Recommendations to Strengthen EPA's

Watershed Approach To Water Quality

Under the Biden Administration

ENVIRONMENTAL POLICY INNOVATION CENTER

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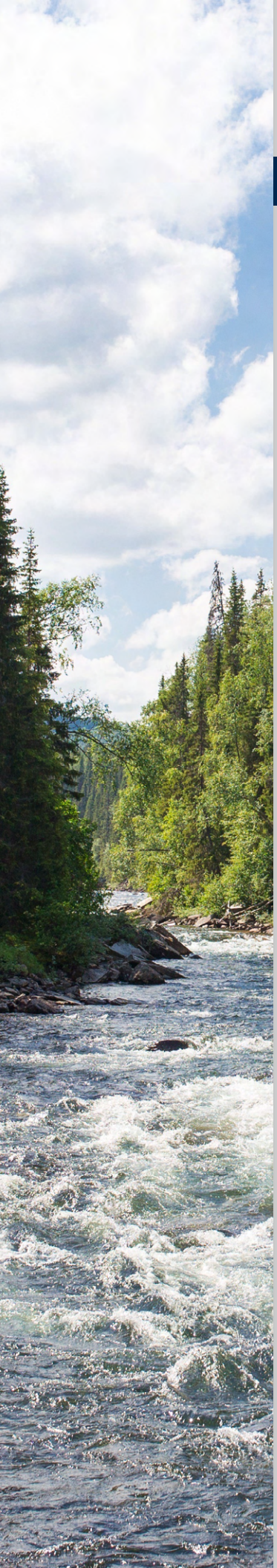


INTRODUCTION

Water quality remains a persistent problem in America in both urban and rural areas despite continued progress on water quality since the enactment of the *Clean Water Act* (CWA) in the 1970s. *The Environmental Protection Agency's* (EPA's) *2017 Water Quality Inventory Report to Congress* underscores the continued impaired status of many of the nation's water resources, finding that 55% of assessed rivers and streams; 70% of assessed lakes, ponds, and reservoirs; 31% of assessed bays and estuaries; 98% of assessed Great Lakes shoreline; and 53% of wetlands in America remain impaired by pollutants such as nutrients, bacteria, sediment, heavy metals, chemicals, and pesticides. This is especially striking given the $1.9 trillion the country has spent since 1960 to help fix surface water pollution.[i] Nonpoint sources now represent the leading source of surface water quality impacts nationwide: as of 2011, approximately 75% of waterbodies with Total Maximum Daily Load (TMDL) limits were primarily impaired by nonpoint source discharges.[ii]

The Clean Water Act (CWA) drives water quality regulations and incentives from the federal level through *National Pollutant Discharge Elimination System* (NPDES) permitting for point sources like municipal wastewater facilities, municipal sewer districts, industrial facilities, *Concentrated Animal Feeding Operations* (CAFOs), and large construction sites. The federal government also supports voluntary programs and incentives for nonpoint sources (e.g., agriculture). CWA programs include TMDL development and implementation, NPDES permitting, and the *Section 319 Nonpoint Source Management Program*.Water quality is also addressed by the *Source Water Assessment and Protection* (SWAP) Program under the *Safe Drinking Water Act.*

Importantly, the CWA requires that states develop a continuing planning process (CPP) for meeting CWA requirements, including developing *water quality management* (WQM) plans that guide implementation. States, counties, municipalities, and other levels of government have additional policies and programs that address water quality and overlap with the major federal water quality programs.

Almost three decades ago, EPA began advocating for a *watershed approach* to address the shortcomings of federal water quality laws focused on "particular sources, pollutants, or water uses" that "have not resulted in an integrated environmental management approach."[iii]

This kind of watershed approach is fundamental to achieving the objectives of the Clean Water Act, and it is well within the authority reserved to the states to prevent, reduce, and

eliminate pollution. Instead of focusing exclusively on one strategy for pollution reduction, a watershed approach enables permittees and political jurisdictions to incorporate point source treatment and watershed projects into a more cost-effective, multi-benefit distribution of pollutant load reductions. In addition, pursuing better water quality through watershed approaches has important synergies with the Biden administration's goal of supporting rural America and all Americans with new investments in infrastructure, both gray and green.

This memo advocates for more aggressive support for watershed approaches to water quality, whereby quantified water quality improvements are recognized and registered across watersheds in a way that allows them to contribute to regulatory requirements.

First, by focusing on approaches that apply at the watershed level, and then by specifically driving at funding and implementation strategies to implement those approaches successfully and quickly, we highlight areas where greater regulatory clarity and guidance would lead to more water quality investment in rural areas and more effective water quality strategy implementation.

While the current memo focuses specifically on recommendations for NPDES permitting to support water quality improvements, the recommendations are relevant to other water quality programs and policies as well.

We believe that 'market-based' is a poor term to describe watershed approaches because it is too narrow. Existing watershed crediting programs include USDA-funded efforts to quantify pollution reductions from agricultural lands; municipality-led programs where a city finds, develops and pays for projects on others'

lands; third-party operated programs that provide turnkey water quality improvements for single buyers; and actual buyer-seller circumstances where transactions occur in a market of sorts. All of these are watershed-based approaches that depend upon tools to quantify water quality improvements, information that facilitates transactions, and voluntary participation from a diversity of landowners who are not regulated point sources themselves. All of these approaches require further policy refinements to unleash their true potential to deliver water pollution reductions. This report outlines some potential regulatory and policy actions the Biden administration should embrace to harness the real potential of all these watershed credit approaches.

States retain significant discretion in how they implement permitting systems, TMDLs, and other programs. However, there is more the EPA can do at the federal level to establish greater clarity around watershed crediting approaches and state program details that EPA will accept and that EPA believes will be effective. We provide recommendations for several specific areas of clarity EPA should support.

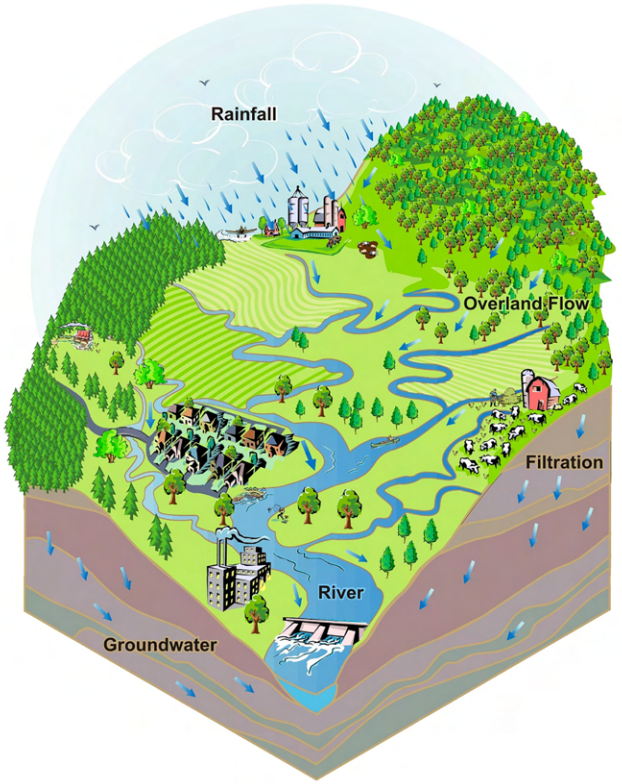
This report is not intended to cover all potential program and policy recommendations EPA could pursue or to provide a comprehensive inventory of all gaps in policy, but rather to identify a select number of areas that have to date not received enough attention and could significantly improve the effectiveness of existing and nascent watershed crediting approaches and make them more successful and investable.

