Section

2

Methods: What Did We Do and How Did We Do It?

Overview

There are many ways to understand governance – the law, the policy, the culture – and the impact on society. This project, by its nature, is a mapping project. Its objective has been to identify key actors and institutions, and to establish their knowledge of existing regional issues. The methods used to identify actors, institutions, and issues have also mapped the connection between these people, places, and things. The first phase of this work aimed to provide an overview of existing institutions, approaches, and a survey of current governance challenges.[1] Phase II of this work aims to provide depth through a sampling of place-based workshops which highlight the complexities of how jurisdictions intersect, and how knowledge is developed and shared between people and communities, to map the patterns that emerge when people are gathered. The goal has been to understand and explain how all this information fits and flows together.

1 Mayer, Terin V, Eileen J Kirby, Linda Reid, Carrie E Jennings, Lila Franklin, and Benjamin Edelstein. "Groundwater Governance in EPA Region 5." The Joyce Foundation, May 2024. https://www.joycefdn.org/groundwater-governance-report.

This project focused on four aquifer areas where Freshwater either led or supported workshops: 1) northeast Illinois, in the northwest suburbs of Chicago, overseen by Chicago Metropolitan Agency for Planning; 2) southwest metro Minnesota, one of the seven subregional water supply planning areas in the Twin Cities Metropolitan Council's Imagine 2050 Metro Area Water Supply Plan; 3) the Michindoh Aquifer, a 12-county, tri-state area across Michigan, Indiana, and Ohio with a workshop hosted at the Native American Indian Association in Detroit and facilitated by Minnesota-based nonprofit Freshwater, and 4) North Central Wisconsin, a five-county region with shared geology in a workshop hosted at the Lac du Flambeau Band of Lake Superior Chippewa Indians and facilitated by Minnesota-based nonprofit Freshwater (Figure 2.0).

The methods section of this report focuses on workshops led and facilitated by Freshwater and provides an overview of methods used by organizational partners on workshops Freshwater supported.

