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GROUNDWATER LAWS AND REGULATIONS: Survey of Sixteen U.S. States Volume II

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I. Introduction

This report is the second volume in a continuing project designed to explore and articulate the groundwater laws and regulations of all fifty U.S. states. This particular report presents surveys for sixteen states throughout the country. The first volume featured thirteen state surveys and can be found at: <http://www.law.tamu.edu/usgroundwaterlaws>.

The purpose of the project is to compile and present the groundwater laws and regulations of every state in the United States that could then be used in a series of comparisons of groundwater governance principles, strategies, issues, and challenges. Professor Gabriel Eckstein at Texas A&M University School of Law and Professor Amy Hardberger at Texas Tech University School of Law developed a matrix to ascertain chief components and characteristics of the groundwater legal regime of each state. Student researchers then used the matrix to respond to a standardized set of questions about the groundwater laws and regulations of a selection of states. In the near future, additional volumes with surveys of the remaining twenty-one U.S. states will be issued.

II. Research Approach

This study presents results of a survey of groundwater laws and regulations of sixteen U.S. states. The purpose of the project is twofold:

- 1) To compile and present this data in a comprehensive format that would allow water managers, researchers, governmental representatives, and other interested parties to explore the various governance mechanisms that states have employed to manage their groundwater resources;
- 2) To develop cross-state comparisons exploring the different mechanisms and approaches used to address groundwater-related issues and challenges, such as groundwater ownership and allocation, aquifer depletion, climate variability, shifting water needs and demands, fouling of recharge zones, and other topics.

A. Methodology

Professors Eckstein and Hardberger began the project by developing a detailed questionnaire to ascertain chief components and characteristics of the groundwater legal regime of each state. The questions and criteria were initially developed based on Professors Eckstein and Hardberger's professional experience working on water law-related issues, as well as their education in geology (both hold J.D. degrees, and Professor Eckstein holds an LL.M. in International Environmental Law; both hold a

B.A. in Geology, and Professor Hardberger holds an M.S. in Geology). They then refined the questionnaire based on feedback from practitioners, academics, and other professionals working in the field of water law from across the country, trial and error testing the questionnaire's relevance and applicability to various U.S. state groundwater legal regimes, and with the invaluable assistance of law students. The final version of the questionnaire is attached to this report in Appendix A.

In addition, Professors Eckstein and Hardberger developed a research protocol detailing the types of resources to use in researching each state's groundwater legal regime, and providing a structure for the work-product for each state. The protocol also provides tips and recommendations for locating various types of information since the nature and quality of information available, as well as the location of such information needed, varies from state to state. The final version of the research protocol is attached to this report in Appendix B.

Over the past eight years, law students working under the professors' supervision applied the survey to a select group of U.S. states. Each student worked on a particular state answering the survey questions for that state. Afterwards, another law student conducted a first line review of the work product and offered comments, recommendations, and questions to further enhance the survey. The first student was then asked to revise the survey in response to the feedback received. The second law student also checked the survey responses for clarity and accuracy, and researched any portions of the survey for which the first researcher was unable to find answers. As some student researchers graduated, new student researchers familiarized themselves with completed surveys before beginning research on additional states. This resulted in each survey being read, edited, and refined by at least three students before finalization.

Once a state survey was completed, Professors Eckstein and Hardberger reviewed the survey and offered additional comments and suggestions, whereupon the original student revised the survey in response to the professors' feedback. Thereafter, upon completion of the final revisions, Professors Eckstein and Hardberger reviewed it once more and approve final drafts. Professors Eckstein and Hardberger were also available for questions throughout the process, and often reviewed preliminary drafts, offered recommendations for source material, and provided feedback on process and substance of each survey.

Once an individual survey was approved by Professors Eckstein and Hardberger, the survey was sent to at least one (and more often two or three) water law expert in the

respective state for external review. State-specific water law experts were selected for their particular knowledge of the state's groundwater legal regime, and their willingness to volunteer their time to conduct the review. Upon receiving the feedback from the state-specific experts, a student was asked to assess and incorporate the comments and suggestions provided by the expert into the survey.

Finally, once all internal and external comments were incorporated into the survey, law students took the raw information contained in the surveys and converted them into readable, essay format. They also replaced individual survey questions contained in the questionnaire with brief but descriptive headings. The essay format is intended to make the results of the project more readable, useful, and accessible by other researchers, stakeholders, and the general public, as well as for later qualitative use. The sixteen surveys contained in this study are the results of this extensive process.

B. Research Design

This project's legal research is doctrinal or theoretical, inquiring what the law is in particular areas by exploring primary sources of case law and relevant legislation, as well as secondary descriptive resources.¹ Arguably, all doctrinal research is qualitative simply because it is non-numerical.² If law could be assessed using a systematic approach and the same law could be identified no matter who carried out the research, only then could doctrinal research be deemed to be quantitative.³ However, any assumption that there is an objective approach to finding the law is at odds with the reasoning frequently used to make the law by judges and legislators.⁴ For example, attorneys discover applicable legal principles through the processes of elimination and inductive reasoning where a principle is gleaned from precedent analysis.⁵ Typically, doctrinal research is not merely finding correct legislation and cases and making objectively verifiable statements of law, but rather is a process of selecting, weighing, and ranking materials by authority and source.⁶ It is likely that such inductive reasoning

¹Ian Dobinson and Francis Johns, *Qualitative Legal Research*, in Research Methods for Law, 19 (Mike McConville and Wing Hong Chui Ed., Edinburgh University Press, 2007).

² *Id.*

³ *Id.* at 21.

⁴ *Id.*

⁵ *Id.*

⁶ *Id.* at 21-22.

must be qualitative in its methodology.⁷ However, qualitative research can, and should, still be systematic, explicit, and reproducible, providing a framework for identifying, evaluating, and synthesizing primary sources.⁸ Accordingly, to establish a systematic process for research for this project, research questions, primary and secondary sources, and synthesis of results were discussed before research began. Moreover, the research process and its results were reviewed and revised in order to better achieve a systematized and consistent process.

1. Source Selection

Because doctrinal law is based on authority and hierarchy, researchers must carefully select sources from primary authorities (s.a., case law and relevant legislation).⁹ Secondary sources like law review articles may be useful in interpreting primary sources, but cannot be the main focus of doctrinal legal research.¹⁰ Selection of sources in advance helps the methodology be thorough, systematic, justifiable, and reproducible.¹¹ Relevant legal documents may be self-selecting in doctrinal legal research in the United States because law is precedential and hierarchical; however, legal researchers and students involved in project such as this one must ensure they do not select sources based on whether the sources support a particular position or outcome.¹²

Here, law students were asked to rely primarily on case law, statutes, and regulations to answer the questions posed in the survey. A limited number of secondary sources, such as journal articles and water law treatises, were used, in part because of limited availability of primary sources from specific states. A focus on codified and case law from each state increased the accuracy and reliability of research findings. This strategy focused on established, primary resources to ensure all possible relevant documents were discovered. Focus on a limited number of sources allows the research to be documented, duplicated, and applied in a manner with limited bias.

⁷ *Id.* at 21.

⁸ *Id.* at 22.

⁹ *Id.* at 23.

¹⁰ *Id.*

¹¹ *Id.*

¹² *Id.* at 31.

2. Topic Selection

The states included in this effort were selected by Professors Eckstein and Hardberger with the initial objective of generating a diverse compilation of states and rules. Garnering the widest possible selection of state groundwater laws and regulations allowed the researchers to project the extent and limits likely encountered in the final, fifty state survey. Criteria included geography, climatic conditions, the states' individual characterization of their groundwater legal system (e.g., prior appropriation, reasonable use, etc.), and the variety of uses to which states employed their groundwater resources (e.g., agriculture, municipal, industrial, etc.). The target of this compilation was 25% of the states in the United States.

3. Survey Questions

In doctrinal research, research questions arise from a search for law applicable to a given set of circumstances, and do not inquire as to value judgments or policy.¹³ There may be an assumption that law exists to be found, but the research questions must recognize that law derives from the *reasoning applied* to the sources found.¹⁴ Here, a matrix containing survey questions were designed to help researchers describe the groundwater laws and regulations of each state for comparative purposes. The matrix approach helped quantify results of what is otherwise qualitative research. Because United States groundwater laws and regulations vary widely among the states, and are often underdeveloped and lack clarity, attempting to garner standardized results will allow later users of this data to conduct cross-state comparisons.

It is noteworthy that the survey questions were revised and refined at least five times based on feedback from practitioners, academics, and other professionals working in the field of water law from across the country, as well as trial and error testing the questionnaire's relevance and applicability to various U.S. state groundwater legal regimes. Changes to questions were made where the prior language failed fully to capture the data and information pursued in the research, and where unique state case law and regulations required modification of the questions to provide a more comprehensive and equitable collection. Likewise, and usually for the same reasons, new questions were added to the questionnaire. The final version of the questionnaire is attached here in Appendix A.