THE WATERSHED APPROACH: BACKGROUND

The watershed approach as defined by EPA in the 1996 Watershed Approach Framework is guided by three primary principles: (1) partnerships among stakeholders in the watershed; (2) prioritization of specific geographic areas for water quality program implementation; and (3) iterative decision making based on science and data. In addition, the approach also needs governance and structure that is sufficient to provide accountability and to create the right incentives for implementation.

Over the past 25 years, watershed approaches, including trading and other similar programs, have been initiated to provide additional, cost-effective compliance options for regulated point source dischargers, and to engage and incentivize nonpoint source polluters – a key source of water pollution in many watersheds - to implement practices that reduce water pollution. Approaches to the procurement of water quality also span a spectrum of payments that are activity-based, such as for conservation practices through Farm Bill programs, to payments that are performance/outcome-based, such as with offsets and outcomes purchasing.

Through multiple strategy and guidance documents over the past few decades, EPA has slowly advanced watershed-based approaches to better integrate the NPDES Program within watersheds and synchronize the multiple options for projects that impact water quality within a watershed. The 1994 NPDES Watershed Strategy reflects EPA's earliest support for this approach, with continued development occurring through the *Watershed Framework* (1996), *Effluent Trading in Watersheds*



"The watershed approach is a coordinating framework for environmental management that focuses public and private sector efforts to address the highest priority problems within hydrologically-defined geographic areas, taking into consideration both ground and surface water flow."
-EPA 1996 Watershed Approach Framework

Policy (1996), the *Draft Framework for Watershed-Based Trading* (1996), *National Water Quality Trading Policy* (2003), *Watershed-Based National Pollutant Discharge Elimination System (NPDES) Permitting Implementation Guidance* (2007), and EPA's 2019 memorandum on *Updating the Environmental Protection Agency's Water Quality Trading Policy to Promote Market-Based Mechanisms for Improving Water Quality.* These policy documents communicated EPA's position on implementing NPDES permitting activities on a watershed basis, discussed the benefits of watershed-based permitting, and presented an explanation of the process and several mechanisms to implement watershed-based approaches.

In 2003, the EPA issued a National Water Quality Trading Policy "to encourage voluntary trading programs that facilitate implementation of TMDLs, reduce the costs of compliance with CWA regulations, establish incentives for voluntary reductions, and promote watershed-based initiatives."[iv] Water quality trading (WQT) is grounded in a watershed approach. Instead of focusing exclusively on one point source, trading enables states to consider other contributing sources and to incentivize pollution reductions from nonpoint sources. Overall, water quality trading provides flexibility to regulated facilities and a potentially ecologically- and cost-effective option to meeting NPDES permit requirements by allowing trades between point sources or between point and nonpoint sources. EPA's Trading Policy supports trading for nitrogen, phosphorus, and sediment, and indicates that other pollutants may be considered for trading on a case-by-case basis. EPA has continued its support for trading through the *Water Quality Trading Assessment Handbook* in 2004, and the *Water Quality Trading Toolkit* in 2007. The 2007 document was intended to not only help permit writers incorporate trading into NPDES permits but also to serve as a guide for anyone interested in establishing a water quality trading program in their watershed.

As contemplated by the 2003 and 2007 policies, to meet permit requirements, regulated point sources can pay for technology upgrades to meet water quality standards; pay for restoration, agricultural conservation or green infrastructure projects at nonpoint sources; contract for point source trades in a water quality trading arrangement; and/or contract for non-point source pollution reductions from third parties. All of these options require the regulated point source to pay for pollution reduction either on- or off-site. Watershed approaches in this context provide a point source with flexibility in determining how and where to meet NPDES permit requirements and the most cost-effective way to do so; the watershed will see the pollution reduction specified in the permit no matter which combination of options is selected. Paying for reductions from nonpoint sources or engaging in water quality trades supplements but rarely ever replaces a mix of facility upgrade investments that are also needed to achieve NPDES permit requirements. In other words, entities use trading and transactions within watershed projects to make an overall program – that still includes facility upgrades – more feasible and cost effective by blending strategies where it is efficient to do so.

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[1] *National Pollutant Discharge Elimination System (NPDES) permits are central to EPA's water quality program. As stated in the 1994 NPDES Watershed Strategy, "The NPDES program occupies a unique position within the overall water program, since it is both a key customer and an essential partner in supporting other Office of Water program activities and achieving many of our broader water quality goals."*

As a result of these enabling EPA policies, most states have developed or are developing innovative watershed-based programs to attain water quality goals. For example, water quality trading programs exist or are being developed in many states: 19 nutrient credit trading programs existed in 2014. Fifteen states have established state nutrient trading regulations and a handful of additional states are doing so. Most nutrient credit trades have occurred in three states - Connecticut, Pennsylvania, and Virginia – but most point sources participating in these three state programs in 2014 did not purchase credits, demonstrating the continued limited demand for water quality credits in some areas.

Among these examples there are several worth highlighting. The Chesapeake Bay TMDL has been a major driver for the robust watershed-based approaches in the Mid-Atlantic. For example, Virginia's point-to-point source trading program has allowed dozens of facilities to manage the timing of their facility upgrades and use excess credits from already improved facilities to meet requirements for facilities where contractors had not yet begun upgrade work. In Washington DC, watershed practices and green infrastructure are a growing area that may account for 10 to 20 percent of the City's compliance needs. For example, DC Water's environmental impact bond used green infrastructure projects in the urban watershed to offset the need for a gray infrastructure stormwater storage and conveyance project. Increasingly, state and local government programs (e.g., various Maryland counties, Milwaukee, Wisconsin) have leveraged pay-for-performance contracting to lower public risks, and to provide financing, delivery, and typically long-term operations and maintenance (O&M) of green infrastructure.[v] The public-private partnership (P3) approach can help to improve upon a public-only approach by leveraging the funding capacity and the regulatory ties of the public entity, and reduce administrative costs and increase the speed of transactions by providing integrated services (design, construction, maintenance) which reduce transactional costs in part by employing private procurement approaches.

