

MULTI-STATE SURFACE WATER MANAGEMENT PRACTICES SUMMARY REPORT

Multistate Survey of Surface Water Management Practices

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ABBREVIATIONS AND ACRONYMS

AF	Acre-Feet
BFE	Base Flood Elevation
CVFPB	Central Valley Flood Protection Board
DNR	Department of Natural Resources
DWR	Department of Water Resources
EGLE	Environment, Great Lakes, and Energy
FEMA	Federal Emergency Management Agency
HUC	Hydrologic Unit Code
MS4	Municipal Separate Storm Sewer System
NDCC	North Dakota Century Code
NDDWR	North Dakota Department of Water Resources
NFIP	National Flood Insurance Program
NPDES	National Pollutant Discharge Elimination System
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
WRD	Water Resource District

EXECUTIVE SUMMARY

The North Dakota Department of Water Resources (NDDWR) is a state agency responsible for the management and oversight of North Dakota's (State) water resources. In North Dakota, surface water management generally corresponds to county and political boundaries in line with State regulations and developments. Recently, a watershed-based approach to surface water management has been discussed as a potential alternative regulatory framework. To assess the feasibility of adopting such an approach, NDDWR commissioned a review of surface water management practices in other states, with a focus on how these states incorporate watershed-based jurisdictions and how such practices might be adapted to North Dakota's needs. This Multi-State Surface Water Management Practices Summary Report (Report), developed by EKI Environment & Water, Inc. (EKI), provides an overview of North Dakota's current surface water management practices and compares them with those of 20 states that share similar geographical and water resource characteristics, referred to herein as the "Key States".

In developing this Report, EKI reviewed each of the Key States individually, focusing on specific practices, nuances, and relevant details, which were compiled into "Cut Sheets" provided in **Appendix A**. These Cut Sheets were reviewed by several representatives from the Key States, as acknowledged. Through the consolidation of these Cut Sheets, EKI's research reveals that nearly two-thirds of the Key States incorporate some form of watershed-based jurisdictions into various aspects of their surface water management practices. These watershed-based entities may include local government units, divisions within state agencies, or advisory bodies. Statewide agencies or their subdivisions typically oversee practices such as dam permitting, surface water quality, water rights (diversions), and often stormwater management, generally following federal guidelines. In contrast, local or regional entities typically manage levees and drainage issues, often with technical support or review from state agencies. Floodplain management responsibilities are usually shared between state and local entities, frequently tied to participation in the National Flood Insurance Program (NFIP) and specific local conditions. Given this complexity, the Report explores how different Key States approach these various surface water management practices and identifies where watershed-based strategies are applied.

Based on EKI's review of surface water management practices in the Key States relative to North Dakota's current practices, the following recommendations are offered as potential strategies to support the consideration:

1. Implement Ongoing Tracking Across the Key States
2. Follow Up with Key States' State Agencies Directly
3. Support Cross-Political Boundary Water Management
4. Incentivize Research into Surface Water Data Collection and Mapping Efforts
5. Further Research Appeal and Dispute Resolution Pathways

1 OVERVIEW

The North Dakota Department of Water Resources (NDDWR) is a state agency responsible for managing and overseeing North Dakota's (State's) water resources. Its mission is to responsibly manage North Dakota's water needs and risks for the people's benefit. Its vision is to sustainably manage and develop North Dakota's water resources for the health, safety, and prosperity of its people, businesses, agriculture, energy, industry, recreation and natural resources. This includes the allocation, conservation, and management of both surface water and groundwater.

In partnership with local and political subdivisions, NDDWR shares responsibility for managing surface water resources through various regulatory and advisory roles. Under the North Dakota Century Code (NDCC), specifically Chapter 61-16.1 and §61-32-03, surface water management is organized on a county-based (political subdivision) system. Local governance is structured through "Water Resource Districts" (WRDs), which are established by county commissions and granted regulatory authority to manage surface water within their jurisdictions.

Recently, a watershed-based approach to surface water management has been discussed as an alternative to the current county-based system. This approach is currently used in Bottineau and Cass Counties, which contain multiple WRDs with watershed-based boundaries. To evaluate the potential for adopting such an approach on a broader scale, NDDWR commissioned a review of surface water management practices in other states, focusing on how and whether they incorporate watershed-based jurisdictions, and how these practices might be applied in North Dakota (the "Review" effort).

This Report, prepared by EKI Environment & Water, Inc. (EKI), provides a summary of the Review, and an overview of North Dakota's current surface water management practices, comparing them to those of 20 other states with similar geographical and water resource characteristics, referred to herein as the 21 "Key States". These Key States are grouped by Federal Emergency Management Agency (FEMA) regions and other geographic factors, as shown in **Figure 1**. This Report offers recommendations on the feasibility of implementing watershed-scale management in North Dakota, a summary of the State's existing management framework, a review of practices in the Key States, an evaluation of watershed geography as a management model, and a comparison of permitting processes and regulations for surface water projects. Informational "Cut Sheets" for each Key State are provided in **Appendix A**.

EKI's review, based on publicly available data and direct consultations with representatives from most of the Key States, found that nearly two-thirds of them incorporate some form of watershed-based jurisdictions into various aspects of their surface water management practices. These watershed-based entities include local government units, divisions of state agencies, and/or advisory bodies. Additionally, statewide agencies or their subdivisions typically oversee dam permitting, surface water quality, water rights (diversions), and often stormwater management, following state guidelines that typically align with federal standards. Local entities generally manage levees and drainage issues, often with technical support or review from state agencies, and sometimes in coordination with federal agencies like the United States Army Corps of Engineers (USACE). Floodplain management responsibilities are typically shared between state and local entities, depending on the scope of flood risks, and may involve federal oversight for cross-state watersheds or large-scale infrastructure projects. Appeals of decisions by these entities are usually handled by a judicial body, such as a district or circuit court, in accordance with established legal processes. This Report examines key factors and considerations relate to surface water management practices, with emphasis on insights for North Dakota.

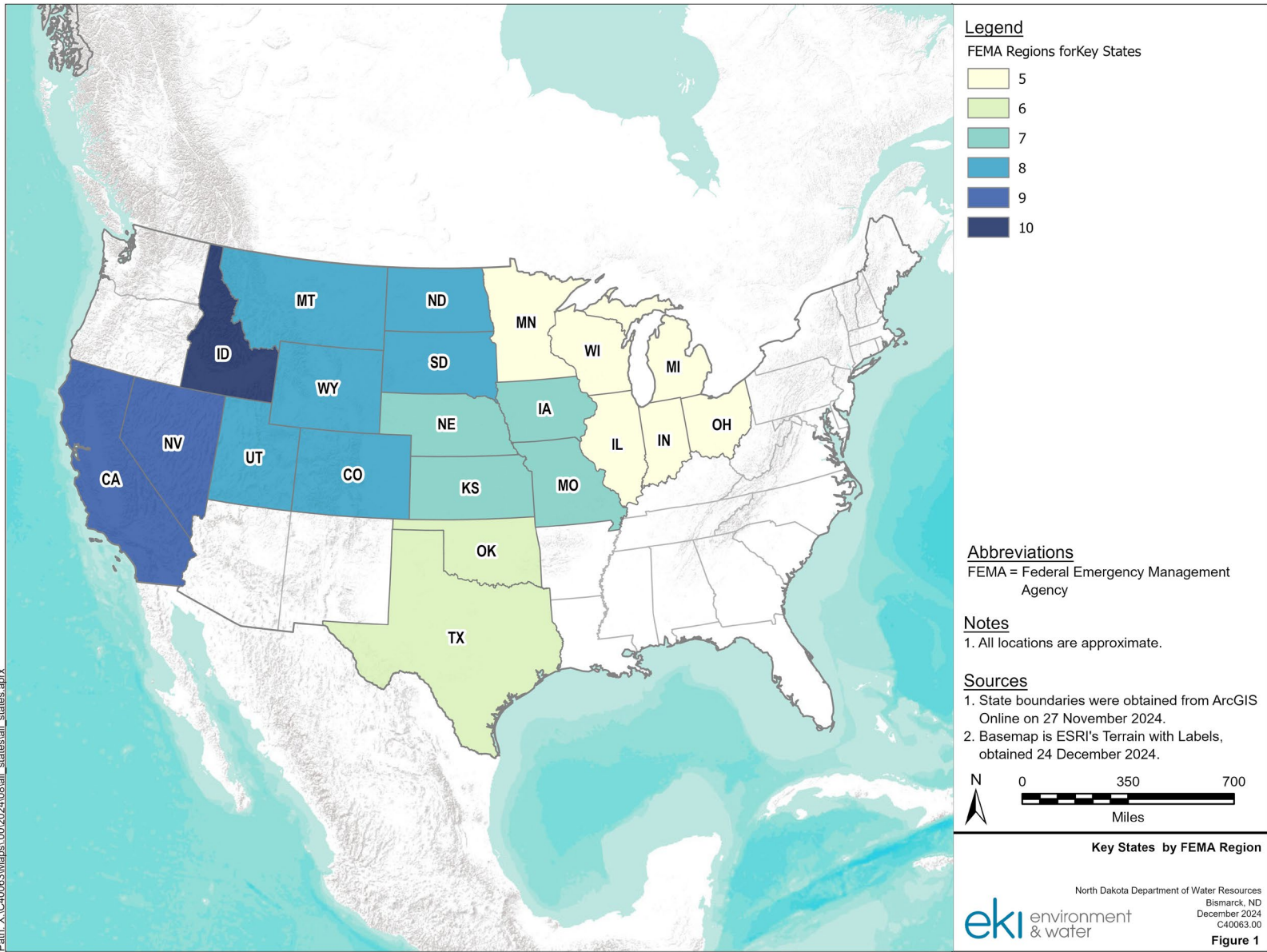


Figure 1: Key States by FEMA Region

2 METHODOLOGY

For this Review, EKI was tasked with providing a comprehensive analysis of the rules, regulations, policies, and operating procedures pertaining to surface water management in the Key States. The focus was on identifying the governing entities responsible for surface water management, the process by which jurisdiction is determined, and the geographic extent of their authority. The Review also examined the full regulatory process, from project conception to permitting and final compliance, within each of the Key States.

The following methodology and process was applied in conducting this Review:

1. **Development of “Cut Sheet” Framework.** In coordination with NDDWR, EKI developed a framework for consistently documenting surface water management practices in the Key States. This included identification of key practice areas and development of a template “cut sheet” to document findings, including key agencies, regulations, and permitting processes.
2. **Review of Publicly Available Information.** EKI conducted a search of publicly available data, including state agency websites, local agency sites, and legal databases. Key search terms, phrases, and regulations were used to gather relevant information, including statutes, administrative codes, and other pertinent resources. Special attention was given to identifying regulations related to watershed-based management approaches. The Review began with regulations mentioned on agency websites and expanded to include other relevant sections of state statutes and administrative codes.
3. **Development of Key States’ Cut Sheets.** EKI developed Cut Sheets for each Key State, summarizing the relevant state and local agencies involved in surface water management, their jurisdictions, management practices, and regulatory practices. This also included an overview of appeals procedures for each Key State. The Cut Sheets are provided in **Appendix A**.
4. **Outreach to Key State Agency Representatives.** EKI reached out to representatives of relevant agencies from the Key States, typically state agency contacts and their recommended colleagues, and their feedback was incorporated into the Cut Sheets. This process also involved collaboration with NDDWR staff to address specific requests for clarification or additional information.
5. **Summarization and Reporting.** The information from the Cut Sheets was summarized and organized into this Report, following an outline that was coordinated with NDDWR. This summary includes key findings, recommendations, and a comparative analysis of surface water management practices across the Key States.

