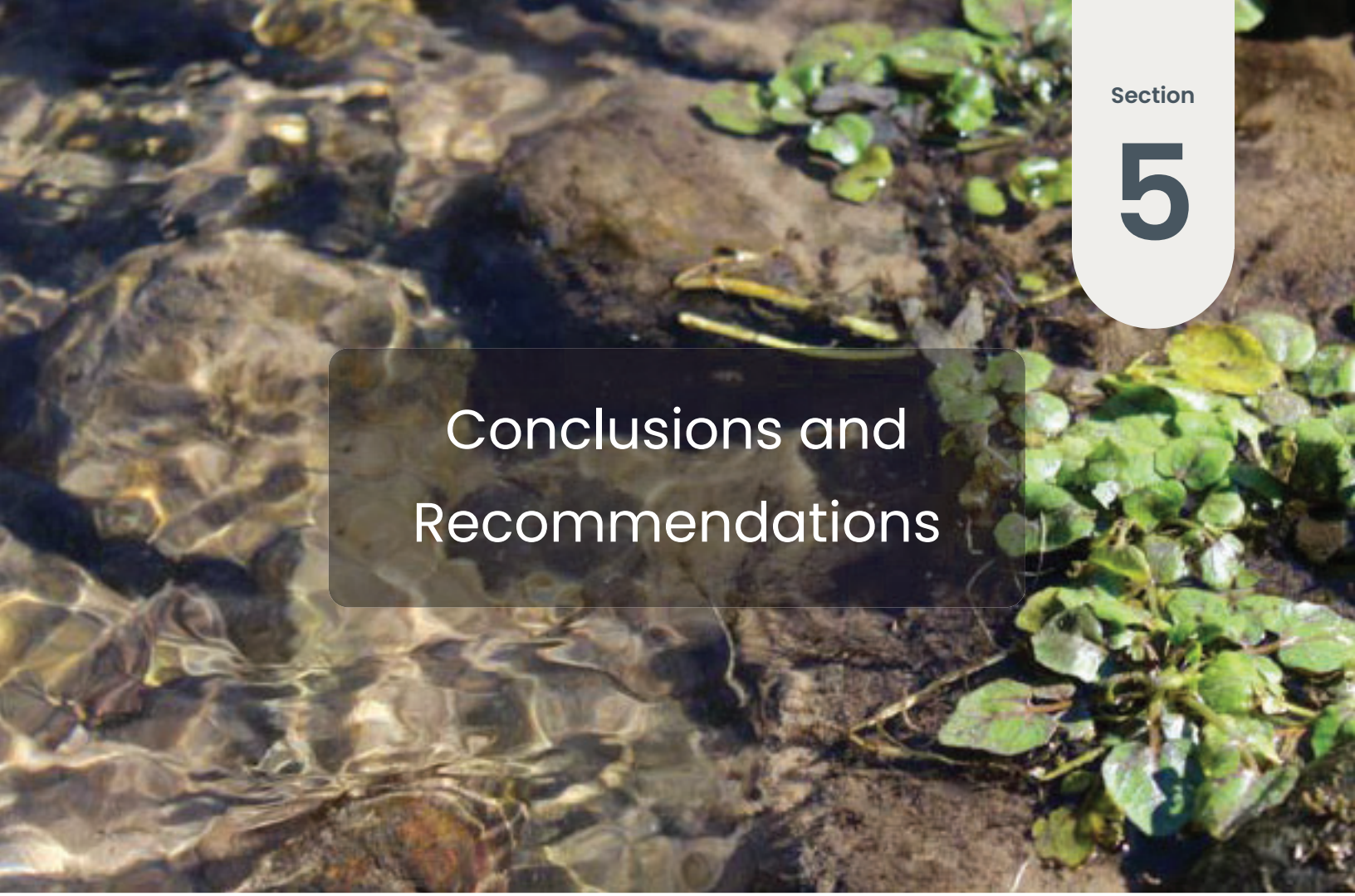

Section

5

Conclusions and Recommendations

Although in its early stages, a groundwater governance system has progressed in EPA Region 5 as evidenced by the increased sharing of information and strategies against the latest groundwater pressures. State, Tribal, and municipal staff, residents, and the media in targeted areas are paying attention to how decisions about groundwater are being made. As recent threats to community water supply coincide with a weakening of federal oversight, it highlights the policy gaps that state legislators are hurriedly trying to identify and fill, all while respecting the ability of city governments and Tribes to determine their own futures.