On the west coast, temperature trading programs in the Pacific Northwest provide another example. The Pacific Northwest also hosts several key water quality trading programs. One of the major drivers in these watersheds is temperature TMDLs, and the need to protect cold-water native fish. Several trading programs have been established to restore native streamside (riparian) vegetation, which provides shade that reduces solar load on the water, thus offsetting the thermal load discharged by wastewater treatment facilities, while also providing multiple co-benefits (e.g., reducing erosion, sequestering carbon, restoring habitat, and building wildfire resilience).

In Oregon, Clean Water Services in Hillsboro launched a water quality trading program in 2004 and continues to generate credits. In 2012, the City of Medford began its point-to-nonpoint trading program for temperature, with the assistance of The Freshwater Trust, an environmental nonprofit. This program used a cost-effective green infrastructure approach (riparian restoration) that is three times less expensive than the city's gray infrastructure option (mechanical chiller or large-scale holding pond) to achieve the same compliance result along with added co-benefits. The Freshwater Trust designed and now implements a similar trading program in nearby Ashland. This program is the first water quality trading program to be financed by Oregon Clean Water State Revolving Fund (SRF) loan funds. The Cities of Eugene & Springfield are also slated to have trading programs approved in 2022.

All these programs direct millions of dollars of funding to environmental restoration, with each $1 million resulting in an estimated 15-30 local jobs. In addition to these municipal trading programs, the most notable Northwest trading example is Idaho Power Company's (IPC) $350 million watershed-restoration program in the Snake River watershed in Idaho and Oregon. This massive program designed by IPC and

The Freshwater Trust is part of a Clean Water Act section 401 certification and is expected to result in over a hundred miles of restored riparian vegetation, multiple instream improvements that will reduce thermal load while also narrowing and deepening the channel dimensions of the Snake River to better fit its current-day floodplain, and on-farm irrigation upgrades to reduce sediment and nutrient loading upstream of these in-river improvements.

In 2019 EPA updated its 2003 Policy with a memorandum entitled *"Updating the USEPA Water Quality Trading Policy to Promote ket-Based Mechanisms for Improving Water Quality."* This memo clarified the intent of the 2003 policy and detailed principles that could support greater trading program development, including encouraging permit writers to approve mitigation measures fully enforceable through permit conditions, agreements, or other legally binding instruments; to allow credits to be generated and verified based on scientifically defensible estimates of pollutant reductions; to include adaptive management concepts; and to provide simplicity and flexibility in baseline development.

While these policies have helped encourage meaningful advancements, as evidenced by current impairment statistics, these advances have yet to catalyze watershed-scale water resiliency. Although EPA cannot directly regulate most nonpoint sources or fix watersheds alone, it is well positioned to catalyze watershed-level approaches and progress given its unique mix of regulatory oversight mandates, water management functions, and financial tools. In the face of increasingly prevalent and extreme drought, flood, and fire driven by climate change, EPA can lead with more effective funding models, better incentives, and much quicker and more coordinated action at the watershed level.

RECOMMENDATIONS

We provide three types of recommendations to facilitate greater use of watershed approaches for CWA permit compliance (Table 1).

The key overarching themes of these recommendations are as follows:

- **Greater regulatory certainty is needed.** EPA should absolutely respect state powers around water quality regulation and pollution reduction, but states would benefit from far more clarity and consistency about what EPA regions would accept. Watershed compliance program development has been held back due to lack of regulatory certainty, as most of the policy pronouncements have been in guidance memos, which EPA regions and individual staff have interpreted differently. We recommend additional policy and regulatory provisions that would clarify what EPA would accept from states and encourage effective programs.

- **Trading and market focused terminology are inaccurate and should be replaced with watershed crediting.** EPA already supports watershed approaches to NPDES permitting but programs are stymied by market-focused terminology that is inaccurate and has accumulated a lot of political baggage. We recommend changing terminology to focus on watershed crediting as an inclusive term that covers watershed project procurement from third parties, sole source contracting, P3 approaches, trading programs, and point source-implemented watershed programs. At the heart of all of these is recognition of units of pollution improvement that a state and EPA will accept.

- **Water quality regulation and pollution reduction must integrate environmental justice and equity.** Watershed-based approaches to water quality can be a partial solution to environmental justice problems if EPA creates preferences for project types and locations and supports additional payment for co-benefits while using both to prioritize projects that address equity issues.

Table 1: Recommendations for WBC Implementation

RECOMMENDATION TYPE	RECOMMENDATION FOR WBC IMPLEMENTATION
FOUNDATIONAL	1. Use more accurate watershed terminology (establish Watershed-Based Credits or WBCs)
REGULATORY CHANGES	2. Define and establish market-based approaches to which WBCs could be applied 3. Provide regulatory authority for WBCs to be included in WQM plans 4. Provide legal authorization for liability transfers 5. Support forward crediting and banking
POLICY/GUIDANCE CHANGES	6. Reaffirm state leadership and autonomy in CWA implementation 7. Encourage states to use and improve regional models for credit and debit calculation 8. Provide policy direction on ratios 9. Embed life cycle cost accounting in WBCs 10. Reaffirm broad service areas for WBCs

1 Use More Accurate Watershed Terminology (Establish Watershed-Based Credits or WBCs)

A central and overarching recommendation of this memo is for EPA to pivot to terminology focused on watershed-based credits and watershed crediting. Water quality trading has faced obstacles driven by inaccurate perceptions that trading allows regulated facilities to trade their way out of on-site costs (e.g., for facility upgrades) and is simply an inaccurate term to describe the diversity of ways that projects on someone else's property are used to satisfy a point source pollution reduction requirement. NPDES permits have stringent requirements that pollution reduction requirements of regulated facilities be achieved. By law, the agency issuing a NPDES permit must demonstrate that the permit is sufficiently stringent to "provide for compliance with the applicable requirements of [the] CWA" and "ensure compliance with the applicable water quality requirements of all affected States."[vi] All the limits and conditions in an NPDES permit are directly enforceable by the state, EPA and even interested citizens.[vii]

We recommend that EPA move to a new terminology that encompasses market-based solutions (e.g., trading, offsetting, performance-based contracting) but is broader, using the terms **"watershed-based approaches"** and **"watershed-based credits (WBCs)."** These terms could be introduced in new regulation or in a new policy or agency memorandum to connotate the diversity of approaches that EPA already is supporting. A credit is simply the uniform "currency" that reflects a quantified water quality

benefit for which the quantification might come from a model prediction focused on a standardized practice or engineering design, or from direct measurement of water quality. WBCs apply to multiple approaches for both regulatory and non-regulatory scenarios to support NPDES permit compliance through trading, TMDL and pre-TMDL compliance, MS4 stormwater permits, alternative compliance programs, flood reduction, redevelopment and construction permits, drinking water source protection, and habitat. We recommend that EPA include all of the above mechanisms in an umbrella concept of watershed-based credits (Figure 1).