¹³ *Id.* at 23.

¹⁴ *Id.*

One of the objectives of the survey is to develop an understanding of each state's groundwater governance system. Accordingly, the survey began by asking the researcher to provide definitions for key terminology, like groundwater, underground water, aquifer, and other concepts, under the state's legal regime. It then required the researcher to characterize the groundwater legal system in relation to established legal doctrines, such as prior appropriation or reasonable use. The survey specified that results may include a combination of doctrines, accommodating states that incorporate principles from multiple regimes. The survey then required a description of the basis for groundwater rights under the legal rights system used by each state. The basis for groundwater rights may be based on overlying land ownership, timing of appropriation, permit, or other criteria. Standards for obtaining a groundwater right under various legal regimes may also differ, and in response, the survey required the researcher to describe what types of use (beneficial, reasonable, or other) may give rise to obtaining a groundwater right.

The survey next asked the researcher to compile the major sources of state law describing the groundwater legal system. Many states have one or more seminal cases where state courts describe groundwater rights and use standards for the jurisdiction. States also frequently have statutory and regulatory schemes governing the right to, and use of, groundwater. As many states only recently adopted such statutory and regulatory schemes, they often attempt to codify the existing common law in the state. By compiling the major sources of law in this area, the survey lays the groundwork for subsequent detailed analyses and comparisons.

The third question in the survey examined the scope of the groundwater right, once acquired by a user. To that end, it questioned whether individuals, the public, or the state in trust "owns" the groundwater; and whether the state distinguishes between ownership of groundwater and the right to use it. It further asked what types of uses are permitted, and whether any uses are preferred. If uses are preferred, the survey asked whether there is a hierarchy between groundwater uses, for example between domestic or agricultural use. It also asked whether use standards such as beneficial or reasonable use are implicated in this hierarchy. Additionally, the survey required the researcher to determine whether location of use is a factor in the scope of a valid groundwater right. Certain jurisdictions require use of water on the land from which it is drawn, and to that end the survey asked whether transport of water away from the overlying land, or outside of its basin of origin, is addressed in state law.

The survey next inquired about the loss of groundwater rights. In some states, statutory or common law procedures for losing groundwater rights have not been developed. In others, rigorous legal criteria govern loss of groundwater rights through forfeiture, abandonment, or other process. The survey asked whether loss procedures have been outlined in state law, and asks the researcher to expound on circumstances and legal procedures accompanying loss of rights.

The fifth area pursued by the survey focused on whether the state regulated well drilling. In doing so, it sought to assess regulations for well drilling-related aspects like licensing of contractors, permits for drilling, criteria for drilling, well-construction standards, etc. Where a state employed such regulations, the survey asked the researcher also to list the state authorities responsible for well-drilling oversight.

Whether state law recognizes the hydrologic connections between groundwater and surface water was the next area questioned in the survey. If the state does address connections between ground and surface water in law, the survey asked the researcher to determine whether any priority between ground and surface water users exists. Additionally, since states that do recognize hydrologic connections between ground and surface water often do so within a context of liability for overuse, the survey asked what penalties the state imposes for interference.

The seventh topic explored by the survey questioned whether the state regulates, encourages, or facilitates aquifer recharge or underground storage programs. While not a widely used technique, groundwater recharge and storage programs have been identified as alternative mechanisms for diversifying and enhancing the freshwater supplies of communities across the country, especially those in arid regions. Thus, the question sought to collect information (where available) on regulations governing groundwater levels and quality, storage capacities, injection and extraction criteria, etc. The researcher was also asked to identify the governmental entity(ies) responsible for oversight of such programs and activities.

The survey next asked the researcher to investigate whether the state required, developed, and/or employed a statewide or local water management plan. Such plans have become more common as states have taken more holistic and approaches and implemented longer-term time horizons managing their freshwater resources. In particular, the survey asked how often such plans (if they existed and were utilized) were updated.

The next question in the survey asked the researcher to list all relevant permitting and regulatory authorities for groundwater in the state, including state and local agencies. The survey also required researchers to determine the scope of authority for the agencies involved. The survey closed with an inquiry into any potential special districts, such as conservation or special districts, or critical management areas, which may be managed by the state or local agencies.

The tenth topic addressed in the survey focused on transboundary arrangements and conflicts related to groundwater resources that the state may have entered into with neighboring states. The reality is that with the exception of Hawaii and Alaska, every state in the union is hydraulically linked to its neighboring states through its groundwater.¹⁵ As a result, there is potential both for cooperation and conflict over these shared resources. Accordingly, researchers were asked to identify agreements and conflicts that somehow pertained to the state's groundwater resources, including identifying the parties involved, the scope and substance of the agreement or conflict, and in the case of agreements, the duration of the arrangement.

The next topic considered in the questionnaire related to Native American rights. The survey question required the researcher to identify and Native American groups that had any claims or rights pertaining to groundwater resources in the state based on historic treaties, pacts, case law, etc. It also asked whether the state granted exemptions, benefits, or other concessions to such tribes that involved or pertained to groundwater resources. In addition, where tribal groundwater rights are wholly or mostly separate from the state's regime, the questionnaire asked the researcher to prepare a separate summary of the tribe's groundwater legal regime following (to the extent possible) the same format as provided in this questionnaire.

Finally, the survey ended with a catchall question asking the researcher to provide any additional useful information, including particularly useful Internet link.

As noted above, as the research progressed and data was collected from more states, these questions were modified several times to better reflect the goals of the study and to accommodate the broad and varied scope of U.S. groundwater law. Each time research uncovered an important aspect of one state's law that was not addressed by the survey, the survey questions were updated to reflect the new finding, and previously

¹⁵ See e.g., USGS, Aquifers: Map of the Principal Aquifers of the United States, <https://water.usgs.gov/ogw/aquifer/map.html> (last visited Mar. 27, 2020).

collected survey data was edited to address the changed or additional survey questions. Applying a flexible standard to the initial states surveyed allowed the project to reflexively incorporate the researchers' preliminary findings.

C. Analysis

While detailed analysis of the collected data will occur at a later phase of the project, a variety of quantitative methods may be considered. Univariate descriptive data analysis gives a data snapshot by providing a basic summary of each studied variable in terms of frequency, or by statistics showing mean, mode, or median.¹⁶ Bivariate analysis attempts to analyze the variables together, exploring similarities and differences by comparing averages between subjects.¹⁷ Statistical tests may then measure correlations between variables.¹⁸ Finally, explanatory analysis attempts to answer “why” rather than “what” questions, and looks for causes as well as patterns in data.¹⁹ Methods like logistic regression and structural equation modelling explore the effect of two or more dependent variables on an independent variable.²⁰ To accomplish more quantifiable analysis of this qualitative data, an excel spreadsheet or other database showing abbreviated responses to each question, by state, may be developed in the future. At that point, graphic and tabular display of the results also may be considered.

As an example, one area of interest for potential graphic display would show areas of combined or changing legal rights systems. Many states' laws are self-described as a particular groundwater legal regime, but in practice use another system – for example, Tennessee courts have described groundwater in the state as governed by the rule of reasonable use, but in practice groundwater allocation more closely resembles the correlative rights system. Groundwater rights systems have also changed as statutes developed codified schemes – for example, Mississippi common law originally followed the absolute ownership rule for groundwater, but later statutory enactments describe a regulated riparian system. Showing these changes or combinations in a table could allow more quantifiable analysis of otherwise qualitative data.

¹⁶ Wing Hong Chui, *Quantitative Legal Research*, in Research Methods for Law, 61 (Mike McConville and Wing Hong Chui Ed., Edinburgh University Press, 2007).

¹⁷ *Id.* at 62.

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ *Id.*

D. Objectives

Once surveys are completed for all fifty states, the various survey volumes (including this one) will be compiled and presented as a desk reference book. Such a reference should be of great interest to state legislatures, policymakers, and agencies across the country who wish to examine their groundwater legal regimes, as well as those of their sister states. It should also be of interest to them in their efforts to explore how various states respond to the numerous groundwater-related challenges and concerns facing states across the country, including shifting water demands, aquifer depletion, climate change impacts on freshwater resources, groundwater-surface water interaction, and other issues. Similarly, this reference book should be of interest to legal and policy scholars focusing on the usefulness and effectiveness of state water laws and regulations and exploring the same types of issues as legislatures, policymakers, and agencies. Finally, it could be particularly useful for engineering companies and law firms who need to know the basic legal framework for groundwater management and regulation in the multiple jurisdictions in which they operate.