Although there are many differences across the region, there are shared values that prioritize groundwater for future use for human consumption and to support ecosystems. The challenge is how to include groundwater to support the economy of a region whether it is based in agriculture, industry, or is shifting to high-tech industries.

This effort created a platform for technical experts, community groups, government employees, and those with knowledge of groundwater to voice their concerns and experiences dealing with the existing governance structure around groundwater. With their input, a greater understanding of the physical limits of groundwater and the current water users sharing an aquifer was achieved. In the most focused conversations among peers, interstate groundwater specialists came together for a productive, solutions-oriented session that dealt with knowledge production and delivery. Broadening

the conversations to those on the receiving end of the data occurred in each of the aquifer area workshops where gaps and best practices were identified.

Local Engagement

Local engagement is a critical component of a project where decisions impact people. Both Tribes and members of hyperlocal organizations are often the first to see and feel the impacts of decisions and are commonly not part of the decision-making process. Front-line communities are not regarded as experts or included in decision-making spaces. In governance practice, shifting the perspective about who holds knowledge and decentering hierarchical credentials can help create a more inclusive process. If governance starts with inclusive, bottom-up practices, there is less need to revise or amend the frameworks of those plans later.

Tribes

Initial outreach to Tribal contacts had varied responses. The goal was to include Tribal participants without placing additional pressures upon Tribal natural resource staff, to maintain a mutually beneficial relationship. The Michindoh Aquifer area required multiple rounds of outreach with the identified potential Tribal participants and organizations. Direct recruitment was necessary to receive a response from local Tribal participants in some cases, and in other cases a more hierarchical form of contact where a direct work supervisor was contacted first was necessary. Overall, more time was needed between notice of invitation and the workshop than originally anticipated. Participants also required the agenda far in advance of the workshop. Tribal natural resource staff members needed the agenda to demonstrate how attendance would show direct benefits to their work, an important process for receiving departmental approval.

Both workshops included an opening with a ceremony and keynote talks which explained the importance of traditional knowledge and an Indigenous worldview. This provided framing for how Traditional Ecological Knowledge fits alongside western scientific knowledge. The goal was to center and uplift Tribal perspectives, without asking Tribal participants to do additional educational work for non-Tribal participants outside of their work roles. This was to assist Tribal and non-Tribal participants in building working relationships during less formal situations where the jurisdictions may not otherwise cross at the same time – federal agencies (US Geological Survey, US Forest Service), state agencies and entities (department of natural resources and state surveys), county-level planners, and conservation staff.

Next Steps and Recommendations

Establish Working Partnerships with Known Tribal Organizations Early

Practically, this means developing a working relationship with a Tribal organization that shares mutual goals and desired outcomes. Ask for assistance from Tribal partners in reaching out to Tribal communities if no reply or response is received during initial outreach attempts. If email isn't sufficient, then call by phone, and if the phone isn't sufficient, then show up in person (with notice) and talk face-to-face.

Provide notice of events far ahead of time, and plan for multiple modes of communication and outreach: different social media platforms, radio, newspaper, and flyers. Plan for responses to take longer than expected. Expect to reach out to new organizations and committees and expect to work around different cultural calendars.

Establish Consultation Practices with Tribes and Tribal Contacts Upfront

Do not decide on or develop a plan and ask for Tribal participation as a last step. Tribal officials, Tribal department staff, and Tribal members should be part of the planning process that decides on goals, objectives, and implementation design. Culturally relevant needs should be accounted for and accommodated during the development process. Ensure the work shows benefit to the community, as decided by the community.

Work with Grassroots Organizations to Gain Local Authoritative Input

The definition of who is an authority is always a question. Hyperlocal organizations are spaces of informal authority in the realm of groundwater governance. These are spaces occupied by locals, by community members, by those who are impacted. In the case of governance, it is easy to turn to experts – policy experts, legal experts, science experts. It is easy to look to those with credentials, degrees, and other recognized forms of professional authority. It is also easy to ignore that authority and knowledge and expertise can come from experience, and experience may grant no degrees beyond wisdom.

