.
- The public interface of the Water Quality Framework is under development.
- The transition to the new ATTAINS system is underway.
- ATTAINS has many new features for uploading data and reporting, to make it easier to use and more informative.

[The two training workshops separated at this time.]

Introductions and Training Workshop Overview

(1) Jim Havard, EPA HQ: Opening Remarks

Mr. Havard began by noting his joy in being with such a large group of people dedicated to water quality. He then led off his remarks with a few national statistics regarding the CWA 303(d) Program: 31 CWA 303(d) lists submitted in the prior year, with 19 approved and 12 under review; over 70,000 TMDLs in place; and that alternatives were counted under the measure for the first time, with five having been agreed upon, covering 19 assessment units. Mr. Havard added that no protection approaches had been submitted yet, but 12 states had identified protection areas for long-term priorities. He explained that EPA is looking to help develop protection approaches, implementation strategies, and associated metrics.

Mr. Havard then focused on TMDL development trends over time. He noted that there was very little TMDL development up to the late 1990s, until a surge in TMDL production occurred in the 2000s, many resulting from consent decrees and other court-related requirements. Mr. Havard referenced the conclusion of many of those consent decrees and how that prompted the discussion between states and EPA about replacing "pace" as the

basis of program measurement with something more representative of actual effort and meeting the most pressing public needs. He added that the Vision and WQ-27 and WQ-28 were developed for that purpose.

Mr. Havard highlighted that the Vision continues to be about strategic use of resources, and Vision themes continue to inform how we work as a 303(d) Program. We **integrate** to look for connections and find synergies; we **engage** to learn, seek buy in, and tap the resources and energy of others; we pursue **alternatives** as we strive to find the approaches that will best achieve water quality, and **protection** approaches so we are being proactive in targeted ways; we **assess** to learn about progress and be adaptive and nimble; and we **prioritize** in a strategic way, so we are pursuing what matters most to states and others.

Mr. Havard explained that the Vision provides key themes for this training workshop, much as it has for ones in recent years. He noted that all of the states have identified their long-term priorities, with pathogens and nutrients, two pollutants that will be addressed later in the day, being priorities for many states. He also referred to the focus on engagement, particularly with Thursday morning's sessions with stakeholders. In addition, Mr. Havard highlighted the significance of integration in the agenda, notably in the Friday morning sessions on urban waters and efficiencies arising from collaboration with the Nonpoint Source Program, in addition to the CWA 303(d) TAS rule session immediately following this introduction. He added that "alternatives" and protection plans offer other ways to meet water quality needs when a TMDL is not the most efficient method, and that assessment is critical to identifying progress and telling the story.

Mr. Havard concluded his remarks by emphasizing the need to remain data-driven and innovative. He suggested that data helps improve efficiencies in TMDL development and is instrumental in engaging with and motivating stakeholders and the general public.

(2) Adam Schempp, ELI: Overview of the Agenda

Mr. Schempp provided a brief story arc to the week's agenda. He explained that each year's training workshop is intended to provide something new, in content, structure, and even the angles from which persistent issues are approached. He noted that the focus of this year's training workshop is on addressing difficult challenges, from particular pollutants and sources, to communication, to imagining new tools and products. In referencing the subtitle for this year, Mr. Schempp said that "Making the Impossible Possible" was meant to be a healthy perspective, positive, open-minded, and solution-driven. He added that the focus necessitated several leaps of faith in the agenda.

Mr. Schempp highlighted the morning sessions on Thursday, for which ELI had invited 11 stakeholders from various sectors and around the country to discuss their personal experiences and perspectives on effective engagement regarding water quality. He noted that the stakeholders also were excited to hear from the training workshop participants and were looking forward to productive conversations. Mr. Schempp explained that the structured elements of these sessions intentionally were kept to a minimum, so as to afford maximum opportunities for discussion, but this means reliance on the participants to contribute to the

sessions. He added that he hoped that the sessions proved to be means for learning from one another about what engagement has worked and why and how to improve communication and collaboration.

Mr. Schempp continued by focusing on the day at hand. He noted that the rest of the morning would focus on the fairly recent CWA 303(d) TAS rule, walking through the steps and highlighting ways in which collaboration between tribes and states already had been occurring. Mr. Schempp then detailed the three-part session on difficult challenges, emphasizing the objective of collectively identifying obstacles concerning the respective pollutants and sources at issue, but most importantly discussing strategies that had been used, successes achieved, and lessons from shortcomings. He explained the origin of the sessions as stemming from the "alternatives" breakout sessions of the prior year, which were well-received, but from which requests to focus on more immediately practical situations were requested. Mr. Schempp said that the day would conclude with a session focused on innovative approaches to TMDL development, adding that planning the session involved whittling down the many great innovations occurring around the country to just three that represent different categories of innovation, and that his intention was for those examples to prompt others to contribute their innovations during the facilitated discussion.

Mr. Schempp then turned his focus to Friday, when two sessions would address the restoration of urban waters and the integration of TMDLs and nine-element plans, respectively. In conclusion, Mr. Schempp requested the participants to try to make the most of the opportunities offered over the subsequent three days, both inside and outside the classroom. He specifically noted the value of following up with colleagues who gave presentations or made comments of interest, to get more information and contribute to the ideas. He also recommended getting to know new people, noting that one of the most influential elements of these training workshops, from his perspective, has been the growth in the community of practitioners.

Session 2: The CWA 303(d) TAS Rule

This session featured three presentations by four presenters, with opportunities for questions. The intended outcomes of the second session included:

- Participants will better understand the CWA 303(d) TAS rule and how it may be implemented.
- Participants will know more about how other states and tribes already are collaborating on water quality assessment, planning, and plan implementation.

(1) Ruth Chemerys, EPA HQ: Clean Water Act (CWA) Section 303(d) Treatment in a Similar Manner as States (TAS) Rule: Increasing Opportunities for Tribes in Water Quality Restoration and Protection

Ms. Chemerys began her presentation by explaining why EPA promulgated the CWA 303(d) TAS rule. CWA section 518(e), she clarified, authorizes EPA to treat eligible federally recognized tribes in a similar manner as states (TAS) for administering CWA programs and

requires EPA to promulgate regulations specifying the TAS process for applicant tribes. Ms. Chemerys noted that prior regulations had established TAS procedures for water quality standards and CWA 402 and 404 permitting, but not for CWA 303(d). She added that the CWA 303(d) TAS rule establishes procedures for eligible tribes to apply to administer the CWA 303(d) program and EPA procedures for reviewing those applications. This rule, she pointed out, is consistent with EPA's 1984 Indian Policy, which includes assisting interested tribes in developing regulatory and management programs for their reservation lands.

Ms. Chemerys then described the collaborative process through which the rule was developed. She explained that EPA initiated pre-proposal consultations with tribes, intergovernmental associations, and states to determine whether to move forward with a rule. On January 19, 2016, she said, EPA issued a proposed rule and then conducted additional outreach, webinars, and consultation. Ms. Chemerys noted that EPA received over 830 comments on the proposed rule, and after making minor changes in response to the feedback, EPA issued the final rule on September 26, 2016.

Next, Ms. Chemerys provided an overview of the rule and preamble. The rule, she said, includes: regulatory procedures for an application from an eligible tribe; regulatory procedures for EPA review of that application; a summary of responsibilities that tribes would have under CWA 303(d); expectations regarding water quality standards; the availability of EPA support for tribes seeking CWA 303(d) TAS; and special circumstances regarding the ability of tribes to seek TAS for the CWA 303(d) Program. She clarified that tribes need not have TAS for water quality standards in order to apply for CWA 303(d) TAS, but that they would need water quality standards to administer the CWA 303(d) program.

Ms. Chemerys outlined the responsibilities that tribes with CWA 303(d) TAS would have, including the lead responsibility for developing lists of impaired waters, establishing priority rankings for those waters, and developing TMDLs for those waters. She added that the tribe's first list is due on the next listing cycle that is at least 24 months from the latter of the date EPA approves the tribe's CWA 303(d) TAS application or the date EPA-approved or EPA-promulgated water quality standards are effective. Ms. Chemerys also noted that tribes would have the lead in setting program priorities in the context of their overall water program goals, including priorities for the development of TMDLs, alternative restoration plans, and protection approaches.

Ms. Chemerys then proceeded to list the criteria for a CWA 303(d) application, noting that the tribe must be federally recognized by the Department of the Interior, have a governing body carrying out governmental duties and power, be authorized to manage and protect water resources within reservation borders, and be reasonably capable of administering the CWA 303(d) Program. According to Ms. Chemerys, however, if the tribe already is approved for TAS under another EPA program, it need only provide the required information not submitted as part of the prior TAS application.

The review of submitted applications, explained Ms. Chemerys, occurs at a regional level. She noted that the process consists of three steps. First, she explained, the application is submitted to the Regional Administrator, after which there is a 30-day notice period for

appropriate governmental entities to comment on the tribe's assertion of authority. Second, EPA reviews the application, a process for which the rule does not specify a timeframe but requires that it be in a timely manner. Third, she noted, is the Regional Administrator's notification to the tribe if the requirements of the rule are satisfied.

Ms. Chemerys shifted the focus of her remarks to the comments received during the rulemaking process, mentioning that the tribes generally supported the proposed rule and highlighted the importance of funding and technical assistance for tribes. She added that they also supported streamlining the application process and favored not requiring water quality standards as a pre-requisite to apply for and obtain CWA 303(d) TAS. According to Ms. Chemerys, there were some concerns from states, local governments, and regulated entities regarding the potential effects on their respective authorities. She explained that the rule does not affect the scope of existing state implementation of CWA 303(d). Others questioned the effects of federal or state-specific legislation or agreements that may limit a particular tribe's ability to seek TAS, and Ms. Chemerys noted that EPA would consider existing arrangements or special circumstances in the context of a specific TAS application.

In conclusion, Ms. Chemerys explained that, while there were not yet any applications, a few tribes had indicated that they are considering applying for CWA 303(d) TAS in the next year or two. She also noted some of the means by which EPA had offered technical assistance and training for tribes, including a pilot on tribal ATTAINS reporting and assessment methods, a CWA Tribal Forum in D.C., and regional CWA training for tribes. Ms. Chemerys added that EPA had developed a draft application template and was in the process of developing an Office of Water tribal resource webpage.

(2) Nancy Schuldt, Fond du Lac Band of Lake Superior Chippewa: Treatment as a State for §303(d) Authority

To start, Ms. Schuldt noted that delivering this presentation completes a circle for her that began in 2011, when she first attended this training workshop. She explained that, during that week, she spoke with EPA staff about the need for tribes to be able to take on this aspect of the Clean Water Act. Now, she added, she was presented with the opportunity to talk about the subsequent journey.

Ms. Schuldt provided context for her presentation by displaying a map for the Fond du Lac Reservation and noting that roughly half of the area consists of wetlands or other waterbodies. Water, she explained, is a big priority for the tribe. Ms. Schuldt expressed her pleasure in working on these issues in an area where many of the water resources are still in pristine condition. She said that the tribe seeks to protect those high quality waters, but they also wish to restore those waters that have been affected by human activities.

Ms. Schuldt specifically highlighted the St. Louis River, one of the most important fisheries on a reservation where fish is a dietary staple. She explained that the exceedance of mercury standards in that river was evident not only in the water column, but also in air deposition, sediment, and fish tissue. Ms. Schuldt said that she approached EPA Region 5 to discuss a tribal impaired waters program, but while the Clean Water Act provides for it, there was no

guidance. Between that limitation and the fact that Minnesota was working on its statewide mercury TMDL at the time, she said, the tribe put its efforts on hold, but the tribe continued to collect data.

Ms. Schuldt shared that the tribal government conducts significant outreach to the community about the mercury contamination. Yet, she emphasized, a consumption advisory is not a solution to the problem, as it is not acceptable to tell tribe members not to eat fish. Instead, Ms. Schuldt said, the outreach focuses mostly on how fish is consumed safely, by detailing what size, what type, and with what frequency they should eat it. Despite these efforts, she noted, few Band members still fish year-round because of their concerns about mercury, illustrating a suppression of treaty rights and a diminishment of culture and integrity.

Ms. Schuldt noted that Minnesota's statewide mercury TMDL did not quite address the tribe's needs. She explained that it focused on air deposition, and even if the reductions in the TMDL were achieved, hundreds of waterbodies (primarily those in northeast Minnesota) would still be too high in mercury to remove fish consumption advisories. Ms. Schuldt added that, when she came to this training workshop in 2011, she presented on a cooperative effort underway between the Fond du Lac Band, EPA Region 5, Minnesota, and Wisconsin to develop a TMDL for the St. Louis River. She lamented that, a few years into the process, Minnesota pulled out, and although they were improving their understanding of the mercury problem in the watershed, they were not finding solutions.

Ms. Schuldt said that she had been making connections with EPA staff via these training workshops, and, through her role as a regional representative to the National Tribal Water Council (NTWC), she was able to elevate CWA 303(d) TAS as another way that tribes could expand and implement their regulatory authority and advance water quality protection. NTWC, she said, recommended that EPA develop guidance for tribes who are interested in pursuing impaired water program authority, giving them the ability to prioritize and initiate TMDLs. She noted her surprise regarding the speed and simplicity with which the EPA rulemaking process occurred.

The Fond du Lac Band, explained Ms. Schuldt, was in the process of preparing its CWA 303(d) TAS application, noting that they intend to use the authority for the purposes that all states and territories are using it now. She added that they would like to reinvigorate the collaborative process to reduce mercury in fish for future generations. Ms. Schuldt concluded by stating that she does not expect many tribes to take advantage of CWA 303(d) TAS. She said that 54 of over 500 tribes are utilizing CWA tools, but it is expensive and arduous, adding that many tribes simply are not well-positioned to utilize the tools. While a groundswell of applications is unlikely, she suggested, some tribes will be applying.

(3) Shane Bowe, Red Lake Nation, and James Courneya, MN: State and Tribal Cooperative Work at Red Lake Reservation, MN

Mr. Bowe began this joint presentation by reiterating Ms. Schuldt's concluding points, noting that all tribes are different, and what works for one may not work for another. To that point,

he explained, the Red Lake Reservation is relatively unique in that it is a closed reservation, with no private property. Mr. Bowe displayed a map of the reservation, adding that the reservation has a larger geographic area and more water than the state of Rhode Island, yet they only have six staff to monitor the roughly 105 lakes and the Red Lakes, a total of 285,000 acres of water. Furthermore, he noted, they also do work in Lake of the Woods.

Mr. Bowe explained that, while many of the lakes are pristine, they also can be hard to access. He noted that they need help in getting to their sites, which has led to extensive cooperation. Mr. Bowe said that they have had a long history of combined monitoring with the Minnesota Pollution Control Authority (MPCA). He added that the MPCA has helped them in a variety of ways, from interpreting results to drafting water quality standards. In addition, continued Mr. Bowe, the Red Lake Nation is part of the Watershed Assessment Team to help determine which waterbodies are impaired. He described the relationship between the two agencies as having a high degree of trust, so much so that the Red Lake Nation is sharing even more of its data with MPCA, after having seen how appropriately they treat it.

Mr. Courneya then provided context for the collaborations with the Red Lake Nation by explaining the WRAPS (Watershed Restoration and Protection Strategy) process in Minnesota. He listed the components of WRAPS: intensive watershed monitoring, assessment, stressor identification, watershed modeling, a TMDL study, a WRAPS report, and public participation. Mr. Courneya noted that the process takes roughly four years, that there are eighty WRAPS locations in the state, and that the goal is to complete the process for eight of them each year, after which they start the ten-year cycle again. He explained that the approach began with a 2008 constitutional amendment that provided additional funding for water quality, environmental, and artistic work.

Mr. Courneya explained that WRAPS has allowed Minnesota to increase its TMDL approval rate, from 50 or fewer per year in the early 2000s to 238 already in 2017. He emphasized that the improved efficiency is due in large part to the work of local partners, like the Red Lake Nation, on the ground.

Mr. Bowe then described their challenges with impairment determinations. He explained that the MPCA historically submitted to EPA impairment determinations on reservation waters, but knowing that they would not be approved. Mr. Bowe expressed his frustration: if their waters get listed, they are not approved, but if they do not get listed, nothing will be done. He added that impairments of reservation waters now appear in the MPCA's CWA 303(d) list under a separate tab, a result with which they are not completely happy but appreciate the improvement. Mr. Bowe also explained that the tribe and the state do not always agree on impairment determinations, commonly resulting from differences in what data are used. He noted that they have been improving communication with the MPCA and are moving forward with a jointly funded study to determine site-specific standards for some lakes.

Mr. Courneya added that Minnesota has additional money budgeted to help the Red Lake Nation complete its work. He also noted that they are exploring the possibility of cooperation in a One Watershed – One Plan effort, if desired by the tribe. In conclusion, Mr. Courneya

described the Tribal-State Relations Training that is designed and presented by the University of Minnesota Duluth's Indian Studies Program. He said that most state agency staff members do not have the tools and knowledge to effectively consult with tribes regarding projects on tribal or adjacent lands. He explained that the training helps state staff learn the history of the tribes, the treaties, and some of the nuances of working with Native American cultures, as well as understanding that no two tribes are the same, adding that he took the training a few weeks earlier and greatly benefitted from it.

An EPA regional participant asked Mr. Courneya and Mr. Bowe how they brought local governments into their collaborative efforts. Mr. Courneya answered that MPCA staff in the NPDES program and Sanitation Deficiency System program, which covers smaller dischargers, works directly with municipal staff in identifying where discharges are in the watershed and, once the TMDLS are developed, in communicating back the allocations given to those dischargers. He added that the state has no authority over discharges within reservation boundaries, that they can prepare allocations in a TMDL but have no method of permitting or compliance enforcement within reservation boundaries. Mr. Courneya also explained that the WRAPS process incorporates Local Government Unit staff into TMDL development. Another EPA regional participant asked Mr. Courneya and Mr. Bowe to what extent they have been involved in the Lake of the Woods process. Both men responded that they and their colleagues have been very active in that process, mostly with respect to water quality. A state participant asked whether Minnesota's WRAPS was modeled after a nine-element plan. Mr. Courneya responded in the negative but noted that Minnesota staff had consulted numerous times with EPA to demonstrate that the nine elements were contained in WRAPS.

A tribal participant sought clarification from Ms. Chemerys that EPA was in the process of developing a CWA 303(d) TAS application. Ms. Chemerys described it as a model template and explained that tribes are not required to use it. Ms. Schuldt noted that the Fond du Lac Band was developing its application package, but that the process had been made easier by the fact that they already had other TAS approvals. An EPA regional participant asked Ms. Chemerys whether tribes that are approved for CWA 303(d) TAS in odd-numbered years remain on an even-year reporting schedule like states, to which Ms. Chemerys answered in the affirmative. The regional participant followed her original question by asking what flexibility would be provided to the tribes. Ms. Chemerys explained that they would work with the tribes and share existing guidance to help them get up to speed.

Mr. Schempp then asked the audience for examples of state-tribal cooperation, in addition to those shared by the presenters. A state participant explained that they invite a particular tribe in their state to meetings and trainings. An EPA regional participant noted that tribes have been involved in various meetings, and in some cases voluntary allocations on tribal lands have been developed. A tribal participant said that she has an annual teleconference with the state regarding which beaches have impairments. She added that a few years earlier the state had determined that one of the beaches on the reservation was impaired, which surprised her and made her all the more appreciative of the line of communication. She explained that they exchanged data and collaboratively came to the decision that the beach was not impaired. The tribal participant also noted that the tribe and the state have a cooperative agreement that they will not sue each other for enforcing different standards in shared Lake Superior waters.

Key Points Raised:

- CWA 518(e) authorizes EPA to treat eligible federally recognized tribes in a similar manner as states for administering CWA programs and requires EPA to promulgate regulations specifying the TAS process for applicant tribes.
- CWA 303(d) TAS offers tribes an opportunity to develop lists of impaired waters, establish priority rankings for those waters, and develop TMDLs for those waters.
- This authority can aid tribes in highlighting and addressing water quality problems on their lands in ways that they otherwise could not.
- The CWA 303(d) TAS rule establishes application procedures for eligible tribes and review procedures for EPA.
- The review of submitted applications occurs at the regional level.
- While a groundswell of applications is unlikely, some tribes will be applying.
- All tribes are different, and what works for one may not work for another.
- Tribes and states have been coordinating on water quality issues through collaborative monitoring, data sharing, collaboratively developing water quality standards, discussing the interpretation of data, agreements regarding the enforcement of water quality standards, participation in meetings, regular phone calls, and more.