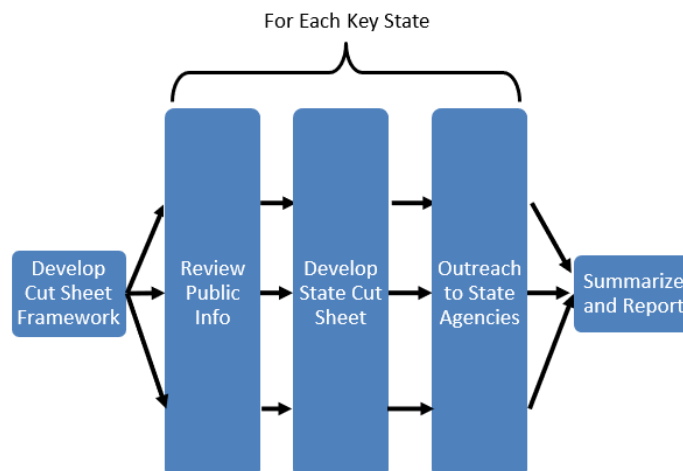


Figure 2: Research Workflow

3 WATERSHED GEOGRAPHY APPROACHES

A *watershed geography approach* to surface water management refers to organizing water governance and regulatory processes based on watershed boundaries, rather than political or administrative boundaries such as counties. A watershed geography approach generally recognizes that surface water resources do not follow political lines and seeks to manage them more holistically, ensuring more coordinated efforts in areas like flood control, levee and dam management, drainage, and water diversion issues.

Among the Key States surveyed, approximately two-thirds use some form of watershed geography to determine the jurisdictions of water-related entities.ⁱ This includes eleven states with local districts or administrative units defined by hydrological boundaries, and six states with statewide entities that are divided into watershed-based regions. In some states, the entire state is divided into watershed-based districts or divisions, either as subdivisions of statewide agencies or as legislatively established districts. In other states, watershed-based districts are established only in specific areas, often through landowner petitions or county boards of commissioners, although some may be created by state agencies to address complex issues. For reference, these watershed-based jurisdictions typically align with Hydrologic Unit Codes (HUCs), mostly commonly at the HUC 6 or HUC 8 level, but can range from as small as HUC 12 to as large as HUC 2.ⁱⁱ Many jurisdictional boundaries are adjusted to align with administrative divisions like counties or locally-defined watershed boundaries, rather than those used by the United States Geological Survey. This section examines the structure and role of watershed-based jurisdictions in the Key States, addressing cross-jurisdictional issues and identifying trends across these states.

3.1 Jurisdictional Boundaries Across Key States

Throughout the Key States, there appeared a varied approach to surface water management jurisdictional boundaries. While some states leaned into the idea of watershed management, other states took a more political subdivision approach. Yet other Key States yielded a hybrid approach of political subdivision management and watershed management coexisting within a single state framework.

3.2 Role of Watershed-Bounded Entities

Local watershed-based entities typically have the authority to develop and enforce water use or watershed management plans, approve projects, and regulate activities such as floodplain management, drainage, and erosion control. These entities often oversee a wide range of surface water management practices, including the design, construction, and maintenance of water infrastructure, flood control systems, and runoff and erosion prevention measures. In contrast, watershed divisions within statewide agencies are typically focused on water rights, water appropriation, and regulatory compliance, with implementation occurring at the local level.

Approximately one-third of the Key States have watershed-based entities that serve in an advisory role. These entities often provide recommendations for state or regional water plans, advocate for local interests in state legislatures, or represent their regions in compact negotiations. Some bodies, like

ⁱ For the purpose of counting states that use watershed-based jurisdictions, North Dakota is counted as a state that uses political, not hydrologic, boundaries; however, watershed jurisdictions are used to define WRDs in Bottineau and Cass Counties.

ⁱⁱ Hydrologic Unit Codes (HUC) identify surface hydrologic features delineated by the USGS. The number of digits in the code reflect each feature's level within the hydrologic system. A 2-digit hydrologic unit (HUC 2) refers to a region. A 4-digit, 6-digit, 8-digit, 10-digit, or 12-digit code (HUC 4, 6, 8, 10, or 12) refers to a subregion, basin, subbasin, watershed, or subwatershed, respectively.

Colorado’s water conservation districts, may also hold local regulatory authority while serving in an advisory capacity at the state or regional level.

3.3 Cross-jurisdictional Issues

The Key States use a variety of approaches to address cross-jurisdictional or cross-boundary issues, which arise when boundaries do not align with watersheds or when an issue spans multiple watersheds and entities. For example, while drainage districts are typically established within individual counties, drainage systems often extend across county or district lines, requiring coordination to resolve cross-boundary drainage challenges, often through special districts or cooperative agreements. This can lead to overlapping authorities, where drainage districts are county-based, while larger watershed organizations or state agencies manage more comprehensive water resources. For instance, Ohio manages cross-boundary drainage issues by appointing a lead engineer in a county district to coordinate with neighboring counties. Iowa allows for the creation of intercounty drainage districts through a joint petition by both counties. Several Key States, including Indiana, Michigan, and Illinois, enable the formation of joint drainage boards made up of existing districts to address these cross-boundary concerns. Illinois also permits the establishment of “regional water management authorities” with broader jurisdiction over water-related issues.

3.4 Trends Across Key States

The use of watershed-based jurisdictions is a longstanding practice in some Key States, while relatively recent in others. This trend has led to the establishment of entities with watershed-based boundaries or the adoption of collaborative, watershed-level planning that transcends traditional jurisdictional lines.

Minnesota’s first soil and water conservation districts, established in the late 1930’s, had watershed-based boundaries, but these were later changed to follow county lines.^[24] Still using watershed-based management, Minnesota enacted a law authorizing the creation of watershed districts in 1955;^[38] in 2013 the state authorized HUC8 watershed-based comprehensive watershed management plans. This was done following recommendations from counties, watershed districts, and soil and water conservation districts. Through the state’s *One Watershed, One Plan* program, the Minnesota Board of Soil and Water Resources (Minnesota Board) is tasked with supporting the development of comprehensive watershed management plans statewide by 2025. A 2021 survey conducted for the Minnesota Board highlighted that participants found value in watershed-level planning, with many motivated by the availability of grant funding to support both planning and implementation efforts.^[23]

In 2020, Utah passed the *Watershed Councils Act*, creating a statewide Utah Watersheds Council and 12 local watershed councils to facilitate stakeholder discussions on water policy. The statewide Utah Watersheds Council convened for the first time in 2022 and is charged with guiding the establishment of local watershed councils. The local councils, which began convening in 2023 with full implementation expected by 2025, serve as advisory bodies to the state legislature and provide forums for collaboration among local water interests. Unlike other watershed-based entities, such as water rights areas or watershed districts, the Utah Watershed Councils do not have regulatory, infrastructure financing, or enforcement capabilities. Instead, they are designed to promote dialog and cooperation among stakeholders, helping to inform state water policy.^[37]

3.5 Potential Value of Watershed-Based Management in North Dakota

In the context of North Dakota, this distinction between the watershed-based approaches of the eastern and western Key States offers valuable insights for considering a shift toward watershed-based water management. North Dakota’s geography and climate vary significantly between its eastern and western

regions, creating distinct water management challenges.^[1] The eastern part of the State receives more precipitation and typically has more abundant surface water resources. This region may benefit from centralized, large-scale water management practices, like those used in the Great Lakes states, where water management focuses on a few dominant hydrological features. In contrast, the western part of the State, which is drier and encompasses parts of the Upper Missouri River Watershed, faces challenges with more limited water availability. Here, a watershed-based approach could help manage and allocate water resources more carefully, ensuring sustainability and addressing local scarcity issues.

Adopting a watershed-based approach in North Dakota could allow for more localized, region-specific management systems tailored to the unique water availability and demands of each region. This could involve defining jurisdictional boundaries based on hydrological features, such as the Missouri River Basin or other smaller watersheds, to ensure that water management is responsive to the specific environmental and climate conditions of each area. By aligning water management with natural hydrological boundaries, the State could enhance its ability to address both local water challenges and broader regional concerns, ensuring that resources are allocated and managed in a way that supports long-term resilience.

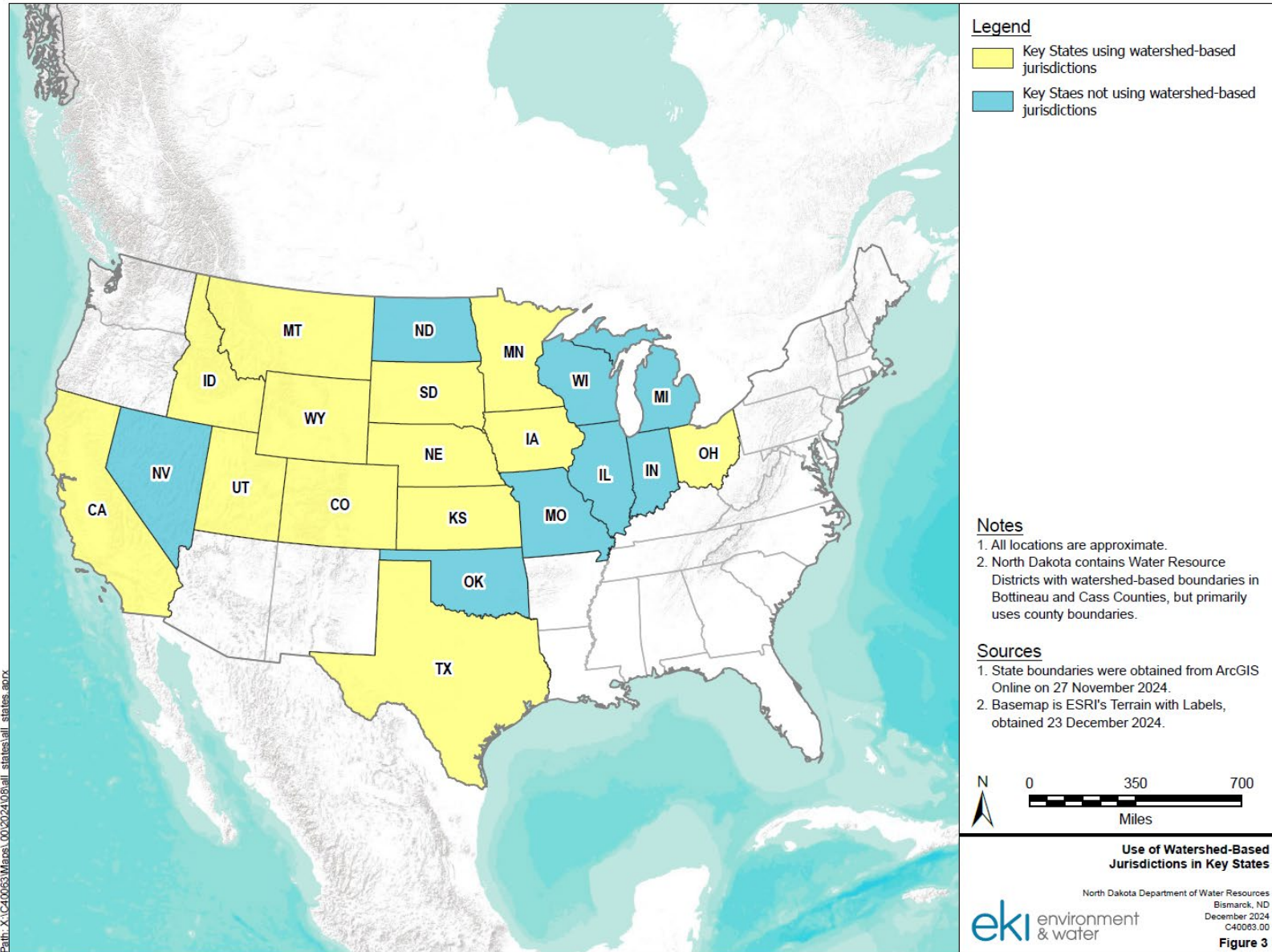


Figure 3: Jurisdictional Boundaries of Water-Related Entities Across the Key States

4 SURFACE WATER MANAGEMENT FRAMEWORKS

To assess the regulatory framework for surface water management across the Key States, an evaluation was conducted focusing on several critical practice areas. These areas include Flood Preparedness and Floodplain Management, Levees, Stormwater, Drainage, Dams, Surface Water Quality, and Water Supply and Diversion Rights. This section summarizes the common practices, policies, and operational procedures that guide surface water management within these key areas, highlighting both the shared approaches and regional variations across the Key States. The findings provide valuable insights into how the Key States address surface water management challenges, coordinate regulatory efforts, and implement solutions to protect infrastructure, communities, and natural resources. Specifically, this section examines whether these practices are based on watershed boundaries or other considerations, providing examples and notes where applicable.

