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INTRODUCTION

Starting in late 2023, ACWA Watershed's Committee Co-Chair Traci Iott, along with ACWA staffer Jasper Hobbs, conducted interviews with state representatives covering a wide range of topics on the 303(d) / TMDL program. The results of those interviews were compiled and combined into the report below.

1. What are the current focus areas/priorities for your 303d Program? Do you need any support from ACWA or EPA to help your program be successful with this task?

States identified a wide range of priorities as they prepared their water quality goals under the current Vision framework. The main goal remains improving their Total Maximum Daily Load (TMDL) work, with many emphasizing the need to update older TMDLs developed in the mid-2000s and to transition toward more proactive watershed-based efforts such as Advanced Restoration Plans (ARPs) and protection strategies. Nutrients and bacteria are currently the most common pollutants of concern, often tied to eutrophication, harmful algal blooms, and source water protection. Other recurring focus areas included chloride, sediment, metals, and emerging contaminants such as PFAS and aluminum. Several programs also noted a growing interest in integrating environmental justice, tribal coordination, and climate considerations into their prioritization frameworks, but are uncertain on if/how they can proceed. Many states described a focus on a "Vision 2.0" approach that emphasizes watershed level planning, measurable outcomes, and protection of high-quality waters. Some have restructured or expanded internal teams, adding restoration units or enhancing data and monitoring systems, while others are still in early stages of rebuilding capacity after staffing changes or resource constraints. Overall, states see Vision 2.0 as an opportunity to strengthen restoration planning.

Technical needs were a major theme across responses. States highlighted the importance of improving modeling tools, such as nutrient and lake models, and making them more user-friendly. Data integration and consistency between assessment and TMDL development were also cited as ongoing challenges. Several programs are using tools like the Recovery Potential Screening (RPS) Tool to support prioritization but requested additional training and peer exchanges to build confidence in these methods. States with more technical capacity often serve as informal mentors to others, while programs with fewer resources rely heavily on EPA contractors or are seeking open- source tools to reduce dependence.

Collaboration was a consistent and valued thread throughout the responses. Many states expressed appreciation for EPA and ACWA partnership, particularly through ongoing coordination calls and training opportunities. However, experiences varied: some described positive regional relationships and constructive technical support, while others felt communication was slow or overly prescriptive, especially during the Integrated Report approval process. Several respondents recommended the creation of targeted workgroups or peer-learning sessions, such as a national discussion series on chloride management.

A number of cross-cutting themes emerged as states expand their program focus. Environmental justice and climate resilience are increasingly seen as integral to setting priorities, though most states are still exploring how to apply these concepts in practice.

Public engagement and transparency have become higher priorities, particularly in developing Vision 2.0 strategies. Many programs also emphasized the importance of aligning TMDL and 303(d) work with other Clean Water Act programs such as 319 (nonpoint source), permitting, and biological monitoring. Across all responses, states shared similar challenges - mainly, limited staffing, constrained funding, and the need for greater flexibility in how priorities are set and tracked. Most agreed that while national consistency and coordination are valuable, programs work best when they have room to tailor their approaches to local conditions and capacity.

2. Are you working or planning to work on any Advanced Restoration Plans (TMDL alternatives) or Protection plans? What successes or challenges have you had?

Most states reported either working on or planning ARPs or similar protection approaches. Some noted successes in implementation, but many also described challenges such as limited staffing, funding constraints, and technical hurdles.

States vary widely in their implementation of Advanced Restoration Plans (ARPs) and Protection Plans, reflecting differing program maturity, priorities, and capacity. A number of states are actively developing or implementing ARPs, often focusing on nutrient or bacteria impairments and seeking to move straight to implementation without the lengthy process of a full TMDL. Several have successfully received EPA approval for ARPs. These states tend to describe ARPs as a practical, flexible alternative to traditional TMDLs, especially for waters with lots of nonpoint sources. For many, the appeal lies in reduced documentation requirements, closer alignment with 319 funded watershed work, and faster progress toward on-the-ground restoration.

Many states, however, are either not currently pursuing ARPs, or remain in the early planning stages. In this case, they are often citing limited staffing, funding, time commitments, and competing priorities. Some reported that ARPs and protection plans have not been emphasized by leadership or that recent staff turnover has reduced institutional knowledge. A few noted while ARPs take less time than TMDLs, unclear approval pathways and inconsistent EPA expectations have created uncertainty and delays, although this reason has been less frequent as more examples of approved ARPs are now available.