Session 3a: Introduction to the Particularly Difficult Challenges

This was the first of three sessions focusing on specific pollutants and sources posing unique and significant challenges to water quality restoration. It served as the introduction to the six concurrent breakout sessions, with one of the co-leaders of each of those breakout groups summarizing the topics on which his or her group would concentrate. This introduction also served as a foundation for the plenary report back. The intended outcomes of the three-part series included:

- Participants will be more familiar with the strategies that others have used to address certain water quality problems, what has worked and not worked, and why.
- Participants will have developed new strategies for addressing these water quality problems.
- Participants will have fresh ideas for addressing their own water quality challenges, and resource contacts for more information.

(1) Trevor Flynn, KS: Nutrients (Technical)

Mr. Flynn began by noting that the main objectives of the breakout focusing on technical elements of nutrients were to identify successful strategies relating to nutrient TMDL development and implementation as well as to determine what EPA can do to help. He then listed the six discussion topics: (1) key challenges with current standards or nutrient criteria development; (2) the parameters listed for nutrients and the methodology for listing them; (3) nutrient TMDL development challenges; (4) modeling relationships, challenges, and utility; (5) stakeholder and allocation challenges; and (6) examples of nutrient successes. Finally, Mr. Flynn explained that he would like to hear many "bites" from many participants, given the size of the group and how well-representative it is. He asked breakout participants to

think over lunch about their main technical challenge regarding nutrient TMDLs and ways in which they are moving forward with developing TMDLs that are achievable and successful.

(2) Helen Bresler, WA: Nutrients (Implementation)

Ms. Bresler presented the focus of the breakout on the implementation aspects of nutrients by listing several of the main issues that they would cover: how to get money for implementation; how to measure implementation; and how to talk about nutrients. She elaborated on the last point by noting the complexities when explaining how something that is inherently good but can have bad consequences. Ms. Bresler added that people often think about nutrients in terms of nonpoint sources, but there is more to it. As an example, she highlighted the flooding of a Seattle wastewater treatment plant, which prompted the state legislature to ask why the state is so focused on farmers when nutrients from the city are not being controlled.

(3) David Croxton, EPA Region 10: Mercury and PCBs

Mr. Croxton introduced the breakout on mercury and PCBs by noting the similarities of the two pollutants, being bioaccumulative and persistent, as the reason why they were being addressed together. He explained that the breakout group would discuss the full range of management actions, including: assessment; source identification; establishing targets; planning via TMDLs or TMDL alternatives; and coordinating with other programs such as TSCA, RCRA, or CERCLA. Mr. Croxton also sought to discuss best management practices, remediation, and other means of addressing mercury and/or PCB contamination.

(4) Kimberly Groff, MA: Chlorides

Ms. Groff noted that the states had much to gain from one another about addressing chloride impairments, adding that Massachusetts is starting to focus on the issue, and they are learning much from what other states have done. She referenced the impacts that chloride can have on aquatic life and stressed the potential consequences for fisheries if current trends continue. Ms. Groff added that there are related excessive sodium levels in water supplies, leading to public health issues. The source, she noted, is well-known: salt application on roads, commercial properties, and private residences. Ms. Groff explained that addressing the problem is a matter of behavior modification. She said that the challenge is figuring out how to deal with the problem, particularly since the problem is generated by a public safety measure, but there is opportunity through working with other programs. That, she suggested, should make for a fruitful discussion. Ms. Groff added that, when thinking about the Vision and assessment frameworks, there is the need for: (1) information; (2) protection, such as shielding areas from the impacts of road salt; (3) TMDLs and alternatives, which might include thinking differently about how to use and apply road salt and perhaps looking into substitute applications; and (4) public engagement. Ms. Groff concluded by requesting participants of the breakout to be prepared to share their experiences and ideas.

(5) Amy Feingold, EPA Region 4: Bacteria

To structure the breakout regarding bacteria, Ms. Feingold had sought comments and questions from those participants who would be in that breakout group. She explained that the responses she received focused on issues ranging from water quality standards, to statewide TMDLs, to implementation strategies. Ms. Feingold added that there was a wide range of comments regarding how bacteria are addressed in surface water and how the CWA 303(d) Program could best contribute. She encouraged participants of the bacteria breakout group to think about their own pressing issues and any successes and be prepared to discuss them.

(6) Jason Gildea, EPA Region 8: Pollution from Active and Legacy Mining

Mr. Gildea highlighted the uniqueness of the breakout that he was helping to lead, in that it was addressing sources as opposed to specific pollutants. He explained that the breakout group would discuss a broad range of topics, from the challenges of locating abandoned mines to the variety of pollutants that come from different mines. Mr. Gildea said that the group would be seeking to identify precise challenges that people are facing in this regard and what assistance would be helpful in addressing them. He noted that water pollution from active and legacy mining has been addressed in many ways around the country, and much is known about the obstacles and opportunities, but he expressed optimism that the group could reveal some innovative and practical solutions.

Session 3b: Implementation Strategies for Addressing Particularly Difficult Challenges

This session consisted of the six aforementioned breakout groups, each with a mix of state, tribal, territorial, and EPA regional and Headquarters participants.

Prior to the training workshop, ELI, with the help of the Workshop Planning Group (WPG), assembled a list of pollutants and sources of pollution that are notably challenging to address and that multiple states had included in their respective prioritization documents. Through the registration materials, participants indicated their discussion preferences from among these topics. The topic of nutrients was overwhelmingly the most popular, and the topic of bacteria was a common write-in candidate. Mercury, PCBs, chlorides, and mining also received many votes. ELI and the WPG decided to split nutrients into two groups, one focusing on technical elements such as TMDL development, and the other focusing on implementation. They also combined mercury and PCBs in light of the similarities in their characteristics and potential solutions. In the weeks leading up to the training workshop, ELI sought the preferences of each registered participant from among the six options and then assigned participants to groups according to those expressed preferences.

The discussion agenda for each breakout group was developed by one state participant and one EPA regional participant in consultation with ELI. These two participants also

moderated the discussion. An EPA Headquarters staff member aided in the development of each discussion agenda and in summarizing the conversation for the report back.

During this session, participants identified specific obstacles to addressing their pollutant or source at issue, discussed strategies for overcoming them, noted the results of past and present efforts, and described how EPA might be able to assist moving forward.

Session 3c: Report Back and Discussion

This session consisted of six brief presentations by the co-leaders of each of the breakout groups. The presentations summarized the discussions and suggestions of their respective groups, and a brief facilitated discussion followed each presentation.

(1) Taimur Shaikh, EPA Region 6: Nutrients (Technical)

Mr. Shaikh began his summary of their breakout group's conversation by noting that nutrient challenges are almost all local and individual in nature. He added that there is no one-size-fits-all approach that would work even within a single state. Mr. Shaikh explained that much of the discussion focused on identifying the many differences in circumstances, from water quality standards to hydrologic characteristics.

Mr. Shaikh said that one of the more instructive points made was that a good stress-response relationship lends itself well to establishing good targets for designated uses. He noted that those relationships can be inconclusive or hard to make, but suggested establishing one when feasible. Mr. Shaikh also highlighted the challenges with and importance of modeling, commenting that nutrient models can be simple or complicated, data intensive or not. He asked how good is good enough. He also said that selecting the right nutrient is essential. Mr. Shaikh added that insufficient representative data to understand the relationship being modeled necessitates making assumptions, which can prompt questions. He concluded the point by suggesting that there is something to the saying "All models are wrong, but some models are useful."

Mr. Shaikh noted that the need for resources arose in the conversation many times. As an example, he said that several participants mentioned instances in which allocations were challenged by permittees. Mr. Shaikh concluded by highlighting the need to help the public understand what is meant by a water being listed as impaired. He clarified that listing a water does not mean that the water has no utility for the public, rather that it might not be able to be used for all of the things for which the public normally would expect or want to use it.

When the audience was offered the opportunity to respond with comments or questions, an EPA regional participant reiterated the difficulty in addressing nutrient impairments and the extensive resources required. He suggested that the process would be easier with technology-based limitations for nutrients. Many participants expressed agreement. A state participant reiterated the challenge of setting a limit without having a target, noting that staff in his state have seen a chlorophyll response to phosphorus, regardless of any reduction in nitrogen.

(2) Selena Medrano, EPA Region 6: Nutrients (Implementation)

Ms. Medrano explained that their breakout group began its discussion through sharing successes. She identified the main themes of these stories as being collaboration, communication, and local support. Ms. Medrano also noted a recurring theme of consistent messaging, that partners and agencies need to be providing the same information. She said that the group discussed funding as well, emphasizing the importance of creativity. As an example, she explained, it is necessary to find another funding source to take the place of Conservation Reserve Enhancement Program (CREP) funding before going back for more CREP support.

Ms. Medrano highlighted the importance of reaching out to interested groups to aid in the implementation of nutrient-reduction strategies, adding that some states require that outreach. She noted that conceptual modeling tools can be helpful in conveying that information. She also said that the group discussed the role of crop rotation and potential strategies for managing it in the future. Ms. Medrano explained an innovative idea that came from the conversation: a state-sponsored nutrient certification program that is backed nationally. She suggested that the national support could provide the spark necessary to make the nutrient certification a reality.

A state participant emphasized the importance of using crises, such as fish kills, as learning and improvement opportunities. An EPA regional participant provided an example of collaboration around nutrients in the San Francisco Bay. He explained that the Bay is significantly affected by agriculture in the watershed as well as forty publicly owned treatment works (POTWs), which has led to nitrogen and phosphorus levels that are higher than those in the Chesapeake Bay. But, he added, it is not impaired yet. He noted that the POTWs have worked with the state and EPA to develop a permit with a requirement that all POTWs look at what it would take to optimize their plants for nutrient removal, upgrade them, and monitor them.

(3) Traci Iott, CT: Mercury and PCBs

Ms. Iott explained that science was central to their discussion of mercury and PCBs. She highlighted the efforts at EPA Headquarters to update air deposition modeling for mercury. Ms. Iott also noted ongoing work to understand environments for mercury methylation, but added that it remains an intractable problem. She said that a technical question that arose concerned experiences with regulating mercury sulfates as a means of controlling mercury.

According to Ms. Iott, their conversation covered issues that are and are not under the control of Clean Water Act programs. Starting with those issues that are within their influence, she encouraged participants to do what they can with sources within their respective jurisdictions. Ms. Iott also suggested grabbing the low hanging fruit with early implementation steps, and then developing TMDLs as needed. Alternatively, she added, one could use TMDLs to bridge the gap between what can and cannot be controlled. Ms. Iott also advocated for working beyond one's silo, noting that mercury and PCBs commonly are multi-media problems. She provided the example of the role of stormwater in many mercury

and PCB water quality impairments. She also highlighted the efforts of EPA Headquarters to improve communication between the air and water programs.

Then Ms. Iott turned to what Clean Water Act programs cannot control. She pointed to the fact that, whether a state, tribe, or territory, there is always a jurisdictional boundary, and thus sources outside of one's authority. The strategy to address this limitation, she said, was to communicate with the public, including through social media. Ms. Iott urged participants to develop TMDLs even if they will not be able to implement parts of them, because the sheer act of developing them brings the issue to the forefront and puts pressure on those who might be able to regulate the sources. She also emphasized the importance of education, so that the public can understand that their actions have an impact on exposed populations.

Finally, Ms. Iott shared the breakout group's desire for greater collaboration among states, tribes, and territories on these issues. She noted that they were not sure what form that would take, but that a collaborative, crowdsourced approach would be a good start. Ms. Iott then asked the audience if a means of seeing what others across the country are doing on mercury and PCBs would be helpful. A few participants raised their hands in support of this idea. A state participant agreed, explaining that, in light of potential rollbacks of emission controls, having a broad national strategy on water quality would be smart.

Another state participant, recalling Ms. Iott's reference to mercury modelling, asked what happened to the Regional Modeling System for Aerosols and Deposition (REMSAD). An EPA Headquarters participant answered that said work was quite dated, noting their efforts to get a work assignment in place to update it. He said that they will reach out to the participants for feedback as that effort gets underway. He explained that their intention is to introduce tags within that modeling so that each facility or source can be followed, as well as to do state- and source-specific attributions, layering it with geospatial data.

(4) Dave Werbach, EPA Region 5: Chlorides

Mr. Werbach noted that, while their discussion on chlorides included stories about what has and has not worked and hurdles to assessment and TMDL development, the issue of standards quickly emerged. He explained that linking chlorides to impaired biota, including establishing defensible numbers and impacts, is challenging. Mr. Werbach also pointed to the fact that the relevant standards for drinking water are much stricter than those that protect aquatic life, adding that, in some places, sodium levels are starting to affect drinking water.

Mr. Werbach expressed his surprise in learning that chloride problems have been reported in parts of the country that rarely deal with ice in the winter, explaining that oil and natural gas extraction activities have contributed to elevated chloride levels in groundwater. He emphasized the distinction in problem and solutions between long-term and year-round groundwater contamination and temporary spikes in surface water contamination.

Mr. Werbach highlighted one of the major problems with addressing water quality impairments from chloride, explaining that once the salt is on the ground, it is difficult to control. Therefore, he continued, focus must be on source control, such as better practices for

when, how, and how much salt is applied. Mr. Werbach explained that DuPage County, Illinois had developed trainings for salt spreaders, to improve their practices. He added that cost savings, in addition to improved protections of drinking water, has proven to be an effective message in support of these changes. He emphasized that it is not a matter of saving fish versus preventing accidents; both are possible.

Mr. Werbach noted that the breakout group supported the idea of compiling chloride reduction practices from around the country as well as the development of a program focused on addressing chlorides. He highlighted accomplishments in Minnesota and New Hampshire as good examples, with both states having best management practice tools, Minnesota having chloride TMDLs in the Twin Cities area, and New Hampshire having limited liability for winter maintenance and a salt applicator certification program.

A state participant noted that his state uses the federal chloride standard and asked whether the concentrations in those standards are too high. Mr. Werbach answered by explaining that not all states have that standard; in some cases the concentrations in the standard are much higher. Another state participant asked whether the breakout group discussed the role of the Federal Highway Administration. Mr. Werbach said no, but he added that there have been discussions with Illinois Tollway because a TMDL limits some of their activities.

(5) Alan Wittmuss, SD: Bacteria

As with previous report-outs, Mr. Wittmuss began by noting that their breakout group discussed the influence of water quality standards. He suggested as a first step reviewing the appropriateness of the standards for primary and secondary contact recreation, and possibly examining the sampling protocols. Mr. Wittmuss posited that, if sampling during wet weather events, a high flow off ramp may be useful for seeing how appropriate that sampling is. He added that collecting a sample under rain almost always will produce high results. Mr. Wittmuss also suggested that *E. coli* is a poor indicator and stressed the value of considering natural conditions, since only a small percentage of *E. coli* might be from an agricultural source. While changing the water quality standards may provide better clarity, he added, doing so is very difficult.

Mr. Wittmuss said that the group agreed that a statewide approach might be worth investigating. He noted that Michigan is in the process of developing such a TMDL for *E. coli*, and that the Connecticut model for a statewide TMDL was well received. Many in the group, he said, were interested in knowing how to start the process for a statewide TMDL.

Mr. Wittmuss then emphasized the importance of communicating with the general public. Michigan, he said, provided a good example of interactive maps associating risk to a particular watershed. He added that it is critical to keep those maps updated. Mr. Wittmuss noted that the fact that *E. coli* itself is not bad creates a challenge in communicating with the public. He suggested documenting what is bad and good about associations with *E. coli*.

Mr. Wittmuss then turned to source identification, noting that the group discussed new technology for identifying sources of bacteria and human health risks. He concluded by

conveying the difficulties in measuring success regarding *E. coli*. He explained that his state has done a lot of implementation surrounding a National Water Quality Initiative project, the results being base flows that meet standards but notable contamination when it rains. He asked what qualifies as success.

An EPA regional participant from the breakout group added that a question of importance among the group was whether there is risk from the bacteria levels. She confirmed Mr. Wittmuss' statement that the group largely found *E. coli* to be a bad indicator, but said that the challenge is what to do with what else states have.

A state participant prefaced his statement by noting that it is not a positive example, explaining that his state stopped developing bacteria TMDLs and refused to prohibit river recreation during high flow events. Another state participant expressed confusion over the wet weather problem. The criterion, he said, is a 30-day geometric mean, so a single sample would not lead to an impairment determination. Mr. Wittmuss noted that the breakout group talked extensively about the diversity of standards across states, adding that sometimes it is a maximum, and sometimes it is a geometric mean.

Another state participant supported the notion of taking a closer look at how the criteria are written, so that effort is focused on what really has value. She shared that her state has many stormwater issues, whether combined sewer overflows (CSOs) or separate stormwater discharges. She said that they chose to develop concentration-based TMDLs, but the major problem with their approach was that they did not identify endpoints for municipalities to know when they had done enough, other than if the water quality standards were met. She explained that a consent decree has resulted in a long and complicated process for reducing bacteria, in essence, an impervious cover target. She added that ten percent or less of the land area in impervious cover creates an assumption that bacteria standards will be met. The state participant also emphasized that people sometimes want to recreate in wet weather events, so there is a public health risk to those events that cannot be ignored. Concluding on a particularly positive note, she said that her state had recently announced increased shellfishing opportunities in one of their bays as a result of new CSO structures. Mr. Wittmuss responded by recounting that the breakout group suggested that ELI develop a resource center for tools, examples of TMDLs, and other materials regarding bacteria, notably statewide TMDLs, and create a forum for discussion.

A state participant detailed the structure of their statewide bacteria TMDL. She noted her initial concern that some of the bacteria issues would not be sufficiently addressed at a statewide level. But she explained that the TMDL has appendices for each watershed, each with intense GIS work and source analysis, which she described as their means of compensating for not being able to go to each source. She added that there is a table showing load allocations. The state participant said that her state has hundreds of bacteria TMDLs as a result, noting that they finally reached critical mass and have made associated improvements in standards and permits. She added that the big change came with the MS4 permit, which, as of July 1, 2017, requires certain baseline best management practices, and if the relevant waterbody is impaired, additional practices are required. In conclusion, she explained that a statewide TMDL does not provide everything, but, in their experience, it builds support to actually do something about the problem.

(6) Jason Sutter, AZ: Pollution from Active and Legacy Mining

Mr. Sutter likened the discussion in their breakout group to that of the bacteria breakout group, noting that they spent much of the time on water quality standards, TMDL development, and implementation after identifying the source. He said that the group pinpointed many hurdles across all three of the categories. In particular, Mr. Sutter noted the challenges with water quality standards, since mines commonly were located in areas that were historically enriched. He highlighted two questions from the group: what were the conditions before the mine; and what is an attainable target now?

Mr. Sutter said that TMDLs do not convey much about what needs to be fixed, and the extent of the issue may not be well known. He added that some participants told stories of using GIS and old aerial photographs to try to figure out where mines used to be. Mr. Sutter explained that old mines can be well hidden, even under buildings. In addition, he said, politics can be in play, offering the example of a rulemaking moratorium in Arizona.

Mr. Sutter acknowledged the benefits of having another active party in the cleanup effort, such as the U.S. Forest Service, Superfund, or Resource Conservation and Recovery Act (RCRA) projects, but said that their targets may not be surface water quality standards. Thus, he added, water quality might still be a concern. Mr. Sutter extolled the benefits of pre-mining water quality data. He admitted that such information is unlikely for legacy mines, but in some modern instances, such as mountaintop removal mining in West Virginia, the data exist. He also highlighted the importance of sharing data, noting that data that are hard to find are effectively unavailable.

With regard to solutions, Mr. Sutter continued, EPA Headquarters could help by clarifying whether abandoned mines are included in the load allocation or wasteload allocation, since regions differ on that answer. He also suggested that EPA consider an exemption for re-mining, noting the possibility that mining might start again in abandoned mines if compliance is set at the existing discharges, helping to assure that the problem will not get worse. In addition, Mr. Sutter referenced the power of EPA's program assessments, but he suggested that the authority be used carefully, as it often is poorly received.

Mr. Sutter noted the value of using passive samplers, but he also acknowledged their limits. He recommended prioritizing TMDL development where an actual difference can be made and looking for "alternatives" when possible. Mr. Sutter also emphasized getting the biggest "bang for the buck," whether one big mine or several smaller ones. He cautioned against plugging mines, as it may not be a sustainable solution. In conclusion, Mr. Sutter expressed appreciation for being away from the confines of a pace-driven measure, since it allows more opportunity to properly identify what can be recovered or improved upon.

Key Points[2] Raised:

- The science is key.
    - Models are not perfectly accurate, but they can be very useful.

[2] These "Key Points" come only from the report-backs and subsequent discussion. Many other points were made in the breakout sessions, but since notes were not taken in those sessions, not all of those points are reflected here.