4.1 Flood Preparedness & Floodplain Management

Among the Key States surveyed by EKI, a strong coordination between state and local governments regulating flood preparedness and floodplain activities is the norm. In fact, 90% (19 out of 21 Key States) appear to have a regulatory structure whereby a single state agency oversees local floodplain management. The remaining two states – Michigan and California – primarily manage floodplain practices at the state level (**Figure 4**). For example, in nine states (e.g., Minnesota, South Dakota, and Montana), their “Departments of Natural Resources” oversee local floodplain management. Notable other examples include the Texas Water Development Board, which oversees floodplain permitting and development, among other responsibilities, and the Utah Division of Emergency Management which is responsible for general floodplain management.^[11, 35] Within this structure, local floodplain administrators – typically at the city or county level – are responsible for enrolling in the National Flood Insurance Program (NFIP), adopting and enforcing local floodplain ordinances, and issuing floodplain development permits.

4.1.1 Examples of State Oversight Structures

While floodplain management responsibilities may vary from state to state, in most cases, the state agency overseeing floodplain management supports local communities by helping them enroll in the NFIP, coordinating funding opportunities with FEMA, and offering technical assistance. Communities participating in the NFIP must implement management programs that meet or exceed the NFIP's requirements,^[16] and many Key States have adopted the NFIP requirements as their own minimum standards. In many states, local communities appear to have adopted stricter standards than those mandated by FEMA, NFIP, or the state itself.

As mentioned above, unlike the majority of Key States, which are managed at both the state and local level, two states – Michigan and California – have the following floodplain management practices that are primarily managed at the state level:

- **Michigan’s Centralized Model:** Unlike most of the Key States, Michigan adopts a centralized approach where flood and floodplain management is handled primarily by the state. The Water Management Section of the Michigan Department of Environment, Great Lakes, and Energy (EGLE) is responsible for floodplain management under the state's Floodplain Regulatory Authority. The EGLE oversees floodplain permitting and issues permits for developments in the 100-year floodplain, particularly in areas with drainage basins larger than two square miles. The state is divided into nine districts, with floodplain engineers providing technical support to communities and assisting with NFIP enrollment.^[12]

- **Additional State Agency in California:** In California, an additional state agency assists with floodplain management for specific purposes, particularly vulnerable regions, or projects. California’s Central Valley Flood Protection Board (CVFPB) enforces floodplain standards for its Central Valley flood control system, issuing permits for encroachment on flood control plains and managing flood mitigation efforts – in coordination with California’s Department of Water Resources.^[5]

4.1.2 Evidence of Watershed-Based Floodplain Management

Among the Key States surveyed by EKI, approximately half of those with watershed-based jurisdictions, as outlined in **Section 3**, appear to have implemented that structure towards floodplain management. These authorities often include flood control, floodplain permitting, and funding for flood mitigation projects. In these states, floodplain management at the watershed level is typically overseen by local entities. For example, in Iowa, local watershed management authorities, organized at the HUC 8 level, address water quality and flood risk within their jurisdictions. Similarly, in Ohio, watershed districts, based on natural drainage areas, are authorized to manage flood control efforts and floodplain permitting within their designated areas.

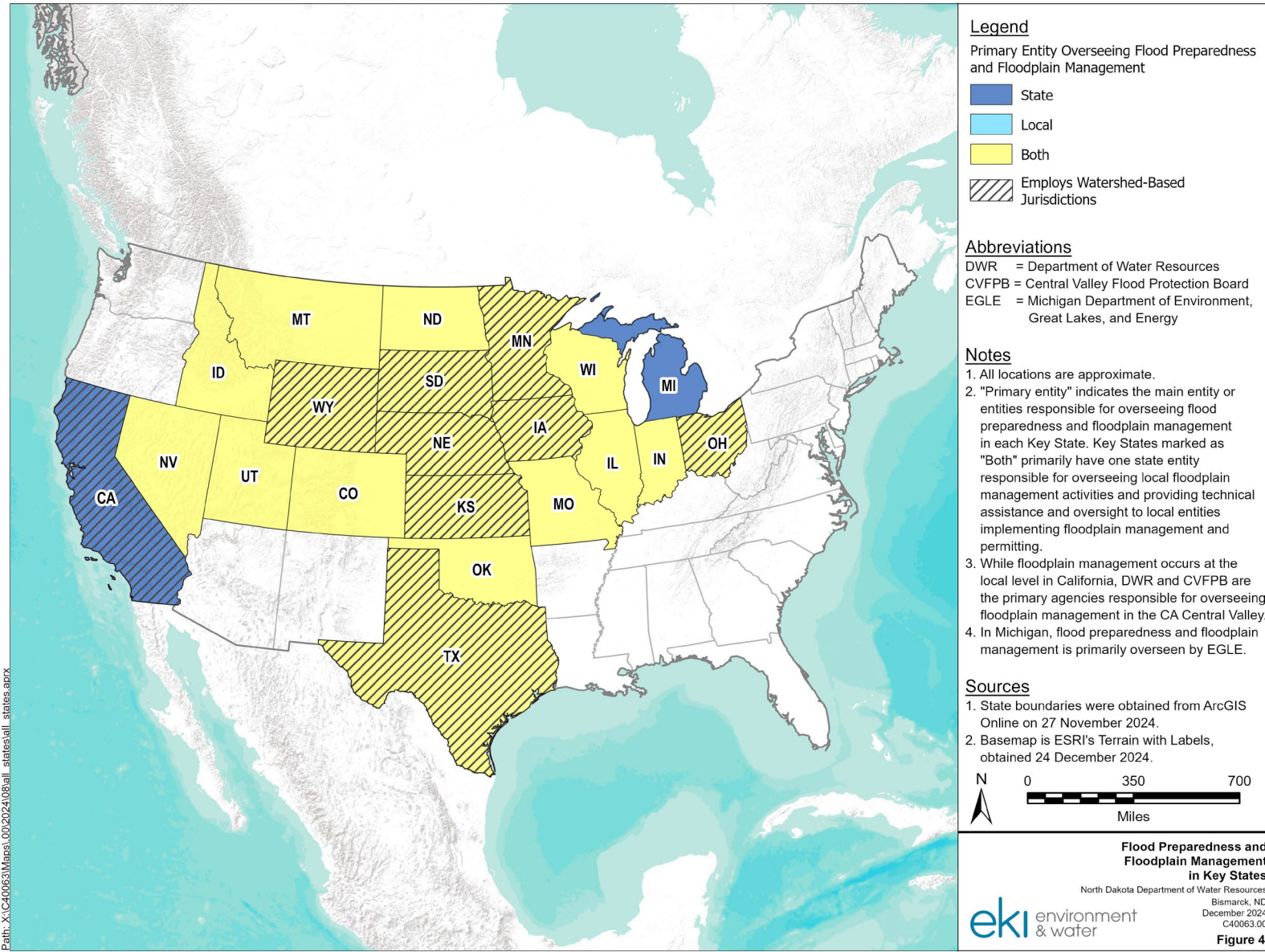


Figure 4: Flood Preparedness and Floodplain Management in Key States

4.2 Levee Permitting and Management

Levee permitting and management procedures vary considerably across the Key States, with some states relying on a combination of state and local coordination, while others place the responsibility at the local level or have no formal levee management procedures in place (**Figure 5**). Among the Key States with state-level oversight, the process typically involves a state agency overseeing levee management, reviewing, and issuing permits for the construction or modification of levees. These states often set specific design standards to ensure the safety, stability, and effectiveness of levees in mitigating flood risks. Additionally, many of these states allow local entities, such as counties or levee districts, to manage levees within their jurisdiction, maintain flood control works, and report on levee conditions to the overseeing state agency.

4.2.1 Local-Only or Minimal State Oversight

In contrast, just over half of the Key States do not have formal state-level procedures for levee permitting or management. In these states, local governments typically oversee levee construction and maintenance, often through the creation of special districts such as levee districts, reclamation districts, or drainage districts. These districts are granted the authority to levy taxes for upkeep and management of levee systems within their boundaries. For example, in Idaho, local governments have the authority to form levee districts that manage and maintain levees. Permitting is generally handled at the county level, and projects within regulated floodplains must obtain a floodplain development permit.^[17] This decentralized approach allows for flexibility, but it also places a significant burden on local agencies to ensure proper flood risk management.

Although these states may not regulate levee construction directly, a permit is still required for levees located within designated floodways or for levees that meet the requirements of a dam permit (see **Section 0** for artificial barriers requiring dam permits). For example, in Colorado, levees are regulated as dams by the Colorado Department of Water Resources.

4.2.2 States with Minimal or No Levee Regulation

Two Key States, Nevada and Utah, stand out due to the absence of state or local procedures for regulating leveesⁱⁱⁱ. In Nevada, the state does not have a formal levee permitting process, mostly due to their lack of levee infrastructure across the state.^[51] Similarly, in Utah, the state does not regulate levees directly but relies on FEMA for the certification of levees that meet federal design, operation, and maintenance criteria. However, Utah is actively working to secure FEMA accreditation for existing levees, ensuring that they meet national safety standards.^[40]

4.2.3 Examples of State Levee Management Frameworks

Examples of state-level oversight structures include:

- **Illinois:** The Illinois Department of Natural Resources' Office of Water Resources operates a state levee program that supports the construction, maintenance, and regulation of levees that could impact floodplains.^[36] Before approving a levee project, the Office of Water Resources requires that developers demonstrate the levee's ability to withstand flood conditions without negatively affecting surrounding areas. Local levee districts, authorized under the Illinois Compiled Statutes, are still responsible for managing levee systems, including maintenance and flood risk mitigation, within their boundaries.^[18]

ⁱⁱⁱ This was confirmed via coordination with representatives from these states, as noted in applicable Cut Sheets in **Appendix A**.