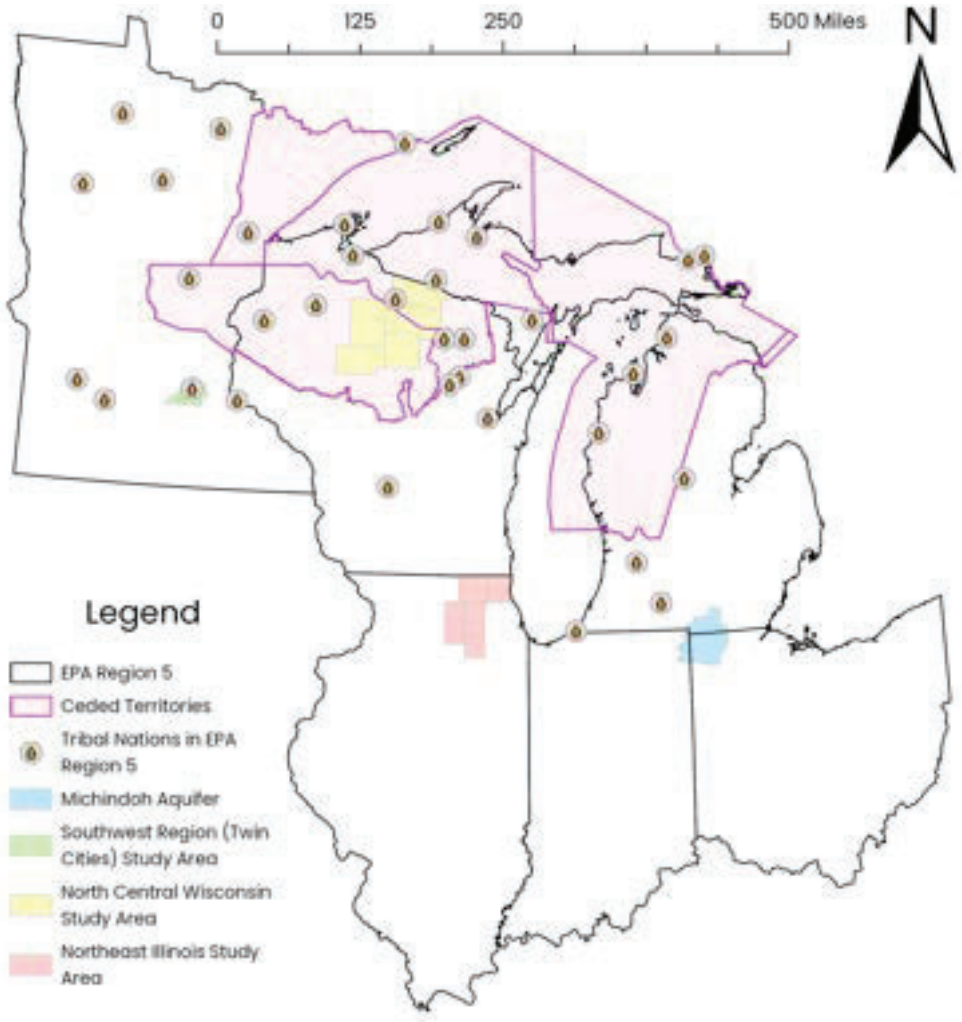

Figure 2.0. EPA Region 5 Study Areas

EPA Region 5 case study areas including 35 federally recognized tribal nations. Point locations shown on map are approximate and do not include trust land. The boundaries of the Michindoh Aquifer are not precisely known. Data from Environmental Systems Research Institute (ESRI), Great Lakes Indian Fish and Wildlife Commission (GLIFWC), the Metropolitan Council, the City of Bryan, Ohio, and the U.S. Census.

Geography and Organizational Partners

The workshops in northeast Illinois and southwest metro Minnesota were urban or suburban areas, and the workshops for the Michindoh Aquifer region and North Central Wisconsin focused on primarily rural communities with small towns. The two rural workshops were planned and facilitated by out-of-state nonprofit Freshwater.

While the entire project emphasized elevating tribal voices and perspectives, the workshops in North Central Wisconsin and southwest Metro Minnesota included tribal members as part of the advisory and planning committees, and the Michindoh Aquifer workshop agenda was developed with a tribal-specific focus and hosted at a local Native American community center.

Northeast Illinois – CMAP-led Workshop

The Chicago Metropolitan Agency for Planning (CMAP) is the comprehensive planning organization for a seven-county region within northeast Illinois around Chicago: Cook, DuPage, Kane, Kendall, Lake, McHenry, Will, and the townships of Aux Sable in Grundy County and Sandwich and Somonauk in DeKalb County.

An evaluation of the high-capacity well review process was conducted by CMAP as part of the water sustainability forecast and future water demand estimate included in the regional comprehensive plan, ONTO 2050.[2] This evaluation included developing a stakeholder list, conducting interviews, and reviewing of existing statues and regulations within the state and neighboring states in EPA Region 5.

The stakeholder list included water-focused and water-adjacent state agencies such as the Office of Water Resources, the Office of Mines and Minerals, the Illinois State Water Survey, the Illinois Water Resource Center, the Illinois State Geological Survey, and programs and divisions within the Bureau of Water. There was also a focus on local government units within the geographic region of the Northwest Water Planning Alliance (NWPA), the five counties of DeKalb, Kane, Kendall, Lake, and McHenry.

As Kane County in northeast Illinois contains the highest number of private wells per capita in the state, the area was the focus as CMAP staff reviewed current statutes, regulations, and municipal ordinances for high-capacity wells and groundwater use. CMAP staff conducted interviews with agency and municipal staff over several months. These interviews helped to shape the resulting policy memo Securing Illinois' groundwater future which builds on Illinois' 2022 State Water Plan and evaluates Illinois' 1983 Water Use Act.[3]

2 "Coordinate and Conserve Shared Water Supply Resources." 2024. Chicago Metropolitan Agency for Planning. June 10, 2024. https://cmap.illinois.gov/regional-plan/goals/recommendation/coordinate-and-conserve-shared-water-supply-resources/.