    - A good stress-response relationship helps establish targets for designated uses.
- Sharing data is important, because data that are hard to find are effectively unavailable.
- The following may help states, tribes, and territories improve their communication and collaboration on these issues:
    - A compilation of chloride reduction practices from around the country as well as the development of a program focused on addressing chlorides.
    - A discussion forum and resource center for tools, examples of TMDLs (notably statewide TMDLs), and other materials, particularly regarding bacteria.
    - An explanation of how different statewide TMDLs have been developed and structured.
- EPA can help by:
    - Supporting the development of tools, including air deposition modeling for mercury, and means of communication.
    - Continuing to improve coordination between the Office of Standards and Technology and the CWA 303(d) Program with regard to standards and their implementation.
    - Clarifying factors for treatment of abandoned mines as they relate to load allocations and wasteload allocations.
    - Considering an exemption for re-mining.
- The public needs to understand the problems in order for solutions to receive support.
    - For pollutants that are not inherently bad, such as nutrients, it is important to identify how, when, and why they may adversely affect designated uses.
    - It is important to clarify that listing a water does not mean that it has no utility for the public, rather that it might not be able to be used for all of the things for which the public normally would expect or want to use it.
    - The public should know what sources are outside a given jurisdiction's authority, to draw attention to the impacts of those sources and limitations on solutions.
- Some messages and means of communicating are particularly effective.
    - The cost savings and improved drinking water protections from chloride reduction plans have resonated well with government officials and the public.
    - Messages should be consistent across partners and agencies.
    - Interactive maps and social media are useful communication tools.
- A TMDL can:
    - Bring issues to the forefront and build support for addressing the problem.
    - Bridge the gap between what can and cannot be controlled.
    - Have layers, addressing an issue on a statewide level with detailed analysis at the watershed level.
- There are effective or potentially effective strategies for addressing these particularly difficult challenges.
    - A good early step, especially when addressing bacteria impairments, is to closely review the standards, so that effort is focused on what really has value.
    - Collecting pre-mining data clarifies the pre-existing conditions and provides a better base for subsequent management.
    - Working beyond one's silo, especially for multi-media problems like mercury and PCBs, is important for effective implementation.

    - Since salt is hard to control once it is on the ground, source control is critical, for example, salt applicator training or a certification program, chloride TMDLs, or limited liability for winter maintenance.
    - A nationally backed state nutrient certification program could help reduce nutrient impairments.
- Resources are needed, and creativity helps in getting them.
- No one-size-fits-all approach to addressing nutrients works even within a single state.
- Stormwater and spikes during wet weather conditions create a problem for monitoring, the implementation and applicability of standards, and determining of "success." People sometimes want to recreate in wet weather events, so there is a public health risk to those events that cannot be ignored.

Session 4: Innovations in TMDL Development

This session consisted of three presentations interspersed with facilitated discussion. The intended outcome of the fourth session was:

- Participants will know about more tools and approaches that others are using to develop TMDLs with better information, with more buy-in, and that are more implementation-ready.

Mindy Ramsey, WV: Hydrology Calibration with PRISM

Ms. Ramsey began her presentation by noting that the innovation of which she would be speaking is the West Virginia Department of Environmental Protection's use of weather data files from Oregon State University's PRISM Climate Group. She provided some background on the state's CWA 303(d) program, including that monitoring and TMDLs are done on a watershed basis, at the 8-digit HUC level. She added that they address all possible impairments in the watershed.

Ms. Ramsey displayed a map depicting watersheds within West Virginia, focusing her comments on the Tygart Valley River watershed. She said that a TMDL project for the Tygart Valley was approved in the prior year. Ms. Ramsey noted that they use the Load Simulation Program C++ (LSPC) dynamic watershed model, which simulates watershed hydrology and pollutant transport, among other parameters, and is driven by weather files. She explained that they traditionally apply NOAA National Climatic Data Center information, collected at only one to two weather stations, to an entire TMDL project watershed. Assuming the weather is the same everywhere in a watershed complicates watershed modeling and often results in over- or under-predicting precipitation in some areas.

Ms. Ramsey displayed a PRISM map of precipitation in the Tygart Valley River watershed from 1981 to 2010, highlighting the significant variation in high and low precipitation throughout the watershed. Had they applied data from only one or two weather stations, she continued, they would have under-predicted precipitation in the southern portion of the watershed. Ms. Ramsey then explained the advantages of using PRISM, including its spatial

resolution at the four-kilometer grid scale. She said that PRISM only predicted to a daily temporal scale, so they used the North American Land Data Assimilation System (NLDAS-2), which is similar to PRISM, for hourly predictions.

Ms. Ramsey recounted that they desegregated the data to create a weather file for each of the 520 sub-watersheds in the Tygart Valley, but found that their computer systems were unable to execute the model. As a result, she explained, they developed weather files at the HUC-12 level. She noted that they wound up with 36 individual weather files in the Tygart Valley River watershed, and she expected to see improvements in the model performance relative to hydrology. However, in validating the model hydrology, they found greater error in the Tygart Valley than in previous projects using only one centrally located weather station. Ms. Ramsey concluded by identifying a few of the lessons that they learned in the process, possible sources or error in the hydrology, and their ongoing efforts to improve the model.

Mr. Schempp of ELI asked the participants for examples of other models or stressor identification tools that they had found to be useful. An EPA regional participant said that EPA is forming a modeling workgroup to better organize water quality modeling and serve the needs of state, tribal, territorial, and regional staff. He also noted that they plan to continue their webinars and are looking for modeling ideas. He highlighted a few specific modeling advances, including the Hydrologic and Water Quality System (HAWQS), which is like the Soil and Water Assessment Tool (SWAT) but for the entire country, and the Water Quality Analysis Simulation Program (WASP), which would be released soon after the training workshop. A state participant explained that some of his state's models look at probabilistic modeling programs and how different parameters collected in tandem help in identifying the most probable stressors in a watershed. Before his state develops TMDLs, he said, they look at available parameters to make those predictions and find stressors.

Erin Rasnake, FL: TMDL Prioritization, Public Process, and Streamlining

Ms. Rasnake started by providing a brief overview of Florida's water resources. She noted that the state has more than 1,700 rivers and streams, totaling 26,960 miles; 44,850 miles of canals; 1,607,261 acres of lakes; 1,702,390 acres of freshwater and tidal wetlands; 2,154 coastal miles; and 1,103 known springs. She added that the state has 6,573 total waterbody segments. Ms. Rasnake then outlined Florida's Watershed Restoration Framework, which includes setting water quality standards, monitoring water quality, determining pollution problems, establishing restoration goals, working with community leaders, developing and implementing restoration plans, and measuring success and adapting. She explained that all of the parts are linked, accomplished via a rotating basin approach, and adopted into state rule or statute. In addition, she said that the public is engaged from the very beginning of the process, but that the challenge is having the money necessary.

Ms. Rasnake noted that nutrients are a key issue in Florida, and the state wanted to improve the readability and consistency of its numeric nutrient criteria TMDLs while meeting EPA's TMDL and standards requirements for approval. She explained that the state had a matrix for the development of these TMDLs, which meets state and federal requirements and creates consistent and clear communication between Division of Environmental Assessment and

Restoration programs and EPA. Ms. Rasnake displayed the matrix, which started with prioritization and included a research and development phase, a rule development workshop phase, and a rulemaking and EPA approval phase. She said that they assembled a workgroup to improve various aspects of the process and the final product, notably to improve the process checklist for TMDL development, to improve the GIS checklist and standardize maps, to revise the rulemaking checklist, to establish a template for TMDLs, and to establish a list of resources for TMDL developers.

Ms. Rasnake explained that, in simplifying the TMDLs, the workgroup reviewed examples of extremely efficient TMDLs from other states and decided what information was ancillary and what was essential using EPA TMDL guidelines. She displayed a list of components from the EPA guidelines as compared to the existing chapters of the state's TMDLs to identify similarities and differences, and where confusion arises when checking boxes for approval. As a result, noted Ms. Rasnake, they updated the structure of their TMDLs. Most notably, she added, they created an executive summary, reformatted the introduction, and set the standard before developing the TMDL. She said that, throughout this revision process, the state involved EPA staff so they would understand the changes.

Ms. Rasnake then displayed their standardized TMDL outline, noting that the TMDL development process now includes the direct involvement of water quality standards, GIS, assessment, and restoration staff. She explained that they are coordinating well internally to ensure consistency, and they have been consulting with EPA at various stages to improve the approval process. In conclusion, Ms. Rasnake demonstrated some of the organizational innovations, including macros in Excel that automatically populate the rules checklist and identify when certain actions need to occur, keeping everyone on task and ensuring compliance.

An EPA regional participant noted that what Ms. Rasnake presented was not easy to develop, taking two years to complete. She explained that she and Ms. Rasnake met in person and by phone throughout the process to work through the challenges. Ms. Rasnake added that having the specific water quality standards associated with this effort is a huge step moving forward, but that it can be confusing to the public.

A state participant asked about the timeframe for the rulemaking process. He noted that, in his state, a TMDL goes to their commissioner and that they have a very detailed standard operating procedure regarding what happens and when. Still, he added, it can take nine months from beginning to end. Ms. Rasnake answered that they develop the TMDLs, have a 30-day notice and comment period, and then meet with the secretaries when ready for the rulemaking. She added that scheduling those meetings can take a few months, but after that the process usually is quick, with a hearing within 45 days. Another state participant asked whether the Florida Department of Environmental Quality is organized into regional offices or just one central office. Ms. Rasnake answered that they are based in Tallahassee but have monitoring staff based in regional offices.

Mr. Schempp then sought additional examples of innovations in integration from the audience. A state participant shared that they recently had met with their Wildlife Resource Division (WRD), which does fish sampling, to discuss ways in which WRD's monitoring can help with her

agency's sediment analysis for biological impairments. Another state participant said that they often work with their state Soil and Water Conservation Board at the beginning of the TMDL process, to use their expertise and connections with the agricultural community and rural areas. An EPA regional participant shared that her region recently switched to a structure that gives each state one coordinator for TMDL and CWA 303(d) purposes. She added that it took some adapting, but that it was a logical move.

Wade Cantrell, SC: TMDL Calculators Facilitate Allocation

Mr. Cantrell described South Carolina's TMDL calculator as a simple tool that allows stakeholders to run their own scenarios of load allocation based on complex modeling. He referred to it as an easy-to-use spreadsheet or program. Mr. Cantrell explained that it accepts load inputs to predict water quality, letting users adjust the load combinations until the water quality standard is met. He added that the calculator was first developed by Jim Greenfield while at EPA Region 4, in connection with the 2002 Charleston Harbor dissolved oxygen TMDL.

Mr. Cantrell proceeded to detail the process for developing the calculator. The first step, he explained, is to establish the baseline water quality model. The second step, he added, is to conduct many model runs. He emphasized that the unit response should be determined in critical segments for each pollutant of concern and each source. In most cases, Mr. Cantrell noted, the response is linear, at least when loadings are in the practical range. He said that, for time variable models, the relation is unique for each day. He suggested keeping track of the information generated from the model runs via a spreadsheet or database, adding that the unit responses for each pollutant, source, segment, and day provide the foundation for the calculator.

Mr. Cantrell said that the calculator has a simple interface, through which users adjust the loadings. As the loadings are adjusted, he explained, all of the individual daily responses are instantly recalculated and summed to get the total response in each segment. Mr. Cantrell suggested confirming the calculator outputs against the results of the actual model to give people confidence that the calculator is accurate enough to use for allocation. He noted that the end result is a tool that replicates the water quality model without the time and cost of re-running the full model.

Mr. Cantrell then provided a few examples of where the calculator had been used by stakeholders as part of finalizing the TMDL. He started with the Charleston Harbor 2013 dissolved oxygen TMDL. He said that the pollutants of concern were fast and slow organic carbon and ammonia, that 13 NPDES facilities were involved, that the target was 0.1 mg/L of dissolved oxygen deficit, and that the necessary cut to permit loads was roughly 60 percent. Mr. Cantrell also described the circumstances surrounding the preliminary Catawba Basin nutrient model, which concerned phosphorus and nitrogen; 15 large NPDES facilities, 12 small NPDES facilities, MS4s, and nonpoint sources; and 2 states and multiple municipalities. He said that reaching the targets would require a roughly 60 percent reduction from permitted sources and a roughly 40 percent reduction from existing stormwater and other nonpoint sources, based on the preliminary model. He provided similar detail for the

Savannah Harbor 2016 5R Plan model developed by Georgia, South Carolina, and EPA Region 4.

Mr. Cantrell then conducted a short demonstration, displaying a screenshot of the Charleston Harbor's dissolved oxygen TMDL calculator's user interface. He indicated which cells were adjustable and showed how to change the figures for those parameters. Mr. Cantrell identified where the facilities and segments of interest were listed as well as where the results were reflected. He then displayed a graph comparing the results from the calculator against those from the model, and they tracked one another closely.

In conclusion, Mr. Cantrell outlined the merits of the TMDL calculator despite its taking hundreds of model runs to set up. A single scenario, he said, is costly to run compared to the single mouse click required for the TMDL calculator. Mr. Cantrell said that it can empower stakeholders to instantly evaluate unlimited scenarios and take charge of their own process. In fact, he pointed out, regulators in Charleston and Savannah were not even present during the allocation discussions. He also suggested that it can help the conversation move from model minutia to bigger questions, including those regarding equity and interstate growth.

Key Points Raised:

- Advancements in geographic and temporal resolutions in data create new opportunities for TMDL modeling.
- Probabilistic modeling can help in identifying the most likely stressors in a watershed at the outset of the TMDL process.
- When revising the structure of TMDLs, it can be helpful to consider examples from other states and compare the list of components from EPA guidelines to those of the state's current TMDLs.
- When revising the structure of TMDLs or the process for developing them, regular communication with EPA can reduce subsequent obstacles.
- Directly involving other relevant programs in the TMDL development process can ensure product consistency, improve the depth and breadth of data on which the TMDL relies, and lay better groundwork for TMDL implementation.
- An executive summary for a TMDL improves its accessibility for stakeholders and the public.
- While time-consuming to develop, a TMDL calculator is much cheaper to run than a single-scenario model, and it is simple enough to use that it can empower stakeholders to take charge of their own process.

Session 5a: Stakeholder Engagement

This plenary session was the first of three sessions focusing on methods and objectives for stakeholder engagement. The session centered around a panel of eleven external professionals who have worked on water quality issues from a variety of perspectives and with a wide range of partners. They shared their individual experiences and lessons learned through brief introductions, a question and answer period, and facilitated discussion. The subsequent breakout sessions built off of this plenary session, allowing participants more in-depth facilitated

conversations with several members of the panel. The intended outcomes of the three-part series included:

- Participants will be more familiar with the diversity of interests, needs, and potential contributions of CWA 303(d) Program stakeholders.
- Participants will have gained practical lessons about engagement from the stakeholder participants and from their state, territorial, and tribal counterparts.

Mr. Havard of EPA Headquarters began the session by emphasizing the importance of stakeholder engagement to accomplishing the objectives of the CWA 303(d) Program, adding that improved engagement is one of the goals of the Vision. He explained that better communication and collaboration between government agencies and regulated entities, environmental organizations, and other stakeholders is instrumental not only to restoring and protecting waters, but also to simultaneously promoting long-term economic growth and environmental health. Mr. Havard concluded by encouraging everyone to capitalize on this unique opportunity to learn from one another. He welcomed the panelists and asked them to introduce themselves.

Jason Cruz is an Environmental Scientist with the Philadelphia Water Department. He noted that he works closely with the Pennsylvania Department of Environmental Protection, EPA Region 3, the Delaware River Basin Commission, and the local USGS water science center. He added that the Philadelphia Water Department was in the process of instituting a monitoring training program, and that they intend to emphasize the use of reproducible data analysis methods.

Jesse Neyens is an Environmental Analyst with of the City of Sioux Falls Public Works. He explained that he is a liaison with stakeholders and ensures that they are following plans for water quality monitoring. Mr. Neyens said that his office also has worked with the South Dakota Department of Natural Resources, conservation groups, agricultural groups, and USDA and NRCS offices, basically anyone willing to help and share knowledge.

Fred Andes is an environmental attorney and coordinator of the Federal Water Quality Coalition, a group comprised of municipal, agricultural, and industrial representatives that comments on EPA regulations and occasionally files lawsuits. He added that the Coalition also works with individual companies and cities. Mr. Andes noted that he has found the best way to make progress to be sitting down with agency staff to discuss solutions, ideally finding ones that all parties support. He emphasized the value of collaborations and the resulting relationships between regulators and regulated entities.

Forrest Westall is an engineer who was formerly the Water Quality Supervisor at the North Carolina Department of Environment and Natural Resources and is now the Executive Director of the Upper Neuse River Basin Association. He noted that the Association was in the process of a highly collaborative re-examination of rules influencing, among other things, the quality of drinking water for the City of Raleigh. He added that 14 local governments as well as environmental groups and state agencies were involved. Mr. Westall suggested that many problems are in fact people problems, because they are unable to get on the same page.

Adam Griggs is the Science Manager at River Network. He explained that the organization seeks to network and strengthen citizen watershed groups, including their abilities to work with state CWA 303(d) programs. Mr. Griggs said that River Network gets feedback from citizen groups about how that communication could improve, and he mentioned that they provide trainings on how to access and apply tools and best practices.

Duncan Hughes is the Executive Director of the Soque River Watershed Association. He noted that the organization works to protect and restore water quality through on-the-ground projects that address bacteria, sediment, and stormwater, which are the main causes of impairment in the watershed. Mr. Hughes described some of the restoration projects and monitoring efforts that they have led, adding that they work with agricultural and landowner partners on sediment issues and have worked with several small towns on green infrastructure to address stormwater.

Jeff LaFleur is the owner of Mayflower Cranberries, on the Board of Directors for Ocean Spray Cranberries, and was previously Executive Director of the Massachusetts Association of Conservation Districts. He emphasized his belief in the direct connection between the marketability of their products and the quality of the environment. Mr. LaFleur suggested that it can be difficult for farmers to work with government agencies, adding that registering a farm can be a significant obstacle for some farmers. He also noted that he was a part of a collaborative effort between producers, the Massachusetts Department of Environmental Protection, and a university to restore a waterbody that is now delisted. He expressed how exciting he found witnessing the changes that took place as a result of that partnership.

Chad Watts is the Executive Director of the Conservation Technology Information Center (CTIC). He explained that CTIC helps farmers to become more conservation-oriented, that they are a conduit between those with the technology and those who need the technology to protect water quality and be productive and profitable. Mr. Watts said that they work with universities, NRCS, EPA, and state water quality agencies. He added that CTIC has collaborated with researchers to better understand the interaction between farmers and the benefits of conservation, to foster leadership around the adoption of conservation measures. He noted that they also have had some success with that approach to watershed planning and setting targets.

Jill Reinhart is the Indiana Assistant State Conservationist for Partnerships at NRCS, previously having been a liaison at CTIC, and in a state agency for watershed management before that. She said that she works to leverage NRCS with all of its partners, including farmers, state water conservation boards, environmental agencies, NGOs, The Nature Conservancy, agribusiness, commodity groups, and farm associations. Ms. Reinhart noted that the Indiana Conservation Partnership has been successful, with all the agencies working together to develop and review the annual work plan to promote partnerships. She also highlighted the work they are doing to quantify the impacts of BMPs.

Chris Carlson is the Assistant Director for Water and Aquatic Resources at the USDA Forest Service, previously having served in other positions at the Forest Service, within EPA, and for a U.S. senator. He said that he and his staff try to deliver water and aquatic life

conservation to 193 million acres of public land across 42 states. Mr. Carlson noted that conservation funding had declined with a greater percentage of the Forest Service budget going to fighting wildfires. As a result, he added, coalitions are all the more critical.

Bruce Sims is a retired hydrologist, having worked for the USDA Forest Service in three EPA regions and four Forest Service regions. He explained that, in those various locations, he had helped to improve relationships with environmental organizations and, as a result, saw much progress on water quality restoration and protection.

At the conclusion of these introductions, Mr. Schempp of ELI asked members of the panel what they had found to be critical to reaching and productively communicating with individuals and other entities regarding water quality restoration or protection efforts. Ms. Reinhart answered that it is important to pick up the phone, talk to people, and show up to meetings, even if one feels like a peripheral partner. While it takes a lot of time and effort to do that, she added, the biggest successes occur when a local person is engaged and makes it his or her job to communicate and initiate discussion. Mr. Watts said that trust and relationships are vitally important to building partnerships, and having a person on the ground who is already engaged and trusted helps those local efforts take hold much quicker. Mr. Westall concurred with both of the prior answers, adding that a big challenge in most watershed efforts is the variety of backgrounds of the residents and of the entities contributing to the problem there. He stressed the need to give all who will be affected a voice, even if they have less to contribute, to keep everyone at the table.