There are several critical aspects of success for watershed-based credits. First, WBCs need to be subject to an approval process to ensure integrity of the credits, reduce uncertainty in the value associated with the credits, and to build confidence around use of the credits. Second, it is critical that EPA explicitly recognize all scenarios that are qualified for use of WBCs *(Figure 1)*. Finally, use of WBCs must be reflected in NPDES permits (for point sources) or some other enforceable program or individual agreement *(e.g., 401 water quality certification)* in all scenarios (no impairment, pre-TMDL, post-TMDL, or alternative to a TMDL). In all cases, the use of WBCs should not affect the limits that are needed to protect water quality or waive compliance obligations of a permittee - permittees are simply being allowed to use WBCs as a compliance tool to meet those limits and conditions in the permit.

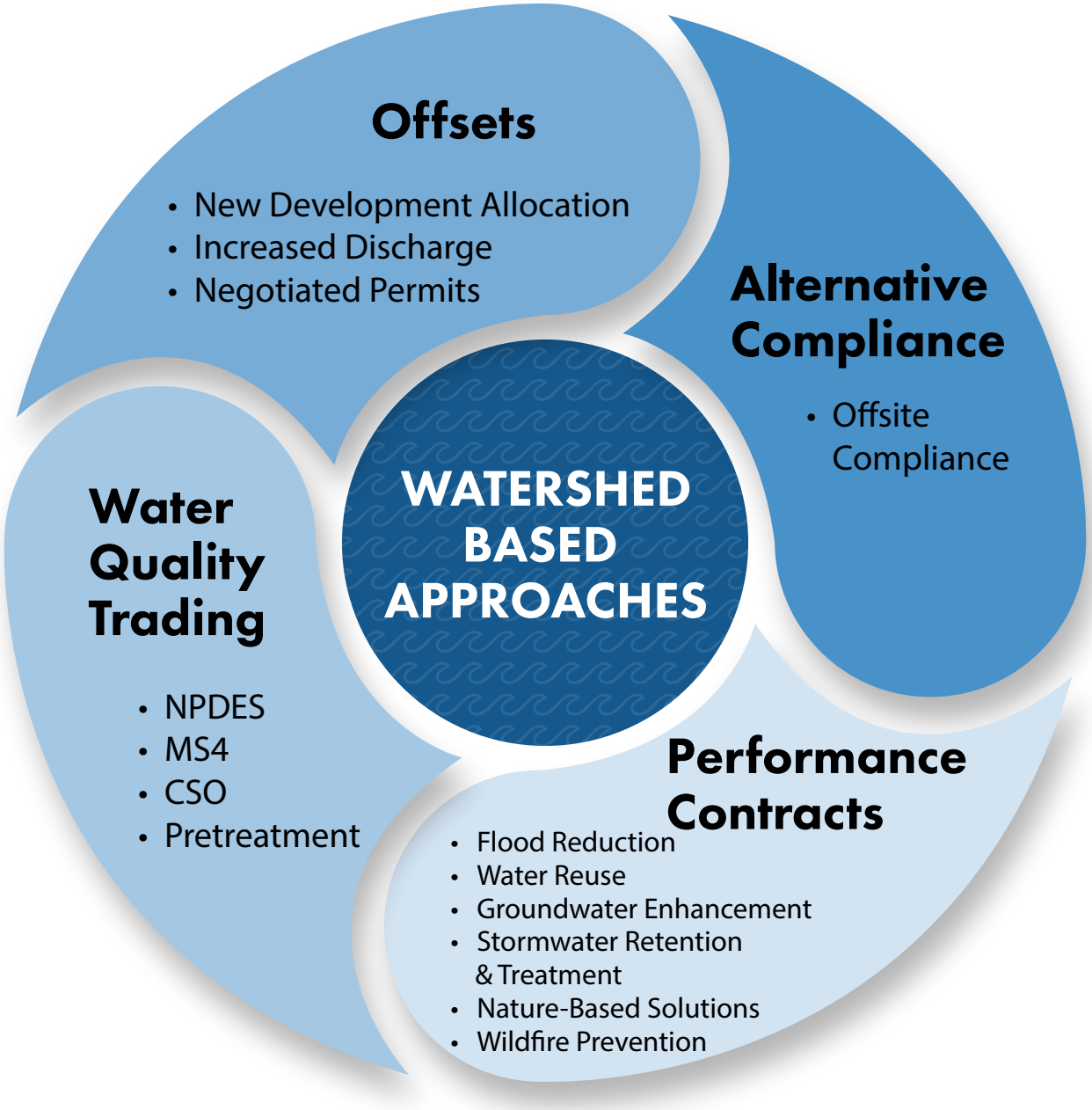

Figure 1: Watershed-Based Approaches

ENVIRONMENTAL JUSTICE BENEFITS OF A WATERSHED APPROACH

Addressing water pollution at a watershed scale can yield important environmental justice benefits if policy choices are implemented with disadvantaged communities in mind. For example, green infrastructure can be preferentially installed in historically disadvantaged communities to allow the co-benefits (e.g., additional green open space for recreation, cooling effects, air pollution and other health effects) of stormwater reduction to flow to these areas. WBCs have water quality values that may also deliver numerous co-benefits to multiple stakeholders. This delivery of co-benefits can be an important result of watershed approaches to water quality, if implemented correctly. Conversely, stakeholders in watershed approaches must take care that programs do not either individually or in the aggregate lead to a greater concentration of water pollution in specific areas, especially where these areas include disadvantaged communities that may have historically experienced greater water and other environmental pollution than surrounding areas. This is already prohibited by EPA policy and permitting requirements.

Uses of WBCs:

- Offsets for new water quality impacts where there is no growth allocation;
- To meet stormwater permit requirements under MS4 permits and the NPDES program to deliver green infrastructure on public or private lands through:
    - Performance contracts;
    - Public private partnerships where WBCs serve as the unit of currency or performance to trigger contract payment; or
    - State or local government procurement of recognized outcomes from completed projects;
- Purchases between and among multiple buyers and sellers through different forms of "exchanges," "clearinghouses" or "marketplaces;"
- Trading between NPDES point sources;
- Purchasing by a NPDES point source from a nonpoint source;
- Incentivizing quantified pollution reductions in advance of permit or regulatory obligations;
- The use of distributed upstream BMPs to meet water quality planning, management, and implementation needs by a downstream point source through modeled or measured outcomes that can be aligned with quantitative goals to meet a water quality or quantity objective;
- Upstream BMPs used for water source protection for downstream water districts;
- BMPs used to enhance groundwater quality or quantity; and
- BMPs used to reduce downstream flooding.