3 Beck, Nora. 2025. "Securing Illinois' groundwater future." Chicago Metropolitan Agency for Planning. January 21, 2025. https://cmap.illinois.gov/news-updates/securing-illinois-groundwater-future/.

Southwest Metro Minnesota – Met Council-led Workshops

The Metropolitan Council, locally referred to as Met Council, is the regional policy-making body for the seven-county Twin Cities metropolitan area with planning services focused on transportation, water use and land use. The Metro Area Water Supply Plan, a subplan within the larger Imagine 2050 Water Policy Plan, included the southwest metro as one of the subregional focus areas where workshops were held.[4] The Southwest Metro Workgroup included members from the six municipalities of the City of Burnsville, Credit River Township, City of Lakeville, City of Prior Lake, City of Savage, City of Shakopee, and as well as the federally recognized sovereign Dakota tribal government of the Shakopee Mdewakanton Sioux Community which is located in Scott County.

A year-long series of participatory meetings developed a subregional workgroup of local leaders who collaboratively designed the two iterative subregional workshops that were held for water-adjacent professionals and experts from utilities, watersheds, state agencies, large-volume water users, nonprofits, and community-based organizations.[5] The participants worked through subregional-specific issues and implementation challenges with their peers, with input and comments collected and added to regional subplans between meetings. A final meeting was held with all subregional participants to explain the overall regional water supply plan. Participants were able to discuss and comment on subregional plans and the area water plan before the plan was publicly posted for comment. Public comments were then reviewed and integrated into Met Council's final plan water policy plan.[6]

Freshwater-developed and Facilitated Workshops

Freshwater Society is a nonprofit based in Minnesota that works on water education, research, and policy in order to inspire and empower people to value and preserve water. Great Lakes Indian Fish and Wildlife Commission (GLIFWC) is an organization that provides expertise in natural resource management, policy and legal analysis, conservation enforcement, and provides information services in support to the eleven Ojibwe tribes across Minnesota, Wisconsin, and Michigan who reserved hunting, fishing, and gathering rights in the 1836, 1837, 1842, and 1854 Treaties with the U.S. government.

In coordination with GLIFWC, Freshwater developed and facilitated two workshops for this project: North Central Wisconsin and the Michindoh Aquifer, hosted at the Native American Indian Association of Detroit, outside the aquifer area, for convenience. The North Central Wisconsin workshop focused on the five-county area of Lincoln, Taylor, Price, Oneida, and Vilas, but included technical presentations relevant to the Lake Superior Basin and Wisconsin state laws. The Michindoh Aquifer region covered the nine-county, tri-state area with Branch, Hillsdale, and Lenawee in Michigan, Steuben, DeKalb, and Allen in Indiana, and Defiance, Williams, and Fulton in Ohio. A key component of this project was the design, development, and recruitment of the participant lists.

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4 Imagine 2050 Water Policy Plan: Metro Area Water Supply Plan, 3-71. 2025. Metropolitan Council. https://metrocouncil.org/Council-Meetings/Committees/Metropolitan-Council/2025/2-12-25/Policy-files-Water-Policy-Plan.aspx.

5 "Southwest Metro - Metropolitan Council." 2023. Metropolitan Council. 2023. https://metrocouncil.org/Wastewater-Water/Planning/Water-Supply-Planning/Workgroups/Southwest-Metro.aspx.

6 Imagine 2050 Water Policy Plan. 2025. Metropolitan Council. https://metrocouncil.org/Council-Meetings/Committees/Metropolitan-Council/2025/2-12-25/Policy-files-Water-Policy-Plan.aspx.