- **Texas:** The Texas Commission on Environmental Quality issues permits for levee projects. Local entities, including Levee Improvement Districts, are responsible for constructing and maintaining levees along rivers, working under the administrative oversight of Texas Commission on Environmental Quality. These districts play a central role in flood control efforts, particularly in flood-prone regions such as the Gulf Coast.^[20]
- **California:** California presents a notable exception in its levee management framework. While the state employs a mix of state and local oversight, state-level permitting is limited to levees within the Central Valley. Their Central Valley Flood Protection Board (CVFPB) is responsible for permitting the construction or modification of levees within the floodway regulated by the CVFPB,^[13] with additional approval required from the USACE. The CVFPB also oversees the maintenance and protection of these levees through the CVFPB “Enforcement Program”, ensuring compliance with safety standards.^[3]

4.2.4 Evidence of Watershed-Based Levee Management

Among the Key States surveyed, no watershed-based approaches specific to levee management were identified. Instead, state entities and local authorities operating within a watershed-based structure typically oversee levee management as part of broader floodplain or drainage management activities. For example, in Kansas, watershed districts are responsible for constructing and maintaining water management works, such as dams, levees, and drainage systems. While these districts aren’t solely responsible for managing levees within their jurisdictions, they may construct and operate them as part of their broader activities.

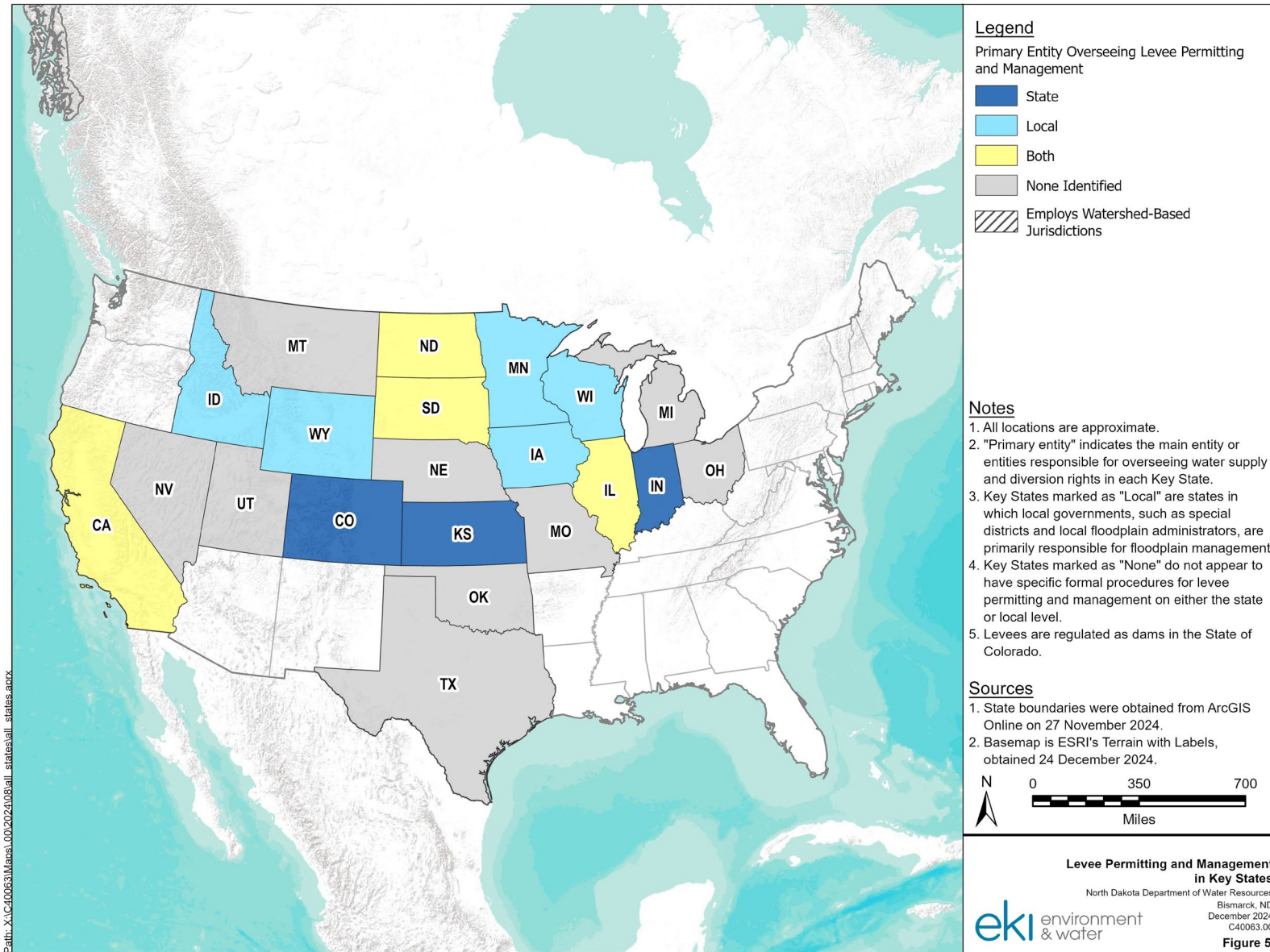


Figure 5: Levee Permitting and Management in Key States

4.3 Stormwater Permitting

Stormwater quality is primarily regulated at the federal level by the U.S. Environmental Protection Agency (USEPA) under Section 402 of the Clean Water Act, which established the National Pollutant Discharge Elimination System (NPDES). While the federal government sets the framework for stormwater regulation, states can be authorized by the USEPA to implement and enforce their own NPDES programs. All 21 Key States have received this authorization, meaning they have the authority to issue permits for various types of pollutant discharges, including those from stormwater systems (**Figure 6**).

In certain states, a state agency, such as Missouri's Department of Natural Resources or Idaho's Department of Environmental Quality, is responsible for permitting stormwater discharges and ensuring compliance through inspections, data analysis, and audits. These agencies manage stormwater pollution by issuing permits for a wide range of activities and monitoring ongoing compliance with stormwater management requirements.

4.3.1 Stormwater Permitting and Compliance

Throughout the Key States, general permits^{iv} are required for certain types of stormwater discharges, except for those subject to state-specific exemptions or covered under individual permits (see **Section 4.3.2**). These include stormwater runoff from industrial activities, municipal separate storm sewer systems (MS4s), and construction activities. Applicants for these permits are generally required to submit detailed plans for managing stormwater, such as a Stormwater Pollution Prevention Plan or a Stormwater Management Program. Compliance with these permits typically involves regular monitoring, reporting, and periodic inspections to ensure that stormwater discharges do not violate water quality standards.

For example, in Wyoming, the state issues specific general permits for stormwater discharges from industrial activities, such as mineral mining, in addition to those for construction and MS4-related discharges.^[33] This ensures that different types of activities with stormwater runoff are managed according to their unique risks and impacts on water quality. Alternatively, individual NPDES permits may be issued, which are tailored to specific discharge activities, locations, or applicants.

4.3.2 Variations in State-Specific Requirements

While most Key States have similar general permitting requirements, some have state-specific variations based on local conditions or additional regulations. For instance, the Michigan EGLE exempts construction activities that disturb one to five acres of land from requiring a general permit. Instead, such projects are covered under the Soil Erosion and Sedimentation Control Program permit, as long as the applicant is a public agency or the project meets specific conditions. Additionally, EGLE exempts certain industrial activities from stormwater permitting if there is no chance for precipitation to contact industrial materials or activities, further tailoring the regulatory approach to reduce unnecessary burdens on low-risk activities.^[21]

4.3.3 Local Stormwater Management

While state agencies regulate stormwater quality and discharge permits, the management of stormwater infrastructure and day-to-day stormwater activities is often the responsibility of local governments. Municipalities, counties, special districts, and local water associations typically manage the design, operation, and maintenance of stormwater systems at the local level. Local governments are encouraged

^{iv} A stormwater general permit is a type of permit issued by a regulatory agency—typically at the state or federal level—that authorizes a category of discharges of stormwater under a set of standardized conditions. It is designed to cover multiple activities or facilities with similar stormwater discharge characteristics, rather than issuing individual permits for each discharge.

to adopt their own stormwater ordinances to ensure that stormwater is managed effectively within their jurisdictions.

For example, cities and counties may develop ordinances to manage construction runoff, establish best practices for stormwater treatment, and implement low-impact development strategies to control pollution. Local authorities often enforce these ordinances and collaborate with state agencies to ensure that local stormwater systems comply with both state and federal requirements.

4.3.4 Evidence of Watershed-Based Stormwater Management

Stormwater permitting is generally managed at the state level, with watershed-based state authorities overseeing it in states that have hydrologic divisions within their permitting agencies. While no specific instances of stormwater permitting by local watershed-based bodies were identified by EKI, with the exception of the Regional Water Quality Control Boards in California, some local watershed-based entities conduct projects that facilitate stormwater management as part of their broader watershed management activities (**Figure 6**).

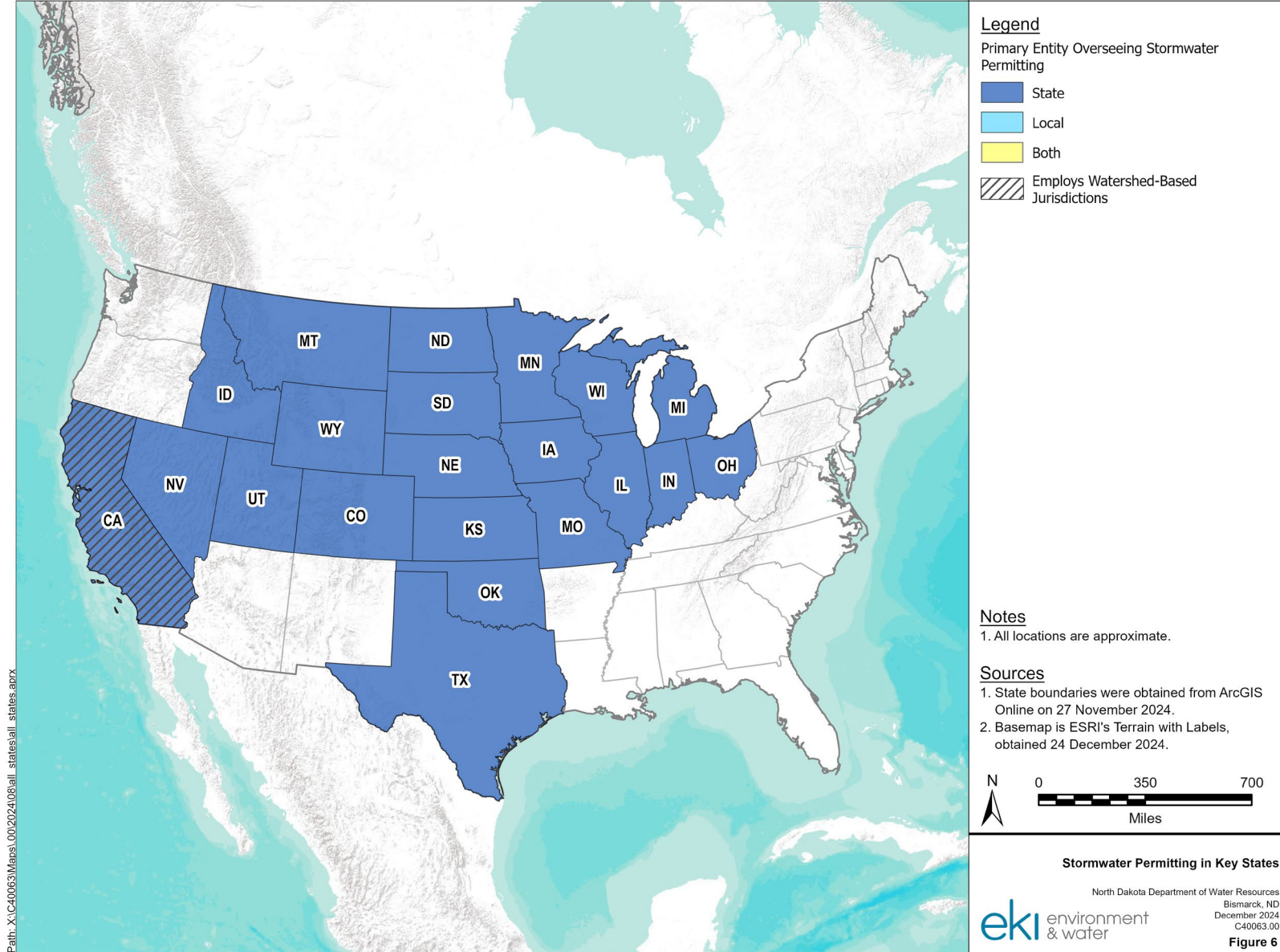


Figure 6: Stormwater Permitting in Key States

4.4 Drainage Permitting and Management

Drainage management practices vary widely across the Key States surveyed, but in general, local (county) governments play a significant role in overseeing drainage activities. Priorities of drainage management can center around enabling crop cultivation in swampy land or flood control as common motivators. The specific structures and processes for drainage management depend on local needs, geographic conditions, and the presence of specialized districts designed to manage water runoff and flood control. While most states rely heavily on local authorities, there are examples of states where a mix of state and local oversight is in place to address complex drainage needs.