Several respondents described frustration with administrative complexity, shifting definitions, and the additional burden of reconciling ARPs with Integrated Reporting and ATTAINS requirements.

Protection plans are even less common, though a handful of states have initiated or expressed interest in these efforts, often tied to nonpoint source or high-quality waters protection programs. Some integrate protection components directly into TMDLs or watershed-based plans rather than developing standalone protection documents. A few see protection as an emerging priority, particularly considering climate resilience and maintaining existing water quality in healthy watersheds, but still feel that the effort and focus should be on TMDLs.

Overall, states are seeking greater efficiency and integration between TMDLs, ARPs, and 9-element watershed plans, with some proposing to consolidate them into a single, streamlined planning framework. Many recognize that ARPs can help accelerate restoration by avoiding duplicative planning steps, provided adequate staff, technical support, and EPA clarity are available. Others remain skeptical, viewing ARPs as a heavy use of time and resources that they may not have. Responses compared to the previous iteration of this report shows that ARPs are now much more common and states are generally more willing to utilize them when appropriate.

3. **Does your program use models? Which ones? For what types of projects?**

State programs use a wide range of models. Their choice and application largely depend on the type of project, as well as the available expertise. Statistical models, such as load duration curves and trend analyses, are commonly run in-house, while more complex watershed and water quality models such as HSPF, SWAT, LSPC, EFDC, and WASP, are often outsourced to contractors.

Some programs leverage specialized tools for tasks such as point-source allocations, reservoir modeling, ocean acidification, or equity analyses, and GIS-based platforms like Model My Watershed are increasingly adopted for faster, user-friendly assessments.

A consistent theme across programs is limited in-house modeling expertise. Staff may have general knowledge or attend workshops, but full implementation of complex models typically require contracting with specific expertise. Successes are most often reported with simpler models, in-house hydrology work, or through leveraging external partnerships and funding support. Conversely, challenges frequently center on staffing limitations, high model complexity and cost, data availability and quality for calibration and validation, and maintaining model relevance over time. Programs also note difficulties with proprietary tools, IT support, and integrating models across systems. Overall, while statistical and simple models are managed internally, complex watershed and water quality modeling largely depends on external support, with programs actively seeking to build staff expertise and improve data collection for more effective modeling outcomes.

4. **Nutrients and Bacteria have been identified as issues that many states are dealing with. Have you developed any strategies to address these issues?**

Nutrients and bacteria were consistently identified as pressing issues. Some states have developed standards or TMDLs to address these pollutants, while others are still in the process of building strategies. Additional concerns included chloride and PFAS. Many respondents highlighted the scale of these challenges relative to available resources.

All states are actively addressing nutrient and bacteria impairments, though approaches and progress varies widely, as does their focus on addressing them through TMDLs. Many states have developed TMDLs for nutrients and bacteria across significant portions of their watersheds, while others are in the process of developing numeric nutrient criteria or statewide nutrient reduction strategies. Nonpoint source (NPS) contributions are a common challenge, often limiting the effectiveness of nutrient reduction through TMDL development. Strategies for bacteria mitigation include increasing monitoring frequency, adopting E. coli criteria, and engaging with stakeholders for source control.

While some states have established methodologies for phosphorus, nitrogen, and bacteria TMDLs, others are in earlier stages of development, often hindered by staffing turnover, limited funding, or gaps in data collection. Successes include long term nutrient reduction through efforts like the multi-state Chesapeake Bay TMDL, completion of bacteria focused TMDLs, implementation of watershed plans, and leveraging federal programs and training opportunities.

Challenges are frequently related to the scale of nonpoint source pollution, resource limitations, regulatory timelines, and the difficulty of implementing controls on widespread or diffuse sources. Coordination with federal, state, and local agencies, as well as engagement with public stakeholders, is an important part of many strategies, but variability in resources and legal frameworks creates uneven progress across states.

Other contaminants that have taken precedence include chloride, largely from road salt or mining activities, is a widespread issue, with some states developing monitoring programs and exploring best management practices. PFAS and other contaminants of emerging concerns are noted by multiple programs as significant, unresolved challenges. Some states are experimenting with new monitoring and analytical methods, such as molecular microbial tracking, high-frequency sampling, and reference stream approaches, to better understand these contaminants and inform management. Other issues include conductivity, hydromodification, total suspended solids, temperature, harmful algal blooms, mercury, and fish tissue contaminants.