Suggested Regulatory Language

To enable watershed-based credits, EPA should include definitions for the watershed-based approach and watershed-based credits into *40 CFR Section 122.2* such as the following:

"Watershed-Based Credits are certified or approved quantified units used to accomplish Clean Water Act program goals. WBCs may be used in both regulatory and non-regulatory contexts to the extent consistent with applicable law and shall be expressed in quantified form."

2 Define Approaches to Which WBCs Could Be Applied

A set of terms are used frequently by EPA, states, or various other parties involved in water quality work, but few have consistent definitions and thus they contribute to confusion about implementation of the Clean Water Act and state programs. We recommend that regulations create consistent definitions for the following terms or otherwise clarify how they overlap or can be used together (40 CFR 122.2):

- **Market-based Approaches –** *'Market-based approaches'* refers to a wide array of frameworks that rely on the availability of multiple sellers of water quality improvements, acquisition of water quality benefits mediated through flexible prices set in a competitive way by buyers and sellers, and recognized units of improvement that are the basis for pricing.

- **Water quality trading –** *Water quality trading* in the context of the NPDES program is typically used where a cap or a limit exists for a specific pollutant (e.g., nitrogen). Trading participants generate watershed-based credits for reductions above and beyond any baseline. Credits are the currency (e.g., lbs/year of pollutant, etc.) that can be sold to others in a defined watershed for whom treatment-based pollutant reductions are less attractive. Trades occur through bi-lateral contracts, or the program may have an exchange or a "clearinghouse" through which multiple parties can offer, buy, and sell credits.

- **Offsets –** The term 'offsets' is normally used in the context of new growth with recognition that many water quality improvement plans do not allocate any new loadings to responsible parties, such as in *Watershed Improvement Plans* under TMDLs or other similar watershed management plans, and therefore such new loadings need to be 'offset.'

- **Alternative Compliance –** The term *'alternative compliance'* is used to describe both watershed and other approaches for regulated entities to pursue solutions other than on-site approaches when on-site practices become infeasible, cumbersome, too costly, or fail to provide valuable co-benefits.

- **Performance-based Solutions –** 'Performance-based solutions' include performance contracts, pay for success contracts, public private partners and other forms of procurement where payment is tied to documented success in achieving previously agreed upon measures of water quality improvement.

3 Provide Regulatory Authority for WBCs to Be Included in Water Quality Management (WQM) Plans

CWA Section 303(e) requires each state to establish a "continuing planning process" (CPP) that is approved by the U.S. EPA. and serves as a method to ensure compliance with the Act but to also provide flexibility to the states for compliance approaches. The continuing planning process "...guides water quality decision-making over a twenty-year span, in increments of five years" and "...has been designed to give the States the primary responsibility to establish and implement water quality management programs within the States." The continuing planning process is dependent on the development of water quality management plans that house the content and direction of how a state will implement the CWA: "WQM plans are used to direct implementation. WQM plans draw upon the water quality assessments to identify priority point and nonpoint water quality problems, consider alternative solutions and recommend control measures, including the financial and institutional measures necessary for implementing recommended solutions. State annual work programs shall be based upon the priority issues identified in the State WQM plan." States have variously created different terms for plans used to meet these requirements, including waste treatment plans, basin plans, watershed implementation plans, water quality control plan, and TMDL implementation plans.

WQM plans, are, therefore, a critical planning tool utilized by states to guide water quality planning and an important leverage point for greater use of watershed-based crediting in implementation. For this reason, we recommend that EPA authorize the use of WBCs in WQM plans to cover multiple programs that may be included such as NPDES permits, TMDL and pre-TMDL scenarios, MS4 permits, and other stormwater and drinking water scenarios. This recommendation is consistent with EPA's 2003 Watershed-Based NPDES Permitting Policy Statement and the 2015 Watershed-Based NPDES Permitting Implementation Guidance.

We recommend that EPA provide regulatory language that explicitly recognizes the role of WBCs in WQM plans. Approved credits should be recognized and eligible for use in multiple programs such as NDPES permits, TMDLs and pre-TMDL contexts, MS4 permits and other stormwater and drinking water contexts.

Suggested Regulatory Language

Considering the intent to serve multiple regulatory and non-regulatory programs in the watershed context, EPA could adopt the following language in 40 CFR Section 130.6 (a)(1) and (a)(10):

"(a)(1)-Watershed-based Credits-Water Quality Management Plans may authorize use of Watershed-Based Credits (WBCs). "(a)(10)- Water Quality Management Plans may include Watershed-based Credits developed and certified at the watershed level under applicable state and federal programs. WBCs may be certified under the governing state and federal programs and registered within a WQM and may be eligible for use in applicable: TMDL programs, NPDES permits, MS4 permits, CSO programs, pre-treatment permits, intraplant and intramunicipal obligations, water flow enhancement programs and in addressing unimpaired waters, to the extent such credits are applicable and not otherwise prohibited for use under such permits or programs. WBCs may be used to reduce pollutant loadings, enhance hydrologic and hydraulic conditions, and minimize flood conditions. WBCs may be considered for use in applicable programs authorizing the concepts of trading, offsets and performance-based contracts. To the maximum extent practicable and as not otherwise prohibited by law, WBCs shall be eligible to achieve simultaneous objectives under multiple regulatory and funding programs."

To the extent a narrower approach focused only on NPDES permits is desired, the 2014 recommendation to EPA from the National Water Quality Trading Alliance could be adopted, but with an amendment to incorporate the terminology recommendations above (40 CFR §131.13):

"States may use watershed-based approaches and rely on watershed-based credits between and among point and non-point sources on a local, state or interstate basis to contribute to attainment of water quality standards. The use of watershed-based credits is permitted for water quality-based effluent limitations so long as data and ecological modeling confirm that the proposed approach would not result in adverse localized impacts or contribute to an exceedance of any applicable water quality standard."

4 Provide Legal Authorization for Voluntary Liability Transfers

One of the biggest impediments to a successful watershed credit program is the liability retained by the buyer, whereby the buyer assumes the risk of legal action should the seller not comply with the arrangement. This increases the risk of watershed approaches compared to facility upgrades, where the facility (the buyer) has full control over pollution reduction. Although there are contractual mechanisms that can be adopted to allow the seller to indemnify the buyer, these indemnities are only as good as the strength of the financial balance sheet of the seller. There are other protections – performance bonds and/or insurance – that can minimize risk, but these mechanisms may create uncertainty and legal complications as the buyer still retains front line regulatory responsibility for the seller's non-compliance.