4.4.1 Local Drainage Management

In most of the Key States, drainage management is primarily handled at the local level, often by county governments. Review of drainage laws in Key States revealed that over half do not appear to explicitly define any triggers for drainage permitting, leaving this determination to local entities (**Figure 7**). These local entities implement drainage ordinances and regulations that govern the construction and maintenance of drainage systems. Many counties also create special districts - such as drainage districts or soil and water conservation districts - to manage drainage and flood control efforts within designated areas. These districts are typically empowered to plan, construct, and maintain drainage infrastructure, assess fees, and resolve disputes related to water management.

Example of Key States that have set up local management districts and boards include:

- **Texas Drainage Districts:** In Texas, drainage districts are formed with specific authority to construct and maintain drainage infrastructure. Cities and counties in Texas may also develop local drainage regulations tailored to their unique needs, with the Texas Water Development Board offering financial assistance to local governments for flood control and drainage projects.^[35]
- **South Dakota:** In South Dakota, County Commissions serve as “Drainage Boards” with authority to regulate drainage projects, maintain drainage infrastructure, assess drainage fees, and issue permits. These county boards are responsible for overseeing the permitting process for surface water drainage and resolving disputes related to drainage activities within their jurisdiction.^[32]

4.4.2 State and Local Coordination

While most drainage management in the Key States is handled locally, a few states have adopted a combination of state-level oversight and local management to regulate certain drainage activities (e.g., cross-boundary issues or impacts to other water resources). These states provide technical assistance, funding, and/or regulatory frameworks that complement local efforts to address drainage challenges (**Figure 8**). Examples include the following:

- **Illinois:** Drainage permitting in Illinois is largely managed at the drainage district level, with each district having specific rules and procedures. Drainage of more than 10 square miles in rural areas or one square mile in urban areas is regulated by the Illinois Department of Natural Resources, and drainage through land owned by another party generally requires a local permit. When drainage systems span multiple districts, interdistrict coordination can take place through the formation of joint drainage districts or regional water management authorities that handle drainage and water resource management on a larger, regional scale. Additionally, each county must prepare a plan for managing natural and man-made drainageways.
- **Michigan:** In Michigan, drainage management is largely handled by local drainage districts and county Drainage Commissioners. These local authorities are responsible for issuing permits for drainage activities, managing county drains, and overseeing drainage infrastructure. For projects that span

multiple counties, inter-county drainage districts may be established to manage the systems. If a project is deemed low-impact, it may be eligible for expedited permitting through the Michigan EGLE.^[22]

- **Nevada:** Nevada employs a hybrid approach, where local governments are primarily responsible for drainage regulation, but the Nevada Division of Environmental Protection provides oversight for drainage activities that could potentially impact water quality.^[29] Additionally, the Nevada Department of Transportation requires permits for drainage activities on state-managed highways and lands.^[28]
- **North Dakota:** In North Dakota drainage management is primarily carried out at the local level by counties, municipalities, and specially created drainage districts. The State requires all applications for draining areas of 80 acres or more to be submitted to the State. Applications of primary local influence are sent to WRDs for final review and approval, with overly impactful or multi-jurisdictional applications to then be forwarded to the NDDWR for a final decision.
- **Wisconsin:** In Wisconsin, drainage is primarily managed by county drainage boards or by drainage districts under their supervision. Expansion of existing drainage systems may require permitting from the Department of Agriculture, Trade, and Consumer Protection, and regulated drainage districts must report to the Department regularly. The Wisconsin Department of Natural Resources is involved only if drainage activities impact navigable waters.^[6]

4.4.3 Evidence of Watershed-Based Drainage Management

In the majority of the Key States, drainage management is handled at the local level, with watershed-based drainage management observed only in some states containing local jurisdictions based on hydrologic regions. For example, in Kansas, watershed districts, aligned with the state's watersheds, are responsible for constructing and maintaining water management works, including drainage systems, within their jurisdictions. Similarly, in Wyoming, watershed improvement districts implement conservation projects within their areas, which can include drainage-related initiatives.

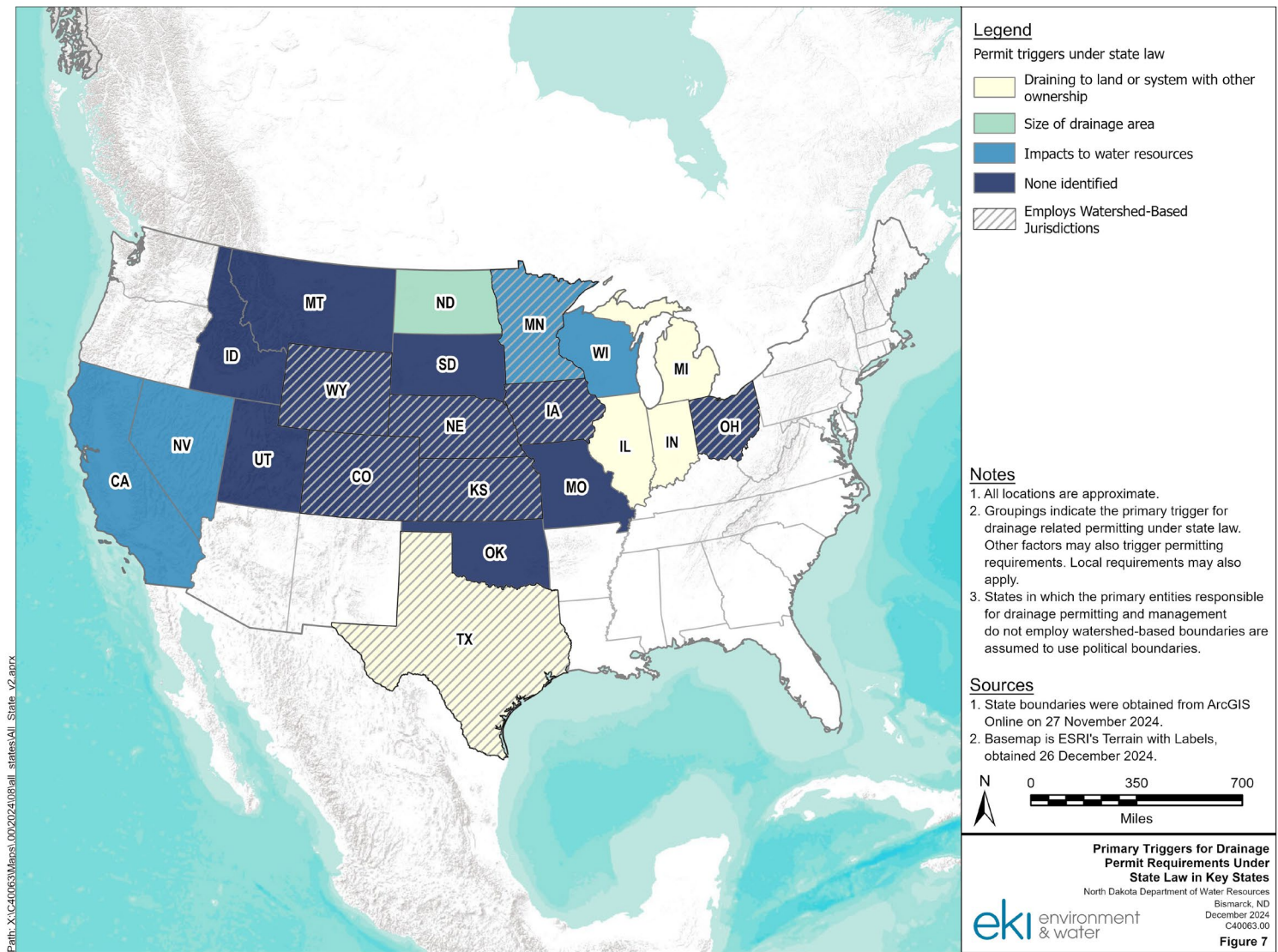


Figure 7: Primary Triggers for Drainage Permit Requirements Under State Law in Key States