In Freshwater-led workshops, stakeholder selection focused on identifying key actors from different sectors but the same region, in order to develop a nuanced understanding of regional issues. To identify gaps and barriers in governance, actors from different sectors were invited to regional workshops to discuss how the availability and governance of groundwater impacted their work. The goal was to build a group who had a breadth of expertise, as well as a depth of knowledge.

What Did We Do?

Stakeholder mapping is a project management tool used to identify interested and impacted parties and to map the power, influence, interest, and engagement people hold over a project. Traditional stakeholder mapping is a simplified model that uses a matrix to compare the level of interest internal and external parties have against the level of influence or engagement those people have in a project, topic, or area (Figure 2.1).

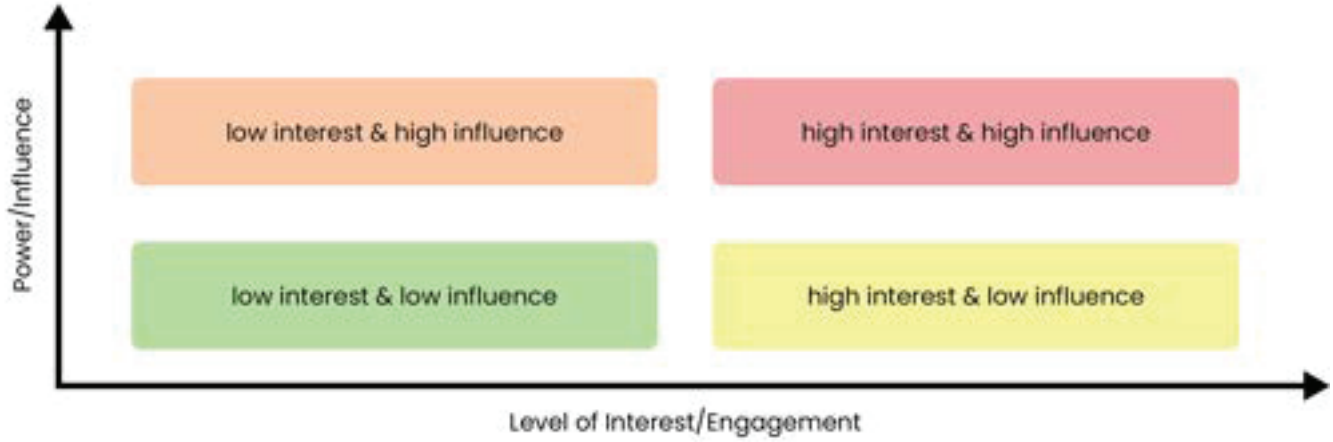

Figure 2.1. Stakeholder Matrix Model

Stakeholder Matrix Model shows the level of power or influence on the x-axis and level of interest of engagement on the y-axis.

To identify key interested and impacted parties in the region, the methodology required something beyond traditional stakeholder mapping. Instead of mapping power and influence over a project, topic, or region, the focus was on identifying people who held specific knowledge (e.g. academics and scientists, policy makers, lawyers, traditional Indigenous knowledge, well drillers) and people who were considered community nodes or good dispersers of information (e.g. community advocates, elders, positive social media engagement, long-term residents with strong social involvement). By identifying and inviting specific knowledge holders and community nodes from different sectors, the workshop participant list would achieve two things: 1) people would know one or two invitees but would be able to make mostly new connections; 2) people would gain new knowledge and disperse that knowledge to their different, varied communities.

Participants were identified using an iterative research process, and the portfolio of potential invitees was developed using visualization mapping techniques, including social network analysis. Iterative methods is a reflexive process that extracts specific information from large datasets and transforms

it into a structured dataset and builds on itself as knowledge is added to it.[7] Social network analysis was also used to gather data on people and events and locations, and to normalize the datasets.[8] A model applied to the datasets and visualizations explained relationships between nodes, including the degree of connections, the frequency of connections, and strength of connections. The visualization highlighted geographic, social and professional, and jurisdictional commonalities and gaps.[9]

Workshop constraints included 1) a limit of no more than 40 people per workshop, 2) a two-day time constraint per workshop, 3) addressing concerns from tribal members about participation, including benefit of attendance to participants. Additional information on these workshop outcomes and the attending participants can be found in the appendices.