Wetland and stream mitigation banks provide a successful example of liability transfer supporting market development for mitigation credits. In this space, EPA first adopted policy statements that recognized that the purchase of certified mitigation credits from an approved mitigation bank would absolve the buyer from legal responsibility for the success of the credit generation. This policy was later embedded into regulation as part of the *2008 Federal Mitigation Rule,* creating clarity and certainty that the purchasing entity would not hold legal liability for credits purchased from approved mitigation banks. The liability transfer only applies to credits generated from approved mitigation banks and does not apply to permitee responsible mitigation, where the permitee undertakes mitigation by itself for a singular permit. The liability transfer is therefore aligned with creating larger scale mitigation banks approved in advance of permit issuance where credits are generated and released.

We recommend that EPA clarify that the agency is open to state proposals that create approaches to transfer liability for approved watershed-based credits from the buyer to the seller. When the seller of credits – responsible for generating, maintaining, and monitoring credits – assumes liability for the quality of those credits, it is reasonable to expect that the quality of credits generated would improve. When credits are sold, the seller could also embed the life cycle costs of credits and the risk of maintaining the environmental practices upon which the value of the credits rest. While some sellers will not want to accept long-term liability, others would benefit from a liability transfer option. By required that credits be "approved", liability transfer could also promote a credit certification process in advance of impacts or permitting and provide assurances to buyers of existing supply.

One example where a liability transfer might be particularly beneficial and not burdensome is where permanent forest protection provides watershed-based credits for an enduring period of time. As with carbon, wetland, stream, or endangered species credits, it is entirely appropriate to have the owner of such a permanently protected forest hold the liability for maintaining the water quality benefits associated with the forest's protection. In contrast, a liability transfer makes little sense in the context of annual practices that provide water quality benefits.

To follow this recommendation, EPA will need to contend with existing legal opinion that regulated point sources cannot transfer liability for regulatory compliance. Currently, regulated point sources address this by entering into private contracts that specify the financial liability of the seller to mitigate the buyer's risk, but the process would be faster and less expensive if these arrangements were part of a broader accepted policy by EPA. For example, liability transfer and the seller's resulting obligations for approved/certified credits could be embedded into new and existing NPDES permits for regulated point sources. If a watershed-based credit is not certified by an applicable state or federal program, then it should not be eligible for the legal transfer of liability other than through private contractual arrangements.

Suggested Regulatory Language

We recommend this be accomplished through the following regulatory language in the minor modification section-40 CFR Section 122.63 (i) (Minor modification provisions):

"Incorporate approved WBCs into permits of the buyer. WBCs may include applicable compliance schedules as set forth in Section 122.47. The obligation to fulfill the WBC commitments included in a permit may be transferred such that they become the legal responsibility of the WBC sponsor."

5 Legally Support Forward Crediting and Banking for WBCs

Credit banking and forward contracting could significantly boost the use of watershed-based credits and incentivize earlier actions to improve water quality. For these reasons, we recommend that EPA regulations expressly allow both.

- **Credit banking** allows credits that are unused in a specified time period to be carried forward and used in succeeding years. Certain programs involve the permanent one-time sale of credits while others are either annual or term-based. For longer-term structural practices, credit generators should be eligible to carry forward projected credits for up to five years, for the life of the credit buyer's permits, or for the lifespan of the practice, whichever is more. Allowing credit banking will incentivize credit generators to provide greater volume in an earlier year because they would not lose value from unsold credits. Banking credits would not be appropriate if the benefit is transitory or seasonal in nature, but if the underlying water quality improvement is maintained and retains its functionality, the banked credits should retain their value over time. Some state agencies have proposed to reduce or extinguish the value of unused credits over time, but doing so creates a disincentive for early action to improve water quality in a watershed.

- **Forward contracting** allows a seller to negotiate contracts with buyers before water quality improvement projects have been developed, approved, or certified. Doing so allows the seller to secure up-front funding to pay for project costs, and the buyer to secure credits for future use less expensively and to be guaranteed a certain amount of future supply to meet their needs. In both cases, certainty around credit generation and purchase is increased. *North Carolina* and *Virginia* have state programs that allow forward crediting and banking in offset markets for nutrients; these programs require a permanent easement associated with the practice, calculate credits over a 30- year period, and allow those credits to be banked if not sold. Additional protections for forward credit sales, such as financial assurances, could be provided to ensure projects are properly maintained. Water quality would not suffer from these arrangements: a permitted entity is still responsible for meeting permit requirements. While no prohibition to forward contracting exists in any state or federal policy, the absence of any policy guidance makes it riskier to do so.

Ideally, EPA would also act to provide a financial backstop for banked or contracted credits, allowing its grant or other programs to be used to purchase (and retire) unused credits after an extended period of time (e.g., 10 years). District of Columbia environmental agencies have created a floor price like this for stormwater credits. However, EPA likely needs statutory authority to do so, given the extended time period over which a contract might be needed and its effect in obligating funds in a U.S. Treasury account.

Suggested Regulatory Language

To facilitate credit banking and forward contracting for nutrient credits, EPA could adopt the following language for NPDES permits in 40 CFR 122.46 (f):

"WBCs generated through practices that have a life span longer than 5 years may be sold for the remaining term of the buyer's permit or the lifespan of the practice, whichever is greater. Any WBCs generated and authorized for sale in a given year that are not sold may be banked for future use for the designated lifespan of the BMP generating the credit. This is conditioned upon the WBCs being certified and incorporated into the buyer's permit; land use restrictions consistent with the term of the WBC; and applicable financial assurances to ensure performance."

The Need for a 'Year Zero' for Ecosystem Services

A nationwide problem exists with ecosystem services, carbon, wildlife conservation, nutrient credit, and similar services: early actors who are willing to help conserve or restore those resources are disincentivized from doing so because they cannot get credit (or compensation) for their work until a program is formally approved. This policy approach makes no sense when baseline data is available upon which crediting methodologies can be applied later, after a program is approved. In addition, ubiquitous satellite data makes it possible to document baseline conditions for at least some kinds of projects (e.g., wetland restoration or tree planting) that have a highly visible footprint.

Rather than continue to discourage early actors, we recommend that EPA establish something that would be completely new in policy: the concept of a 'baseline year zero' and indication that EPA would accept watershed-based credits for use in permit compliance as long as baseline conditions on a property relevant to nutrient credits can be documented in that year zero and an approved methodology used to retroactively calculate credits from that point to present day. With a national zero baseline year of, for example, 2023, future changes resulting from water pollution reduction activities could be standardized and early actors would be able to predict a benefit from action today, thus incentivizing more pollution reduction activity.