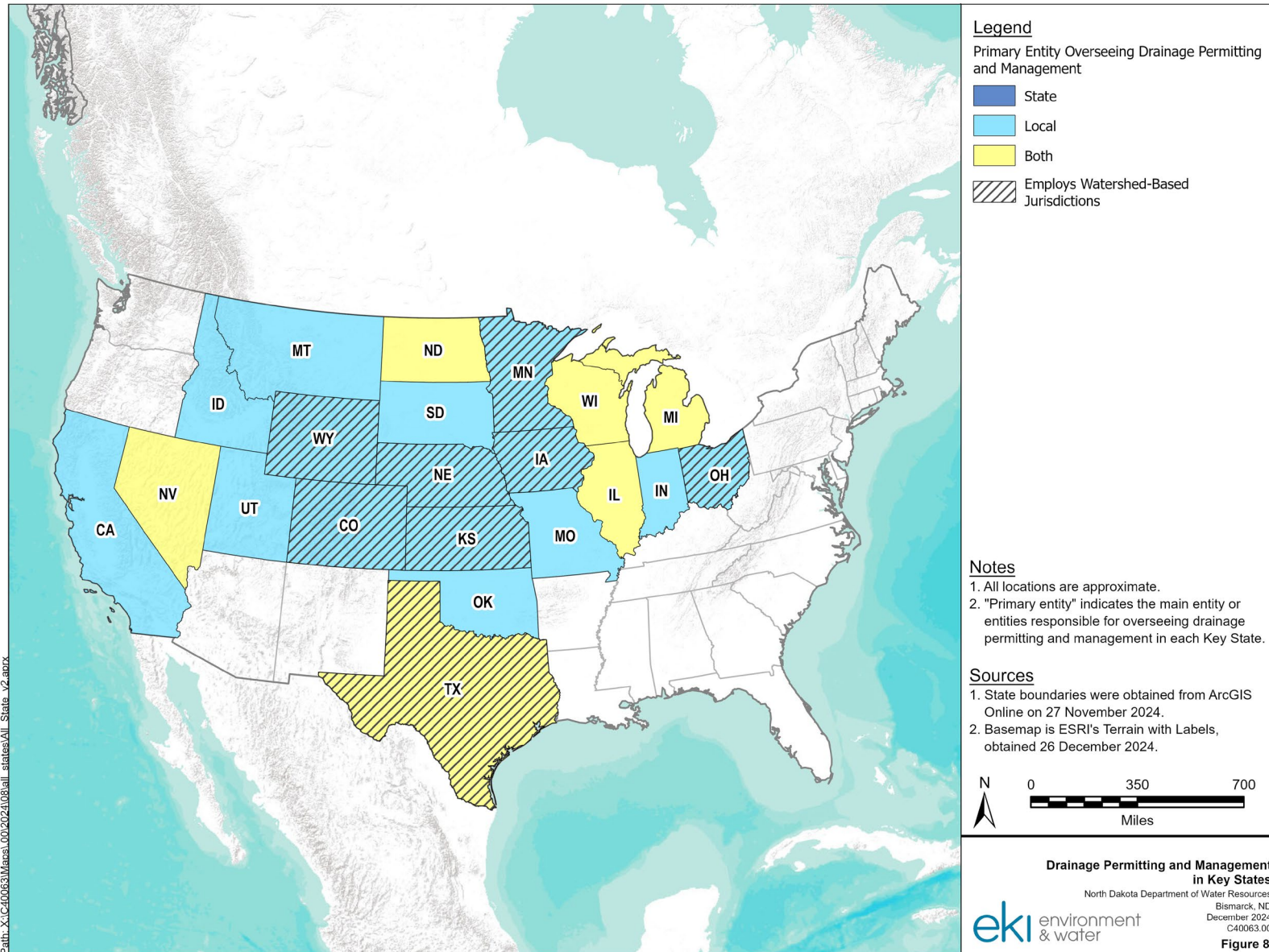


Figure 8: Drainage Permitting and Management in Key States

4.5 Dam Permitting and Management

Dam permitting and management in the Key States are primarily overseen by state-level agencies, which generally have the authority to establish regulations governing the design, construction, operation, and maintenance of dams (**Figure 9**). In most states, specific state entities or a designated State Engineer, are tasked with managing dam safety and overseeing compliance with both state and federal regulations. In states with more complex surface water management structures, such as Oklahoma, Michigan, and Texas, specialized agencies like the Oklahoma Water Resources Board, Michigan's EGLE, and the Texas Commission on Environmental Quality, respectively, handle dam permitting and management.

State agencies responsible for dam permitting generally have the authority to set standards and regulations for all aspects of dam management, including design, construction, alteration, abandonment, maintenance, monitoring, operation, repair, and removal. These standards are often determined by factors such as the dam's size, its hazard classification, and its intended use. A key feature of dam management in the Key States is the classification of dams based on the hazard they present to human life, property, and the environment, consistent with the guidelines of the National Dam Safety Program.^[2, 10] For instance, in most Key States, the higher-risk dams must meet more stringent design and operational standards due to the greater potential consequences of their failure.

4.5.1 Dam Permitting Requirements

In most of the Key States, a dam permit is required for any structure at or above a certain height – typically 25 feet or greater – and which can impound a certain amount of water - often 50 AF or more. Additionally, permits are required for the enlargement, alteration, repair, or removal of existing dams. These permitting requirements ensure that changes to dam structures are reviewed and assessed for potential safety risks.

Beyond the initial permitting process, state agencies are generally responsible for ensuring ongoing compliance with safety standards throughout the life of a dam. These agencies can take various actions, including responding to complaints, ordering inspections, issuing emergency repair orders, revoking permits if safety standards are violated, and taking actions to eliminate hazards and protect public safety and property. In some cases, states may allow for waivers or special permitting processes for dams that present a low risk to public safety, such as those in remote areas with no downstream impact. For instance, in Wyoming, the permitting entity may waive certain requirements for dams located in areas where failure would not cause significant harm to people or property.^[34] Conversely, dams meeting specific design criteria may require special applications to ensure they meet safety standards.

In North Dakota, the State Engineer is the primary authority overseeing dam permitting and safety. Like the other Key States, North Dakota classifies dams by their hazard potential and requires permits for any dams that impound a certain amount of water. Additionally, the State can take enforcement actions such as issuing emergency repairs or revoking permits if safety standards are not met.

4.5.2 Evidence of Watershed-Based Dam Permitting and Management

In the Key States, dam permitting and management are generally overseen by state agencies, which establish statewide standards and regulations for all aspects of dam management, regardless of watershed boundaries. As a result, a watershed-based approach to dam permitting and management was not observed at the state level with the exception of Wyoming, where the State Engineer's Office divisions perform dam inspections and rehabilitation on a watershed basis. However, some states have watershed-based local authorities responsible for regulating water management works and land use within their jurisdictions, including the management of dams. For example, in Kansas, watershed districts oversee the construction and maintenance of small dams within their jurisdictions, subject to state oversight, while in Minnesota, Watershed Management Organizations are tasked with regulating land use and maintaining water management infrastructure for the 7-county Minneapolis-St-Paul metropolitan area.

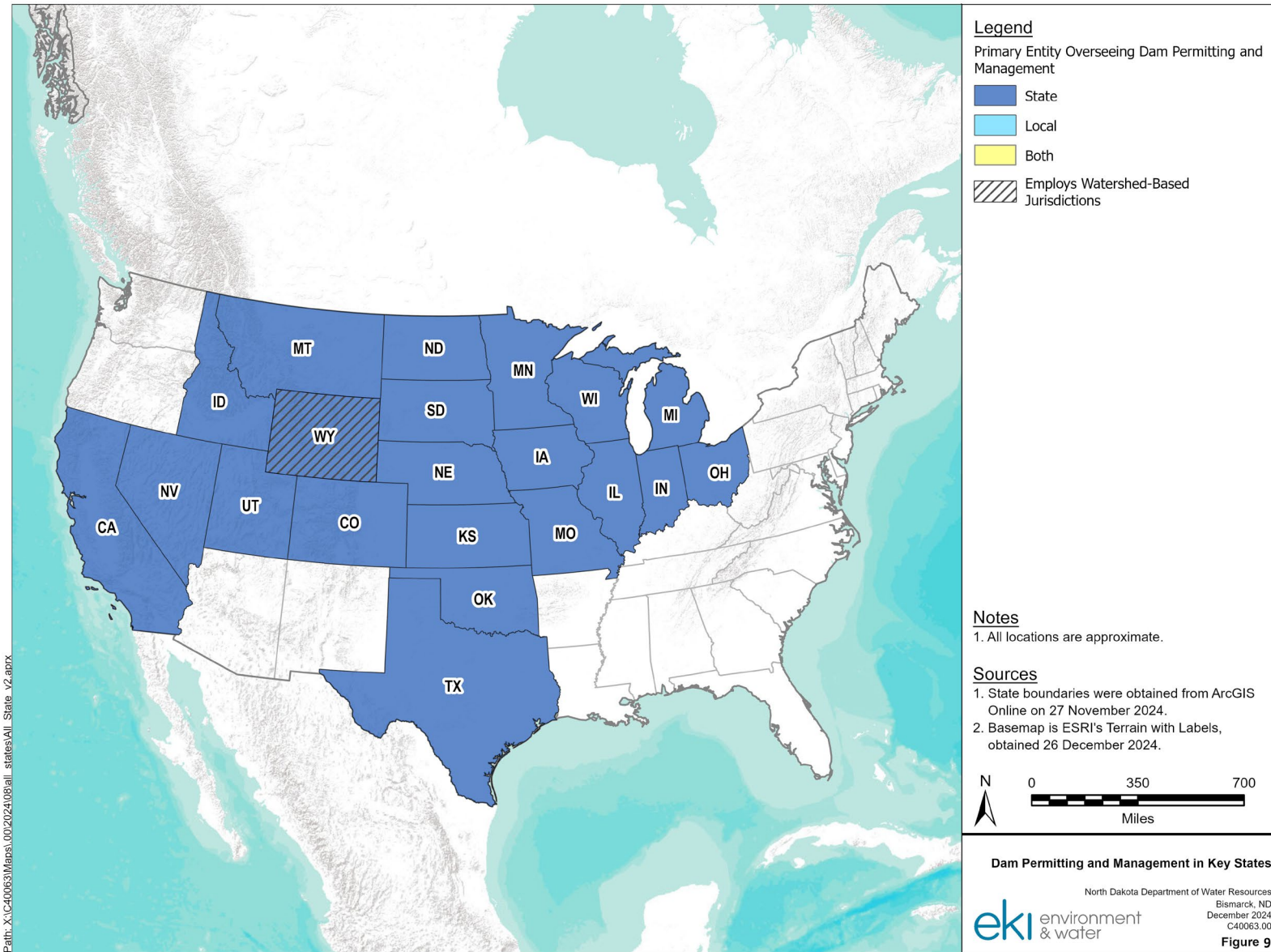


Figure 9: Dam Permitting and Management in Key States

4.6 Surface Water Quality Monitoring and Management

In all of the Key States, surface water quality is primarily overseen at the state level, with a designated state agency responsible for establishing and enforcing water quality standards. These agencies, in compliance with Section 303(c) of the federal Clean Water Act, develop water quality standards that reflect the beneficial uses of the state's waters - such as recreation, agriculture, industrial use, and aquatic life. Additionally, these agencies enforce these standards by issuing permits for point source discharges (such as wastewater treatment plants or industrial facilities) and, in many states, managing nonpoint source pollution (such as runoff from agricultural or urban areas).

In some states, surface water quality management is a joint effort between state-level agencies and regional entities (**Figure 10**). This dual approach allows for more localized management, helping address the specific water quality challenges that vary across the state. One example of this is California, where their State Water Resources Control Board formulates statewide water quality control plans, while the state's Regional Water Quality Control Boards – jurisdictions roughly at the HUC 4 watershed level - handle water quality management on a more localized level. This allows each region to develop water quality plans that are more responsive to local conditions, whether it's addressing water pollution from urban development in one region or agricultural runoff in another.^[4] Another example is South Dakota, in which the Department of Natural Resources develops the state's surface water quality standards and oversees surface water quality throughout the state through the implementation of programs like the South Dakota Water Quality Monitoring Program and watershed assessments. Additionally, South Dakota's seven Water Development Districts, whose boundaries are based on counties within a watershed, engage in local water quality monitoring and implement projects related to water quality within their respective boundaries.

4.6.1 Surface Water Quality in North Dakota

In North Dakota, surface water quality is managed by the North Dakota Department of Environmental Quality, which is responsible for developing and enforcing water quality standards for all state waters. Like other states, North Dakota adheres to the guidelines set forth by the CWA and works to ensure that water quality is maintained for beneficial uses such as irrigation, drinking water, recreation, and fish and wildlife habitat.

4.6.2 Evidence of Watershed-Based Surface Water Quality Monitoring and Management

The majority of local entities that implement watershed-based approaches identified in **Section 3** oversee some aspect of surface water quality monitoring or management, with the exception of entities specifically overseeing water supply and diversion rights. Water quality permitting is generally the purview of state agencies, though this may be delegated to regional, watershed-based divisions (**Figure 10**). As such, surface water quality in these Key States is typically managed on a watershed level, whether it be through watershed-specific funding, monitoring activities, pollution prevention programs, or other management activities. For example, at the local level, in Iowa, Watershed Management Authorities perform water quality monitoring and management within their watershed jurisdictions.