Why Did We Do It This Way?

The participant invite list was designed to build safeguards for invitees who would be able to check with their known and trusted communities. By issuing invitations to a closed workshop, the hope was to keep participants comfortable by creating chains of trust within the space. If every participant knew someone, then everyone in the room could reasonably assume good intentions until individual trust could be built. It was the job of the facilitators to build that trust.

Water touches many realms, and a hydrogeologist has a very different perspective than that of a regulatory lawyer who has a very different expertise than that of a small farmer whose private well draws solely from the local aquifer. It takes all these different perspectives and more to understand the governance needs of a community and a region. In designing the workshop lists so that one person could fulfill many roles, the hope was to enrich conversations despite the small number of participants. When possible, we invited the lawyer who was also a small farmer; the geohydrologist who practiced traditional Indigenous medicine; the university historian who was also the tribe's Tribal Historic Preservation Officer (THPO).[10]

This method was also used with the awareness that policy decisions are repeatedly informed and made by the same subset of people. Those people are typically academically credentialled and accredited by institutions with rigorous requirements and require knowledge to navigate bureaucratic processes and access to financial resources. Those who do not participate by these specific standards, which include a four-year tertiary education degree at minimum, publication credits, and conference attendance and presentations, are usually excluded from the decision-making process. The methodology used in this research was intended to identify knowledge holders or others who followed alternative education pathways but were considered knowledgeable about their communities, their water, and who acted as community nodes. The intention was to ensure broader knowledge access, to establish stronger regional networks among communities, and to identify what barriers may have not been considered when developing regional frameworks for groundwater governance.

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7 Srivastava, Prachi, and Nick Hopwood. 2009. "A Practical Iterative Framework for Qualitative Data Analysis." International Journal of Qualitative Methods 8 (1): 76–84. https://doi.org/10.1177/160940690900800107.

8 Camacho, David, Ángel Panizo-LLedot, Gema Bello-Orgaz, Antonio Gonzalez-Pardo, and Erik Cambria. 2020. "The Four Dimensions of Social Network Analysis: An Overview of Research Methods, Applications, and Software Tools." Information Fusion 63 (2): 88–120. https://doi.org/10.1016/j.inffus.2020.05.009.

9 https://visiblenetworklabs.com/guides/social-network-analysis-101/

10 "Social Network Analysis 101: Ultimate Guide." Visible Network Labs, September 14, 2023. https://visiblenetworklabs.com/guides/social-network-analysis-101/.

How Did We Do This?

Based on previous interest indicated during Phase I, the decision was made to focus the initial workshop areas around the Michindoh Aquifer which are included in the ancestral homelands of the Potawatomi, and near the Lac du Flambeau Band of Ojibwe in the Northwoods of the North Central Wisconsin region which is in the ceded territory of 1842.

Initial knowledge discovery included identifying all original participants from the first phase of this work and confirming their current geographic locations, places of work, and job titles. The original dataset was built around people who were confirmed water professionals and who had already contributed to this project. To build on this dataset, an investigative approach was used to explore the place of work; others with similar job titles in the regional area; papers published and those who contributed, were cited, or were otherwise mentioned; activities or hobbies that were publicly available. Refining the dataset included identifying people's organizational affiliation, primary and secondary sector, and the rationale for including them in the dataset moving forward (Table 2.0). As the dataset expanded, this was refined to element, relationship, sector, geography, jurisdiction, and knowledge (Table 2.1).

Table 2.0. Initial Dataset Parameters

Job Title	Organization	Primary Sector	Secondary Sector	Rationale
	Federal, state agency, LGU, Tribe, academia, community organization, nonprofit, other.	Primary social role. Usually a person's work role.	Secondary role socially or professionally. Usually academia, tribal, nonprofit.	Perspective or knowledge is represented. A connection to or through person or place.