6 Reaffirm State Leadership and Autonomy in CWA Implementation

Given the central role states play in implementing programs to meet CWA requirements, if EPA issues new regulations or policy on watershed approaches it is important for EPA to reaffirm *state roles in CWA implementation.* We believe EPA should include an explicit grandfather clause in regulations that allows existing state water quality trading and other watershed programs to continue as designed, through one or more permit terms. When evaluating state programs and watershed approaches, we also think that the following criteria associated with watershed approaches should be present:

- Create a preference for state statute or regulation over policy and guidance;
- No relaxation of technology based effluent standards unless relaxation of those standards was explicitly authorized under enabling technology standards;
- Avoidance of localized and environmental justice impacts;
- Compliance with antidegradation obligations;
- Compliance with antibacksliding obligations;
- Consideration of positive and negative environmental justice considerations; and
- Clear and defined metrics and specifications outlined in environmental goals.

State programs should also be evaluated for consideration of environmental justice issues to determine how to assist states in the design of watershed-based approaches and WBCs that would reduce or ameliorate environmental justice concerns. EPA regulations already include an *antidegradation standard,* and thus we recommend that regulations (or a regulatory preamble) reference that requirement and recommend that states address it in their plans for watershed-based approaches. The undocumented hypothetical fear about environmental justice "hotspots" arises frequently in litigation regarding nutrient trading; addressing this from an environmental justice perspective could help resolve that uncertainty going forward.

Suggested Regulatory Language

To grandfather existing state watershed-based programs, we think the following regulatory language could be used to support recognition of those existing programs that meet the requisite standards (add to 40 CFR Section 123.65):

"Grandfather of Existing State Watershed-Based Programs. All existing state programs relating to water quality trading, adaptive management, or offsets adopted through law or regulations shall be grandfathered if such laws or regulations are adopted under a state approved NPDES program; do not undermine technology based effluent standards; meet antidegradation and anti-backsliding requirements; and do not result in localized hot spots or in negative environmental justice considerations."

7 Encourage States to Use and Improve Regional Models for Credit and Debit Calculation

The currencies associated with environmental credits – the environmental value backing one credit - are critical and are becoming more so as voluntary and regulatory programs dependent on credits expand. To function and scale, environmental markets need currencies that are documented and certified, and developed through models that states and the EPA will accept. In the carbon space, the U.S. Senate recently passed the *Growing Climate Solutions Act,* allowing USDA to authorize carbon certifiers and to approve carbon tracking methodologies.[x] This will be a game-changer for bringing agriculture and other sectors into the carbon markets. Research is also facilitating the entry of the agriculture sector into voluntary and regulatory carbon markets, such as the recent publication from the *American Farmland Trust* that reviews models supporting the development of currencies.[xi] The same opportunities and needs exist for water quality quantification but need further expansion and standardization.

As noted above, one of the prerequisites for a successful watershed-based approach is the development of metrics tied to the overall goals of a water quality standard or water quality improvement plan. Units could include pounds of nitrogen, phosphorus, or sediment; impervious acres reduced; temperature reductions, bacteria reductions, and reductions of certain hazardous materials (as appropriate). Clarification of the types of metrics and recognition that metrics are an essential element of a successful watershed-based crediting program are necessary. EPA can help create more certainty by approving various currencies in the watershed planning process, and states can similarly identify which currencies they will accept and detail their verification and validation requirements in water quality management plan documents or permits.

Numeric vs Non-Numeric Permit Limits

Municipal and industrial wastewater treatment plants typically must meet several numeric permit limits that apply over different time cycles (e.g., instantaneous minimum, daily maximum, or monthly average). These strict quantitative limits often necessitate the installation and operation of treatment systems. To demonstrate compliance with numeric limits, the plants must regularly monitor and measure discharge quality after treatment using *EPA-approved analytical methods.*

By contrast, many of the other permits developed by EPA are generally subject to non-numeric permit limits that tend to be narrative, such as limits expressed as best management practices (BMPs), or other narrative control measures designed to minimize the level of pollutants in runoff. With rare exception, these types of permits do not require the same sort of analytical monitoring that is common for discharges from municipal and industrial wastewater treatment plants. Rather, to demonstrate compliance, in most cases these credit generating projects

need only conduct visual inspections to ensure that their BMPs and controls are implemented and functioning as designed, as well as visual or qualitative monitoring of their discharge points to detect any obvious signs of problems. In some cases, project proponents are also required to monitor and measure their discharge quality. However, instead of tying the monitored results to numeric limits for compliance purposes, the results are more commonly compared to "benchmark" values that are used to assess the effectiveness of the BMPs.

The ability and cost to monitor different pollutants varies greatly. For instance, it is relatively easy and inexpensive to monitor runoff rate and volume as well as turbidity/ sediment; however, it is more costly to monitor metals, bacteria, and nutrients. The cost for monitoring certain pollutants may limit the ability to cost- effectively provide the quantification needed to support a credible watershed-based credit program until technological improvements can reduce the cost and increase the reach of monitoring across a landscape or watershed.

Metrics to define appropriate environmental goals should be developed with regional models that also describe the efficiencies of eligible BMPs that may be used to generate WBCs or actual data, if available. Specifications, standards, and lifespans should also be developed for each of the eligible BMPs. Through the development of metrics, regional models, and practice standards, WBCs may be generated with consistent results in a given watershed.

Nevertheless, many states have developed data-rich, edge-of-field calculators to approximate the water quality reductions associated with different types of nonpoint source BMPs; these calculators can be re- calibrated and validated over time with the benefit of additional data and experience. Similarly, many watershed-based programs have embraced sophisticated ecological models to help calculate and quantify not only the reductions associated with a given BMP, but also the discounted value of those reductions when applied further downstream (e.g., after accounting for fate and transport within the water). Most contemporary credit projects incorporate periodic verification audits to confirm that the credit-generating activities are in place and functioning as designed.

To minimize inconsistencies across interstate watersheds, we recommend that states adopt models that can be used across regions to support WBC calculation that reflect the regional landscape, climate, and land use context. These models can benefit from emerging technologies such as *Geospatial Information Systems* (GIS) coupled with advanced modeling and monitoring that are making it easier to estimate and verify nutrient reductions from BMPs. The certainty of these quantifications will likely never be as accurate as the measurements from the end of a point source pipe, but there are methods of accounting for this uncertainty - such as discounting the WBC - which make the use of WBCs a cost-effective strategy for meeting water quality

standards. The Chesapeake Bay is one example of a region in which states have already agreed to use a common model; in the Midwest the use of the Nutrient Tracking Tool is another example.

We recommend that new policy or guidance encourage the development of or incentivize the use of such metrics for watershed-based credits on regional scales.