Mr. Andes answered the question by noting that, when dealing with regulated entities, agencies need to understand how those entities will be affected, in part to be able to explain to them why they should be involved. He emphasized the importance of involving regulated entities early in the process, but said that they often are not notified until after a draft TMDL has been developed, which does not allow for much change. Mr. Neyens highlighted the need for leadership, to ensure that everyone is working towards the same goal. As an example, he explained that little gets done if the city council is not engaged. Mr. Griggs noted that they stress to local watershed groups the need to build relationships with state and local governments. He added that "lawsuits are more like third dates," adding that groups usually begin with outreach and enforcement, but that litigation is sometimes necessary. Mr. Griggs suggested that citizen groups are natural project partners, especially on CWA 319 projects, and that they should be involved from the beginning, especially if they have data to provide and are the ones doing the work on the ground.

A state participant asked two questions of the panel concerning funding: (1) whether receiving partial funding is more of an impediment or an opportunity to build partnerships and leverage funds; and (2) what timeframes for allocating funds tend to work, noting that the pressure that states sometimes are under to allocate money quickly does not always work well on the ground. Mr. Griggs answered that coalitions are natural partners. Regarding timelines, he added, implementation can take a while, and it is very helpful for everyone to be on the same page, with project plans in place, as early as possible. Mr. Watts addressed the second question by saying that it depends on where the project is in its cycle, commenting that people sometimes want to jump to implementation before they are ready. Mr. LaFleur noted that having multiple sources of funding is not unusual, but it can require more coordination, especially if the different sources

have different requirements for use of the money. He also emphasized that much of the funding available to farmers is in the form of reimbursements, but that this leaves the challenge of covering the up-front costs. Mr. LaFleur explained that access to credit to cover those costs, with the grants serving as the guarantee of repayment, can be critical to implementation occurring and the grant program functioning. He added that gaining the trust of farmers often is a critical step, can take time, and thus can delay implementation and results. Mr. Carlson highlighted the value of leveraging state and other sources of funding to get projects moving, noting that, when there is a clear nexus to the Forest Service's resources, the Forest Service has an opportunity to receive funding for conservation opportunities outside the green line (beyond forest and grassland boundaries).

Responding to Mr. Andes' suggestion that regulated entities be involved earlier in the process, an EPA regional participant asked him for his thoughts on how to do that. Mr. Andes said that there is no one answer, but that he believes greater emphasis on the impact that a TMDL could have on an entity's discharge permit would go a long way. Some regulated entities, he added, do not know that a TMDL will influence the permit allocation. Mr. Andes noted that he tries to explain to people how they will be affected by the CWA 303(d) list, why they should care that early in the process. The EPA regional participant asked whether they should focus more on outreach education. Mr. Andes answered that wastewater treatment plant staff, for example, are very busy trying to comply with permits and communicating with residents about their expenses. He noted that trade association meetings are helpful for this communication, that a presentation can disseminate information and start building relationships.

Mr. Schempp expanded the question to all of the panelists, asking for other useful ways of engaging stakeholders. Mr. Westall said that the easiest thing to do is to blame EPA, and that many in the regulated community do it, but that much of that sentiment stems from not knowing how the process works. He added that they often do not read their permits. Mr. Westall emphasized the importance of communication and cautioned against blaming people because they are busy or understaffed. Mr. Cruz noted that it is not always clear how a listing translates to a TMDL, and understanding that process better would help their involvement, including in data collection. In addition, he said, it would give them a better idea of when to expect TMDLs. Mr. Neyens suggested telling municipalities how they will be affected financially, to compel attention by leadership.

A state participant mentioned that, in planning water quality restoration efforts, they need to quantify the effects of best management practices and the resources required. She asked whether NRCS is sharing data that would help with such quantifications. Ms. Reinhart responded by saying that, currently, NRCS can aggregate best management practices at a watershed and county level. She noted that all of their conservation implementation programs, together with partners, are putting their information together to run the R5 model. On a county and statewide basis, she added, they can indicate the percentage reductions that have occurred as a result of the collective restoration efforts.

Another state participant noted that his state has many watershed groups, some that partner well and others that are more adversarial. He asked for suggestions on how to engage with those that are more adversarial. Mr. Griggs said that he has found the maturity (age) of the group to make a

difference, explaining that watershed groups often are formed around an affront to their watershed, organizing around a fight. Once that fight is over, he added, they turn to cooperative engagement for restoration. Mr. Griggs also suggested that an organization may employ both litigants and outreach staff and to not ignore those staff who might be more receptive to collaboration, such as educational and outreach directors. He said that River Network works to connect all organizations and encourage them to engage in their state process before the process is over. Mr. LaFleur highlighted the importance of building personal relationships. He said that there has been finger pointing between agriculture and homeowners for decades, but getting to know the people on the other side and talk with them really helps. Mr. Carlson said that some groups' funding models are centered on suing the Forest Service, and that sometimes there simply is no way to work with those groups. He added that they might engage, but to the point that they find a soft spot to litigate.

Noting that his state has much public and private land, a state participant asked for good ways of building trust with agricultural communities. Mr. Hughes asked the participant if he knows his county cooperative extension agent, and suggested that, if not, he take him or her to lunch. Mr. Hughes added that identifying those key players is critical. He echoed what other panelists had said regarding attending meetings and talking to people, noting that a relationship is fundamental to being able to agree to disagree. Mr. Watts opined that far too often people predict what the other side will say without ever talking to them, and he urged the participants to go and talk. Ms. Reinhart emphasized the importance of working through local partners who have good relationships with stakeholders. Mr. Schempp added that a state's CWA 319 program is a good place to start.

The same state participant followed up the responses by noting the concern in his state that TMDLs will become regulatory, especially on federal lands, adding the he needs to learn how to communicate with those individuals. Mr. LaFleur emphasized the importance of drawing the financial connection. He provided an example of Ocean Spray customers demanding a scorecard for environmental sustainability for each farm, which has more closely linked the quality of the environment to the value of their product, making the financial incentive obvious. Mr. Carlson said that because the Forest Service has a statutory responsibility to meet the requirements of the Clean Water Act, it often translates state and EPA guidelines into permit requirements. Another state participant added that they had a similar situation, and they consulted a lawyer. She noted that the legal clarification was helpful in communication, adding that when there is trust, you can get good feedback.

Referencing the suggestion to engage stakeholders by focusing on the economic impacts, another state participant asked how to engage with nonpoint sources who do not believe that there is a problem. Mr. Neyens responded by suggesting that many people do not believe that there is a problem, and he emphasized the importance of education. He acknowledged that, as a representative of a municipality, he is not really in a position to educate farmers, adding that it is in those instances that working with other groups on education is particularly important. Mr. Neyens explained that they have worked with farmers to talk with other farmers, and that the credibility of the message is much greater when it is conveyed by someone like them and someone they trust. Mr. Andes noted that stakeholders do not always talk to regulators about the helpful things that they are doing, in part because they are afraid of talking with individuals that

they perceive as the enemy, and in part because they consider the activities to simply be good stewardship. He said that he has encouraged greater communication of these activities, so that regulators know what is being done and stakeholders can get a better idea of the potential effects on water quality. Ms. Reinhart shared that they add a monitoring component, even as simple as grab samples, to many of their local projects, and that farmers like having the data and seeing the changes firsthand.

Another state participant asked Mr. Hughes how he would recommend aiding the adoption of green infrastructure in small towns in light of his experience doing so. Mr. Hughes suggested starting the conversation with what the community already is doing that is good, adding that the local knowledge is one of the reasons why it is helpful to have some citizens on board early. He said that effective solutions are built over time, that dropping a pot of money in an area with little follow-up or ownership will have far less of a chance of success. Mr. Hughes noted that planting these seeds shows people that it works, promoting buy-in. He added that people now come to him with ideas, not just the other way around. The same state participant then asked Mr. Neyens and Mr. Cruz with whom the state should work if NPDES permittees are not interested in making change. Mr. Neyens suggested going directly to the mayor or public works director, as that has had results in his experience. He recommended starting higher on the chain for big projects and lower for smaller projects. Mr. Cruz said that the Philadelphia Water Department has a rather robust organizational structure for taking on projects but acknowledged that it can be harder for them to take smaller sums of money, in which cases they try to direct the support to other entities.

Another state participant described a challenge they had been having in attracting public engagement. She explained that her state was in the process of adopting a basin approach to their water service program, and they were seeking to establish stakeholder advisory groups for each basin. After extensive advertising in their pilot basin, she added, only a total of forty people showed up for two meetings, and only one person desired to be a part of the advisory group. She said that many people felt as though it was a trick, and that their feedback was not genuinely desired. She asked members of the panel for suggestions. Ms. Reinhart highlighted the importance of conveying "what's in it for me," acknowledging the difficulty of that task when trying to reach a broad audience. She suggested bringing the outreach down to a smaller scale. Mr. Sims added that some people are interested in water quality, but others might engage for other reasons, such as future development plans or improving the tax base. He recommended focusing on specific issues, ideally real, tangible problems.

Key Individual Points Raised:

- Many problems are in fact people problems, because they are unable to get on the same page.
- Effective solutions usually take time.
    - Talk to people; pick up the phone and attend meetings.
    - Build relationships, as they are fundamental to establishing trust, understanding each other, communicating efficiently, and even being able to agree to disagree.
    - Implementation can take a while, so it is best to be prepared, with everyone cooperating and project plans in place, as early as possible.
    - Successful projects can breed interest by others and expand an effort organically.

- Identify and work with local partners who have good relationships with stakeholders.
    - It is impossible to be everywhere and know everyone.
    - A government agent is not always the right messenger.
    - The nonpoint source program is a good starting point for connecting with local partners.
- Identify the best point of contact.
    - For collaborations, seek out staff who might be more receptive to it, such as educational and outreach directors.
    - When trying to get the attention of regulated entities, start higher on the chain for big projects and lower for smaller projects.
- Involve stakeholders as early in the process as possible.
- To keep everyone at the table, all who will be affected must be given a voice, even if they have less to contribute.
- Focus on specific issues, ideally real, tangible problems.
- Educate regulated entities on the listing-TMDL-permit process and how they might be affected.
    - The process is complicated, and both regulators and the regulated often are busy and understaffed, necessitating patience.
    - If regulated entities do not understand how a decision might impact them, it is difficult to engage them.
    - Better understanding the process can help regulated entities be prepared for what is next, such as a forthcoming TMDL; be engaged in the process early; and even contribute information.
- Explaining the financial implications of decisions can be an effective means of attracting stakeholder attention and engagement.
- Providing stakeholders a role in restoration, and ideally one that allows them to see the changes firsthand, can help sustain and even improve their engagement.

Session 5b: Engagement Breakout Session I

This breakout session consisted of five breakout groups. Each group, led by a moderator and with the participation of two or three of the stakeholder participants, discussed communication and collaboration with an identified category of stakeholder. The respective breakout group topics and stakeholder participants were:

- Local Governments, with Jason Cruz and Jesse Neyens
- Regulated Entities, with Fred Andes and Forrest Westall
- Environmental Organizations, with Adam Griggs and Duncan Hughes
- Agriculture, with Jill Reinhart, Jeff LaFleur, and Chad Watts
- Federal Land Managers, with Chris Carlson and Bruce Sims

Each participant was assigned to a group based on his or her preference, expressed prior to the training workshop.

Session 5c: Engagement Breakout Session II

For the second engagement breakout session, the breakout group topics and stakeholder participants remained the same, but state, tribal, territorial, and EPA participants changed rooms, to discuss communication and collaboration with a different category of stakeholder. As with the first engagement breakout session, each participant was assigned to a group based on his or her preference, expressed prior to the training workshop.

Session 6: Breakouts by Region

This breakout session consisted of ten breakout groups, one for each EPA region. The breakout groups contained state, tribal, territorial, and EPA participants from the region as well as the regional liaison from EPA Headquarters. The intended outcomes of the sixth session included:

- Participants will better understand the needs, challenges, and views of others in their respective regions.
- Participants will have resolved, or at least advanced conversation on, issues important to the states, tribes, and territories of the region.

This session provided participants an opportunity to learn about and discuss issues important to the states, tribes, and territories of the region and to help all participants better understand the needs, challenges, and views of others in their region. Prior to the training workshop, ELI collected discussion topic preferences from each of the state, tribal, and territorial participants, as part of the registration process. ELI created ten distinct lists of identified topics and used those lists as the basis of discussion with EPA regional participants in the development of an agenda for each breakout group.

Session 7: Urban Waters

This session featured five presentations, followed by a brief facilitated discussion. The intended outcomes of the session were:

- Participants will better understand the range of challenges regarding urban stream impairments as well as strategies for addressing them.
- Participants will know additional means of communicating impairments, goals, and progress in the urban stream context.

Kate Schofield, EPA HQ: Using CADDIS for Causal Assessment in Urban Streams

Ms. Schofield began her presentation by describing the Causal Analysis/Diagnosis Decision Information System (CADDIS) as a website created by EPA and others that helps users to conduct causal assessments of stream biological impairment. She explained that CADDIS contains an evidence-based framework for stressor identification as well as information and tools to help with that analysis. Ms. Schofield said that CADDIS was developed to address complex situations in which there are multiple stressors causing observed consequences, such as cases of frequent runoff from impervious surfaces.

Ms. Schofield noted that CADDIS is organized into five volumes: Stressor Identification; Sources, Stressors & Responses; Examples & Applications; Data Analysis; and Causal Databases. She explained that Volume 2 provides background information on commonly encountered sources, stressors, and responses for use in deciding which candidate causes to consider, as well as in developing cases for or against those candidate causes in the actual assessment. One of the modules in that volume, added Ms. Schofield, concerns urbanization. She described some of the features of that module, focusing in particular on the information concerning flow alteration in urban streams.

Ms. Schofield then explained that Volume 3 provides examples that illustrate different aspects of a causal analysis. She suggested that participants review them if they will be undertaking causal assessments. In conclusion, Ms. Schofield highlighted the two main tools in Volume 5: the CADDIS Literature Resource (CADLink) and the Interactive Conceptual Diagram (ICD) application. She described CADLink as a database containing information on stressor-response associations from peer-reviewed scientific literature, for purposes of assessment. The ICD, she explained, uses conceptual diagrams to organize supporting literature for linkages among different sources, stressors, and responses.

Will Isenberg, VA: Communicating the Challenges of Urban Streams through Better Biological Assessments

Mr. Isenberg opened by noting that much of the work he would be describing in his presentation was a result of Virginia's Urban Streams Workgroup. He explained that 75 percent of the state's aquatic life impairments in urban areas are benthic, adding that MS4s had expressed concern that the state's reference conditions were too lofty and there were significant costs for little gains. Mr. Isenberg also said that implementation challenges and few short-term benefits seeded public skepticism.

Mr. Isenberg referenced the term "Urban Stream Syndrome," which describes urban streams' flashier flows, elevated concentrations of contaminants, altered channel morphology, and reduced biotic richness with increased dominance of tolerant species. Amidst these conditions, he added, biological assessments will confirm high stress in urban streams, but their uses are limited to that confirmation. Mr. Isenberg emphasized the difficulty in actually supporting biological function in urban streams. Since biological functions rely on the hierarchical support of hydrology, hydraulics, geomorphology, and physiochemical properties, he explained, a lot of work needs to happen to support biological functions, noting that even the lowest level of function, hydrology, is compromised in urban streams.

Mr. Isenberg then proceeded to identify problems with biological assessments and TMDLs. He noted that the impairment threshold for benthic metrics is based on the lower ten percent of reference communities. Also, he explained, the fact that impairment status is binary, either pass or fail, means that improvements can occur but not be reflected in the impairment status. In addition, Mr. Isenberg said that the process for benthic TMDL development is extremely data-limited, and a high potential for numerous stressors makes it easier to leave stressors unidentified.

Mr. Isenberg identified a few potential solutions to these problems. First, he suggested using a tiered aquatic life use (TALU) framework, breaking up current aquatic life standards into different tiers based on attainable, incremental goals. In other words, he clarified, instead of determining pass or fail on a high bar, a TALU framework allows a pass/fail determination on incremental bars, making it easier to show progress. Second, Mr. Isenberg highlighted the Biological Condition Gradient (BCG), which describes a biological condition related to increasing levels of stress on a scale from one to six. He explained that the BCG is built off of organism stressor response relationships, showing what kinds of communities exist at each stress level. Mr. Isenberg added that the BCG relies on best professional judgment but has been validated. He also noted that the BCG provides measurable, incremental goals and can serve as a basis for the tiers in a TALU framework.

Third and finally, Mr. Isenberg explained that assessment subcategories can be better used. He said that Virginia uses Categories 5A and 4A for benthic scores, regardless of the stressors identified in TMDL or TMDL-alternative development. To better communicate the challenges of urban stream benthic impairments, he suggested listing each identified stressor as 4A when addressed by a TMDL, Category 5R or 5-alt when addressed by "alternative" approaches to restoration, or Category 4C for stressors not resulting from a pollutant, such as those purely caused by flow, a lack of riparian vegetation, or habitat modification. In conclusion, Mr. Isenberg emphasized that biological goals in urban environments are hard to attain, and the costs of meeting those goals are high, which promotes the perception that the goals are unattainable and leads to a lack of support. Yet, he proclaimed, better communicating the details of the goals and progress can make a big difference.

Traci Iott, CT: Moving Beyond Assessments to Successful Implementation: Tools for Use with Urban Waters

Ms. Iott contextualized her presentation, stating that she would focus on moving from assessment to implementation with regard to urban waters. She alluded to the CWA 303(d) program as the bridge between monitoring data and implementation and noted the difficulty in getting implementation. Ms. Iott identified four tools that could help: standards, stressor relationships, communication, and partnerships. Water quality standards, she explained, are statements of objectives. She said that Connecticut has adopted the BCG standard, has anti-degradation requirements, and has declared that water quality is not significantly affected if the first inch of stormwater is not discharged and best management practices are applied.

Regarding stressor relationships, Ms. Iott noted that Connecticut had analyzed the relationship between the Benthic Macroinvertebrate Multimetric Index and stormwater, in connection with an impervious cover TMDL. In short, she explained, areas with higher impervious cover have higher impairment. Ms. Iott added that Connecticut was in the process of strengthening its ecological risk assessment tools and had found them to be critical in dealing with sites in urban areas with stressors that might not expand to the whole sector of TMDL work but affect aquatic life.

Ms. Iott then emphasized the importance of communication. She said that the University of Connecticut is using the impervious cover TMDL for research teaching and highlighted how

the campus has employed green infrastructure. Ms. Iott added that the state expanded its website for stormwater, with some information being obtained through CADDIS, improving the opportunity to connect with the public about the relationship between stressors and stormwater. Furthermore, she noted, Connecticut developed an online GIS interactive web "Storyboard" to communicate about stormwater. These maps, she explained, show imperviousness and impairment status and allow users to view at a street level where MS4 communities are located. Ms. Iott also highlighted the importance of a local focus, referencing the state's town-specific stormwater factsheets, which identify the location of impairments, plot and explain data, specify a benchmark, and identify what to do if samples exceed the benchmark.

Ms. Iott turned her attention to partnerships. She noted that Connecticut permit and TMDL personnel began visiting towns and groups to talk about stormwater and water quality. She said that many people did not realize that the two were related. After this effort to raise awareness, Ms. Iott explained, the state used supplemental enforcement funds to hire Esri to hire a "circuit rider" as an interface in helping towns move through the permit process and to answer their questions.

Concluding her comments, Ms. Iott detailed a few results of collaborations with their permits program. She said that the construction permit requires infiltration of the first inch of rainfall, and if that is not possible, infiltration of what is possible and treatment of the rest of that inch. Ms. Iott also described the MS4 permit that would be effective July 1, 2017, which has new nitrogen, phosphorus, bacteria, and impervious cover requirements.

Jeff Seltzer, DC: Leveraging Policy & Public Funds to Restore Waters in the District of Columbia

Mr. Seltzer began his presentation by explaining the circumstances facing the District of Columbia (DC). He noted that DC has three main watersheds, the Potomac River, Anacostia River, and Rock Creek, and the city is divided into 26 local segments. Beyond these local obligations, he added, there are obligations under the Chesapeake Bay TMDL.

Mr. Seltzer identified four major sources of impairment: legacy toxics, raw sewage in combined sewer overflows, stormwater runoff, and upstream sources. Regarding upstream sources, he said that all three watersheds are predominantly outside of DC's jurisdiction, requiring it to collaborate regionally with upstream partners to ensure that DC programs and efforts are mirrored upstream. He added that all federal agencies in DC have signed the federal stormwater memorandum of understanding to make improvements. Mr. Seltzer described legacy toxics as river bottom sediments contaminated with harmful chemicals from past industrial activity, adding that they are particularly harmful because of their contributions to pollutant loading and the risks they pose to the health of residents and wildlife. He highlighted the 20 million dollar Anacostia River sediment investigation intended to sample sediment, water, and fish from a nine-mile segment of the river; develop a cleanup plan for contaminated sediments; and identify responsible parties. Mr. Seltzer then described the large combined sewer system in DC, which covers one-third of DC and historically has an annual sewage and stormwater overflow of 3.2 billion gallons. The 2.6

billion dollar Clean Rivers Project, he explained, seeks to reduce those combined sewer overflows by 96 percent.