As the study progresses, and if appropriate resources become available, the data and information generated from this study will be coded and converted into a searchable database, potentially on the Internet. The purpose of such a database is to facilitate cross-state comparisons exploring the different mechanisms and approaches states use to address groundwater rights, allocation, depletion, and other factors, including the groundwater-related challenges and concerns noted above.

E. Limitations

The present study was limited by the selection of states, discussed above, and by its focus on groundwater use rights. This focus excluded a large body of state groundwater law addressing groundwater quality and contamination. Groundwater quality law is generally based on federal U.S. law and could easily constitute the entire subject matter of another comprehensive survey. Focus on allocation and use rights related to groundwater resources addresses an area of law that is still largely under-developed, that is not addressed by federal law, and that demonstrates wide variations between states. These variations are of scholarly interest because they highlight different principles of use, ownership, and management.

It is possible that the survey, by providing potential answers within its questions, limited the researchers' ability to craft qualitative descriptions. Nevertheless, focus on obtaining

both qualitative and quantifiable results necessitated survey questions that pointedly limited the researcher's scope.

III. Acknowledgement

As noted in the discussion on Methodology, this project has greatly benefitted from the feedback and reviews provided by water law expert in the various state. These experts were selected for their particular knowledge of their state's groundwater legal regime, and their willingness to volunteer their time to conduct the review. We greatly appreciate their feedback and engagement in this endeavor wish to thank and acknowledge their invaluable contribution to the project.

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Fig. 1. Principal Aquifers of the United States¹

¹ United States Geological Survey, Principal Aquifers of the United States, <https://water.usgs.gov/ogw/aquifer/map.html> (last visited Mar. 27, 2020).

IV. State Surveys

A. Alaska

Alaska adopted the prior appropriation system in 1966.¹ Several statutes and regulations require a state permit for all water appropriated after 1966 before any diversion or beneficial use can occur.² The priority date for permits issued after 1966 is determined by the filing date of the application.³

1. Definition, Basis of Rights, Standards, and Interactions

The statutory definition of water includes "all water of the state, surface, and subsurface, occurring in a natural state, except mineral and medicinal water."⁴ Thus, in Alaska, surface and groundwater are treated as a unitary regime for management purposes.⁵ However, mineral and medicinal water are excluded from the definition of "water" under the Water Use Act.⁶ Mineral and medicinal water is "water of a hot spring with curative properties" and "geothermal fluid."⁷ The Alaska Administrative Code's chapter on Water Management, which outlines administration of the Water Use Act, further defines groundwater as "any water, except capillary moisture, beneath the land surface or beneath the bed of a stream, lake, reservoir, or other body of surface water within the boundaries of the state, whatever may be the geologic formation or structure in which the water stands, flows, percolates, or otherwise moves."⁸ Additionally, aquifers are

¹ Alaska Stat. § 46.15.040(b) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

² Alaska Stat. § 46.15.040(b) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

³ Alaska Stat. § 46.15.050(b) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁴ Alaska Stat. § 46.15.260(9). (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁵ Christina Hoffman & Sandra Zellmer, *Assessing Institutional Ability to Support Adaptive, Integrated Water Resources Management*, 91 Neb. L. Rev. 805, 844 (2013). There is also a separate definition for groundwater found in 18 AAC § 75.990 that is applicable to water quality standards.

⁶ Alaska Stat. § 46.15.260(9). (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁷ Alaska Stat. § 46.15.260(9). (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁸ 11 Alaska Admin. Code 93.970(10) (Lexis, LexisNexis through Reg. 237).

defined as "any geologic formation that will yield water to a well in sufficient quantity for beneficial use."⁹ Wells in Alaska are "any artificial opening" from which groundwater is withdrawn.¹⁰

A water right is a "legal right to use surface or groundwater under the Alaska Water Use Act" which allows a specific amount of water from a particular water source to be diverted, impounded, or withdrawn for a particular use."¹¹ To obtain a right to appropriate water in Alaska, an applicant must first apply for a permit to appropriate. A "permit to appropriate" is defined as "an instrument granting the holder the right, limited to a definite period and subject to the terms and conditions contained in it, to construct works necessary to the appropriation of water and to establish a beneficial use."¹² Subsequently, a permit holder must apply for a "certificate of appropriation, which is defined as "an instrument granting the owner the right to appropriate water, subject to the terms and conditions contained in it."¹³

Alaska adopted the prior appropriation system in its constitution and codified in the Water Use Act of 1966.¹⁴ Various statutes and regulations require a state permit for all water appropriated after 1966 before any diversion or beneficial use can occur.¹⁵ The priority date for permits issued after 1966 is determined by the filing date of the relevant application.¹⁶

⁹ 11 Alaska Admin. Code 93.970(27) (Lexis, LexisNexis through Reg. 237).

¹⁰ 11 Alaska Admin. Code 93.970(17) (Lexis, LexisNexis through Reg. 237).

¹¹ *Water Rights in Alaska*, Alaska Dep't of Nat. Res.' Div. of Mining, Land, & Water (February 2006), http://dnr.alaska.gov/mlw/factsht/wtr_fs/wtr_rght.pdf: *see also* Alaska Stat. § 46.15.

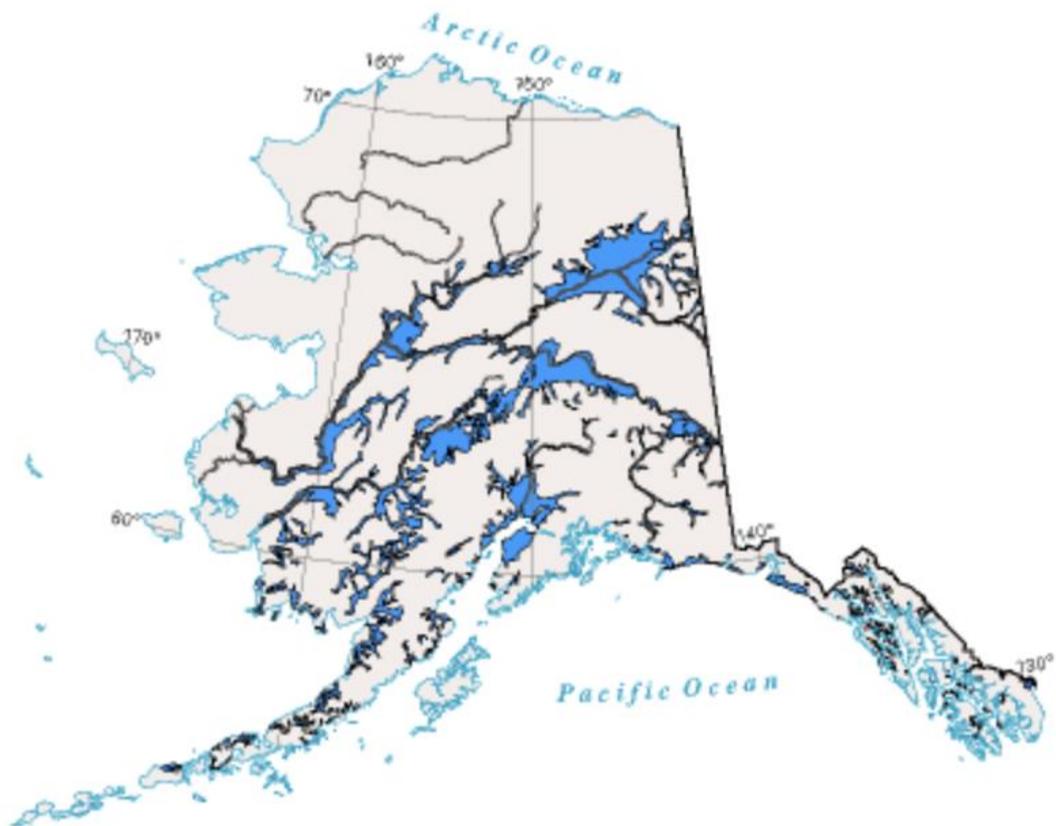
¹² 11 Alaska Admin. Code 93.970(11) (Lexis, LexisNexis through Reg. 237).

¹³ 11 Alaska Admin. Code 93.970(2) (Lexis, LexisNexis through Reg. 237).

¹⁴ Alaska Stat. § 46.15.040(b) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

¹⁵ Alaska Stat. § 46.15.040(b) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

¹⁶ Alaska Stat. § 46.15.050(b) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).



Coarse-grained alluvial and glacial outwash deposits of Quaternary age are present in many of the lowland areas of Alaska and are known to yield large quantities of water in such places as Fairbanks and Anchorage. These coarse-grained deposits are likely to yield water in other places, if the deposits are unfrozen.