Overall, while nutrient and bacteria management remain a central focus, states are increasingly recognizing and planning for additional contaminants such as chloride, PFAS, and other emerging pollutants, with a combination of regulatory, monitoring, and educational strategies being employed to address these complex water quality challenges.

5. **Does your state implement narrative WQS in your 303(d)plans? What approaches do you use? If you aren't currently doing this but would like to, what obstacles are in the way?**

Several states already implement narrative criteria, often for aquatic life and biological assessments. Others expressed interest in doing so but noted obstacles such as lack of clear guidance, technical limitations, or resource shortages.

Most states have narrative water quality standards (WQS) in place, but their use in 303(d) listings and TMDL development varies considerably. Several states actively apply narrative criteria—particularly for pollutants such as nutrients, sediment, trash, oil and grease, and those affecting aesthetics or biological integrity. These states often rely on reference conditions, biological indices, peer-reviewed evaluation guidelines, or biocriteria models to interpret and apply narrative standards. In some cases, narrative criteria serve as a "catch-all" for issues not covered by numeric standards, such as visible sheens or odors.

Other states, however, have narrative standards but rarely use them in 303(d) plans due to a lack of translation procedures, limited staff capacity, or policy restrictions that prevent narrative-based listings. Some are exploring ways to translate narrative standards into measurable endpoints, particularly for emerging issues like harmful algal blooms, secondary recreation, or trash.

Common obstacles across states include the difficulty of converting qualitative narrative language into defensible numeric or measurable endpoints, insufficient data and staff resources to support

interpretation, and stakeholder or industry resistance to using narrative based criteria. A few states are addressing these challenges through the development of predictive biological models and biocriteria rules, while others are implementing empirical or peer-reviewed guidance to strengthen their interpretation of narrative standards. It is evident that while narrative WQS are nearly universal, their consistent application in 303(d) programs remains limited, and future progress will depend on developing clear translation methods, improving data and staff capacity, and resolving regulatory or policy barriers.

6. **How is stormwater handled in your 303(d) plans?**

States vary widely in how they handle stormwater within their 303(d) plans, reflecting differences in regulatory structure, program maturity, and the role of municipal stormwater permits (MS4s). Many states incorporate stormwater where it is identified as a pollutant source, often through waste load allocations (WLAs) in TMDLs. In these cases, MS4s are assigned pollutant reduction targets or percent reductions based on established baselines, and these are often embedded directly into stormwater permits with compliance schedules that may extend over multiple permit terms. Several states, such as those in the Mid-Atlantic region, translate numeric WLAs into practice based BMPs, reflecting a move toward practical implementation measures rather than strict numeric limits.

Others approach stormwater indirectly or more qualitatively. Some states consider stormwater primarily through modeling of "critical conditions," monitoring during runoff events, or incorporating narrative language into integrated reports. A few have begun explicitly linking TMDL requirements with MS4 permits for the first time, while others, especially those without large MS4 systems, have not yet integrated stormwater into their 303(d) planning at all. States also face recurring challenges: difficulty defining appropriate, enforceable limits for rainfall-driven systems; limited monitoring data; lack of specific stormwater criteria; and uncertainty around how to fairly account for stormwater variability.

In summary, while some programs (e.g., those with mature MS4 frameworks) are advancing toward structured integration of stormwater into TMDLs and implementation plans, others remain in early stages, focusing on research, pilot projects, or coordination between permitting and nonpoint source programs. The general trend points toward increased incorporation of stormwater into 303(d) planning, though with ongoing debate about how to balance regulatory enforceability with hydrologic and practical realities.

7. **What's your experience with using ATTAINS and How's My Waterway? What feedback do you have on your experience so far?**

Experiences with ATTAINS and How's My Waterway (HMW) vary depending on the state, but most, if not all, had appreciation for their usefulness, while some frustration with technical and usability challenges remain. Most states actively use ATTAINS for Integrated Report (IR) and TMDL submissions, though the level of comfort and reliance differs depending on in-house data systems and staff familiarity. Many respondents described ATTAINS as improving over time: offering better structure, support from EPA, and national data accessibility. However, states noted a steep learning curve, frequent glitches, and data entry constraints, such as problems handling merged or split assessment units, duplicated segments, or parameters linked to multiple designated uses. Several states expressed frustration with the inability to make edits directly, the need to go through EPA HQ and regional administrators for corrections, and unexplained system errors that delay submissions. While some states praised EPA's responsiveness and

support, others described ATTAINS as cumbersome or built for programmers rather than intuitive for Clean Water Act practitioners. A few states have developed bridging databases or automated scripts like Access, R, or Exchange Network interfaces to streamline uploads, while others still rely on manual entry and cleanup processes.