Yet, Mr. Seltzer referred to stormwater runoff as the most difficult problem to address. He said that 43 percent of DC has impervious cover, and that if they wanted to manage stormwater like they managed combined sewer overflows, it would cost over 7 billion dollars. Because there are not adequate public funds for such a project, said Mr. Seltzer, they must be innovative. He outlined goals for stormwater improvement, which included turning back the clock on development and retrofitting impervious surfaces with green infrastructure. To meet these goals, Mr. Seltzer said they have layered programs that include direct public investment, incentives, and regulations. Their direct public investment, he explained, includes partnering with transportation and schools to do volunteer retrofits in public space. Their incentive programs, he added, generally are more cost-effective and include subsidies for households to retrofit private properties, a rebate program on green roofs, a stormwater retention credit trading market, and a discount on stormwater fees. Mr. Seltzer noted the bag law, coal tar ban, and styrofoam ban as other stormwater management initiatives. As for regulations, he added, land-disturbing activities must retain the first 1.2 inches of rainfall, and interior renovation projects must retain the first 0.8 inches of rainfall. He clarified that up to half of the required retention can be accomplished off site, after achieving at least half on site, which provides flexibility and accommodates trading.

Mr. Seltzer concluded by sharing program results. He said that green infrastructure had become common practice, they were starting to see significant voluntary private investments in green infrastructure, and 14 stormwater retention credit trades had been completed. He added that over 4,000 residential properties had been retrofitted and over 2.7 million square feet of green roof had been installed. Finally, Mr. Seltzer shared the forecast that 30 percent of MS4 impervious surfaces will be retrofitted by 2040.

Roy Simon, EPA HQ: The Urban Waters Program at U.S. EPA

Mr. Simon started by explaining that the Urban Waters Federal Partnership is a collaboration of 14 agencies to help urban and metropolitan areas, particularly those that are under-served or economically distressed, connect with their waterways and work to improve them. He said that there are 19 cities on which the Partnership focuses, clarifying that the Partnership takes a watershed approach, so they address not only the urban areas, but also the rest of the watershed. Mr. Simon then described EPA's Urban Waters Small Grants program, an effort to simultaneously improve water quality and otherwise support communities. He noted that, over the six-year life of the program, it has awarded a total of 6.6 million dollars to 114 organizations across the states and Puerto Rico.

Mr. Simon also detailed the Five Star and Urban Waters Restoration Grants program, which seeks to develop community capacity for urban waterway restoration projects by funding diverse local partnerships. He explained that each project awarded must engage at least five separate community partners and include habitat restoration and/or green infrastructure creation; education, outreach, and training; measurable benefits; and united community partners. Mr. Simon said that these grants have supported over 270 projects over the last five

years, covering almost every state. He added that each project receives roughly 45 thousand dollars and is matched locally. He explained that the program is a public-private partnership, with money coming not only from federal agencies but also from companies such as FedEx, Southern Company, Alcoa Foundation, and Pacific Gas and Electric Company. He also noted that this grants program will continue in Fiscal Years 2018 and 2019 and is open to all organizations except for-profit companies and federal agencies.

Mr. Simon then described the Urban Waters Learning Network, a collaboration of EPA, River Network, and Groundwork USA to support a peer-to-peer community of urban waters practitioners that share experiences, tools, and resources. He noted that over half of the 395 members represent NGOs, less than 20 percent are EPA staff, roughly 11 percent are from other federal partners, roughly 8 percent are from state and local government, and roughly six percent are in academia. Components of the Network, elaborated Mr. Simon, include networking, training and knowledge sharing, mentoring and coaching, boosting project effectiveness, and providing information on funding opportunities and technical resources. He noted that the Learning Network helps EPA regions by taking some of the burden off of regional coordinators to provide technical expertise.

Mr. Simon gave an example of urban waters and TMDLs, focusing on Bear Creek in Denver. He explained that Bear Creek runs through a low-income suburb in which many homes have septic systems. To address the *E. coli* problem, he said, Groundwork Denver is connecting some homes to the sanitary sewer system and helping others with their septic systems. Mr. Simon added that EPA provides lab and technical assistance and has given Groundwork Denver a CWA 319 grant and two Urban Waters Small Grants.

In his final reflections, Mr. Simon noted that the Urban Waters Program is committed to working toward the Clean Water Act goals for all urban watersheds, using all the tools, methods, and provisions of the law, and therefore, the listing process and TMDLs should be a big part of any local Urban Waters Partnership's work plan.

To open the question-and-answer portion of the session, a state participant sought clarification from Ms. Iott whether the inch of stormwater that she referenced was in the state's water quality standards. She answered that it was, and specifically in the anti-degradation portion. She explained that, when doing Tier 2, one must evaluate the impact of new or expanded activities on water quality, and they have thousands of stormwater permits. She noted that EPA studies showed the impacts of the first inch of stormwater runoff, so, in consultation with permitting staff, they drafted a statement that infiltrating the first inch of stormwater results in their being no impact on water quality. She added that this provides permitting staff an easier means of putting a water quality requirement in permits. Another state participant asked Ms. Iott where she got her data on impervious cover, to which she responded, the state's ambient monitoring program.

An EPA Headquarters participant asked Mr. Isenberg whether he had explored the possibility of using the biological condition gradient in an urban environment. Mr. Isenberg replied that he could see the merit of using it in those circumstances, and that Virginia is exploring that in the Northern Piedmont ecoregion, which includes the DC metro suburbs. Another EPA Headquarters participant asked why Mr. Seltzer's presentation did not reference salts. He responded by noting

that DC does not have a chloride TMDL, but that it does have a chloride problem. He added that it will be a very difficult matter for them to address since the political pressure to over-salt roads for the sake of safety is incredibly high. He said that they would like to develop a TMDL to leverage best practices, but they are not sure that they would be able to meet the reductions in the near future. Ms. Iott commented that Connecticut also does not have a chloride TMDL. While their limited monitoring had not shown a dire need for it, she acknowledged that salt is a big issue and that their monitoring results might have just been luck of the draw. She noted that they are working with the Connecticut Department of Transportation to switch to liquid application and looking at chlorides at Bradley International Airport, especially from the long-term parking lots. Ms. Iott added that rural communities have expressed interest in looking at the impacts of roads on water quality, and she might end up talking to them about chlorides as well. Mr. Isenberg said that they are trying to replicate lessons from the Twin Cities and are hoping to piggyback on good ideas, such as New Hampshire's legislative initiatives. He highlighted the potential opportunities associated with limiting liability for commercial properties as well as the challenges of water quality monitoring during snow events.

Before proceeding to discussion questions, Mr. Schempp polled participants as to whether their jurisdiction had addressed stormwater outside of the permitting process. Roughly ten percent of participants raised their hands. Mr. Schempp, acknowledging the difficulty in communicating the challenges of urban streams while still maintaining stakeholder confidence, then asked the participants if anyone had been able to explain the problem but keep people at least moderately positive about the possibility of doing something about it. A state participant replied that her state takes great pride in its beaches, and wet weather impairments at those beaches are a big deal. Therefore, she explained, there has been much attention given to addressing the impacts of stormwater. She explained that they have been able to document reduced beach closure days resulting from specific stormwater best management practices. One beach, she said, used to close routinely after rain events, but now it has been many years since there has been a closure. She noted that they use those examples as a way to communicate when investing in stormwater infrastructure. Another state participant explained that they saw impervious cover TMDLs as a great tool to get communities involved, noting that the TMDL worked in two cases, but in another, the city did not approve it. Instead, the city developed its own plan, she said, a plan that did more than would have been expected by a TMDL.

Mr. Schempp asked the participants what other obstacles they had found to water quality restoration in urban streams. A state participant emphasized the importance of money, adding that restoring streams affected by urban stormwater is costly. She suggested that shortcomings in this area are not as much from a lack of will as from a lack of resources. She noted that the state's infrastructure bank, which manages clean water finance programs, among others, had just done a soft rollout of a green infrastructure reserve program, offering 100 percent principal forgiveness for green infrastructure. This, she said, has been an important way to get more of these practices on the ground. She added that, as people see the benefits of these projects, they better understand the impacts of impervious cover and are more willing to pay for solutions. An EPA regional participant mentioned that, in his experience, larger urbanized TMDLs are very contentious, with a great deal of fighting over allocations. He said that this experience has, in some cases, led parties to collaborate on other matters to avoid that kind of a TMDL process again. He suggested learning from these examples, to demonstrate how everyone can work

together to figure out benefits and burdens. A state participant added that he had seen similar tensions among MS4s regarding their discharges.

In conclusion, Mr. Schempp asked the participants how EPA or others might be able to help states, tribes, and territories with urban waters issues. A state participant requested acknowledgement that wasteload allocations are difficult to develop for stormwater discharges, suggesting that a water quality approach can be taken without a wasteload allocation and specifically referencing a best-management-practices approach. An EPA Headquarters participant said that building urban waters partnerships can help in raising money. He identified a few examples of multi-organizational collaborations to address water quality matters in urban areas. He added that these endeavors can involve multiple cities or just be focused on a single city.

Key Points Raised:

- Biological goals in urban environments are hard to attain, and the costs of meeting those goals are high, which promotes the perception that the goals are unattainable and leads to a lack of support.
- It is important to communicate well the details of the goals and progress toward them. For example, instead of determining pass or fail on a high bar, a TALU framework allows a pass/fail determination on incremental bars.
- The BCG provides measurable, incremental goals and can serve as a basis for the tiers in a TALU framework.
- Innovations in water quality standards, stressor relationships, communication, and partnerships can significantly aid water quality restoration, particularly in urban waters, and there are numerous good examples for each category.
- The water quality impacts of stormwater can be effectively addressed through direct public investment, incentives, and regulations, and ideally through a combination of these approaches.
- Allowing some required stormwater retention to be accomplished off site provides flexibility and accommodates trading.
- Examples of successful implementation, such as reduced beach closure days resulting from stormwater best management practices, help the public better understand the problems and solutions and lead people to be more willing to pay for those solutions.
- Bad experiences with the TMDL development process can have the unintended consequence of promoting collaboration among the parties on future matters.
- Money is a significant factor in addressing urban waters, and building partnerships can help in raising money.
- The Urban Waters Program works toward the Clean Water Act goals for urban watersheds using all tools, methods, and provisions of the law available, and therefore, the listing process and TMDLs should be a big part of any local Urban Waters Partnership's work plan.

Session 8: Nonpoint Source Integration

This session featured four presentations by five presenters, with opportunities for questions. The intended outcomes of the eighth session included:

- Participants will know more about collaboration opportunities in the course of nonpoint source priority setting.
- Participants will be familiar with more examples of integrating TMDLs and nine-element watershed plans.

Cyd Curtis, EPA HQ, and Jim Havard, EPA HQ: National Level Activities

Mr. Havard began the session by noting that there are five means by which CWA 303(d) programs have been integrating with other programs and agencies. The first of these, he continued, is through prioritization. Mr. Havard referenced the many states that consulted with other programs and agencies in the process of establishing their Vision priorities. He added that EPA Headquarters has been working on joint priorities with the CWA 319 Program. Second, Mr. Havard explained, is integration through planning, highlighting the discussion regarding watershed-based plans as "alternatives" under the Vision. Third, he mentioned integration regarding implementation. Fourth, said Mr. Havard, is integration of measures, including how to capture and report interim progress. Finally, he noted, EPA has been coordinating on engaging stakeholders. As an example, he referenced the NEIWPCC webinar that focused on engagement with nonpoint source stakeholders.

Ms. Curtis then shared some of the history of integration between the CWA 303(d) and CWA 319 Programs. In particular, she highlighted the results of a recent review of CWA 319 grants across the country, noting that 206 projects had a role in TMDL development, and over 1,000 projects had a role in implementing a TMDL.

Molly Rippke, MI: The Bad Axe Creek TMDL/WMP Hybrid

Ms. Rippke started her presentation by explaining that the purpose of combining the TMDL and water management plan for Bad Axe Creek was mainly about money. She said that the state decided not to use CWA 319 funds for writing plans or other documents, instead wanting to purely spend that money on staff and implementation projects. Ms. Rippke noted that some plans covered too large of an area and without enough detail to implement, and that the Michigan Department of Environmental Quality (Michigan DEQ) had older plans that needed to be updated. As a result, she added, Michigan DEQ wanted to find a means by which they could write implementation plans to fill the gaps left by the funding restrictions.

Ms. Rippke said that they considered using TMDLs as watershed management plans. She explained that they have been improving their TMDLs, especially for *E. coli*, including the use of spatial analysis and monitoring data to identify critical areas, conducting field inventories of nonpoint sources, and recommending best management practices at catchment levels. While the TMDLs did not meet all nine elements of a watershed plan, added Ms. Rippke, they thought that the TMDLs might be sufficient for the purpose. She noted that

EPA disagreed but offered to fund a project to find ways to make TMDLs meet all nine elements.

Ms. Rippke turned to the example of Bad Axe Creek. She explained the challenges in Saginaw Bay, which is shallow, warm, and in close proximity to a considerable amount of agricultural land. She noted that reducing phosphorus loads to the Bay is a priority for both the Michigan Department of Environmental Quality and EPA. Ms. Rippke said that they chose Bad Axe Drain because it was one of the few nutrient impairments on their CWA 303(d) list and the only one in the Bay. She noted that, while a majority of the Bad Axe Creek subwatershed was once wetland, it is now used for agricultural production. She then shared a screenshot from their interactive mapper for the statewide *E. coli* TMDL, identifying the locations of point sources.

Ms. Rippke introduced what she referred to as "Watershed Management Plan 'Light.'" She explained that five of the nine elements received full coverage: Element A: identification of causes and sources; Element B: load reductions from management measures; Element C: description of management measures; Element H: criteria to assess progress; and Element I: monitoring to evaluate effectiveness. Ms. Rippke then detailed what the other four elements did and did not include: Element D (estimate of technical, financial, and regulatory assistance needed) included a general description of the regulating agencies and available resources but did not include a cost estimate for best management practices; Element E (public information, education, and participation) included a recommendation to develop an information and education strategy; and Elements F and G (schedules for implementation and interim milestones) included a schedule of milestones, but with much less detail than is typical, and did not include commitments by stakeholders to implement practices.

Ms. Rippke then explained their struggles with whether to develop the TMDL or the watershed plan first. She said that they decided to develop the watershed plan first, but they still question whether that was the better approach. Ms. Rippke added that it was fine for *E. coli* because the target is the standard, but they did not have the phosphorus target until the very end. In addition, she noted, doing the TMDL last meant that their permit section was not part of the process until the end.

Ms. Rippke also mentioned that, with regard to stakeholder involvement, the Huron Conservation District was engaged and already knew stakeholders who would implement best management practices. She added that they had a great turnout at the final public meeting, which was attended by 40 farmers in the small watershed, but the presentation was too technical for the audience. Ms. Rippke said that the farmers just wanted to know what the problem was and how they could help, noting that the experience delivered a good lesson.

In conclusion, Ms. Rippke noted that they would like to use "Watershed Management Plan 'Light'" to provide implementation plans where TMDLs already exist, such as the statewide *E. coli* TMDL, and especially in watersheds that have active stakeholder groups but no capacity to develop complete nine-element plans.

Laura Johnson, NE: Update – Nebraska's 5-Alt

Ms. Johnson began by providing context, illustrating the Nebraska Department of Environmental Quality's (Nebraska DEQ) limited resources and the resulting need for collaboration with partners such as Nebraska's Natural Resources Districts, the Nebraska Environmental Trust, and the Nebraska Water Funding Task Force in order for implementation to occur. She also described Nebraska DEQ's Vision priorities, which are based on social impact and the likelihood of implementation, on a basin rotation schedule. Ms. Johnson then outlined Nebraska's main water quality issues: *E. coli* in streams and nutrients in lakes. She added that roughly half of the state's TMDLs address *E. coli*, but only one-quarter of them are being implemented.

Ms. Johnson said that she anticipates their developing roughly 41 "alternatives." She identified the natural resources districts with which they have partnered on "alternatives," noting that the partners already are working on plans, many of which are expected to be completed by the end of the year. Ms. Johnson then described the 5-alt package distributed to these partners, which included a letter explaining the contents of the package; a notes file with data sources and overall results; an *E. coli* file with data analysis, load reduction percentage, load duration curves, and NPDES facilities; an allocations file with charts and graphs of results; and a components file with insertable language with appropriate element locations and references.

Ms. Johnson explained that, since the planning is nearly complete, the focus is now on implementation. She identified the primary obstacle as the requirement that nine-element watershed plans target twenty percent of the area for implementation, noting that some natural resource districts will focus only on the areas that they think are priorities or may choose not to work on the area impaired by *E. coli*, even though Nebraska DEQ would like them to do so. Ms. Johnson added that there is a general misunderstanding of TMDLs, as farmers with animal feeding operations were not interested in a binding commitment to improve water quality. Consequently, she explained, they sought to clarify the terminology used and, through a local lawyer who had a working relationship with the farmers, educate the board about the process and implications.

Ms. Johnson then highlighted Nebraska DEQ's eDNA partnerships, noting that they were able to identify many different DNA streams. She remarked that where there were high levels of mammal DNA there tended to be high levels of *E. coli*. In addition, Ms. Johnson noted that the prevalence of human DNA indicated that septic systems were a more significant part of the problem than previously believed.

Ms. Johnson also detailed the progress of Nebraska DEQ's partnerships regarding best management practices. She noted that best management practices have been used on thousands of acres, adding that she was able to get information about the contract, best management practice, and acres to which it was applied, although she is not able to plot that information on a map. Ms. Johnson referenced Nebraska DEQ's work with the Sioux Nation on nutrients impairments, analyzing surface and groundwater connections and sources of the pollutants. She noted that they found contributions of nutrients from fertilizer used in the

1960s and 1970s. In conclusion, she emphasized how productive the external partnerships and collaborations with the CWA 319 Program have been.

Sol Brich, WY: Prairie Dog Creek Watershed Plan to TMDL

Mr. Brich explained that, like the other two states represented in the session, the Wyoming Department of Environmental Quality's (Wyoming DEQ) resource limitations have prompted the staff to work more closely with stakeholders and other government entities. He added that, to meet their Vision objectives, they will need to be very efficient with time and money. Mr. Brich said that some of Wyoming's nine-element watershed plans are particularly thorough, and it was with one of their most proactive conservation districts that they undertook this effort to develop a TMDL from a watershed plan.

Mr. Brich noted that Wyoming's process for developing TMDLs is the same as in other states but that, in the case of *E. coli* in the Prairie Dog Creek Watershed, they went straight to planning and implementation. He said that two segments of Prairie Dog Creek were on the Wyoming CWA 303(d) list for *E. coli*, and three tributaries were subsequently added to the list in 2012. Mr. Brich explained that the conservation district did an assessment report in 2007 and 2008 and an interim monitoring report and nine-element watershed-based plan in 2011. He added that Wyoming DEQ cross-referenced the collective information from those reports and that plan with the elements of a TMDL, and they provided watershed characterization, targets, water quality impairment status, source assessment, load capacity, margin of safety, monitoring strategy, and restoration strategy. The only TMDL element not addressed was load allocation. He noted that they are working with Tetra Tech to develop the TMDLs. Mr. Brich then turned to matters of implementation. He said that the CWA 319 Program and the conservation district had put money into best management practices in the watershed, and that they think they have seen a ten percent reduction in *E. coli*. Mr. Brich clarified that there are not regulated point sources of *E. coli* in the watershed.

Mr. Brich identified the accomplishments of this effort, from addressing five Vision priority waterbody-pollutant combinations on the CWA 303(d) list to setting an example of collaboration between Wyoming DEQ and local conservation districts. He also noted that, by summarizing and combining all of the conservation district's work into a single document and "administrative record," they were able to: streamline the TMDL development process, capitalize on work done by stakeholders, and facilitate EPA's job of reviewing and approving the TMDL.

Mr. Brich concluded by identifying challenges to and opportunities for this kind of integration. Among the challenges he noted, the Prairie Dog Creek example was unique as of the presentation and rarely do third parties provide most or all of the pieces needed to complete TMDLs. Mr. Brich suggested that this example demonstrates opportunity: the information exists in some cases, coordination can occur, and a respected product can result.

Starting the question-and-answer period, an EPA participant asked Mr. Brich to clarify how he reduced strife with and among those contributing to the problem. Mr. Brich answered that, by working with the stakeholders to identify the sources of *E. coli*, rather than telling them what the

sources were, the end result was better received. He noted that, when Wyoming DEQ identified grazing as the cause of *E. coli* in a technical report concerning another watershed, livestock producers saw it as a threat to their federal grazing allotments, and the TMDL process ground to a halt. In the Prairie Dog Watershed, he added, stakeholders have a strong advisory group, and they were able to look at land uses and patterns objectively and review monitoring data to determine the sources collectively.