EXPLANATION
 Coarse-grained Quaternary deposits—Locally comprise aquifers

Fig. A.1. Alaska's Unconsolidated-Deposit Aquifers¹⁷

¹⁷ U.S. Geological Survey, Unconsolidated-deposit aquifers – Alaska, <https://www.usgs.gov/media/images/unconsolidated-deposit-aquifers-alaska>.

It is important to note that a large amount of land in Alaska is federally designated lands.¹⁸ Under the 1952 federal McCarren Amendment, federal sovereign immunity has been waived for the adjudication of federal and competing water rights claims under established state water-management procedures.¹⁹ In Alaska, the administrative basin-wide adjudication by the Commissioner of all water claims, including federal claims, is provided by statute.²⁰ Alaska Stat. §46.15.166 provides judicial adjudication of such claims in Alaska's state courts.

The basis for a water rights after 1966 in Alaska is the issuance of a certificate to appropriate water by the Alaska Department of Natural Resources upon the perfection of the water right.²¹ The appropriation process is started by applying to the Department of Natural Resources for a permit to construct the works necessary to withdraw water and establish beneficial use.²² Upon completing construction and applying for a beneficial use, an applicant must file for a certificate of appropriate to perfect their water right.²³ Whoever files for a permit first establishes the first-in-time right to the water.²⁴

To obtain a permit from the Alaska Department of Natural Resources for the right to appropriate groundwater, an applicant must first apply with the Commissioner of the Department.²⁵ Each application must include an application fee, which varies based on the type and quantity of use and various other possessory and hydrologic evidence for the proposed withdrawal and use.²⁶

¹⁸ See generally, Thomas E. Meacham, *Alaska State Water Overview*, 4 Waters and Water Rights I (3rd, 2009).

¹⁹ 43 U.S.C.S. § 666.

²⁰ Alaska Stat. § 46.15.165(West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

²¹ Alaska Stat. § 46.15.040(b) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.); see also Alaska Stat. § 46.15.010 (defining “commissioner”).

²² Alaska Stat. § 46.15.040(b) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.); see also 11 Alaska Admin. Code 93.970(11) (defining “permit to appropriate”).

²³ Alaska Stat. § 46.15.120 (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

²⁴ Alaska Stat. § 46.15.050(b) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

²⁵ Alaska Stat. § 46.15.040(b) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

²⁶ Alaska Admin. Code tit. 11, § 93.040(c) (Lexis, LexisNexis through Reg. 237); see also Alaska Admin. Code tit. 11, § 05.260 (describing application fees) (Lexis, LexisNexis through Reg. 237).

Additionally, water appropriation permits are subject to public notice and comment.²⁷ Once any existing objections are resolved, the Commissioner then may issue a permit for more or less than the applicant requested.²⁸ A permit may not be issued for more water than can be beneficially used for the purposes stated in the application.²⁹ The Commissioner may require modification of the plans and subject the permit to conditions and restrictions.³⁰ The Commissioner has discretion to determine the period for which the permit is valid.³¹ Each use has a specified maximum period of time for which a permit may be held to allow the applicant to establish full and beneficial use of the water.³² The applicant may file for an extension of the time period if they can show a diligent effort toward completing the appropriation.³³ This request may be granted at the Commissioner's discretion, who may grant the request and impose additional conditions or deny the request.³⁴ It is important to note that a permit granted by the Department of Natural Resources does not guarantee that the volume, quality, or artesian pressure will be available to be appropriated. Still, it does allow for a permit holder to sue a later appropriator for these factors.³⁵

Once the applicant completes construction of the well or other works of appropriation and commences the beneficial use of the water, they may apply to the Commissioner for a certificate of appropriation.³⁶ A certificate of appropriation is the recordable instrument that gives an individual a legal water right in the state of Alaska. "[T]he permit holder must submit a statement of beneficial use stating that the means necessary for the taking of water have been developed and the permit holder is beneficially using

²⁷ Alaska Admin. Code tit. 11, § 93.080 (Lexis, LexisNexis through Reg. 237).

²⁸ Alaska Stat. § 46.15.100 (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

²⁹ Alaska Stat. § 46.15.100 (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

³⁰ Alaska Stat. § 46.15.100 (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.); *see also* Alaska Admin. Code tit. 11, § 93.120(e) (Lexis, LexisNexis through Reg. 237).

³¹ Admin. Code tit. 11, § 93.120(b) (Lexis, LexisNexis through Reg. 237).

³² Admin. Code tit. 11, § 93.120(b)(1)-(7) (Lexis, LexisNexis through Reg. 237).

³³ Admin. Code tit. 11, § 93.120(f) (Lexis, LexisNexis through Reg. 237).

³⁴ Admin. Code tit. 11, § 93.120(g) (Lexis, LexisNexis through Reg. 237).

³⁵ Alaska Stat. § 46.15.040(d) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

³⁶ Alaska Stat. § 46.15.120 (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

the quantity of water to be certificated."³⁷ The permit holder must have also complied with all conditions imposed on his permit to be eligible for a certificate.³⁸ The Commissioner may grant the certificate in any amount equal to or less than that granted under the permit and may place conditions on the certificate at his or her discretion.³⁹

Furthermore, applicants who seek to appropriate water for a public water supply may apply for preferred use status.⁴⁰ "Preferred use status allows the use of water for a preferred use when adequate water is not available from the same source to supply all lawful appropriators."⁴¹ The applicant must provide evidence to the Commission that the "use of water is for a public water supply that serves the general public," the present or future conditions of the water source may be inadequate to fulfill all appropriations, and any damage to prior appropriators will be minimized through water conservation measures.⁴² As part of the application process for a preferred use status, the applicant must provide the commission with compensation agreements made between the applicant and potentially injured prior appropriators.⁴³

In addition to the regulatory scheme for applying for a permit to use water, Alaska also allows for permits and certificates to be issued for reservations of a quantity of water to be used in place (*i.e.*, for instream flows or lake levels for various specified beneficial purposes). The reservation process is similar to the permitting and certification of process appropriations.⁴⁴ Upon issuing a certificate of reservation, the quantity of water specified in the certificate is withdrawn from the water source's pool of waters available for appropriation, and the quantity is no longer available to be appropriated.⁴⁵ The Commissioner must review each reservation certificate at least once every ten years to

³⁷ 11 Alaska Admin. Code 93.130(a)(1) (Lexis, LexisNexis through Reg. 237).

³⁸ 11 Alaska Admin. Code 93.130(a)(2) (Lexis, LexisNexis through Reg. 237).

³⁹ 11 Alaska Admin. Code 93.130(a), (c) (Lexis, LexisNexis through Reg. 237).

⁴⁰ Alaska Stat. § 46.15.150(a) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁴¹ 11 Alaska Admin. Code 93.230(Lexis, LexisNexis through Reg. 237).

⁴² 11 Alaska Admin. Code 93.240 (Lexis, LexisNexis through Reg. 237).

⁴³ Alaska Admin. Code tit. 11, § 93.260(a)(2) (Lexis, LexisNexis through Reg. 237).

⁴⁴ Alaska Stat. § 46.15.145(a), (b) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁴⁵ Alaska Stat. § 46.15.145(d) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.); *see also* Alaska Admin. Code tit. 11, § 93.141(Lexis, LexisNexis through Reg. 237).

ensure that the certificate's requirements are still being met.⁴⁶ After issuance, the certificate of reservation is held by the entity that applied for the reservation.⁴⁷

Additionally, unappropriated water also is available for temporary use in Alaska. "[T]he commissioner may authorize the temporary use of a significant amount of water, as determined by the department by regulation, for a period of time not to exceed five consecutive years. . . ."48 A temporary use authorization does not grant the applicant a water right or a priority date as a certificate would, so the water remains available for appropriation by other applicants.⁴⁹ A temporary authorization can be modified, amended, or revoked at any time by the Commissioner to protect the public interest.⁵⁰ If an application for a temporary authorization to use water is denied, the applicant is not precluded from pursuing a permit for appropriation.⁵¹

Water rights in the State of Alaska that were "acquired by law before July 1, 1966 or a beneficial use of water on July 1, 1966, or made within five years before July 1, 1966, or made in conjunction with works under construction on July 1, 1966, under a lawful common law or customary appropriation or use" are recognized as lawful under the current regulatory scheme.⁵² Pre-1966, water rights holders had a statutory period for which they could make a claim for their rights under the new regulation and have their priority date back to the day work on the appropriation commenced so long as due diligence was exercised.⁵³ If a claim was not filed by the regulated date specific to each district, any claim to the pre-1966 water right by the claimant was extinguished.⁵⁴

⁴⁶ Alaska Stat. § 46.15.145(f) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.); *see also* Alaska Admin. Code tit. 11, § 93.147 (Lexis, LexisNexis through Reg. 237).