In the case of this project, stakeholders were identified through a variety of means – previously contacted participants from previous project phases, regional experts in niche subject matter, word of mouth. Participants were also located through social media and newspaper articles. The Williams County Alliance and No to Niagara are examples from this project of hyperlocal, grassroots organizations that act as watchdogs by monitoring environmental impacts after large-scale, water-intensive industries arrive in the community. These participants were identified because members were consistent in organizing water-monitoring and educational events, speaking to news organizations, and posting on social media pages. Physically, socially, and economically, the people in these organizations bear the risk from both being a front-line community and speaking out.

It is almost impossible to know when an area will become a hot spot of activity, and a grassroots group will shift from being a group of locals to a group with hyper-specific local knowledge and expertise. However, these front-line groups are usually the first to recognize a change in their ecosystems and the first to sound an alarm. At times it is easier to identify a hyperlocal, grassroots group than a hot spot location.

Stay Engaged with Information Being Shared in Your Focus Area

Keep an eye on local news stories in ever vanishing small-town newspapers in water-rich areas. Be willing to educate those who show up in bureaucratic processes and explain technical language. Be willing to listen to and hear the local experience and how the impact is felt despite the intention of the action. Be willing to act in partnership with local knowledge and energy, and to invest in the process.

Who Was Not Included

The workshops in this project did not include businesses and industry, elected representatives, or many water supply operators. Future conversations would benefit from their eventual inclusion. One regular and consistent risk in relationship building is competing priorities and a lack of time.

Industry

Industries are important participants because they are invested in planning and policy decisions which may impact their ability to grow. Industries may have a more regional presence and familiarity navigating different governance structures, restrictions, standards, and incentives. Water-intensive industries have historically used legal pressure against front-line communities as a means of quieting dissent. Other tactics have involved offering future economic incentives like infrastructure development in the form of roads and investment in schools and new jobs in return for tax write-offs, bulk rate offers on water purchases, and permit evasions through ordinance loopholes. These future incentives may fall through if the water-intensive industry never moves beyond the exploratory phase or closes before making a profit. Legal and social pressure has been leveraged against front-line community members who hold expert knowledge of the local ecosystem and monitor impacts from industry activities. Some Tribal members and local community groups expressed hesitance at participating until assured that the participant lists did not include industry groups.

Elected Officials

Policies and legislation are not passed without the endorsement of elected officials. Therefore, it is important to keep them in the loop and educated on matters of groundwater supply. The geographically focused conversations did not specifically include elected officials (e.g. county commissioners, legislators). These omissions did allow government staff present to propose solutions and air concerns freely. However, it is critical that legislators, Tribal leaders, commissioners, city and township administrators and other officials be briefed on the outcomes of engagement and provided with information. The right time to do that may be when specific approaches to close governance gaps can be translated into resolutions, bill or ordinance language. For example, upon completion of the CMAP memo on their workshop result, the organization engaged with an Illinois legislator early in the legislative session when change could be implemented.

Water Supply Operators

Some of the aquifer area conversations included those involved in water supply, but water plant operators and rural water suppliers were notably missing in other conversations. In the southwest metro, water-supply professionals who were present reported being left out or included late in their city's planning process. Land decisions and electrical supply drove planning conversations with the assumption that water would always be available. Water supply professionals hold critical information regarding changing demands on infrastructure and can readily engage with other groundwater managers.

Next Steps and Recommendations

Prioritize Building Trust at Every Stage of Engagement

To build trust, power differentials among individuals must be recognized and acknowledged. All the actors across the different sectors need to understand how past actions may have contributed to present inequities and commit to a shared future in a shared geology and geographic space. The initial trust-building meetings should also be used to identify high priority industry representatives, relevant elected officials, and water supply operators in a region to include in future conversations.

Where issues have become contentious or entered into a litigation phase, it may impact the ability of those in the room to build trust and speak freely. A way to navigate problematic relationships around shared groundwater may be to work with a neutral third party. For example, engineering firms hired to design water-intensive businesses or academics studying a particular water sector might be able to speak generally about site-selection processes, industrial processes, and alternate water sources in a more general way to help a conversation move forward.