A state participant asked to what Ms. Rippke attributes the great turnout from farmers at the public meeting she referenced. Ms. Rippke said that she did not know for sure, but that it likely was because of the conservation district. She added that a local leader, who was a farmer with a degree in agriculture, had toured them around the farms in the district, which likely helped too. Another state participant asked Ms. Rippke how many meetings she had when developing the hybrid approach. He noted that, when they tried something similar, stakeholders did not like the length of the TMDL process; they did not want to attend so many meetings. Ms. Rippke said that they only had two meetings, one at the very beginning of the process with farmers and wastewater treatment plant staff and the other at the end of the process with just farmers, adding that the farmers and treatment plant staff placed substantial blame on each other.

At the prompting of Mr. Schempp, an EPA Headquarters participant explained that the Nonpoint Source Program has been revamping the process for collecting and building success stories, in order to better communicate the results. She said that they are working with states and integrating with ATTAINS, pulling information about identified waterbodies from that database. She added that they are re-designing the website as well, to make it more interactive.

Key Points Raised:

- Over 1,000 CWA 319 projects have implemented a TMDL.
- Insufficient resources often are an impetus for integrating CWA 319 and CWA 303(d) procedures and products.
- There are pros and cons to developing a watershed plan before a TMDL, and a TMDL before a watershed plan.
- "Watershed Management Plan 'Light'" can be particularly useful where TMDLs already exist or in watersheds that have active stakeholder groups but no capacity to develop complete nine-element watershed plans.
- When trying to develop a TMDL or nine-element watershed plan from one or more documents, one should cross-reference the elements of the desired product with the information available in the existing documents, identify what information is missing, and discuss with EPA what of that missing information must be gathered and included.
- Stakeholder engagement is important in CWA 319 - 303(d) integration efforts.

Training Workshop Wrap-Up

(1) Jim Havard, EPA HQ; Adam Schempp, ELI: Summary and Next Steps

Mr. Havard began his remarks by noting his highlight of the week: the stakeholder plenary session from Thursday. He specifically emphasized individual input from panelists from

many different sectors as to how best to engage people on water quality. Mr. Havard reiterated some of those suggestions, including showing up to meetings, picking up the phone, having a local leader with whom to share the success of best management practices, and explaining concretely how TMDL activity will affect individuals in the watershed. He also noted the focus on incentives such as technical, financial, and stewardship programs as well as the discussion about leveraging stakeholder resources in order to achieve goals.

Mr. Havard then turned to the "to-dos" for the Watershed Branch of EPA for the coming year. He began with the continuing relationship with the Association of Clean Water Administrators (ACWA), for which he deferred to Traci Iott of Connecticut for detail. Ms. Iott noted that ACWA has different committees and that she co-chairs the Watersheds Committee, which focuses on CWA 303(d) programs, with Jeff Berckes of Iowa and Julian Gonzalez of ACWA. She explained that the Committee holds phone meetings every four weeks to discuss program implementation, innovations, and collective priorities. Ms. Iott said that the co-chairs had been keeping a record of issues that sparked interests over the week, to build a list of calls that would discuss those matters more fully. She also asked participants to sign up if they are not currently on the email list and to submit topics for future calls.

Mr. Havard thanked Ms. Iott and continued his remarks on the "to-dos." He explained that EPA Headquarters plans to continue its integration efforts with other programs. He specifically referenced the Office of Standards and Technology, in light of the multiple comments made during the "difficult challenges" breakouts regarding water quality standards and setting parameters that can be clearly interpreted and implemented. He encouraged similar conversations to occur at the regional and state levels. Mr. Havard also emphasized the Branch's focus on tool development and fostering innovation. As an example, he referenced the current support for groundwork on the mercury air deposition project. In addition, Mr. Havard said that the Branch is investing in modeling efforts, specifically identifying the EPA's modeling group, which is analyzing core models being used to determine how best to summarize and present information in the TMDL context.

Mr. Havard then listed several relevant EPA-funded cooperative agreements. He started with the cooperative agreement underlying this training workshop and announced that the 2018 training workshop had been funded. He emphasized that the event is a top priority for the Watershed Branch. Mr. Havard also highlighted two other cooperative agreements with ELI, one that connects CWA 303(d) practitioners with stakeholders, last year taking state staff to River Rally to present on implementation of the Vision and this year bringing the stakeholders to this training workshop, and one that develops compendia that support program implementation, last year focusing on water quality restoration approaches and this year focusing on effectiveness monitoring. He added that they have the funding to focus on another issue next year. In addition, Mr. Havard noted the cooperative agreement with the New England Interstate Water Pollution Control Commission (NEIWPCC) to develop a series of webinars covering a range of program-relevant issues. He emphasized that many of the training workshop participants have been key to those webinars.

Mr. Havard acknowledged the requests that he had heard regarding protection plans, most notably to clarify how protection plans fit with the measures. He highlighted the importance

of considering not only how the program should think about protection plans and where to protect but also what types of plans and approaches should be promoted. He supported spending time and resources on these matters, adjusting from priority setting to more protection-based discussions. Mr. Havard's final "to-do" concerned litigation. He said that there were twenty or more lawsuits on related matters at EPA Headquarters, and more arriving. He explained that the lawsuits concerned, among other things, TMDL and listing decisions regarding particular waterbodies and pollutants.

Mr. Havard concluded his remarks by recounting a moment of particular levity from the training workshop, when one of the presenters quipped, "So, why would you do this, unless you just think it's fun?" Mr. Havard welcomed the excitement and passion around the program and its work.

Mr. Schempp provided a few closing statements before turning the microphone over to Jeff Berkes of Iowa for the send-off. He started by reiterating his appreciation to the participants for taking the time from work and home, and in many cases traveling great distances, to be a part of this event. Mr. Schempp emphasized that their participation makes the training workshop what it is, from presentations; to in-class discussions; to the conversations at breaks, meals, and evening events. He said that his favorite part of the week was seeing the many side conversations among people from different states, territories, tribes, and regions between sessions and after hours. Mr. Schempp noted that, from his perspective as an outsider, the program has an impressive community. He added that he appreciated seeing people take advantage of it, working together and learning from each other. He suggested that, now more than ever, that support is critical.

Mr. Schempp acknowledged that he usually leaves the inspirational elements of the wrap-up to others, but as he walked across the main bridge the day before, he noticed plaques with quotes, and two seemed particularly relevant to the themes of the prior few days. The first, he explained, was attributed to Dwight D. Eisenhower and read, "Leadership is the art of getting someone else to do something you want done because he wants to do it." Mr. Schempp said that he felt it nicely echoed some of the points raised in Thursday's engagement sessions, the importance of communicating in a way that highlights incentives or reasons to care that are relevant to that audience.

Mr. Schempp read the other quote, one attributed to Eleanore Roosevelt: "You must do the thing you think you cannot do." He said that it reminded him of the subtitle for the week, adding that the impossible will remain such if it is not tried. Mr. Schempp acknowledged that there often are many reasons not to tackle the hard problems, many ways to fail, but in paraphrasing comments that he had heard over the years from one of the participants, Ms. Helen Bresler, "so what?". Mr. Schempp noted that working with limited time and resources is tough, but one of the great things about the people in that room is that they believe in what they do. He added that they are innovative and do the most with what they have. Mr. Schempp expressed his sincere hope that the participants felt energized from the week and could capitalize on it. He exclaimed that he is proud of the work that they do and is honored to be even a little part of it.

(2) Jeff Berckes, IA: Send-Off Remarks, "Tackling the Most Difficult Lifts"

Mr. Berckes began the send-off remarks by sharing his pride in the gender-balanced community of practitioners and expressing how inspired he is by the strong women in the audience. He shared that he initially thought the subtitle of this year's training workshop was "Tackling the Difficult Challenges," one of the original options for the subtitle, and he planned his remarks with that slogan in mind. In keeping with the "tackling" metaphor, Mr. Berckes showed a photo of himself from his high school all-state football days, "all-state" academic, he acknowledged. He displayed a chart comparing what he learned from playing football and from working with TMDLs.

Mr. Berckes emphasized the importance of laughter because the work is hard and getting harder. He displayed a revised meaning of the TMDL acronym: Tired of all the…, Marginalized, Dull Drudgery, Loco. He explained that it is easy to get tired of the politics, budget cuts, hassles, and feeling marginalized. He noted that the dull drudgery can stem from the nature of the documents, noting that he had reviewed 50 to 60 TMDLs, and they do not get more interesting. He acknowledged that "loco" was to be bilingual and express a sentiment that does not have a true English equivalent.

Mr. Berckes then offered insights on how to reevaluate what "TMDL" can mean to program staff. He suggested that "T" stands for "Teamwork." He recalled the football saying, "You're only as strong as your weakest link – don't let that weak link be you." Mr. Berckes shared that, for him, the statement means that your teammates are going to be working hard, and if you do not work hard, you will be left behind. He displayed an old photograph of him and his teammates on the playing field and a more recent photograph of them together supporting their high school team. Mr. Berckes explained that they are some of his favorite pictures because of the memories he shared with those teammates over four very formative years of his life. With that said, he displayed the group photo from the 2016 training workshop and said, "This is my team now." There are not many organizations, he noted, in which people have the ability to connect right away. Mr. Berckes said people come back year after year, and, even when they do not return, more great people come with new brilliant ideas. "This is my team," he reiterated. "This is what we need to rely on when things get tough."

Mr. Berckes continued his re-envisioning of the acronym. He explained that "M" can stand for "Meaningful." He emphasized the innovations in TMDL development and partnerships as well as the dedication, optimism, and professionalism of the people in the room, adding that the group is a "mosaic of inspiration." Mr. Berckes labeled "D" as standing for "Droll," or dry amusement. To elaborate, he provided examples from Iowa: Muddy Creek is impaired for sediment and turbidity; Catfish Creek had a fish kill and no catfish were found; Bear Creek had a fish kill caused by animal waste; Silver Lake has a mercury impairment; and Green Valley Lake is impaired for algal blooms. Mr. Berckes suggested that "L" can stand for "Legion of Friends," displaying a series of pictures from the week of him with other participants. Mr. Berckes concluded with a formula: TMDL = $\sum$BFF + $\sum$WTG + LOL, as he thanked everyone for being such great teammates.

APPENDIX 1: TRAINING WORKSHOP AGENDA

ENVIRONMENTAL LAW INSTITUTE®

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2017 NATIONAL TRAINING WORKSHOP FOR CWA 303(d) LISTING & TMDL STAFF

MAKING THE IMPOSSIBLE POSSIBLE

National Conservation Training Center
Shepherdstown, West Virginia
May 31 - June 2, 2017

TRAINING WORKSHOP AGENDA

Made possible through a cooperative agreement with the United States Environmental Protection Agency

PURPOSE OF THE TRAINING WORKSHOP

To provide an opportunity for staff from state and territorial Clean Water Act Section 303(d) Listing and TMDL programs and tribal water quality programs to learn about and discuss new opportunities and practical approaches to address difficult water quality and program challenges.

WORKSHOP OBJECTIVES

- Learn about **strategies and practices employed** by states, tribes, and territories to make progress in common but challenging circumstances.
- Learn about the **improvements to tools and data systems** for decision-making and water quality data reporting.
- Learn **diverse approaches to establish and sustain relationships** with various stakeholder groups.
- Learn about and discuss the new **CWA 303(d) TAS rule**.
- Enhance the **network of listing and TMDL professionals** by expanding and improving communication among the states, tribes, and territories and with EPA regions and headquarters.

OUTPUT

A final report summarizing presentations and discussions from the training workshop. The report will include a summary of individual input from workshop participants and may serve as a reference for program personnel implementing their responsibilities consistent with the Vision.

AGENDA

Tuesday, May 30 ***Arrival, Check-In, and Registration***

2:00 pm – 8:00 pm	NCTC Check-In and Training Workshop Registration Main Lobby
5:30 pm – 7:30 pm	Dinner Commons Dining Room
8:00 pm – 9:00 pm	Informal Welcome Ding Darling Lodge, Lounge Area

Wednesday, May 31 *Training Workshop Day 1*

6:30 am – 8:15 am Breakfast
Commons Dining Room

8:30 am – 9:00 am **Welcome**
Auditorium

Greeting

Adam Schempp, ELI

Opening Remarks

John Goodin, EPA HQ
Alexandra Dunn, ECOS

9:00 am – 10:00 am **Session #1**
Water Quality Framework
Auditorium

Overview of the Water Quality Framework and Demonstration of the ATTAINS Tool

Dwane Young, EPA HQ

Session #1 Outcomes:

- *Participants will better understand the changes that have been made to the Water Quality Framework, and the next phase of implementation under this effort.*
- *Participants will be familiar with how the Integrated Reporting process and performance measures will work in the new ATTAINS.*
- *Participants will know what developments in water quality data management tools are on the horizon.*

10:00 am – 10:20 am Morning Break

10:30 am – 11:00 am **Introductions and Training Workshop Overview**
Auditorium

Opening Remarks

Jim Havard, EPA HQ

Overview of the Agenda

Adam Schempp, ELI

11:00 am – 12:00 pm **Session #2**
The CWA 303(d) TAS Rule
Auditorium

Clean Water Act (CWA) Section 303(d) Treatment in a Similar Manner as States (TAS) Rule: Increasing Opportunities for Tribes in Water Quality Restoration and Protection
Ruth Chemerys, EPA HQ

Treatment as a State for §303(d) Authority
Nancy Schuldt, Fond du Lac

State and Tribal Cooperative Work at Red Lake Reservation, MN
Shane Bowe, Red Lake Nation
James Courneya, MN

Facilitated Discussion

Session #2 Outcomes:

- *Participants will better understand the CWA 303(d) TAS rule and how it may be implemented.*
- *Participants will know more about how other states and tribes already are collaborating on water quality assessment, planning, and plan implementation.*

Potential Discussion Questions:

- In what ways are states and tribes working well together on common water resources, and how can collaboration be improved?
- What are the opportunities and obstacles for state-tribal data sharing?

12:00 pm – 12:30 pm **Session #3a**
Introduction to the Particularly Difficult Challenges
Auditorium

Nutrients (Technical)
Trevor Flynn, KS

Nutrients (Implementation)
Helen Bresler, WA

Mercury and PCBs
David Croxton, EPA R10

Chlorides
Kimberly Groff, MA

Bacteria
Amy Feingold, R4

Pollution from Active and Legacy Mining
Jason Gildea, EPA R8

12:30 pm – 1:15 pm Lunch
Commons Dining Room

1:30 pm – 3:00 pm **Session #3b**
Implementation Strategies for Addressing Particularly Difficult Challenges
Breakout Rooms, Various Locations

This session will consist of six breakout groups, with each group being assigned a different one of the selected water quality challenges. A pair of moderators will lead each breakout group through a discussion of the challenge, from the specifics of the obstacles, to strategies for overcoming them, to the results of past and present efforts, and how EPA might be able to assist moving forward. Each participant is assigned to a group based on his/her topic preference expressed prior to the training workshop.

3:00 pm – 3:20 pm Afternoon Break

3:30 pm – 4:30 pm **Session #3c**
Report Back and Discussion
Auditorium

Nutrients (Technical)
Taimur Shaikh, EPA R6

Nutrients (Implementation)
Selena Medrano, EPA R6

Mercury and PCBs
Traci Iott, CT

Chlorides
Dave Werbach, EPA R5

Bacteria
Alan Wittmuss, SD

Pollution from Active and Legacy Mining
Jason Sutter, AZ

Facilitated Discussion

Session #3 Outcomes:

- *Participants will be more familiar with the strategies that others have used to address certain water quality problems, what has worked and not worked, and why.*
- *Participants will have developed new strategies for addressing these water quality problems.*
- *Participants will have fresh ideas for addressing their own water quality challenges, and resource contacts for more information.*

4:30 pm – 5:30 pm **Session #4**
Innovations in TMDL Development
Auditorium

Hydrology Calibration with PRISM
Mindy Ramsey, WV

TMDL Prioritization, Public Process, and Streamlining
Erin Rasnake, FL

TMDL Calculators Facilitate Allocation
Wade Cantrell, SC

Facilitated Discussion

Session #4 Outcome:

- *Participants will know about more tools and approaches that others are using to develop TMDLs with better information, with more buy-in, and that are more implementation-ready.*

Potential Discussion Questions:

- What new models or stressor identification tools have you found helpful in developing TMDLs?
- In what ways have you been integrating other programs or agencies into TMDL development?
- What tools or procedures have you been using to improve stakeholder engagement in TMDL development?

5:30 pm – 7:30 pm Dinner
Commons Dining Room

8:00 pm – 10:00 pm Bonfire

Thursday, June 1 *Training Workshop Day 2*

6:30 am – 8:15 am Breakfast
Commons Dining Room

8:30 am – 10:00 am **Session #5a**
Stakeholder Engagement
Auditorium

This session will bring together individuals who have worked on water quality issues from a variety of perspectives and with a wide range of partners to share their individual experiences and lessons learned, through brief introductions, a question and answer period, and facilitated discussion. The subsequent breakout sessions will allow participants more in-depth facilitated conversations with several members of this panel.

10:00 am – 10:20 am Morning Break

10:30 am – 11:15 am **Session #5b**
Engagement Breakout Session I
Breakout Rooms, Various Locations

Each breakout group, led by a moderator and with the participation of one or more of the stakeholder participants, will discuss communication and collaboration with an identified category of stakeholder. Each participant is assigned to a group based on his/her preference expressed prior to the training workshop.

11:30 am – 12:15 pm **Session #5c**
Engagement Breakout Session II
Breakout Rooms, Various Locations

Participants will change rooms, as assigned, to discuss communication and collaboration with a different category of stakeholder with another moderator and one or more stakeholder participants.

Session #5 Outcomes:

- *Participants will be more familiar with the diversity of interests, needs, and potential contributions of CWA 303(d) Program stakeholders.*
- *Participants will have gained practical lessons about engagement from the stakeholder participants and from their state, territorial, and tribal counterparts.*

12:15 pm – 1:00 pm Lunch
Commons Dining Room

1:15 pm – 3:00 pm **Session #6**
Breakouts by Region
Breakout Rooms, Various Locations

This session will consist of ten breakout groups, one for each region, each with state, tribal, territorial, and EPA participants from that region and from EPA headquarters.

Session #6 Outcomes:

- *Participants will better understand the needs, challenges, and views of others in their respective regions.*
- *Participants will have resolved, or at least advanced conversation on, issues important to the states, tribes, and territories of the region.*

3:00 pm – 3:20 pm Afternoon Break

3:30 pm – 5:30 pm (variable durations) **Optional Small Group Trainings**

- *Recovery Potential Screening tool (with Preliminary Healthy Watersheds Assessment data)*
  154 Instructional West

- *USGS Water Balance Model Futures database and web portal*
  109 Instructional East

- *Retrieval and analysis R tools off the Water Quality Portal*
  G24 Instructional East & G30 Instructional East

- *Causal Assessment, Stressor Identification, and CADDIS*
  Auditorium

5:30 pm – 7:00 pm Dinner
Commons Dining Room

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

- *Building and Supporting a Network of Modelers*
  Ding Darling Lodge, Lounge Area

- *Telling the Water Story: Feedback Session on the New Public Website*
  Rachel Carson Lodge, Lounge Area

Friday, June 2 *Training Workshop Day 3*

6:30 am – 8:15 am Breakfast
Commons Dining Room

8:30 am – 10:00 am **Session #7**
Urban Waters
Auditorium

Using CADDIS for Causal Assessment in Urban Streams
Kate Schofield, EPA HQ

Communicating the Challenges of Urban Streams through Better Biological Assessments
Will Isenberg, VA

Moving Beyond Assessments to Successful Implementation: Tools for Use with Urban Waters
Traci Iott, CT

Leveraging Policy & Public Funds to Restore Waters in the District of Columbia
Jeff Seltzer, DC

The Urban Waters Program at U.S. EPA
Roy Simon, EPA HQ

Facilitated Discussion

Session #7 Outcomes:

- *Participants will better understand the range of challenges regarding urban stream impairments as well as strategies for addressing them.*
- *Participants will know additional means of communicating impairments, goals, and progress in the urban stream context.*

Potential Discussion Questions:

- How have you balanced communicating the challenges of urban streams while still maintaining stakeholder confidence?
- What other obstacles have you found to water quality restoration in urban streams?
- With what could you use help in this context?
- In what instances have you seen progress being made from implementation efforts?