⁴⁷ AS 46.15.145(c)-(d).

⁴⁸ Alaska Stat. § 46.15.155(a) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁴⁹ Alaska Stat. § 46.15.155(c) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁵⁰ Alaska Admin. Code tit. 11, § 93.210(b) (Lexis, LexisNexis through Reg. 237).

⁵¹ Alaska Admin. Code tit. 11, § 93.220(g) (Lexis, LexisNexis through Reg. 237).

⁵² Alaska Stat. § 46.15.060(West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁵³ Alaska Stat. § 46.15.065(a) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁵⁴ Alaska Admin. Code tit. 11, § 93.020(Lexis, LexisNexis through Reg. 237).

2. Sources of Law

The Alaska Constitution created a unified system of water management for surface water and groundwater⁵⁵ and established a system of prior appropriation.⁵⁶ Later, the Alaska Water Use Act and Chapter 93 of the Alaska Administrative Code were enacted, thereby replacing the earlier Territorial common-law regime with a codified prior appropriation system.

The Alaska Water Use Act "governs the appropriation and distribution of water rights in Alaska"⁵⁷ and "established the Alaska Department of Natural Resources as the state manager of water resources for the purposes of water allocation of surface and subsurface waters."⁵⁸ This Act includes Alaska Stat. Ann. §§ 46.15.010–46.15.270. Additionally, in 1980, the Alaskan legislature amended the Water Use Act in "recognition of the economic and social benefits that would be derived by adding another class of water rights (*i.e.*, appropriations of water)" by adding "instream-flow" reservations of water.⁵⁹

Finally, Chapter 93 of the Alaska Administrative Code provides further regulations regarding the permitting system.⁶⁰

3. Scope of Right

a. Groundwater Ownership

While groundwater belongs to the people of Alaska for common use, it is available for appropriation in accordance with the process described above.⁶¹ Once an applicant

⁵⁵ Christina Hoffman & Sandra Zellmer, *Assessing Institutional Ability to Support Adaptive, Integrated Water Resources Management*, 91 Neb. L. Rev. 805, 844 (2013).

⁵⁶ ALASKA CONST. Art. 8, § 13.

⁵⁷ *Tulkisarmute Native Cmty Council v. Heinze*, 898 P.2d 935, 941 (Alaska 1995).

⁵⁸ Christopher C. Estes, *The Status of Alaska Water Export Laws and Water Transfers*, AM. SOC'Y OF CIVIL ENG'RS WORLD WATER & ENVTL. RES. CONGRESS 1, 3 (2001), https://www.adfg.alaska.gov/static/lands/planning_management/pdfs/WaterExport.pdf.

⁵⁹ Christopher C. Estes, *The Status of Alaska Water Export Laws and Water Transfers*, AM. SOC'Y OF CIVIL ENG'RS WORLD WATER & ENVTL. RES. CONGRESS 1, 3 (2001), https://www.adfg.alaska.gov/static/lands/planning_management/pdfs/WaterExport.pdf.

⁶⁰ Alaska Admin. Code tit. 11, § 93 (Lexis, LexisNexis through Reg. 237).

⁶¹ Alaska Stat. § 46.15.030 (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of

completes the appropriation process, the certificate of appropriation "provides the holder with a full and permanent property right in that quantity of water."⁶² This property right is a usufruct, meaning the holder of the appropriations certificate has a right to use the water rather than a full right of ownership.

However, neither a permit to appropriate nor a certificate of appropriation guarantees "that water will be available for appropriation at a certain volume, quality, artesian pressure, or cost."⁶³ In the event of diminished quantity or degraded quality, a permit or certificate holder may bring claims against any subsequent appropriators to protect their prior rights.⁶⁴ Notwithstanding the statement in Alaska Stat. §46.15.010, which provides that "The Department of Natural Resources shall determine and adjudicate rights in the water of the state, and in its appropriation and distribution," such enforcement must be pursued judicially; the Commissioner does not adjudicate such claims between appropriators.⁶⁵

Water rights in Alaska are appurtenant to the land.⁶⁶ The right may be severed only with the permission of the Commissioner.⁶⁷

b. Scope of Use

i. Permitted and Preferred Uses

Alaska allows water appropriations for beneficial uses that meet the statutory definition. Beneficial use is defined by Alaskan law to mean:

31st Leg.).

⁶² *Tulkisarmute Native Cmty Council v. Heinze*, 898 P.2d 935, 941 (Alaska 1995).

⁶³ Alaska Stat. § 46.15.040(d) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁶⁴ Alaska Stat. § 46.15.040(d) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁶⁵ Alaska Stat. § 46.15.040 (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁶⁶ Alaska Stat. § 46.15.160(a) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁶⁷ Alaska Stat. § 46.15.160(b) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

a use of water for the benefit of the appropriator, other persons or the public, that is reasonable and consistent with the public interest, including, but not limited to, domestic, agricultural, irrigation, industrial, manufacturing, fish and shellfish processing, navigation and transportation, mining, power, public, sanitary, fish and wildlife, recreational uses, and maintenance of water quality.⁶⁸

Additionally, water reservations are allowed to maintain a "specified instream flow or level of water at a specified point on a stream or body of water, or in a specified part of a stream, throughout a year or for specified times."⁶⁹ Acceptable purposes for reservations are limited to (1) protection of fish and wildlife habitat, migration, and propagation; (2) recreation and park purposes; (3) navigation and transportation purposes; and (4) sanitary and water quality purposes.⁷⁰

Alaska recognizes that some water rights applicants may have competing applications for a permit from the same water source.⁷¹ When there is not enough supply to accommodate all permit requests, public water supplies receive their permits first, as a statutory preferred use, and any remaining unappropriated water is permitted to the "most beneficial use".⁷² The term "most beneficial use" has not been clarified in case law, statute, or regulation. Nor is it clear how the Constitutional and statutory "priority of application" is to be applied under state statutes.

Alaska law allows applicants who plan to use their appropriations for a public water supply to apply for preferred use status.⁷³ This status allows the appropriation to take priority over other uses when there is no adequate water supply.⁷⁴ Other than to those

⁶⁸ Alaska Stat. § 46.15.260(3) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁶⁹ Alaska Stat. § 46.15.145 (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁷⁰ Alaska Stat. § 46.15.145(a)(1)-(4) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁷¹ Alaska Stat. § 46.15.090 (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁷² Alaska Stat. § 46.15.090 (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁷³ Alaska Stat. § 46.15.150(a) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁷⁴ Alaska Admin. Code tit. 11, § 93.230 (Lexis, LexisNexis through Reg. 237).

with a preferred use status, Alaska law does not presently give preference to any other type of appropriation, although the Alaska Constitution does contemplate that other preferred uses may be established by law.⁷⁵ If there is a limited water supply, prior appropriators may sue subsequent appropriators to meet their certified water rights quantity.⁷⁶

ii. Location of Use

The use of appropriated water under permit or certificate is not restricted to the land overlying the source of the water.⁷⁷ Generally, the right to appropriate water is "appurtenant to the land or place where it has been or is to be beneficially used."⁷⁸ However, a user may apply to have all or any portion of an apportionment severed from the appurtenant land.⁷⁹ Subsequently, those rights can be sold, leased, or transferred to other land.⁸⁰ The Commissioner evaluates every request for changes to an apportionment for potential impact to other water rights and public interest and the degree to which the beneficial use is changed.⁸¹

Additionally, water is not typically approved for transport outside of the originating hydrologic unit, unless the removal meets a specific set of standards and the Commissioner approves it. An application for removal will be denied unless the Commissioner:

- (1) finds that the water to be removed or appropriated for removal is surplus to needs within the hydrologic unit from which the water is to be removed or appropriated for removal, including fishing, mining, timber, oil and gas,

⁷⁵ Alaska Const. Art. VIII, § 13.

⁷⁶ Alaska Stat. § 46.15.040(d) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁷⁷ Alaska Stat. § 46.15.160(b) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁷⁸ Alaska Stat. § 46.15.160(a) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁷⁹ Alaska Stat. § 46.15.160(b) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁸⁰ Alaska Stat. § 46.15.160(b) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁸¹ Alaska Admin. Code tit. 11, § 93.930(c)-(d) (Lexis, LexisNexis through Reg. 237).

agriculture, domestic water supply, and other needs as determined by the commissioner;

(2) finds that the application for removal or appropriation for removal meets the requirements of AS 46.15.080; and

(3) assesses a water conservation fee under (b) of this section.