In contrast, How's My Waterway received more mixed reviews, particularly regarding its role in public communication. Some states actively promote HMW as a user-friendly public portal or as a complement to their own state dashboards, citing its value in providing a national, accessible view of water quality data. Others, however, find it confusing or misleading for non-technical audiences, especially because it condenses assessment categories into simplified groupings (e.g., "Good," "Polluted," "Unknown"), which can differ significantly from a state's official 1–5 categorization. States also noted that HMW often lacks finer spatial or naming details, such as searching by specific waterbody or assessment unit, or connecting tributaries to main basins. A few states have opted to direct citizens to their own state- specific water quality portals or interactive maps rather than relying on HMW. In many cases this is due to their own portals pre-existing HMW.

Common themes across responses include the recognition that both systems have strong potential but require continued improvement to meet state and public needs. States praised the support and communication from EPA but consistently requested more flexibility in data entry and correction, better integration between ATTAINS and state databases, clearer documentation and training, and enhanced usability and search features for both ATTAINS and HMW. Overall, while there is broad appreciation for EPA's progress, respondents emphasized the need for greater user control and intuitive design to make ATTAINS and How's My Waterway more effective tools for both state programs and the public. That said, all respondents noted that vast improvements have been made, and that they hope that will continue.

8. **Many states worked to strengthen partnerships through the Vision process. How have the partnerships within and outside your agency been going?**

Collaboration between 303(d) programs and other Clean Water Act (CWA) programs such as monitoring, permitting, water quality standards, and nonpoint source (NPS) management, ranges from deeply integrated to loosely coordinated, depending largely on agency structure, staff size, and institutional history. Many states report strong internal coordination, especially where monitoring, assessment, and TMDL development are housed within the same division. In these cases, regular meetings, shared data systems, and cross-program teams are common, ensuring alignment from monitoring design through implementation. Some programs even embed liaisons from permitting, stormwater, and agricultural NPS teams into each TMDL project, emphasizing the value of early and ongoing communication.

Other states describe a more fragmented system, where collaboration occurs mainly on an as-needed basis. These programs often note challenges with information flow, particularly between TMDL and NPDES permitting staff, where mismatches between waste load allocations and permit conditions can occur. A few respondents highlighted that while monitoring and NPS coordination is strong, permitting remains more "removed," and data sharing tools or cross-program documentation could improve integration. Staff turnover and organizational silos also limit continuity and shared understanding in some places.

Smaller or more centralized agencies often reported easier communication and flexibility, with staff wearing multiple hats across programs (e.g., serving as both TMDL writers and monitoring leads). Others, especially larger states with decentralized structures or separate monitoring agencies, described coordination challenges and efforts to build more direct data-sharing systems or joint planning frameworks. However, most states do feel that interagency collaboration and coordination is improving.

When it comes to outside partners and other stakeholders, most states reported using a wide variety of strategies to build partnerships with stakeholders outside their agencies. Nearly all programs emphasize public engagement and transparency through meetings, forums, outreach events, and accessible information such as fact sheets and story maps. Many also rely on citizen science and volunteer monitoring programs to expand data collection capacity, strengthen community relationships, and increase scientific literacy among the public. These efforts are often supported by small grants, partnerships with universities, or coordination through existing frameworks such as 319 programs, watershed councils, and conservation districts.

Several states highlighted structured coordination, such as committees and roundtable meetings that bring together agencies, local governments, and regulated entities. A few states mentioned having formal offices or liaison positions dedicated to agricultural or watershed collaboration. Others have built relationships with organizations like the Army Corps of Engineers, universities, and other non-governmental groups to improve the use and quality of partner-collected data.

Common themes across the states include the benefits of local collaboration, especially through local watershed coordinators who provide on-the-ground connections to communities. These often highlight the importance of clear communication pathways with permittees and dischargers.

However, challenges persist. Several states noted difficulty engaging tribes and environmental justice (EJ) communities, citing a lack of resources and communication barriers. Some programs, particularly newer or smaller ones, struggle with limited staffing and low public participation despite outreach efforts. Others described inconsistent engagement with EPA regional offices or challenges ensuring volunteer-collected data meet quality assurance standards.