Present Information Across Siloes to Break Down Communication Barriers

As water-intensive industries are driven by financial pressures, there is potential for conflict with grassroots priorities and domestic water users. Information transparency will help to mitigate tensions. With sufficient scientific data to support risk and cost-benefit analyses, land-use and economic development planners will be able to work with utility operators to balance local energy and water supply growth with environmental impacts.

Exercise Timely Engagement of Elected Officials

It may be sensible for time reasons to include the staff of an elected official earlier on in the planning process. While the exclusion of elected officials allows government staff the ability to speak freely, early inclusion of political staffers may help to build trust and to ensure there is someone to take part in the practical discussions and hear all the concerns raised in the workshop.

Across Jurisdictions: Challenges and Recommendations

Host Webinars

Hosting easy-to-attend webinars that are recorded and can be disseminated afterward is an inexpensive and effective way to reach diverse and large audiences. Examples that occurred during Phase II of this project included a lunchtime webinar for continuing legal education credit that summarized the lack of existing law around groundwater quantity and a seminar held for regional policy makers by the Council of State Governments, Midwest (CSG Midwest) and the Legislative Conference Energy & Environment Committee and the Great Lakes-St. Lawrence Legislative Caucus. The topic was Data Centers in the Midwest: Their Expected Growth and Potential Impacts on Water Use and Management.

Hyperlocal Coordination

In the absence of statutory authority, it is still possible to convene groups at all levels of decision making. Examples include the kinds of workshops hosted for this project to bring together Tribal, national, state, local, and private stakeholders to discuss challenges and best practices. Regional groundwater planning conversations based on natural boundaries can happen even where planning groups do not exist and may come together around a specific need or topic. For example, a cluster of small towns around a larger municipality approached by large water users are reluctant to engage with the larger city. An independent academic or non-profit entity with groundwater knowledge could facilitate a planning conversation in the shared aquifer area to help balance the otherwise outsized influence of the larger city.

Getting well owners and residents to discuss groundwater can be achieved by organizing local events that are helpful to well owners like well-maintenance and -testing clinics. These can be done in partnership with non-profits and local community groups. The No to Niagara group co-hosted two well-testing clinics with the Minnesota Well Owners' Organization and the Minnesota Groundwater Association, supported by staff and funding from participating counties and volunteers.

Knowledge, Sharing, and Data Transparency

Transparency and coordination of technical data and knowledge production across a region promotes confidence in planning efforts. For example, making results from an ecological monitoring program or well network public can demonstrate good intentions even if other entities do not have the capacity to independently analyze those data sets. Independent, cross-jurisdictional groups like the USGS Upper Midwest Water Science Center commonly serve in this capacity. Data sharing is facilitated through the National Groundwater Monitoring Network that aggregates data from federal, state, Tribal, and local groundwater monitoring networks. Groundwater models could similarly be shared across these jurisdictions.

Although communication barriers between states were cited, there is no lack of existing convenings around groundwater. These meetings can serve as a platform for information exchange among practitioners and include:

I. The twice-yearly Minnesota Groundwater Association meeting

II. Wisconsin's annual meeting of the American Water Resources Association

III. The technical day that occurs prior to the Great Lakes Compact meeting

IV. The Illinois Groundwater Association meeting

The Fall 2024 MGWA conference was intentionally orchestrated to feature speakers from across the Region on the topic of groundwater sustainability. Setting the agenda of the day-long conference required a champion to create a cohesive series of talks and then host a more targeted, small group discussion the following day. The number of groundwater technical managers in the region is not large and many have existing professional connections, making a cohesive network possible.

Expanding groundwater conversations beyond the technical managers and to a State or Tribe's economic development agency is an efficient way to ensure that business development and growth are mindful of groundwater availability. Currently, a business-friendly, global water risk atlas steers water-intensive industry to locations with water security.[1] There is an opportunity for local governments to create a shared, collaborative, and higher-resolution version of this atlas. In addition to higher resolution geospatial data, local versions could reference specific state statutes protecting streams, wetlands, or rare species. The global Aqueduct Atlas is a useful tool for corporations and insurers looking to compare and screen sites, but it "certainly does not replace local data and knowledge". [2]

Communication

Communication is a complex and multi-faceted solution. Policy, science, and law must all be synthesized and translated for a non-technical audience. The needs of the community must also be explored, synthesized, and explained to decision makers. Breaking down communication barriers can help make all other solutions possible.