Additionally, Alaska allows water that is appropriated for the benefit of the state to be sold by the state and transported out of Alaska, so long as the removal meets the requirements stated above and the water is sold for fair market value.

c. Loss of Water Rights

In Alaska, a water right may be lost through forfeiture or abandonment. The Commissioner of the Department of Natural Resources may issue a finding of whole or partial abandonment or forfeiture.⁸² For the Commissioner to declare a water right to be abandoned, the user must not have made beneficial use of all or part of their appropriated water and expressed an intention to abandon.⁸³ Forfeiture occurs when "the appropriator voluntarily fails or neglects, without sufficient cause, to make use of all or a part of the appropriated water for a period of five successive years."⁸⁴ When an appropriator fails to make beneficial use of their water for five successive years, the Commissioner will presume that the appropriator has abandoned or forfeited their appropriation.⁸⁵ The appropriator has the burden to prove otherwise before the Commissioner.⁸⁶

Permit holders are also subject to loss of an issued permit if they do not comply with the time limitation or conditions of their permit.⁸⁷ Failure to comply with conditions, or

⁸² Alaska Stat. § 46.15.140(a), (b) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁸³ Alaska Stat. § 46.15.140(a) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁸⁴ Alaska Stat. § 46.15.140(b) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁸⁵ Alaska Stat. § 46.15.140(c) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁸⁶ Alaska Stat. § 46.15.140(c) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁸⁷ Alaska Stat. § 46.15.175(a) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

exceeding the specified time period to make beneficial use of the water without an approved extension, could result in the forfeiture of the permit before perfection of the right into a certificate. The procedure for forfeiture of a permit is the same as that for a certificate.⁸⁸

The procedure for revoking a certificate or permit for forfeiture or abandonment is conducted by the Commissioner and prescribed by AS 44.62.330 - 44.62.60 (Alaska Administrative Procedure Act).⁸⁹ The procedure for revoking an abandoned or forfeited appropriation begins with notice to the appropriator of the Commissioner's intention to revoke their certificate.⁹⁰ The appropriator then has 30 days to file an objection if they wish to keep their certificate.⁹¹ Once the appropriator has filed their objection, they have 60 days to submit proof that they have not forfeited or abandoned their appropriation.⁹² The Commissioner may hold a hearing to gather evidence on the proposed revocation.⁹³ If the proof is sufficient, the revocation notice will be rescinded and the appropriation will remain intact.⁹⁴ If the proof provided is insufficient to defeat the revocation, then the appropriation certificate will be revoked, and any works of appropriation will be ordered to be removed.⁹⁵ Water held under a revoked certificate or permit to appropriate will revert back to the state and become available for appropriation by other applicants.⁹⁶

4. Well Drilling

If a person drills, drives, jets, or augers a well, the contractor or constructor must file a report within 45 days after completion of the well with the property owner and the

of 31st Leg.), *see generally* Alaska Admin. Code tit. 11, § 93.120 (Lexis, LexisNexis through Reg. 237).

⁸⁸ Alaska Stat. § 46.15.175(a) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁸⁹ Alaska Stat. § 46.15.175(a) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

⁹⁰ Alaska Admin. Code tit. 11, § 93.940(a) (Lexis, LexisNexis through Reg. 237).

⁹¹ Alaska Admin. Code tit. 11, § 93.940(b) (Lexis, LexisNexis through Reg. 237).

⁹² Alaska Admin. Code tit. 11, § 93.940(b) (Lexis, LexisNexis through Reg. 237).

⁹³ Alaska Admin. Code tit. 11, § 93.940(b) (Lexis, LexisNexis through Reg. 237).

⁹⁴ Alaska Admin. Code tit. 11, § 93.940(c) (Lexis, LexisNexis through Reg. 237).

⁹⁵ Alaska Admin. Code tit. 11, § 93.940(d) (Lexis, LexisNexis through Reg. 237).

⁹⁶ Alaska Stat. § 46.15.140(d) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

Alaska Department of Natural Resources.⁹⁷ The report must contain, as applicable, the following information:

(1) the method of construction; (2) the type of fluids used for drilling; (3) the location of the well; (4) an accurate log of the soil and rock formations encountered and the depths at which the formations occur; (5) the depth of the casing; (6) the height of the casing above ground; (7) the depth and type of grouting; (8) the depth of any screens; (9) the casing diameter; (10) the casing material; (11) the depth of perforation or opening in the casing; (12) the well development method; (13) the total depth of the well; (14) the depth of the static water level; (15) the anticipated use of the well; (16) the maximum well yield; (17) the results of any well yield, aquifer, or drawdown test that was conducted; (18) if the water well contractor or person who constructs the well installs a pump at the time of construction, the depth of the pump intake and the rated pump capacity at that depth.⁹⁸

Public water wells and wells that have more than 100 service connections or are used by more than 500 individuals per day must comply with permitting and certification requirements.⁹⁹ All wells must be decommissioned per with Alaska state law.¹⁰⁰

5. Hydraulic Connection and Regulation

While both ground and surface water are handled under the same state statutory and regulatory regime, Alaska has very few ground/surface water interaction regulations.

The Alaska Water Use Act mentions, in the section pertaining to removal of water from one hydrologic basin to another, that an application for removal of water from "ground water that significantly influences the volume of water in a lake, river, or stream that is used by fish for spawning, incubation, rearing, or migration" will only be approved if the Commissioner first reserves adequate surface water to protect impacted fish species and their habitat.¹⁰¹ Beyond this, there is no specific mention of the hydraulic connection

⁹⁷ Alaska Admin. Code tit. 11, § 93.140(a) (Lexis, LexisNexis through Reg. 237).

⁹⁸ Alaska Admin. Code tit. 11, § 93.140 (Lexis, LexisNexis through Reg. 237).

⁹⁹ Alaska Admin. Code tit. 18, § 80.007(Lexis, LexisNexis through Reg. 237); *see also* Alaska Admin. Code tit. 18, § 74.006 (Lexis, LexisNexis through Reg. 237).

¹⁰⁰ Alaska Admin. Code tit. 18, § 80.015(e) (Lexis, LexisNexis through Reg. 237).

¹⁰¹ Alaska Stat. § 46.15.035(c) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess.

between surface and groundwater.

It does not appear that there is a priority among users of hydraulically linked surface and groundwater, nor is there liability for interference.

6. Aquifer Recharge and Underground Storage

Alaska does not regulate, encourage, or facilitate aquifer recharge or underground storage programs.

7. Water Management Plan(s)

Alaska does not have a statewide water management plan.

8. Regulatory Authorities

The Alaska Department of Natural Resources, Division of Mining, Land, and Water determines and adjudicates water appropriations.¹⁰² Additionally, the Commissioner of the Department is responsible for developing and executing regulations to carry out the Water Use Act.¹⁰³

The Commissioner of the Alaska Department of Natural Resources has the power to enter into contractual agreements to carry out provisions of the Water Use Act, accept or extend grants or gifts to any public or private source, and adopt procedures to allow the state to qualify for grants, loans, and gifts. This office also has the authority to create divisions responsible for carrying out the Water Use Act provisions.¹⁰⁴ The Commissioner is required to adopt procedural and substantive regulations to carry out the Water Use Act, create and maintain a standard procedure for water appropriations applications, work with other departments to provide advice in matters related to waters in the state, prescribe fees for the provisions in the Water Use act, and to make a yearly

of 31st Leg.).

¹⁰² Alaska Stat. § 46.15.010 (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

¹⁰³ Alaska Stat. § 46.15.020 (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

¹⁰⁴ Alaska Stat. § 46.15.020(a)(1)-(3) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

report of their activities to the legislature.¹⁰⁵

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9. Special Districts

There are no designated basins or districts for groundwater management in Alaska. All water resources, surface and subsurface, are managed by the Alaska Department of Natural Resources as a whole.

The Alaska Department of Natural Resources may designate critical Groundwater Management Areas to protect and manage areas experiencing water shortages or high contamination levels.¹⁰⁶ The Commissioner may initiate proceedings to designate a geographic or hydrologic area of groundwater as a critical water management area if "the commissioner determines that there is or might be an imminent water shortage in the area," if there is a petition for the designation of an area, or if twenty-five percent or more certificate or permit holders can prove the existence of a water shortage in their area.¹⁰⁷ There must be a public notice and hearing on whether to designate, revoke, or amend a designation of an area as a critical water management area.¹⁰⁸ A Department order will then be issued that must state the reasons for an area's designation, the area in which the designation applies, and how current and future appropriations will be affected.¹⁰⁹ Designation as a critical water management area allows the Commissioner to suspend applications for further appropriations and seek voluntary agreements between current appropriators for an equitable apportionment of available water.¹¹⁰

Currently, the area of St. Paul Island is a designated critical water management area

¹⁰⁵ Alaska Stat. § 46.15.020(b)(1)-(5) (West, Westlaw through Ch. 32 Ballot Measure 2 of 2020 2d Reg. Sess. of 31st Leg.).