8 Provide Policy Direction on Ratios

Trade ratios embedded in watershed programs are intended to address uncertainties around the accurate valuation of nonpoint source water quality credits and are implemented to provide a margin of safety for actual pollution reduction. Ratios might include considerations of uncertainty, reserve, delivery, and credit retirement issues but these considerations are rarely well-documented or explicit. When selecting ratios, many program managers appear to have double-counted risks by making conservative assumptions that overlap across different parts of a watershed-based approach, compounding multipliers, or using excessively large factors without justification. In general, we disagree with the use of ratios that significantly discount the value of watershed credits.

We believe state or program managers should not assume ratios are needed because watershed approaches are not inherently less likely to perform successfully compared to facility upgrades, and in fact, may appreciate in value to the watershed over time in a way that technology-based approaches do not. However, where ratios are to be used, their development should follow a consistent approach and be documented in a transparent manner. In addition, watershed-based approaches often provide many co-benefits, like climate resilience, which are not factored into project selection, prioritization, or scaling. We recommend that EPA also establish guidance to help states calculate co-benefits and build them into ratios.

Suggested Policy Language

"States should provide a justification of their approach to ratios and how ratios can be used in concert with other strategies to address uncertainty in program outcomes and co-benefits from them, as projects are implemented. Ratios of 1:1 are acceptable when performance risk, modeling error, or measurement error is low or where there are other means to address it."

9 Embed Life Cycle Cost Accounting in WBCs and Alternatives

Once metrics are developed, successful programs have typically included an accounting structure for credits that outlines the eligible practices, the credit yield for each practice, the lifespan of the practice, and long-term operations and maintenance requirements. All of these are essential components to determine the true costs of a unit of reduction, which in turn allows for cost comparisons of practices and appropriate prioritization of watershed and on-site point source projects in plans.

Too often, programs – both gray and green infrastructure ones - promote practices and solutions that are not based on life cycle cost accounting and do not include predictable multi-year operation, maintenance, and stewardship costs, complicating programmatic decision-making. We recommend that EPA require full life-cycle cost accounting for WBCs and alternatives to them in traditional gray infrastructure project construction, operation, and maintenance. Costs should reflect the duration of the practice, i.e., whether it is an annual, term, or permanent practice; the type of practice; the lifespan of the practice; any land use restrictions; whether one or more pollutant credits are being sold; and the monitoring, maintenance, and stewardship requirements associated with the practice. A framework for life-cycle cost accounting creates the foundation for unit pricing, which allows buyers and regulators to undertake a true cost comparison. By including monitoring, maintenance, and stewardship obligations associated with such practices, unit pricing can include factors such as operational and market risks. In addition, market-based approaches are well suited to identifying the optimum cost-effective solutions when these risk factors are built into the system rather than ignored.

Suggested Policy Language

"WBC pricing should include the cost of the practice design, permitting and implementation; land stewardship; and monitoring and maintenance costs over the life-span of a practice generating WBCs. To the extent available, WQMs should include price data on representative WBCs. Similar analysis using comparable techniques and time frames should be available for alternatives to WBC approaches."

10 Reaffirm Broad Service Areas for WBCs

Although referenced in EPA's 2019 Water Quality Trading Memo, the defined service areas in which watershed-based approaches can operate continue to be too narrow. The geographic area in which a watershed-based program operates usually has a defined compliance point (e.g., an impaired lake, estuary, or other water body) where water quality goals must be met. Many TMDLs for nutrients (e.g., Chesapeake Bay and Lower Boise River) or water temperature (e.g., Willamette River) identify a point of maximum impact, which is the location within the waterway where the effects of pollutant loading have been identified as the greatest.

Where a legal framework for large scale market-based solutions exists (i.e., Chesapeake Bay, Ohio River and Mississippi River), interstate trading between nonpoint and point sources should be expressly allowed within the watershed upstream of the compliance point. This typically would need to be accomplished in the context of a broad-based TMDL or where there are clear parameters for achieving pollutant reduction goals, such as in scenarios where the compliance point and the location of pollution reduction practices can be related through modeled delivery factors. For interstate trades, we recommend that states require reciprocal procedural and substantive standards before allowing credits from another state to be used, or alternatively require that trades follow the state rules where the credits will be used.

Suggested Policy Language

"Service areas for the use of WBCs should be as broad as possible to support market efficiencies while being consistent with applicable legal and scientific standards. Where the legal and scientific framework exists for solutions crossing state boundaries, WBCs should be eligible for use in other states. States may choose to condition the acceptance of such WBCs on meeting the local state certification standards and procedures or enter into a reciprocal agreement for the recognition of such WBCs with other such states."

CONCLUSION

Watershed-based approaches to meeting water quality goals have been pursued by EPA and various states for a substantial amount of time but remain difficult to implement efficiently and at scale in many instances. This memo advocates for EPA to strengthen the watershed approach to water quality through clearly defining watershed-based credits (WBCs) and implementing changes and additions to regulation and policy and programmatic guidance that would allow these watershed credits to be used in multiple regulatory and non-regulatory programs in ways that could benefit water quality around the country. Importantly, policy design could also impart important equity and environmental justice benefits and involve communities and local stakeholders in water quality planning and implementation in both rural and urban areas.

Pursuing these regulatory and policy changes will require EPA to conduct broad-based outreach to stakeholders at various levels of decision-making and to impart knowledge on best practices and lessons learned so that the evidence of the benefits of watershed-based approaches is clear. At the same time, EPA must prioritize the regulatory and policy changes we recommend in order to facilitate greater uptake of market-based approaches. We believe the benefits from expansion of these watershed approaches makes it very much worth EPA's time to go through this effort.

ENDNOTES

i. D.A. Keiser, et al., The Low but Uncertain Measured Benefits of US Water Quality Policy, 116 Proc. Nat'l Acad. of Sciences 5262 (2019), www.pnas.org/content/116/12/5262.

ii. EPA, National Evaluation of the CWA Section 319 Program (2011), www.epa.gov/sites/production/files/2015-09/documents/319evaluation.pdf.

iii. EPA 1996 Watershed Approach Framework

iv. 68 Fed. Reg. 1608, 1610 (Jan. 13, 2003)

v. U.S. EPA, 2015

vi. See 40 CFR § 122.4(a) and (d).

vii. See 33 U.S.C. §§ 1319 and 1365.

viii. U.S. EPA, State Continuing Planning Process Handbook, 1975.

ix. See 40 CFR Section 130.6 (b).

x. S.1251 - Growing Climate Solutions Act of 2021.

xi. Perez, Michelle and Emily J. Cole. 2020. A Guide to Water Quality, Climate, Social, and Economic Outcomes Estimation Tools: Quantifying Outcomes to Accelerate Farm Conservation Practice Adoption. Washington, DC: American Farmland Trust. farmlandinfo.org/publications/guide-to-outcomes-estimation-tools.

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