In conversations with city administrators who have limited staff, it was indicated that groundwater was not something anyone had time to address or that was well understood. Staff and administrators did not know what or whom to ask. Individuals in those roles requested templates or lists of questions and model ordinance language. Direct outreach with specific regional information from the state, county, an NGO, or academic partner could help under-resourced municipalities put groundwater sustainability issues in context. Trust in that relationship has to predate the conversation for it to be well received.

Communication with community members will also lead to increased awareness of processes, planned events, and industry partnerships. Direct communication and ongoing relationship building with Tribes in the form of Tribal consultation will improve other coordination efforts. Overall, transparency where possible will improve trust and working relationships in the community at large.

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1 "Aqueduct Water Risk Atlas." Map. World Resources Institute. Accessed 2025. https://www.wri.org/applications/aqueduct/water-risk-atlas/.

2 Samantha Kuzma of World Resources Institute, personal communication with Dr. Carrie Jennings, March 7, 2025.

Legal

Laws and statutes, rules, ordinances, and policies are all codified mechanisms that can be decided upon and then enforced by a community. When a group agrees on an action, a system of rules is set into place which includes expectations, accountability measures, and consequences. To agree on the appropriate mechanisms, people ideally understand enough about a subject to make those decisions. Through education, collaboration, and knowledge sharing, communities can come together to enact rules to support those decisions.

Currently, there are robust legal protections for groundwater quality. Groundwater is a major source of drinking water in EPA Region 5 and serves an average of 52% of residents.[3] Most of this drinking water serves private domestic wells and public municipal water supplies. There are options like a progressive public trust doctrine, which expands upon the traditional notion of navigable waterways as a natural resource for government use and asserts that the government owns and manages a broader range of water, including groundwater, for the benefit of the public. This has not gained real traction in any EPA Region 5 state. The EPA Treaty Reserved Rights Rule has offered more protection for Tribal sovereignty but focuses on surface water and, as of writing this report, has not yet been tested.

Regional laws and local ordinances establishing priority use for domestic residents offer a way to allow economic development while ensuring current communities are not casualties of extractive practices. Crucially, practical options that are robust, durable, and avoid litigation are preferred.

Implementation and Enforcement

Enforcement of existing regulations is a first step, but enforcement is not simple. Leak detection, other conservation efforts, and reporting requirements may take staff or data that are not readily available. Periodically reviewing permitting processes for their consistent application or any unintentional loopholes is a best practice. Agency review is critical if sustainability goals articulated in statute are to be upheld.

A recent example in Minnesota can shed light on unintentional policy gaps. Large industrial groundwater users approached cities directly for a share of the groundwater appropriations. This did not trigger a review for a new high-capacity well by the Minnesota DNR. In Minnesota statute, industrial users are lower priority than domestic users, energy production, agricultural and small appropriators. By connecting to a municipal water supply system, the priority-of-use distinction is muddied and the illegality of guaranteeing water to the industry in times of drought is not clear to the city. Review, clarify, and propose revisions to existing statute and ordinance language to close similar policy gaps.

Where it is not possible to simply enforce the current rules and achieve sustainable and equitable groundwater use, technical approaches like managed aquifer recharge may come into play. A state may need to incentivize more circular water practices or at the very least, not incentivize wasteful ones. This requires some awareness of how large appropriators are using water and alternatives to that consumptive use. For example, there are other ways to move heat than to consume groundwater, and wastewater can be reused by co-locating water-intensive industries. In some areas, conversations

3 **Note:** This number found by Table 1.0 from Section 1, and averaging percentage of population whose drinking water is sourced from groundwater.

about regionalization of water supply systems are needed, especially as population centers move away from surface water sources or face expensive treatment options.

Shift Sources

Encourage people to move away from groundwater as their primary water supply and shift to surface water. Encourage water circularity and other sustainable options where possible. Encourage infrastructure, legal support, a permitting path and research for water reuse.