Criteria for determining first round of potential participants.

Table 2.1. Refined Dataset Parameters

Element	Relationship	Sector	Geography	Jurisdiction	Knowledge
Person, place event, or item.	How are these elements connected? Strength, directionality, frequency of connection.	What space does this person affiliate with?	Where are elements based or occuring	The legal or Tribal jurisdiction of element. Tracked cross-or multi-jurisdictional elements.	What specific knowledge is held? What relevance is there to the project?

Criteria for refining potential participant list.

To build the expanded dataset, a geographic area of scope was determined for each workshop and initial research was conducted using a broad research comb which focused on individual counties and a series of search terms ("groundwater," "water governance," "water policy," "water availability") and then refined based on news articles that were found in the previous 36 months. The news articles were used to build an initial understanding of water issues, institutions, and actors in the region. In the Michindoh Aquifer region, the nine counties served by the aquifer were considered the areas of focus. In the North Central Wisconsin region, the area of scope was confined to five counties that had shared geologic and hydrogeologic features.

Once a reasonable dataset of elements, including institutions and actors, was established and refined by topic and issue, additional data were added using social media and other public sources to identify prior contacts between elements. The objective was to identify people who 1) occupied multiple social and professional realms, 2) were both producers and distributors of knowledge, 3) knew at least one other person on the invitee list, and who 4) provided a different perspective or knowledge or expertise. Finally, participant invitees were asked if they would like to suggest or recommend anyone for the workshop.

A visualization map was used to explore how elements were related and how different geographies and jurisdictions were overlaid with sectors and knowledge. The visualization map explained gaps in knowledge spaces, specific sectors, and jurisdictions that were not represented. With this information, an effort was made to locate and recruit participants to fill those gaps. Link analysis was applied to the dataset to build an understanding of where people were located geographically, how they were connected socially and professionally, and how information travelled between geographies, communities, and jurisdictions.

Tribal members in the geographic region were communicated with and invited to the workshop. Initial outreach was conducted by both Freshwater staff and by members of GLIFWC and other tribal partners. Both workshops required an adjusted outreach approach.

In the Michindoh Aquifer region, outreach was conducted with Potawatomi tribes including the environmental departments and THPOs for Nottaweseppi Huron Band (NHBP), Pokagon Band, and the Match-E-Be-Nash-She-Wish Band also known as the Gun Lake Band. The United Tribes of Michigan and the Environmental Justice and Tribal Liaison at the Michigan Department of Environment, Great Lakes, and Energy (EGLE) were also contacted. Personal outreach was also conducted by Freshwater's Tribal Liaison to contact local tribal elders in the Detroit metro area.

In response to the original planning issue communicated by tribal staff in the North Central Wisconsin region, a planning committee was formed which included members of Lac du Flambeau's Natural Resource Department, the Great Lakes Fish and Wildlife Commission (GLIFWC), and the Bureau of Indian Affairs (BIA) who all helped to suggest and contact potential invitees. A longer planning period was accommodated, specific recruitment methods, and organizational outreach were conducted as recommended. More on this adjusted outreach process can be found in the North Central Wisconsin Workshop Summary (Appendix D).