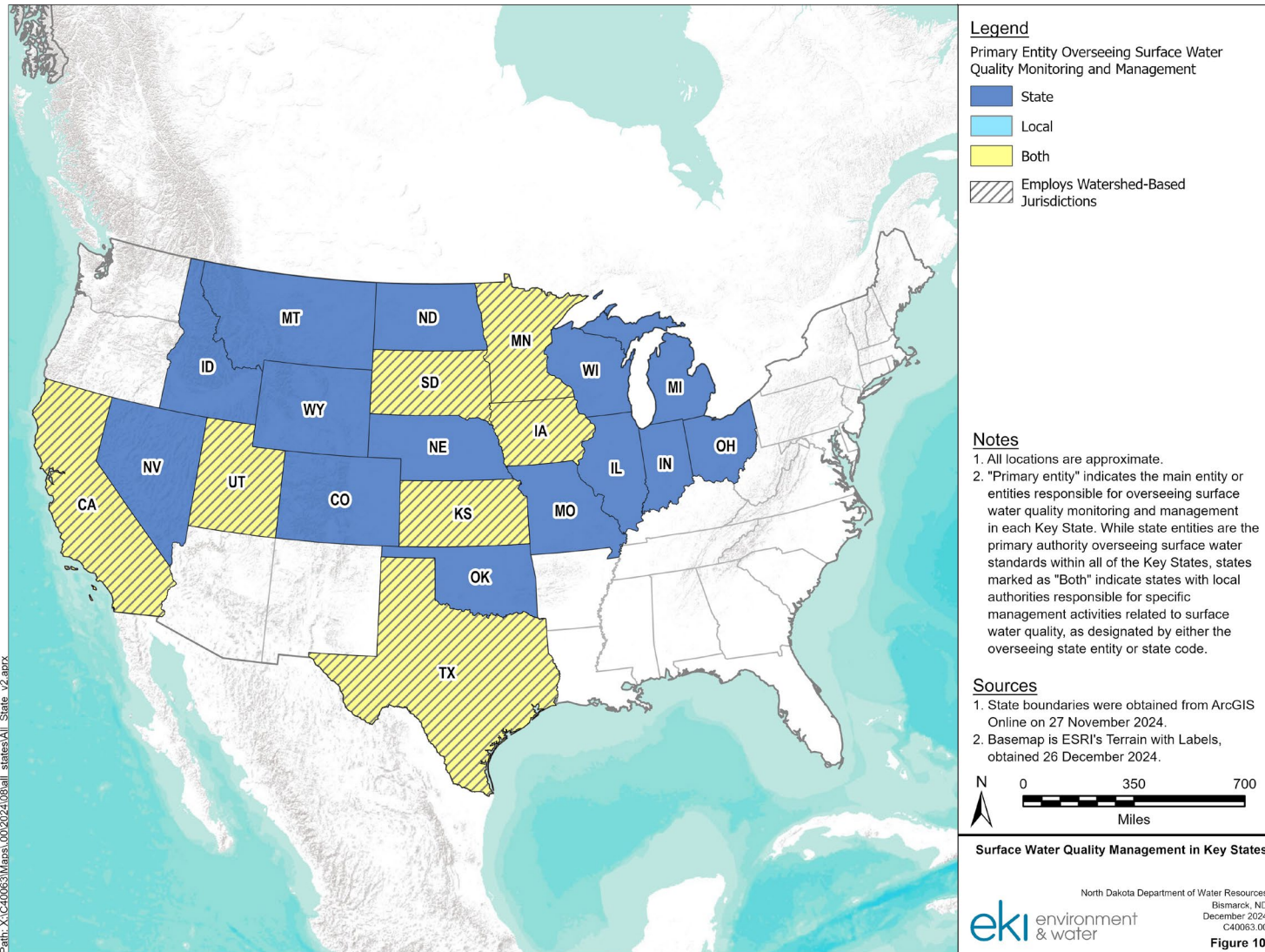


Figure 10: Surface Water Quality Management in Key States

4.7 Water Supply and Diversion Rights

The requirements for obtaining surface water rights differ significantly across the Key States, primarily due to two major legal doctrines: the prior appropriation doctrine and the riparian doctrine. Western Key States, particularly those with arid or semi-arid climates, generally follow the prior appropriation system. Under this doctrine, water rights are allocated based on the "first in time, first in right" principle, meaning that the first person or entity to divert water from a source has priority in using it, regardless of land ownership. This system is common in states like Colorado and Utah, where water use is often regulated through permits issued for specific beneficial uses, such as agriculture, industrial use, or municipal supply. In contrast, Eastern Key States like Minnesota, Michigan, and Indiana follow the riparian doctrine.^[25] This system grants water rights to those who own land adjacent to a water source, such as a river or lake, and allows them to use the water in a reasonable manner for various beneficial uses, such as irrigation, domestic use, or recreation. The riparian doctrine emphasizes shared water resources, and water rights are generally tied to land ownership and usage needs rather than the order of usage or volume withdrawn.

4.7.1 Prior Appropriation States

In Key States governed by the prior appropriation system, typically in the west or Midwest, water diversions and uses of any quantity are tightly regulated through permits based on both the amount of water withdrawn and the beneficial use to which it is put. For example:

- **Nevada:** A permit from Nevada's Department of Water Resources is required for all new appropriations of water or changes in use of water from a previously permitted appropriation. Permits are granted if there is water available and using it will not harm existing water rights holders. Pre-statutory rights, which were established by decree or historic appropriation prior to development of the current permitting system, are assumed valid unless challenged in court, with priority given to more senior water users.
- **Kansas:** Also permits most water uses but provides exceptions for domestic water use, where individual homeowners or small users may not need a permit for relatively small diversions of water.

4.7.2 Great Lakes and Riparian States

In contrast, states in the Great Lakes region and those following the riparian doctrine issue permits primarily based on significant water withdrawals rather than on the type of use. For example:

- **Minnesota, Michigan, Wisconsin, Indiana, Illinois, and Ohio** typically issue permits for large-scale water users or for activities such as inter-basin transfers (moving water from one watershed to another), as specified under the Great Lakes-St. Lawrence River Basin Water Resources Compact (the "Great Lakes Compact").^[15] This compact regulates water withdrawals to protect the water resources of the Great Lakes Basin, ensuring that significant withdrawals or diversions are carefully managed (**Figure 11**).
- Outside the Great Lakes Compact, Michigan's EGLE requires registration for surface water diversions between 100,000 and 2 million gallons per day and a full permit for withdrawals exceeding 2 million gallons per day.^[9] This ensures that major water users are monitored while also allowing flexibility for smaller withdrawals. Several of the other eastern Key States also align with this model, requiring permits only for significant withdrawals, such as those exceeding 100,000 gallons per day.^[19] These regulations ensure that large-scale water users are monitored while smaller users generally face less stringent oversight.
- In these states, the primary concern is ensuring that water use does not significantly degrade the water quality for other users downstream. As such, the regulatory framework emphasizes the

environmental protection of water resources, rather than imposing strict limitations on the amount of water diverted. State agencies in riparian states typically set water quality standards, monitor pollutants, and issue permits that ensure water use does not exceed the capacity of the waterway to assimilate the impacts.

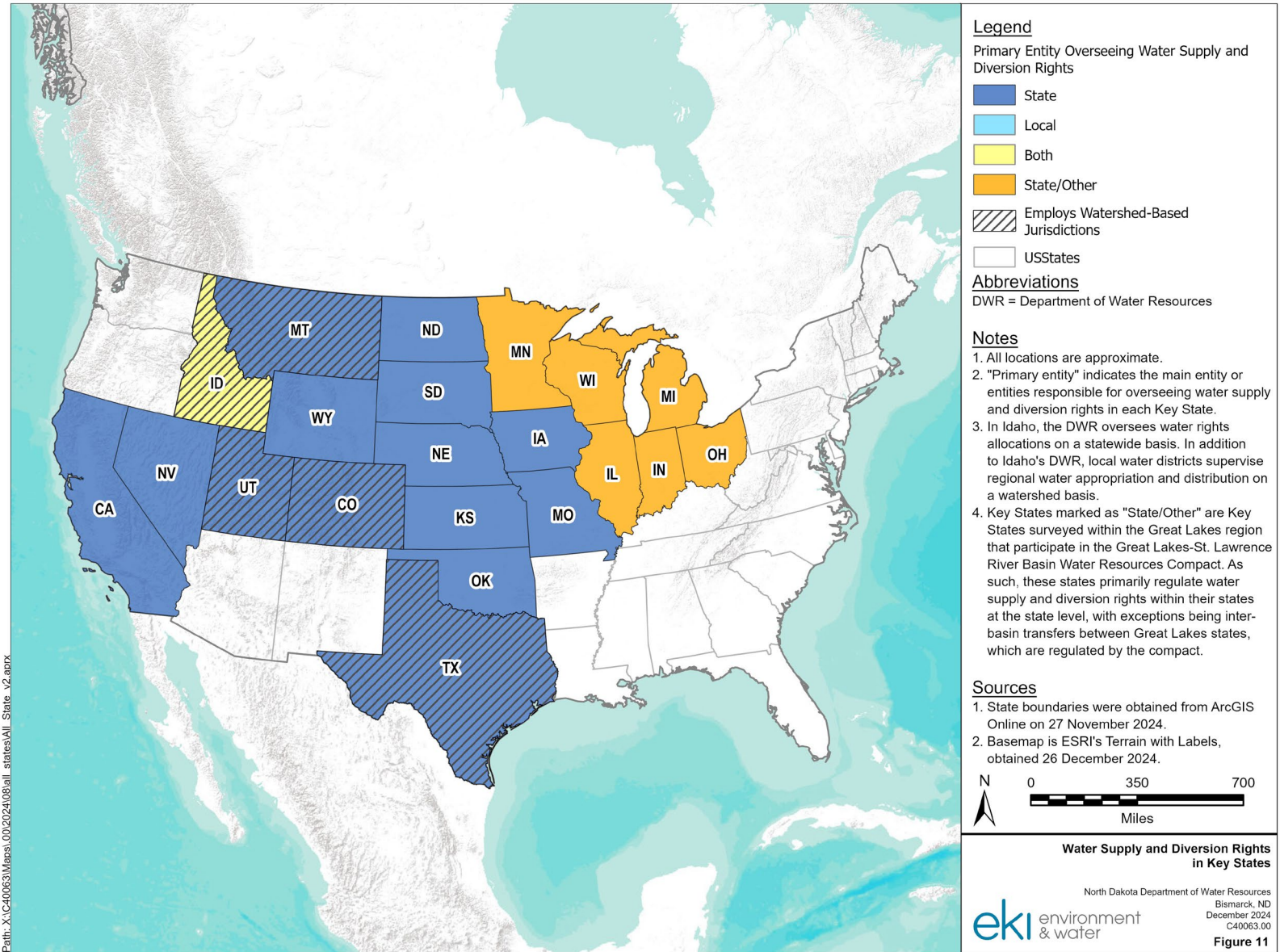
4.7.3 Exceptions to Permitting Requirements

Water users in each of the Key States are required to obtain a permit before diverting water for use, typically based on the intended beneficial use or the quantity of water being diverted. As discussed in **Section 4.7.2**, in some Key States, such as Michigan, water users who do not meet the state's permit requirements for their diversions may still be required to register their diversion to help the state track water usage.

An exception to these general criteria is the State of Missouri. In Missouri, water users are not required to obtain a permit to divert or use water. Instead, major water users with the capacity to divert 70 gallons per minute or more, or 100,000 gallons per day, from surface or groundwater sources are required to register their water use with the Missouri Department of Water Resources. According to the department, the lack of a permitting requirement for water diversions within the state is due to an abundance of water resources, including the Mississippi and Missouri rivers, the Ozark Aquifer, several alluvial aquifers and a large amount of precipitation, which make it unnecessary to regulate the State's water users.