Most states recognize that building partnerships requires ongoing communication, shared data systems, and local engagement. Successful approaches tend to combine formal structures (e.g., committees, liaison roles, data-sharing frameworks) with grassroots involvement (e.g., citizen monitoring and education). As with many of these questions, differences across states largely reflect program resources, agency size, and the maturity of their partnership networks. That said, there is broad consensus that collaborative, community-based relationships are critical for advancing water quality goals.

9. **What innovations or changes have you made within your program to improve program efficiency, improve workflow or program effectiveness?**

States reported a wide range of innovations and internal changes aimed at improving the efficiency, workflow, and overall effectiveness of their 303(d) programs, with efforts generally focused on automation, staff development, data management, and strategic shifts in program priorities.

Several states are modernizing their data assessment processes through automation and tool development. Some have created custom assessment calculators and databases that reduce months-long assessment work to mere minutes, grouping similar waterbodies or impairments to streamline decision-making. Others have developed standardized templates, detailed procedural documentation, or training materials to improve knowledge transfer and reduce disruption from staff turnover. These efforts are often paired with broader succession planning and standard operating procedures to maintain program continuity.

Several states emphasized workflow restructuring, such as integrating assessment and reporting processes, coordinating multiple Integrated Report (IR) cycles simultaneously, or shifting focus away from quantity (e.g., number of TMDLs produced) toward quality and implementable outcomes. Some also highlighted the benefits of the "Vision" framework, noting it brought greater flexibility, better-defined staff roles, and improved prioritization. Others are experimenting with alternative approaches like Advanced Restoration Plans (ARPs) and combined 9-Element/TMDL plans to consolidate planning requirements and streamline implementation.

However, a recurring theme is that efficiency gains can only go so far without adequate staffing and resources. Some states reported that while automation and workflow tools temporarily boost productivity, they require maintenance and can become obsolete if not supported. Staff recruitment, training, and retention remain ongoing challenges across many programs.

Finally, a few respondents described cultural and strategic shifts toward engagement and practical outcomes, such as focusing on real water quality problems rather than procedural targets, incorporating continuous monitoring, and building stronger relationships with local watershed partners and conservation districts. Overall, while states vary in resources and program maturity, most are taking concrete steps toward modernizing workflows, institutionalizing knowledge, and aligning staff and tools around more efficient and meaningful water quality outcomes.

10. What does your program do well? What challenges do you face?

Across the states, most programs reported strong internal teamwork, cross-program collaboration, and commitment to meeting Clean Water Act (CWA) goals despite ongoing challenges with limited funding, staffing shortages, and growing workloads. Many states expressed pride in the dedication and innovation of their staff, describing their teams as adaptable, resourceful, and committed to maintaining progress under constrained circumstances. Several programs emphasized effective collaboration (both internally and externally) as one of their biggest strengths.

Several respondents highlighted recent successes in automation, data management, and process streamlining. Some programs have implemented new tools for assessments, data visualization, and QA/QC, increasing transparency with the public and improving communication with EPA. Others have built strong inter-program coordination structures that connect TMDL, NPS, and permitting efforts more effectively, while a few noted specific accomplishments like statewide nutrient reduction work or expanded public and tribal engagement.

Despite these successes, challenges are pervasive and largely consistent across states. The most common concern is insufficient funding and staffing. High turnover and loss of institutional knowledge compound

this issue, while recruitment challenges can limit capacity. Several programs noted burnout among small teams, a lack of technical expertise in some areas, and the burden of training new or inexperienced staff.

Nonpoint source (NPS) pollution remains one of the most persistent challenges. Many programs cited limited authority or a lack of regulatory tools to address NPS issues, resource gaps for implementation, and a general lack of effectiveness or public understanding around TMDLs as barriers to achieving measurable water quality improvements. Administrative hurdles such as delays in EPA review, slow internal approvals, or IT system failures, were also frequently mentioned as obstacles to timely progress.

Finally, several states described broader structural and policy challenges, including uncertainty around Waters of the U.S. (WOTUS) definitions, outdated or poorly documented water quality criteria, and inconsistent EPA guidance. Despite these challenges, state 303(d) programs underscored their adaptability and teamwork, achieving strong coordination, creative problem-solving, and continued compliance with CWA requirements, even in the face of persistent resource constraints.