¹⁰⁶ Alaska Department of Natural Resources, *Critical Water Management Areas*, <http://dnr.alaska.gov/mlw/water/cwma/> (last visited June 18, 2020).

¹⁰⁷ Alaska Admin. Code tit. 11, § 93.500 (Lexis, LexisNexis through Reg. 237).

¹⁰⁸ Alaska Admin. Code tit. 11, § 93.510 (Lexis, LexisNexis through Reg. 237).

¹⁰⁹ Alaska Admin. Code tit. 11, § 93.520 (Lexis, LexisNexis through Reg. 237).

¹¹⁰ Alaska Admin. Code tit. 11, § 93.530(b)(1)-(2) (Lexis, LexisNexis through Reg. 237).

because of groundwater contamination.¹¹¹ The Department Order of 2006 prohibits the establishment of any new water wells in the area until the order is

10. Transboundary Arrangements

Alaska and Canada share a transboundary watershed that is governed by the Boundary Waters Treaty. Any issues arising regarding trans-boundary water conflicts can be referred to the International Joint Commission.

11. Native American Rights

While Alaska has 229 federally recognized tribes,¹¹² there is only one Congressionally-established Alaska Native reservation, the Annette Island Reserve in Southeast Alaska, which is subject to the *Winters* Doctrine.¹¹³ In the *Winters* case, the U.S. Supreme Court established the principle that sufficient water be maintained to fulfill the intended needs of the Congressional reservation, regardless of whether the water was actually being used at the time.¹¹⁴ However, most of the approximately 145 million acres of land owned by Alaska's Native communities are held privately by corporations created by the 1971 Alaska Native Claims Settlement Act.¹¹⁵ These lands are not subject to the *Winters* Doctrine as they are not congressionally-established reservations.

Alaskan tribal groups are able to submit applications for "instream-flow" water reservations with the Alaska Department of Natural Resources.¹¹⁶ Such groups, and Alaska Native corporations, may apply for these appropriation certificates on the same basis as other Alaskan individuals, groups, and corporations.

¹¹¹ State of Alaska Office of the Commissioner, *Townsite of the City of St. Paul: Critical Water Management Area Department Order #148* (Apr. 5, 2006), <http://dnr.alaska.gov/mlw/water/cwma/DNR-Order-148.pdf>

¹¹² Alaska Department of Natural Resources, *Tribal Relations*, <http://dnr.alaska.gov/commis/tribal.htm> (last visited July 2, 2020).

¹¹³ Marie Lowe & Linda Leask, *Understanding Water Rights in Alaska*, INST. OF SOC. & ECON. RESEARCH 1, 2 (Feb. 2017), http://www.iser.uaa.alaska.edu/Publications/2017_02-UnderstandingWaterRights.pdf.

¹¹⁴ *Winters v. United States*, 207 U.S. 564 (1908).

¹¹⁵ 43 U.S.C.S. § 1601.

¹¹⁶ Alaska Department of Natural Resources, *Instream Flow Program*, <https://www.adfg.alaska.gov/index.cfm?adfg=habitatoversight.reservations>.

B. Arizona

Outside certain designated areas restricting the use of groundwater, the State of Arizona follows the “American Rule” of Reasonable Use for non-appropriable groundwater. Groundwater users are generally allowed to pump and use groundwater to benefit the overlying land without liability to neighboring lands; however, transportation of water away from the land where it is pumped is considered unreasonable if it harms neighboring land. Transporting water away from areas with high water stress, absent an exemption or grandfathered right, is considered per se unreasonable.

The Groundwater Management Code of 1980 governs groundwater use and regulation in Arizona. The Code designated various management areas, grandfathered and quantified certain water rights, created mechanisms and incentives for groundwater recharge, imposed requirements for water supply and sustainable pumping on subdivision development, established a permitting system for a variety of uses, and created the Department of Water Resources. Within water management districts known as Active Management Areas (AMAs) and Irrigation Non-expansion Areas, groundwater is regulated strictly by the Groundwater Code. AMAs tend to be located in areas of high economic development and population growth; thus, much of Arizona’s water management is handled through the Groundwater Code in these areas.

1. Definitions, Basis of Rights, Standards, and Interactions

Arizona’s Groundwater Code defines groundwater as water “under the surface of the earth regardless of the geologic structure in which it is standing or moving.”¹ However, groundwater does not include the “sub-flow” underneath a waterway or underground streams with “ascertainable beds and banks.”² The sub-flow of a waterway is subject to prior appropriation as surface water and is defined as “the saturated floodplain Holocene alluvium”³ While sub-flow may be underground, it is not considered groundwater.⁴

¹ Ariz. Rev. Stat. Ann. § 45-101(5) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

² *Id.*

³ *In re Gen. Adjudication of All Rights to Use Water in Gila River Sys. & Source*, 9 P.3d 1069, 1081-1082 (2000).

⁴ *Id.* at 1073.

The State of Arizona predominantly follows the American Rule of Reasonable Use. However, in management districts called “Active Management Areas,” a permit system governs groundwater use and transportation. The Arizona Supreme Court initially adopted the American Rule in *Bristor v. Cheatham*, by stating, “we adopt what is called the American rule that one may extract such water for a reasonable, beneficial use of the land from which the same is taken.”⁵ Arizona subsequently codified the rule in the Groundwater Code. The rule inherently requires that the use of groundwater must benefit the land from which it originated. The Court further held that “[i]f [groundwater] is diverted for the purpose of making reasonable use of the land from which it is taken, there is no liability incurred to an adjoining owner for a resulting damage.”⁶ In the same vein, landowners were not allowed to transport groundwater away from the originating parcel. The Arizona Supreme Court held that, regardless of beneficial use, “[w]ater may not be pumped from one parcel and transported to another just because both overlie the common source of supply if the plaintiff’s lands or wells upon his lands thereby suffer injury or damage.”⁷ Moreover, the Ninth Circuit Court of Appeals clarified Arizona’s use of the American Rule, holding that in areas susceptible to the rule, if withdrawn groundwater is used on the overlying land in a way that benefits that land, neighboring landowners have no cause of action under the Groundwater Code.⁸ This holding apparently conveys no requirement that the groundwater use be “reasonable,” but the land or land use must benefit from the groundwater withdrawal, regardless of subsequent effects on neighbors.

Despite Arizona’s adoption and reaffirmation of the American Rule, much of Arizona’s groundwater is regulated by the Groundwater Code and through AMAs and Irrigation Non-expansion Areas (INAs). Additionally, the Groundwater Code modified the American Rule allowing the transportation of produced groundwater and exempting grandfathered rights from elements of the American Rule. Thus, primarily rural areas of Arizona maintain a modified American Rule system alongside the statutorily regulated system present in the most densely populated parts of central Arizona.

⁵ *Bristor v. Cheatham*, 255 P.2d 173, 178 (Ariz. 1953).

⁶ *Id.*

⁷ *Farmers Inv. Co. v. Bettwy*, 558 P.2d 14, 21 (Ariz. 1976).

⁸ *Brady v. Abbot Labs.*, 433 F.3d 679, 682-683 (9th Cir. 2005).