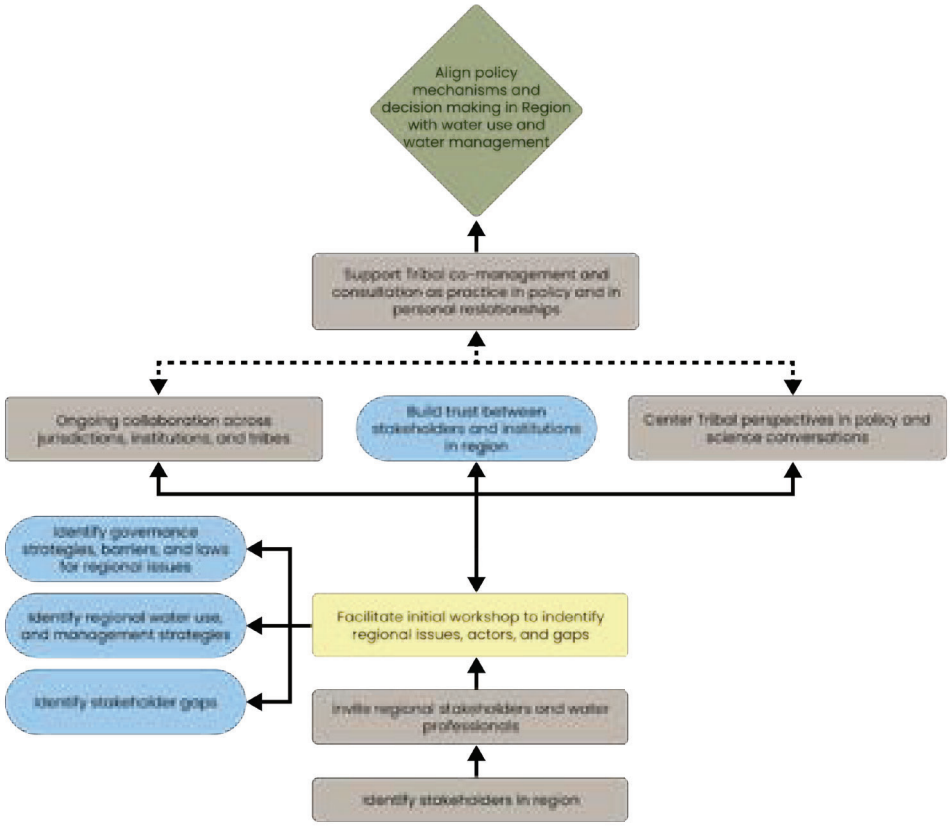
How Did This Achieve the Objective?

The objective for this project was to identify next steps toward regional groundwater governance systems. This process was an assessment which identified key actors beyond established institutions, mapped jurisdictional and communication barriers and gaps, and located potential leverage points for future action. These workshops also mapped key regional issues and allowed participants to reach a shared understanding of how those issues connect and might be addressed collaboratively.

In this phase of work, the project built off the relationships established with individual actors and institutions identified and interviewed during the original project. By necessity, the scope narrowed to focus on four action areas: northeast Illinois, southwest metro Minnesota, the North Central region of Wisconsin, and the Michindoh Aquifer area which spans southwest Michigan, northeast Indiana, and northwest Ohio. The ultimate objective in this work is to align policy mechanics with groundwater management while also supporting multi-jurisdictional collaboration and tribal co-management.

To achieve these, actors must build trust over time, identify similar regional problems from different perspectives, and understand how sector systems create gaps and barriers to existing governance practices for different institutions (Figure 2.2).

Figure 2.2. Process Map



Process map moves from bottom to top, with initial planning as the lowest box. Yellow box indicates current point in process. Blue ovals indicate process outcomes that occur as a result of activities. Green diamond indicates objective process is designed to achieve. Dotted lines between events indicate secondary events or results from primary activities.

Future Work and Recommendations

During this workshop series, members of industry were not included on the stakeholder list. This exclusion was intentional. An initial awareness was that groundwater management has long been siloed from land-use planning and economic development conversations, and while those behaviors are beginning to shift, most water management and governance research did not include industrial water users. Additionally, many of the large-scale industrial water users in the regions of focus were staffed by non-local contacts. A final and deciding factor was a concern from participants about how information provided in the workshop would be utilized.

In future work, with an understanding of regional water management, water users, and tensions, the recommendation would be to invite three new sectors: 1) industrial and other large water users, 2) municipal economic development planning teams, 3) land-use planning teams. Depending on the type of industry, energy producers should also be invited as water and energy use may be intwined for facilities like data centers and hospitals.