10:00 am – 10:20 am Morning Break

10:30 am – 11:30 am **Session #8**
Nonpoint Source Integration
Auditorium

National Level Activities

Cyd Curtis, EPA HQ
Jim Havard, EPA HQ

The Bad Axe Creek TMDL/WMP Hybrid

Molly Rippke, MI

Update: Nebraska's 5-Alt

Laura Johnson, NE

Prairie Dog Creek Watershed Plan to TMDL

Sol Brich, WY

Session #8 Outcomes:

- *Participants will know more about collaboration opportunities in the course of nonpoint source priority setting.*
- *Participants will be familiar with more examples of integrating TMDLs and nine-element watershed plans.*

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

Summary and Next Steps

Jim Havard, EPA HQ
Adam Schempp, ELI

Send-Off Remarks

Jeff Berckes, IA

12:00 pm Lunch
Commons Dining Room

APPENDIX 2: PARTICIPANT LIST

2016 NATIONAL TRAINING WORKSHOP FOR

CWA 303(d) LISTING & TMDL STAFF

MAKING THE IMPOSSIBLE POSSIBLE

National Conservation Training Center
Shepherdstown, West Virginia
May 31- June 2, 2017

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APPENDIX 3:
COMPILATION OF WORKSHOP PARTICIPANT EVALUATIONS

Fifty-four workshop participants completed an anonymous Participant Evaluation Form (provided in the resource binder materials). The combined numerical results from the evaluations indicate an overall event rating of "Very Good-to-Excellent," across all categories. In addition to the numerical responses, we received many written comments, which are reproduced here.

Participant Evaluation Form: Compilation

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

A. The Workshop—Overall

Information Presented
5 (27) **4** (24) **3** (2) **2** (1) **1** (0) **AVG: 4.43**

Workshop Materials
5 (39) **4** (13) **3** (1) **2** (1) **1** (0) **AVG: 4.67**

Workshop Organization
5 (46) **4** (8) **3** (0) **2** (0) **1** (0) **AVG: 4.85**

Group Interaction
5 (38) **4** (12) **3** (4) **2** (0) **1** (0) **AVG: 4.63**

Session Facilitation
5 (37) **4** (12) **3** (5) **2** (0) **1** (0) **AVG: 4.59**

Conference Facility (NCTC)
5 (47) **4** (6) **3** (1) **2** (0) **1** (0) **AVG: 4.85**

Comments:

- In general the workshop was great and very well-organized. Kudos to ELI staff. The only area that could be improved was the facilitation of the smaller group sessions. In my groups a few participants tended to dominate the discussion and I felt the facilitators should have done a better job of managing this. As a result, other people did not get much engagement and I did not feel the sessions were very useful. I'm referring to session 3b, 5b, and 5c. These sessions also felt a bit ad hoc. I wish there was a more directed discussion with specific questions and discussion topics.
- Congrats on organizing a well-organized and impactful workshop!

- Really liked the topics this year and mix of plenaries and breakouts. Especially liked stakeholder panel. Great also to have such good representation from all states, territories, and some tribes. ELI did a great job of organizing participants and the agenda, and facilitating discussion.
- ELI did a very good job at organizing. Thanks ☺
- As always, the conference exceeded expectations. Thank you all for what you put together! I particularly enjoyed the break outs and all of the engagement sessions.
- This workshop was incredibly well organized and facilitated! Kudos to the organizers.
- Liked the breakout sessions, but could use better facilitation. Perhaps guidelines and/or discussion questions.
- I liked the stakeholder sessions the best – found those the most useful to me. I also really like the informal interaction with the states and EPA. Well organized by ELI. Thank you!
- I ranked information presented as satisfactory because I have less tangible outcomes to take back with me. Some sessions were so rushed, we really only had time to air our issues, with no time to talk about solutions.
- First time here. Really impressed with all aspects of conference. Would love to return.
- Facilitators could have used better tools to help visualize and organize the discussions better. For small groups, the use of flip charts or boards would have been good.
- The workshop was organized very well.
- The ELI team did a good job. They are very helpful and friendly. Things that I didn't like: Time set for lunch. 45 minutes for lunch is unacceptable and unrealistic. That time doesn't factor in walking distance, long lines waiting for food and walking back to your session. The auditorium chairs are uncomfortable and do not provide enough leg room. At the end of each session there should be a game to wrap up. That would keep the audience engaged. There should be more healthy shack options. I find that most items were full of sugar eg: nuts had M&Ms, cake and sodas. Provide bottle H_2O and room temperature water instead of cold tap water. You have to take into take into consideration people who don't drink cold water.
- Thanks for a great job organizing – it makes travel for work a pleasure.
- Overall excellent opportunity to connect with national agenda and to network with colleagues (Fed/state). Well-organized and successful event. Well done!
- Plenary sessions continue to be the highlight. The week failed to deliver on the session name. I did not encounter content which might make the impossible possible.
- For such a dry topic, the workshop was surprisingly interesting!
- ELI's facilitation in every aspect was excellent. Not all presentations were applicable – but there were nuggets of info in all of them that were helpful.
    - On a social/networking note – I don't partake in alcohol, so the investment in that resource is a bit lost on me. The bonfire was pleasant in the light, but once it was dark, I didn't have much desire to hang around when it was difficult to identify other participants. Maybe plan a social networking opportunity that would appeal to others. For example – Maybe plan a nature walk with someone who could lead and identify natural resources. It seems like the financial resources are available to pay someone – if there are no naturalists in the group.

- The information presented was not as relevant to my work with standard setting as I hoped it would be. I expect the information presented was much more helpful for those actively developing and implementing TMDLs.
- Will all the presentations from the workshop be made available electronically?
- Overall, I don't feel as though we had as much conversation amongst the group. There were presentations and we asked questions of the presenters, but we didn't have the full-room conversation that we usually do.
- It is great to network with others who are facing the same problems and find out how they are dealing with them.
- Please repeat at the same dates.
- Nice mix of breakout sessions, diversity of topics and opportunities for networking.
- Excellent hospitality. Great facility.
- Overall excellent. Find ways to engage more discussion in small workgroups.
- The lunch periods were only 45 minutes. The lunch period includes the time it takes to walk to and from the workshop. I recommend that the lunch periods be a minimum of one hour, even if it means the workshop lasts until later in the day. The best aspect of the workshop is the relationships and side bar conversations.
- NCTC is great, but please have them fix Wifi – on & off. No access in lodges – grr!
- Thank you for a great workshop! Wondering if HABs would be a good topic for next year? ND could talk about their program. For informal evening, would love to see who has best/most efficient load duration curve models/spreadsheet and share.
- It would be a helpful reference if regional EPA staff could/would say where they are located, or where their region is headquartered when they introduce themselves at talks and during sessions.
- Hope this effort can continue in the future.
- Very informative meeting that will help me when I go home.
- Workshop covered a lot of fragmented topics this year. I think, as a whole, the workshop is better if centered on a theme. Perhaps next year should focus on a pollutant, or a source, or a technology. Overall the workshop is extremely helpful, with learning and engaging with peers.
- Very good! Interactions with other states are invaluable. Love coming here. You make great use of our time but still provide adequate breaks. Overall – workshop was great this year, with the emphasis on breakouts and interaction plus training.

B. Goals and Outcomes

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

5 (16) **4** (23) **3** (2) **2** (1) **1** (0) **AVG: 4.29**

How successfully did the workshop meet your own expectations?

5 (20) **4** (19) **3** (3) **2** (1) **1** (0) **AVG: 4.35**

Comments:

- Liked the format with breakouts, think it allowed for more discussion and problem solving. Perhaps even smaller groups in the future would help us hear from everyone and participate fully. Some of the presentations were too long and detailed while others too brief and quick (eg: VA urban streams and biological assessments).
    - Encourage presenters to put websites on their slides for where to go for more info.
- It might have been unreasonable to think that we'd come up with real solutions, rather than just starting to talk about it.
- These are struggles we all have; good to hear how others are addressing them.
- My work is the listing part of 303d, so the greater focus on TMDL development wasn't as applicable to me but also was not a shortcoming of the workshop.
- Wish there were more discussion on NPS issues and tied in with TMDL. One session of it wasn't enough. Found the resource binder very helpful and convenient.
- Not sure I came away with a solution to anything.
- A good question to ask attendees: "Would you attend if EPA/ELI were not covering the cost on your behalf?" Not sure the workshop planning effort succeeded well.
- Loved the breakout sessions BUT… 1) There are a few folks with dominant personalities that tend to talk over conversations and make it about one small problem. You might want to try and choose moderators that can deal better with this type. 2) My head is spinning – I feel like I ran through the whole week and all speakers were on mega caffeine to get through all they needed to in their short time. I know there are only two days so not sure how to make break outs longer. These were all SO good and I wished often I could be at two at once.
- I personally learned a lot and engaged with many peers from other states and regions. This to me was the most useful part of the workshop.

C. Specific Sessions

Session #1: Water Quality Framework

- Excellent content; smooth delivery; little difficult to see the slides from back of the room; also, consistently using the mic in the audience is vital – especially when the room is so full.
- A really great intro and background on the WQF. I would have enjoyed the opportunity to attend a deeper discussion on the IR process and measures working in ATTAINS.
- A very good general overview. Will be excited to see the final version and how future efforts will allow integration of the CWA 319 NPS efforts and how the various measures are tracked and/or reprinted. Also interested in how the CWA 303(d) guidance will be updated. Please keep in mind how to better integrate CWA 319 NPS where applicable.
- Enjoyed seeing the reports in final version of ATTAINS, got me thinking of how we might use the new capabilities to present info to internal and external stakeholders.
- Very helpful/informative to get the update on ATTAINS tool!
- It was nice to understand the background on why the new framework has been developed and how the new framework will be used to link to other CWA programs (NPDES permitting, 319 projects, RCRA, etc.…).

- Helpful. It left me wanting a discussion on moving forward with comprehensive system that can show impairment status, data trends over time, and implementation/restoration actions.
- Dwane did a great job! I'm excited to get home and use the new system. I can already see ways this tool will save me and others a considerable amount of time.
- Looking forward to the direction in which this is headed. Especially in terms of GRTS and actions tracking with ATTAINS and integration ideas there. How can we do this?
- The water quality framework is an aggressive goal with many refinements that will need to be made over time. I am pleased to see EPA's leadership role in the development of the framework.
- I liked that at the end of the presentation they played the "heads up game" to summarize the information.
- Very helpful to know ATTAINS will be available soon.
- Good presentation by Dwane. Examples of reports were helpful. I hope in the breakouts that EPA can provide a similar presentation that folks can use to brief people at home. Excellent graphics.
- Great lead in to the two conferences. Liked that it carried the message from introduction (importance of communicating with data). Hope as an outcome/action from workshop we continue to work on "bite," "snack," and "meal" messages using data tools.
- Nice demo.
- Nice intro to ATTAINS – great to see the progress.

Session #2: The CWA 303(d) TAS Rule

- Tribal presentations were great; especially liked the tag-team presentation.
- Great examples from tribes!
- Very informative – our state does not have Indian tribes but appreciate the discussion.
- Informative – was happy to hear from Nancy Schuldt and Shane Bowe on this topic. Also appreciate input from other Tribal representatives in attendance during the Q&A period afterwards.
- The state of Georgia does not have any Indian Tribes so the topic was not relevant. However, GA EPD is doing similar watershed (HSPF) and lake/estuary modeling for the entire state.
- Very glad to see this included. In many discussions I've had with my cohorts it amazes me how <u>little</u> consultation or conversation is had with tribes in their areas.
- Would be nice to hear tribal perspective from western states.
- I'm glad this was part of the agenda.
- It was good to hear from the tribal perspective ~ that really helps with understanding the whole picture.
- Interesting, but not fully applicable. This might have been better as a break-out session. The case study of MN's Watershed Restoration and Protection Strategies (WRAPs) was the most relevant and helpful to my direct work.
- It was refreshing to hear from a few tribes. The structure of this session where the state and tribe co-presented was exactly what people needed to see. EPA, stop encouraging states to cover tribal lands with black boxes!
- I learned a lot and will think more broadly about managing tribes.

- It was good to learn how the TAS Rule will be implemented.
- This may have been better as a breakout session since many states do not have interaction with any tribes.
- Great to see collaboration between tribe and state working well.
- Not applicable to my work.
- Some of it was a bit detail heavy. While that's good, those portions moved far too quickly for me!
- Great to hear directly from tribes on their experience and coordination with states.
- I feel like this was randomly included in the agenda and it did not fit in well with the rest of the agenda. Likely no need to discuss at future state meetings.
- Interesting for us – reminder that we need to do more outreach to Native American tribes. Surprising/disappointing that they have to apply separately for all aspects of CWA.

Session #3a: Introduction to the Particularly Difficult Challenges

- This session felt unneeded. I would have rather been able to attend 2 of the challenges topics instead of a whole session on introductions. Perhaps a handout covering what was said in introductions would suffice.
- Did not really know what to expect from the breakout session. Overall everyone has similar issues. Some states shared positive/constructive comments.
- The plenary discussions were great!
- The bacteria breakout was great and conversation was facilitated well. Would have been great to break up the issues a bit more to discuss solutions in more detail.
- Interesting that bacteria TMDL are a challenge – the answer is Q*Stnd=TMDL; SPDES permits typically are given the stnd. as their limits thus WLA is Q*Stnd so LA is Q*Stnd.
- Good brief overview.
- Great overview of what's to come.
- #3a-#3c: I believe the structure of Session #3 was interesting and challenging for the presenters, given that they had to synthesize what was discussed in the discussion to "report back." Our session was good with productive conversation. We could have spent more time discussing bacteria.
- It was helpful to discuss and identify common challenges and needs.
- Good idea to form these groups. We learned a lot from each other!
- The nutrients technical and implementation discussion was very helpful.
- I was in the nutrients-technical session. Perhaps the topic was too broad; I found the session a little frustrating in that topics couldn't receive more than cursory discussion. This needed so much more time, even for participants to effectively communicate a point. Obviously a very complicated and multifaceted problem.
- Ok, I guess. Seemed a bit like time filler.
- Good overview so you knew what the other topics were dealing with. Worthwhile session – will be interesting to see wrap up.
- I liked this overview before the detailed sessions.
- Good intros!
- Good intro, given that we could only attend one breakout.
- The introduction was good.

- Likely not needed. I recommend deleting this ½ hour session in the future (i.e., just go directly to the small group breakouts, which were excellent).
- Panel was helpful to introduce all topics.

Session #3b: Implementation Strategies for Addressing Particularly Difficult Challenges

- Not long enough; I suggest shortening session 3a and lengthening 3b. Session 3c was an adequate length and very helpful to receive a summary of the sessions that couldn't be attended. Building in the opportunity to attend two breakout sessions would be great.
- Enjoyed this format for discussion. Attending two different session would be great in the future.
- Nutrient technical → it was an hour and a half but felt like we only scratched the surface on many aspects of this topic. In the end I'm not sure how much we gained. I did appreciate hearing from all the people in the group.
- It was interesting and useful to hear about how other states are dealing with difficult issues; could have discussed for longer period of time if allowed, but I realize time needed for other issues.
- Great discussion.
- Good discussion but slightly unfocused. Suggest having a few questions or discussion suggestions prepared beforehand if possible.
- Challenging to jump into discussion where participant leads fully engaged in their experiences and results which were totally ahead of (my) area. Discussion did address some concerns.
- It would be useful if all the speakers present a short PowerPoint presentation and share with all the participants.
- Didn't really cover this. More a discussion of the challenge.
- Bacteria: Need to understand stressor/response relationship to set appropriate stnds to support designated use; models are complicated, data and resource intensive and costly → all models are wrong. Some are useful – selection of the right model is key; small community upgrades – unrealistic?? – would be nice to have technology based Effluent Limits.
- Maybe could use a little bit more time to get the discussion going. People needed time to warm up and feel comfortable talking. Then the discussion really got going.
- Ok, we talked about all our problems and not much about solutions. Not enough time to cover all the angles.
- Good session and good discussion; a couple people dominated discussion with their particular situation and that was unfortunate.
- I think the breakout sessions for this portion could have been a little longer. I feel this was a beneficial exercise and would have gotten more out of a slightly longer session.
- We have discussed how different states have been addressing the chloride issue.
- This was very useful but at times became a bitch session due to the lack of structure for the discussions.
- Breakout sessions were too short to really engage in meaningful discussion.
- Session I was in seemed poorly planned; appeared to lack vision. As a result, the time was not managed well.
- Unfortunately in my session I felt like the dialogue was dominated by EPA personnel.

- The nutrients implementation session was very good – liked the discussion. The next session was less useful to me.
- Bacteria: Good discussion and opportunity for info sharing. Would have liked to see the discussion go into more concrete actions – where would we want to be on this issue next year? Need for resources? Work groups?
- Good discussion with multiple entities (states, tribes, EPA regions, EPA HQ).
- While I signed up for a different session, I ended up in bacteria and really enjoyed the discussion. Much like last year, I have some ideas to take home so it was great.
- Good exchange of info and challenges in addressing mercury and PCB TMDLs. Some examples of what a few states are doing, but mostly not much in the way of solutions.
- The breakout session was not well-organized. That would have made it better. While it was good for people to put out thoughts, it didn't really go anywhere and needed more direction. It was also not well-led.
- Small group discussion was excellent, and the topics were perfect. Recommend keeping this for future workshops. Very useful! Also perhaps expand this session.
- Chlorides – interesting, motivating conversation. Chloride below WQS is impacting benthic fauna – interesting, and we will pursue this research in our state.

Session #3c: Report Back and Discussion

- I think this format is a fine way to summarize the conversations, but in this report out, those who provided the summary seemed to misrepresent the main ideas from the sessions. I don't have a solution for this, but wanted to express my thoughts.
- Overview was good – much commonality between states and not much discussion – wished there would have been more – but maybe it just indicated that everyone has similar issues they are all working through.
- It was good to hear back from the other groups but it was a lot of information to convey in a short amount of time – not a way around that really.
- Good.
- I really wish there had been a way to attend all breakouts. This is the part really important as a TMDL writer and choosing just one was difficult, especially since EPA in my region is pushing to add more information on decisions and more recent research on impairments. We just don't have the time or resources to investigate and research all new relevant material on the impairments we face.
- The intro and report back was great. It was great to hear input from those who were part of another discussion.
- Bacteria: Surprised that recommendation on the bacteria TMDL is to sample only during dry weather. The criteria apply for all weather conditions. We should be expected to fix those bacteria contribution due to human activities. We may never be able to meet the bacteria criteria due to natural background levels.
- Seems like discussion on some topics led to more questions than possible solutions.
- Again, it was ok… not enough time… never enough time ☹
- I like this report back discussion as it gave me a chance to get an idea of what was talked about in the sessions I could not attend.
- Great discussions and learning experience.

- Summary discussion of challenging topics will help us as we move forward in trying to address the various TMDL projects.
- Good summaries provided.
- Not good – might have benefitted from some time between breakout session and report back session. Scope/content of report backs suggest not too productive discussions in session #3b.
- Good overview of what went on in the various sessions. I thought the structure of these three sessions was excellent. The format could be done at future meetings.
- Did not hear much that is actionable. Informative nonetheless.
- Much better than report backs from the year before! I liked that we save more time for discussion. Perhaps a better way to do it, though, would include time limits for the report backs so that there is more time for group reaction and discussion.
- I really wish I could have gotten more of the depth and discussion of other sessions, especially because mine were a bit disappointing, but I understand that there's no real solution for that aside from waiting for the workshop report later.
- This was not valuable and the presentations lacked conclusiveness.
- This needs more structure. Report-outs weren't particularly useful to the broad audience. I suggest more facilitated report-out, or Q&A session, or panel Q&A, or ? Needs more thought.

Session #4: Innovations in TMDL Development

- I wished that this session had more time dedicated to it. The session being at the end of the day was also unfortunate since most had "checked out" mentally.
- Complex.
- TX – working with soil conservation service who understands agriculture in state; Region 6 – one coordinator for CWA 303(d) list & TMDL (being used in GA in Region 4); TMDL calculator – we used this to develop Lake Lanier chlorophyll TMDL.
- Presenters could have used more time.
- Interesting; not sure we have the resources to develop/run some of these tools.
- It is hard to limit the time of presenters, but I thought ELI did a great job conceiving the presentation structure and at least planning discussion.
- Very good session.
- It was good to see what some other states were doing in their TMDL development.
- Very interesting – looking forward to thinking of how we can use these to improve our own thinking in development.
- Not particularly helpful.
- We learned how to engage stakeholders and other programs.
- This was a tough session – not sure info is transferrable (which is generally the best part of the meeting).
- Liked the FL presentation looking at gaming efficiencies in TMDL process and ways to simplify TMDL documents for public consumption. Would like to see how the experience could be transferred to other states.
- No complaints! I thought it was a good discussion although I was tired. That's on me!
- Liked Wade's tool for re-allocating without redoing a TMDL.
- Good.