4.7.4 Evidence of Watershed-Based Management within Water Supply and Diversion Rights

Of the Key States surveyed, approximately half of those with watershed-based jurisdictions, as outlined in **Section 3**, issue water rights permits based on the state's hydrologic divisions; this includes five of the six states in which state agencies utilize watershed-based approaches. For example, in Montana and Texas, divisions of the Water Court and Watermasters, respectively, review and issue water rights permits on a river basin basis. Similarly, in Colorado, Water Court divisions oversee the adjudication of water rights, while in Utah, the Division of Water Rights' regional offices, organized at the HUC 8 level, enforce water rights policies at a subbasin level. In addition to management at the state level, local water districts in Idaho, which are organized by watersheds, manage regional water appropriation and distribution within their respective watersheds (**Figure 11**).



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Figure 11: Water Supply and Diversion Rights in Key States

5 REGULATIONS AND POLICIES

This section examines the regulatory frameworks and policies governing water management across the Key States, focusing on the various authorities and levels of government involved, as well as the key sources and drivers of these policies. It complements the discussion of where agencies are responsible for driving policies and regulations, including instances where watershed-based approaches are implemented.

5.1 State or Local Government

As discussed in **Section 4**, the level of government responsible for regulating water management varies by practice area, with different entities overseeing specific aspects of surface water governance. For example, dams that are not federally managed and exceed certain size or capacity thresholds are typically regulated at the state level in all Key States. This usually involves inspections by professional engineers, submission of detailed plans to state agencies, permitting, and assigning a hazard classification based on the potential risk to life and property in the event of failure. Surface water diversions are also generally managed at the state level, with State Engineers or similar staff assessing the availability of water for appropriation and, in some cases, state judicial bodies adjudicating disputes or claims. Water quality is also overseen by state agencies operating under frameworks aligned with the CWA and NPDES. In this regard, state agencies or their regional divisions set Total Maximum Daily Loads for water bodies to control pollutants. This is one avenue through which watershed jurisdictions are sometimes applied, as some of the regional divisions in Key States are based on major hydrologic features. Stormwater permitting operates within the NPDES framework, often administered by a state agency, while implementation is primarily managed by counties and municipalities. Floodplain management is largely handled by counties and municipalities in coordination with the NFIP, with state agencies playing a supportive role, such as setting higher standards or providing technical assistance. Drainage management is typically a local responsibility, with counties or special purpose districts managing permitting and regulations, often under the supervision of one or more counties. Where drainage is not managed exclusively on a county basis, districts are often formed around a contiguous area where a drainage system is desired. Alternatively, drainage can be managed by explicitly watershed-based districts, such as Nebraska's Natural Resources Districts. Levees, like floodplains, are generally managed by local authorities or as part of broader drainage and flood control efforts, often following similar permitting processes.

5.2 Sources and Drivers of Policies and Regulations

State regulations and policies concerning surface water management arise from a variety of sources, with key influences coming from both state constitutions and federal frameworks. In some Key States, water rights are enshrined directly in the state constitution. State laws and administrative codes often govern surface water management policies. These regulations are often shaped by national and regional programs that influence state-level water governance. For example, the federal Standard State Soil Conservation Districts Acts of the 1930s and 1940s prompted the creation of soil and water conservation districts across the United States, a model still in place in many Key States.^[26] Iowa, Idaho, Illinois, Indiana, Minnesota, Missouri, Ohio, South Dakota, and Texas all currently have soil and water conservation districts, and other states have similar districts by other names. Such districts frequently correspond with counties, which can help with funding and administration, though at the time of the districts' establishment, United States Department of Agriculture officials encouraged the use of watershed boundaries.^[7, 14] Today, states such as Nebraska base these districts on a combination of county and watershed boundaries, while others like Wisconsin have watershed districts as subunits of conservation districts.

Federal programs like the NFIP and NPDES have significantly impacted how states manage surface water. In states like Ohio and Indiana, these federal programs form the basis of state regulations, with state agencies either directly implementing the programs or serving as facilitators for local communities. In Wisconsin, the state has adopted the USACE's standards for levee design and construction, demonstrating how federal guidelines often shape state-level policies.^[39]

Floodplain management is another area influenced by federal programs. Nearly all of the Key States surveyed base their minimum floodplain regulations on the NFIP, but some, like Wisconsin and Colorado, go beyond these minimums. The more detailed implementation aspects of floodplain management are generally handled by counties or municipalities, which could involve coordination with conservation or watershed districts and similar organizations to construct and maintain projects promoting resilient floodplains within applicable rules and regulations.

5.3 Appeals

The decision-making process of regulatory and permitting bodies in surface water management often includes an opportunity for public comment or protest, allowing interested parties to raise concerns before a final decision is made. When a challenge is lodged - typically by a permit applicant or a party who believes they will be negatively impacted - a hearing is usually held by the agency or entity responsible for the decision. In cases involving water appropriations or diversion rights, this process may involve a detailed review of the applicant's priority claim, as well as an assessment of water availability by the state engineer or an equivalent authority. Parties involved are expected to present evidence supporting their positions, whether for or against the proposed action.

Once a final decision is rendered by the relevant authority, affected parties generally have the right to appeal the decision in state district or circuit court. Further appeals typically follow standard judicial procedures, with higher courts having the final say. In some states, however, specialized courts are designated to handle water-related disputes, offering more streamlined or specialized adjudication. For example, Colorado and Montana have established "water courts," with Colorado's court handling all water rights claims and Montana's court focusing on claims related to pre-statutory water rights. In these states, appeals from water court decisions go directly to the state supreme court, whose decision is final. In Idaho, the 5th Judicial District Court in Twin Falls is the designated court for all water rights adjudications and appeals, as chosen by the Idaho State Supreme Court. This centralization aims to ensure consistency in the interpretation and enforcement of water laws.^[8] The structure of judicial appeals in most Key States means that initial decisions may be made by a watershed-based entity, but appealing to progressively higher authorities may move the case out of the watershed-based jurisdiction and into a larger political one.

Some states have alternative dispute resolution mechanisms outside the judicial system. For instance, in Nebraska, if a conflict arises between a natural resource district and the Nebraska Department of Water Resources, an "Interrelated Review Board" can be convened to mediate the dispute.^[27]

These varying appeals processes reflect each state's approach to water resource management. While some states rely heavily on judicial processes, others incorporate specialized courts or alternative dispute resolution systems to manage water-related challenges efficiently.

5.4 Outliers

Some aspects of water management practices in the Key States stand out for their uniqueness, reflecting differing priorities, organizational structures, and regional concerns. For example, while most Key States delegate floodplain management and coordination with the NFIP to natural resources state agencies, Wyoming assigns this responsibility to their Office of Homeland Security. This organizational choice

suggests that Wyoming places a heightened emphasis on flood-related safety threats, prioritizing emergency management over the broader environmental or resource-based management of rivers and streams. This distinction may indicate a different conceptualization of flooding risks and the role of governmental agencies in addressing them.

In Colorado, the surface water rights adjudication process is also distinctive. While many Key States hold hearings for water rights cases, Colorado requires that, for trial-track cases, experts employed by both parties meet privately - without the presence of the parties or their attorneys - to identify contested facts and work toward mutual agreement. This approach is designed to reduce bias in expert testimony, which might otherwise be influenced by the pressure to advocate for a client's interests. By fostering a more neutral dialogue between experts, Colorado seeks to ensure that the evidence presented in court is as objective and accurate as possible.^[31]

Iowa is unique in the degree of freedom it grants to drainage operations. For instance, drainage districts in Iowa are exempt from state permitting for draining wetlands within their boundaries. Iowa law also grants individual landowners the right to drain water in the natural course of drainage, even onto neighboring property, as long as the quantity or method of drainage is not increased. Meanwhile, downhill landowners cannot block or redirect drainage in a way that harms the uphill landowner's property, unless the uphill landowner has consented for ten years to a barrier preventing drainage. Constructing drains across another's property requires an easement and potential compensation. The Iowa Environmental Council has proposed a series of updates to modernize Iowa's drainage laws, including requiring consideration of environmental impacts, recordkeeping of private drainage, and requiring permits for drainage large areas within or outside of drainage districts.^[30]

Lastly, Missouri is the only Key State that does not require a permit or formal documentation for surface water rights to divert water. While other states require permits for water diversions, Missouri only mandates that large withdrawals (those with the capacity to divert 70 gallons per minute or more) be documented. This regulatory choice reflects Missouri's less restrictive approach to water use, allowing greater flexibility for users while still maintaining oversight for larger-scale diversions.

Out of the examples above, only Colorado Water Court proceedings are carried out by an entity with watershed-based jurisdiction. These examples demonstrate how variations in state water management practices can reflect unique regional priorities, concerns, and historical influences, shaping the ways in which surface water resources are governed.

6 RECOMMENDATIONS

Based on EKI's review of surface water management practices in the Key States relative to North Dakota's current practices, the following recommendations are offered for NDDWR's consideration. It should be noted that these recommendations are preliminary and may require further refinement to fully align with North Dakota's legal, political, and operational considerations:

1. **Implement Ongoing Tracking Across the Key States:** Using the information provided in this report and its appendices as a starting place, NDDWR may choose to continue to track developments in watershed management across the Key States in order to facilitate future discussions or identify new trends. Paying attention to these evolving trends will allow North Dakota to respond to shifting water management dynamics and proactively align North Dakota's policies with successful approaches used in other states.
2. **Follow up with Key States' State Agencies Directly:** In the preparation of this report, the availability of publicly accessible information and the willingness of state agency staff to review the cut sheets varied across the Key States, which means some details - such as the exact size and number of local districts or the appeals processes for permit decisions - were not clear. NDDWR may choose to follow up directly with the relevant state agencies to gather more precise and up-to-date information on specific areas of interest. The following states, in particular, have been identified for follow-up:
 - a. Utah recently advanced changes to the development of watershed management within the state. NDDWR may wish to contact them for more information on the state agency's involvement, the implementation process, and the long-term solutions they are hoping for.
 - b. Nebraska manages drainage explicitly by watershed-based districts and may be able to provide more information on how this works from a funding and regulatory perspective.
 - c. Minnesota has a hybrid approach to watershed management that uses political boundary management with optional watershed management. This state may be able to provide more information on the regulatory framework of managing surface water both on a watershed and a political boundary scale.
 - d. Iowa and Wyoming did not respond directly to EKI to review their cut sheet. NDDWR may choose to follow up with those states to confirm the information within their cut sheets.
3. **Support Cross-Political Boundary Water Management:** As identified in Section 3.5, North Dakota's diverse geography and climate position the state to explore a hybrid version of watershed and political-boundary based surface water management. North Dakota regulations currently allow for Joint WRDs to be created and managed. NDDWR may choose to explore policy options to streamline state-level permitting for water management projects that span across political boundaries, and to further evaluate the regulatory framework used by a Joint WRD. Ohio, Iowa, Indiana, Michigan, Illinois, and California have been identified as states that have established regulations on cross-jurisdictional water management.

Additionally, NDDWR may consider working with the legislature and water stakeholders to further study Joint WRDs and evaluate the potential for them to serve in an advisory capacity over the political-boundary based WRDs or to assist in broader water management planning.

4. **Incentivize Research into Surface Water Data Collection and Mapping Efforts:** North Dakota may choose to provide grant funding to Joint WRDs or other watershed-based political subdivisions in order for them to research and model the unique hydrology of their watershed. This modeling would

support permitting needs and designs and enhance understanding of watershed management at the local level for project sponsors that desire it.

5. **Further Research Appeal and Dispute Resolution Pathways:** The research used for this report identified several different administrative remedies used for surface water management disputes across the Key States (Section 5.3). NDDWR may consider working with North Dakota's legislature and water stakeholders to consider doing a further review of North Dakota's administrative remedies, to identify efficiencies and assure effective management for surface water. States identified with unique administrative remedies are Montana, Colorado, Idaho, Utah, Nevada, and Nebraska.

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