- This session needed the most work. Topics presented were not that "innovative," perhaps would have been better as a modeling session, or "tools," or bring in ORD or USGS tool experts. Also have questions after each speaker, not at the end of the session. Good concept in general, but it needs more work.

Session #5a: Stakeholder Engagement

- Excellent, excellent, excellent.
- This was the best part of the week.
- Really liked the full panel portion of this session. Having each panelist talk about their own experience and take questions as a group was great (this might be my favorite session).
- So awesome! Great variety, great perspective, and great to see shared views on best engagement practices!
- Thought it was great to spend some time on Q&A with all stakeholders and big group. It allowed for some of the crosscutting messages to come out.
- Excellent panel and overview; would like to see more of these with speakers from our partners/stakeholders – e.g. State Dept. of Transportation and more agricultural organizations e.g. state conservation districts.
- Great panel – you obviously spent time trying to get people with a varied perspective.
- Great session. Great panel. Could have been a better over-arching theme.
- How were stakeholders chosen? I'm really torn about this one. Presence of regulated entities at a workshop where I hoped to speak freely to EPA/States changed the dynamic. Conversation was good, just not why I came to this workshop. Would have preferred to continue yesterday's discussions. If you want to do this stakeholder engagement type stuff, suggest a more coordinated discussion between state and stakeholder. You invited stakeholders but didn't coordinate with the state they work with. So, it isn't a fully balanced discussion.
- This was very helpful and should be expanded for the next workshop to include other partners and stakeholders such as the interstate basin commissions.
- This session was helpful to learn from panelists who have different backgrounds and shared what worked in their watersheds.
- Enjoyed listening to their stories and feedback. Answered questions in detail. I picked up a few ideas from this session.
- This was particularly sufficient – I really did appreciate hearing the stakeholders' perspective.
- This was a good session giving everyone the opportunity to ask questions about all categories of interest. Was able to get a lot from being able to ask every one of the "experts."
- Would have liked to see and hear more women on the panel and more diversity generally.
- I thought the introduction to Session 5 was probably one of the best sessions. Thank you
- This worked well for bringing in stakeholders to give advice.
- Excellent idea; great to get their viewpoints.
- Very worthwhile.
- Glad we got the chance to hear from everyone before the breakouts.
- It is all about developing personal relationships.

- The panel was great. Had a variety of stakeholders with ability to articulate their points very clearly and had a range of experience. I wish this discussion could have continued.
- Good information and ideas were presented.
- Really needed to talk to more than one group. If you do in future it would help with choices if the stakeholders gave a short bio like those introductions earlier. After hearing them I would have chosen environmental organizations instead – might be better to call them grassroots organizations – not interested in Ducks Unlimited or Sierra Club etc. – but those local guys would have been good to talk to.
- Good sessions!
- Great choice of speakers – all knowledgeable and dynamic speakers. Really enjoyed this session and found some of the suggestions very helpful.
- Enjoyed hearing from different entities and getting that point of view.
- This was a great opportunity to hear from a diverse group who all engaged with different stakeholders. This was a learning experience.
- I really enjoyed this and the following sessions. To me, this was one of the highlights of the whole workshop.
- Interesting session – I don't think that the speakers increased my "program knowledge," but they were engaging and interesting.
- Panel was interesting. Helpful insight. Good to have it before the smaller breakout.

Sessions #5b and #5c: Engagement Breakout Session I and II

- These sessions needed twice as much time as they got. They were useful but, in at least one of them, the presentation given by one of the guests took up most of the session.
- Agriculture breakout was good; local gov't – a bit disappointing that so much time was spent on PowerPoint presentations, so little time left for discussion (though presentations were good); one shortcoming: almost all men, one woman.
- Not much more learned – seemed a little disorganized. Maybe have and/or discussion pre-survey questions to help organize and structure the breakout.
- For Local Government Breakout, too much time spent on presentations leaving no time for discussion. For both, more time could have been allocated for discussion.
- I liked this. Great discussions. Only complaint was that while it was interesting, discussion time was limited by lengthy opening remarks by the guests. Perhaps a time limit would work. One session was great and we had good discussion. The other was just short and rushed.
- I went to the environmental org. session and it was great! I also went to local government session. It was more PowerPoint-based and was good, too, but more discussion was better.
- Agricultural/Enviro: Somehow the first one felt too short, the second one seemed to have sufficient time. It probably just took too long to settle into the format the first time.
- The two sessions I attended were very interesting and worthwhile; make them longer and maybe allow us to attend all of them (maybe over two days).
- I thought the local gov't was well-organized. Good idea to have a short presentation. Federal land management should have done the same.
- Basically good, but not clearly connecting to over-arching theme.

- This was very helpful and should be continued in future workshops. Talking with these stakeholders highlight for me how we in the state programs frequently believe we are engaging stakeholders when we are not.
- Helpful. Although we have different issues, the session gave us ideas about how to address and engage with farmers.
- Enjoyed these sessions, as they're interactive.
- Very informative.
- I don't know how useful this portion was. I was in the engagement session for regulated entities, and I don't think any states got the opportunity to talk or ask questions. Industry reps. mostly discussed how they think states should do site specific standards for them – it was interesting to hear the perspective but would've liked to hear states work for those types of activities and challenges. Ag. was more interesting.
- I think it would have been good to have a little more time in these breakout sessions.
- Both sessions were beneficial, but I would have liked to hear more from the entire panel.
- I think session 5a was better than 5b and 5c.
- Some individuals did not provide any additional information or a more detailed explanation in the breakout sessions.
- Could have used a little bit more time in these sessions. It would have been interesting to have a follow-up with the panel after these sessions.
- Indiana meets monthly with all the environmental groups in the state; EPA has Data Discovery Tool to look at data; Penn. has a GIS Integrated Report Viewer; CA – Save Our Water Program – water conservation.
- I didn't get as much from the breakouts and felt I was missing out on the other discussions.
- Good.
- Very good information regarding outreach.
- Brief discussion was <u>great</u> – needed to go 3 hours!
- The session with local governments was more specific to larger cities than I expected. Helpful, but if this type of thing is done again consider different sizes/types of local governments – or better description of session?
- Benefitted from getting a different (external) perspective on our programs and policies.
- Sessions were okay. I thought the big group discussion was more helpful since all speakers could respond to various questions.
- Happy we were then able to go into more depth with stakeholder engagement groups that interested us. These went by quickly and a lot of material was covered.
- Not much more learned – similar questions and issues nationwide. Did learn a little more.
- I was in the "Regulated Entities" & "Env. Groups" sessions and they did a good job on identifying problems, but less so of solutions, especially the regulated entities session. All the citizen science stuff in the environmental groups was great but I don't know if it deserves ~2 hours' worth of ELI Agenda time.
- Again, I'm not sure that this benefitted my program knowledge/experience, and as such, I likely would not recommend continuing with this session in the future. However, the topics/speakers were definitely interesting.
- Regulated community – very interesting, lots of good ideas. Local government – Sioux Falls talked for~25 minutes so reduced discussion time drastically ☹

Session #6: Breakouts by Region

- Very good session, could have used a little more time.
- Helpful to have dedicated time to discuss issues specific to our region.
- Always nice and enjoyed. The pre-planning worked well for discussion.
- Nice discussion, good opportunity for states to see what others are doing.
- Great! Keep doing these. Allowed some time for each small group to digest some of the info from the meeting and see how it could apply to the state's specific circumstances.
- Good update – always useful session.
- Good opportunity to bring together partners.
- Very good. Nice to compare notes with sister states.
- Very helpful, more time needed! Talked some about issues, not enough time for concrete solutions.
- More time should be available for these sessions as this is the only time that we meet face to face in recent years.
- Great discussion with Region Reps. and states in the Region, especially integration of 319 and TMDLs.
- Always good to engage and coordinate with your Region's EPA and states folks.
- Enjoyed meeting with people in my Region. Picked up a few ideas and suggestions from these sessions.
- Great session.
- Wonderful to get a chance to meet with Region 4.
- Very useful and productive discussion and networking. Thank you for this opportunity.
- Very important and helpful – thank you!
- Not enough time to adequately discuss items. Some states dominated the discussion.
- One of the better sessions. I would find it beneficial to have this type of meeting (with everyone from the region) more frequently.
- We worked out some things and learned we have some work ahead of us.
- Yeah! EPA Region is going to have a stable TMDL meeting. Hydrologic alterations (4C) – due to what dams, water withdrawals, concrete channelize nutrient TMDLs – lessons learned: adapt the correct standard.
- Always great to have the Region discussion – it's rare we get to meet face to face due to travel/budget. Almost wish we could have more regional discussion.
- One of my favorite discussions – it was productive.
- Good – used mostly to set agendas for future conference calls. If we can't get our travel ban lifted may need to look at expanding time so we could have a TMDL regional meeting.
- It was useful that the region provided a general agenda for this section.
- Great opportunity to meet and develop relationships with neighboring states and EPA counterpart.
- Good experience. Opportunity to engage with area representatives and hear about their challenges and successes. Always good opportunity to talk with region and neighboring states. Hope it remains part of agenda.
- Still a great opportunity to talk with regional partners face to face.
- Always useful to get together with regional staff – please keep this session.
- I enjoyed the regional breakout session.

- Appreciated the opportunity to talk with neighboring states.
- Always good to talk.
- Since we didn't have handouts for this session, it made it difficult to cover and address topics among the region. However, I really think that this is an essential session to helping great work from states.
- Always a good use of time at these meetings!
- Always a great idea! Very helpful and interesting.

Optional Small Group Training

- CADDIS training very good; in future, might be good to have a shorter training.
- Sorry I didn't go ☹
- R Tools – very useful.
- R Tools – Great opportunity to do hands on training. Ran smoothly.
- CADDIS was good session – would like more focus on a real world example of how it is used to develop a TMDL.
- Laura went too fast. Should have gone slower enabling people to view their own data. It would have been useful to have had a chance before the class.
- Modeling session should have started on time and been a bit more organized.
- The groups were a little too large and I would suggest having two training groups for each topic. Otherwise these were very good.
- Great session.
- I participated in CADDIS – it was very informative.
- Water Balance Model Futures was exciting and useful. We will be using this tool to further develop our award-winning climate change adaptation plan.
- I was in the CADDIS presentation – having the training this late on the second day was not all that successful. It may have just been the topic as well as the meeting space, but I found it hard to sit through.
- Glad to see demo, very helpful.
- R tools: Great to get your hands on these new tools; can't wait to put them to good use!
- CADDIS: Very long. Seemed a little disorganized. Seemed like after going through the process that it was still BPJ. They had no justification for why the decisions made were made. They asked us to evaluate the data they tossed up but didn't seem familiar with it. Seemed removed from reality of the situations we are actually in.
- It may be that I didn't read the descriptions close enough, but I had trouble choosing a session and then felt I was missing out. Or the tool wasn't as useful as I had hoped in terms of applicability to TMDL development. But I did like small training options, and I liked being able to test out the USGS tool, rather than just sit through a presentation – the hands-on portion was great.
- Informative and well presented. Expect to use the tools.
- R tools: Very interesting but due to short time some details left out – like where to find this new program -- I'm guessing EPA website?
- Please provide with specific link for each of the tools presented. Also, indicate if exist for webinar or training for those.
- Complex – more time needed than two hours allotted.
- CADDIS overview was very informative.

- Really liked the more technical focus of the CADDIS workshop.
- A good chance to test out tools relevant to my day-to-day.
- Very informative. Will be seeking more assistance with Healthy Waters Assessment.
- Loved having the opportunity to see more of some great tools. I also liked that it was optional.
- I enjoyed the USGS climate modeling training. It was short, but I got enough info to play around with. Interesting.

Informal Evening Session

- ACWA got a ton of feedback & interest & email addresses.
- I didn't go but kind of regret it…damn email…
- Did not attend.
- This was great!! I went to the modeling session; it was very helpful and has reinvigorated my interest. Nice to know there are resources available.
- ATTAINS display was very helpful. Program developers have explained how the future looks.
- Consultants were friendly and listened to our suggestions and comments.
- Modeling – excellent
- I am super interested in continuing to participate in the modeling networks – our state doesn't have internal capacity to model or to pay for modeling so as a manager I feel that I don't have any tools. This resource is indispensable for a state like mine. I also hope it will build to a point so that we are able to be on the teaching side of this equation.
- These settings are so positive for learning and networking.
- Modelers: Went well. I think everyone is excited about joining a network of like-minded modelers to support each other.
- Need to decide on models that can be used to have open source code. There are problems with "black box" models; have no idea what is going on.
- I missed the evening session because I felt burned out by the end of the day. But I liked the options – they are both interesting. And I talked with Region 8 folks about modeling support and needs. The public website of the ATTAINS info will be very useful to Colorado.
- Excited about modeling workgroup.
- I have to admit, I was pretty tired but so glad I went. I think these are good ideas and you could expand past model groups to maybe those dealing with WQS changes or how to use social media or other "pet projects" people might have and like a support group for. ☺
- Good experience. Great work by fellow Annie in developing the mock website.
- Really like the idea of WQ modeling network. Kudos to Jeff, Julian, Taimur, and Jason!!
- N/A – allergies went haywire so I didn't attend.
- Modeling session was good, could probably make this a main workshop topic.
- Modeling – I applaud the effort. We will support by participating but at this time have no modelers on staff

Session #7: Urban Waters

- Good presentations.

- Great examples of various storm water control approaches, including permitting approaches.
- I thought this was a good session with good discussion. I may be biased, though.
- Nice progression/overview.
- Liked the progression of the examples in the presentations from the states.
- Excellent presentations, but the uneven length of presentations should be looked at!
- Pretty good session; state presenters were great.
- Facilitated discussion is really helpful. Really smart to come up with discussion topics beforehand – true for all sessions.
- Urban Waters Assessment and problem solving using biological indicators will be helpful in restoring areas that need attention and MS4 permits will have a large role in implementing BMPs to reach the goal.
- Liked the flow of each presentation: assessment → successful tools used for implementation providing grants.
- Great – interesting challenges – I really look forward to checking out the story map Connecticut has developed for their TMDL.
- Good session, worth repeating.
- Lots of great solutions to urban issues.
- Very good presentations and information. However, I wish presenters would have had a few more minutes.
- Both this session and the following session are good demonstrations/case studies. These are always educational and can be very relevant if you're working on the same issue. Therefore, I suggest future breakout sessions to present case studies for particular pollutants or sources.
- I liked this format – multi short presentations with one theme.
- Very interesting – our urban areas are just developing, so it's great to hear all that is going on by those with experience.
- Good presentations – inspiring approaches/ideas.
- Nice progression of topics – hearing from VA, CT, and DC was very valuable.
- Liked it!
- Session was relevant but too broad – recommend modeling this more like the Nonpoint Source Integration session. Focus on integration with TMDL more.
- CADDIS – interesting. Now I wish I went to that breakout session. VA – will check out their website. CT – learned a lot and will review their permits.

Session #8: Nonpoint Source Integration

- Good presentations, good practical examples. Great examples of integrating watershed plans and TMDLs. Presenters highlighted what worked but also issues and how those were addressed and lessons learned.
- Good session with good discussion. Good timing, too!
- Good examples provided to tell story that puts together 303d/TMDL/319/Stakeholders programs.
- TMDLs as more of an art…Great to see creative solutions to bring about partnerships focused on implementation. Thought it followed nicely from stakeholder discussions.

- Hybrid 319/TMDLs may work on a very small watershed. However, it may be better to find a WBP and develop TMDL. Coordination between the NPS and TMDL programs is vital for hybrid TMDLs. Early identification of stakeholders will be necessary to meet the Nine-Minimum Elements of a WBP.
- Liked the brief intro to NPS. Presenters were knowledgeable about their states' issues. I liked their slides; they were engaging and easy to follow.
- Very good presentations.
- Great idea to make a TMDL also a 9-key element plan – hybrid! Would love to know what is missing in GA TMDLs that do currently have implementation plans.
- Great to have some specific examples of NPS integration.
- Case examples of anything are always my favorite, especially by people who actually worked to complete things. They know all the crazy details I'm interested in.
- Liked the concept that stakeholders played important role in identifying sources of pollution (Wyoming).
- Appreciated hearing from MI, NE, and WY.
- A really great panel and great discussion!
- Excellent session – I think this could be a good theme for future workshops. Have questions after each speaker, not at the end.
- Interesting contrast of projects – good selection.

Training Workshop Wrap-Up

- Kudos to Jeff for ending on a high note with humor!
- YOU GUYS OUTDO YOURSELVES EVERY TIME!! Great closing Adam + Jeff! #BFFFOREVER
- Excellent!
- Thank you! Great job!
- Thank you again. Great job! A++++ to Jeff ☺
- ACWAA ~ info + 303(d) – Thanks; Quality of presentations – five stars! Looking forward to report from ELI.
- Inspiring – all three!

Other Comments or Suggestions

- I was impressed with how well this training was organized and run/facilitated. Participants were given all necessary info prior to and during the training regarding logistics – I really appreciate that! All ELI staff were very professional and courteous, and I recognize how much time and effort was put into making this training a success. Thank you!
- If we have another conference here, it would be good to have a longer mic boom at the podium! It was hard to hear because no one could really get the mic close enough.
- Build in free time/hike or some other group activity. Even though one afternoon had "optional" talks, tough to miss them.
- Overall I was impressed at what was packed into 2 ½ days.
- Would like to see participant list organized by state. Would be easier to remember who is who and contact later.

- I think having this during the week of Memorial Day is fine once in a while, but not every year. Please consider some other week for next year. Seriously, well done to ELI staff for coordinating this workshop. Very professional and helpful, really appreciate all their hard work, both before and during the workshop.
- One of the common questions throughout the workshop was, "How do I communicate with the public or the target audience?" I think it would be useful to revisit the "Water Words That Work" workshops from several years ago. It would be good to identify a few states that communicate well to provide some examples and possible templates.
- I found the Q&A more insightful than the actual PowerPoint presentations. Some presenters were passionate about the information presented and others were soft-spoken and boring. The room temperature in the auditorium was too cold.
- Please consider holding the workshop on a different week that does not coincide with a holiday. This should make flights cheaper and possibly allow more participants from each state.
- Massage therapy between sessions; opens the mind for more productive conversations.
- Large panel of NGOs was not as effective as the rest. Breakout sessions needed focus; they were just a recitation of unique problems; nothing was resolved. All topics were interesting and relevant to my job, but maybe not for this conference.
- ELI staff was very helpful and did an excellent job of facilitating the meeting.
- Schedule next year's workshop for after graduation season. It would be interesting to have a future session on TMDL alternatives. Include a map of EPA regions in the binder. Perhaps have a focused discussion/meeting of federal agencies and states/tribes/territories on water quality. It could include NRCS, USFS, BLM, DOD.
- Thank you for saying names and where people are from; it helps since you can't always see. It seemed there were a lot of name tag and plate mistakes. The helper people weren't overly helpful.
- Would really like information on new research regarding impairments. If it can't be presented in conference: a resource fact sheet, by impairment, to find relevant papers would be very helpful. Research both in terms of how parameters might interact as well as any information on BMPs for reduction, especially if it contains information like "General Reduced Nutrient Concentrations By 25-40%." This is what is being required by our regional EPA. I understand this is a hugely time consuming request, but maybe ELI has some interns that are bored? ☺ Or maybe there is a database out there that has this kind of information? If so, a link to that would be great. Or even a list of best information sources/universities for studies on different parameters. Something to at least be a starting place other than a general Google search.
- Webinar for modeling basins.
- Keep up the good work. Really liked more small group discussion format. Thought this year was good balance between large groups and smaller group breakouts
- Would prefer to have workshop a little earlier in the year if possible; slightly more difficult to make travel arrangements around Memorial Day; enjoyed the workshop overall.
- What's in a plan? TMDL, 5-alt., 9-element alt. protection; Crosswalk – which ones are appropriate under certain situations? Which ones allow for additional funding opportunities (e.g. 319)? Common issues or reasons why EPA does not approve 5-alt or 9-element or other alternative plans. What are potential solutions to keep programs

moving forward (progress)? Provide examples of the best available across the nation – how can the processes be streamlined?

- While I'm not usually cold with indoor temperatures, it was extremely cold in the auditorium. Having just 3 degrees warmer would be a great improvement. Thank you for keeping our sessions on schedule! The binder and materials were excellent!
- In the future, if having more diverse topics, then have more small group breakouts where people can attend topics of their choice. While NCTC is a great facility, there is benefit to rotating the meeting to other parts of the country so that more people from central and west coast states can attend. I recommend having a west coast meeting next year, preferably at a similar facility, if available. I recommend having a "technical" meeting, similar to the data meeting (i.e., modeling, statistics, GIS, TMDL tools, monitoring). Current meetings are mostly policy-focused and not relevant to many personnel. I recommend having a litigation session to summarize existing litigation throughout the states.
- ELI and EPA are to be congratulated on a great conference!

APPENDIX 4:
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 2017 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.