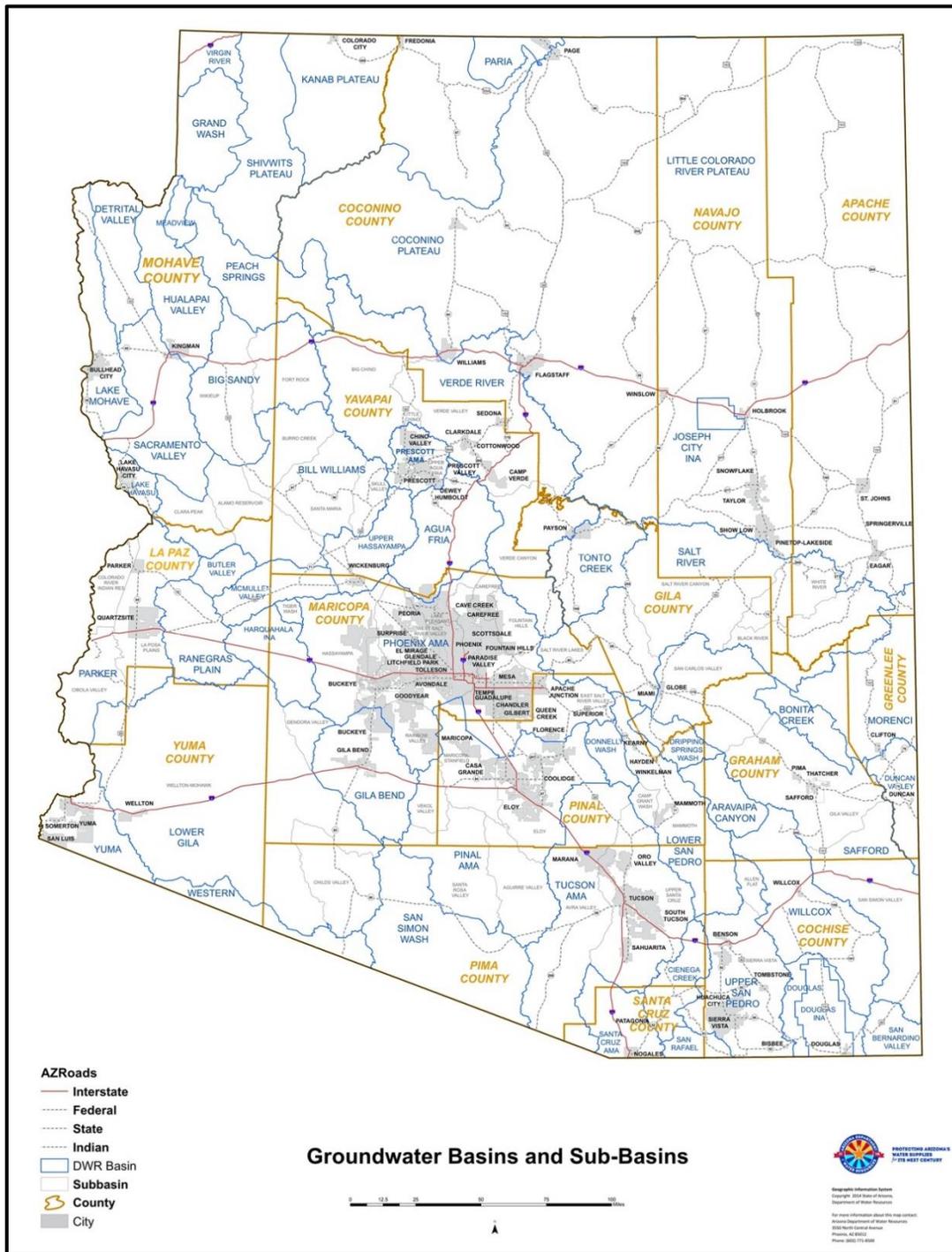


Fig. B.1 Arizona Groundwater Basins and Sub-basins⁹

⁹ Arizona Department of Water Resources, *Groundwater Basins and Sub-Basins*,

Traditionally, overlying land ownership is the basis for a right to use groundwater in Arizona, as beneficial use must occur on the land from which the groundwater was taken. A water right is typically appurtenant to the overlying land. Accordingly, groundwater rights cannot be reserved or severed from the land when actual withdrawal and use has not occurred.¹⁰ In AMAs, rights may be established through grandfathered rights, agreements between districts, service area rights (for public utilities and municipalities), small exempt wells, and specific withdrawal permits required in order to pump additional groundwater. However, AMA management plans and regulations do not affect decreed or appropriated rights.¹¹

Three types of grandfathered groundwater rights exist in an AMA: Type 1 Non-irrigation grandfathered rights, Type 2 Non-irrigation grandfathered rights, and irrigation grandfathered rights. All three grandfathered rights are applicable to “a person who was legally withdrawing and using groundwater as of the date of the designation of the active management area.”¹²

A Type-1 non-irrigation grandfathered right applies to “a person who owns land which was legally entitled to be irrigated with groundwater and who retired such land from irrigation after January 1, 1965, but prior to the date of the designation of the active management area in anticipation of a non-irrigation use.”¹³ A Type-2 non-irrigation grandfathered right is granted to “a person who owns land from which groundwater was being legally withdrawn and used for a non-irrigation purpose as of the date of the designation of the active management area.”¹⁴ A Type-2 non-irrigation grandfathered right is the only type of groundwater right in Arizona that is severable from the land and saleable independent of real property.

<https://new.azwater.gov/sites/default/files/media/GWBasinV2.pdf> (last visited June 22, 2020).

¹⁰ *Davis v. Agua Sierra Res. L.L.C.*, 203 P.3d 506, 510-12 (Ariz. 2009).

¹¹ Ariz. Rev. Stat. Ann. § 45-451 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

¹² Ariz. Rev. Stat. Ann. § 45-462 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

¹³ Ariz. Rev. Stat. Ann. § 45-463(A) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

¹⁴ Ariz. Rev. Stat. Ann. § 45-464 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

An irrigation grandfathered right is granted to

a person who owns land which was legally irrigated in whole or in part with groundwater at any time during the five years preceding January 1, 1980 for initial active management areas or the date of the notice of the initiation of designation procedures . . . for subsequent active management areas, which is capable of being irrigated and which has not been retired from irrigation for a non-irrigation use.¹⁵

Irrigation refers to the application of water on land of two acres or more for production of commercial crops, or for human or animal consumption. Holders of irrigation water rights also have a right to withdraw up to 10 acre-feet per year of groundwater for domestic or stock watering purposes.¹⁶ In addition to non-irrigation and irrigation grandfathered rights, cities, towns, private water companies, and irrigation districts all maintain “service area rights”. Service area rights allow entities to “withdraw and transport groundwater within each [entity’s] own service area for the benefit of landowners and residents within [the] service area, and the landowners and residents are entitled to use the groundwater delivered.”¹⁷

Water Rights in an AMA: New Withdrawals and Exempt Wells

Additionally, various new groundwater rights may be obtained in an AMA. These rights include “new groundwater withdrawals” obtainable by permit and exempt non-irrigation uses, obtainable by grandfathering or notice to the Arizona Department of Water Resources (ADWR). New groundwater withdrawals include: dewatering permits, mineral extraction and metallurgical permits, general industrial use permits, poor quality groundwater permits, temporary permits, drainage water permits, and hydrologic testing permits.¹⁸ Dewatering permits shall be issued to entities commencing or continuing mining activities to allow for adequate lowering of the water table.¹⁹ The

¹⁵ Ariz. Rev. Stat. Ann. § 45-465 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

¹⁶ Ariz. Rev. Stat. Ann. § 45-465.03 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

¹⁷ Ariz. Rev. Stat. Ann. § 45-492 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

¹⁸ Ariz. Rev. Stat. Ann. § 45-512 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

¹⁹ Ariz. Rev. Stat. Ann. § 45-513 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess.

withdrawn groundwater may be used to aid in the permittee's mining activities.²⁰ If nearby entities such as towns or farms are affected by the dewatering, the remaining withdrawn groundwater must be equitably apportioned amongst those affected.²¹ If the groundwater withdrawn under a dewatering permit is inadequate, and other water sources are unavailable, permittees may obtain a mineral extraction and metallurgical permit to withdraw groundwater for mining purposes.²² If unappropriated surface water, including Central Arizona Project water, becomes available, the permittee may be required to use that surface water.²³

General industrial use permits may be obtained for the withdrawal and use of groundwater outside municipal or private water company service areas if other sources of water are unavailable. However, the groundwater withdrawal must adhere to the AMA's management plan, and there must be "sufficient groundwater of adequate quality . . . available to the applicant to satisfy the projected general industrial use for the duration of the permit."²⁴ Poor quality groundwater permits are available to allow for the withdrawal of groundwater whose quality is not suitable for any use.²⁵ Temporary permits are available to electric energy generators during emergencies and to mining entities if additional water is essential for maintaining the structural integrity of the mine's development.²⁶ Both may be revoked by ADWR when the water is no longer needed or, in the case of mining entities, after a period of five years.²⁷ Additionally, water drainage permits may be obtained if agricultural land requires dewatering to maintain "reasonable economic return."²⁸ Withdrawn water may be

Fifty-Fourth Leg. (2020)).

²⁰ See, Ariz. Rev. Stat. Ann. § 45-513(C)(1) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

²¹ *Id.* at § 45-513(C)(2).

²² Ariz. Rev. Stat. Ann. § 45-514(A) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

²³ *Id.* at § 45-514(C).

²⁴ Ariz. Rev. Stat. Ann. §§ 45-515(A)(5), 45-515(A)(6) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

²⁵ Ariz. Rev. Stat. Ann. § 45-516(A) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

²⁶ Ariz. Rev. Stat. Ann. §§ 45-517, 45-518 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

²⁷ Ariz. Rev. Stat. Ann. §§ 45-517(C), 45-518(B)-(C) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

²⁸ Ariz. Rev. Stat. Ann. § 45-519(A) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg.

conveyed to persons holding grandfathered non-irrigation water rights.²⁹ Finally, hydrologic testing permits may be issued for groundwater quality testing, so long as the withdrawal does not exceed three acre-feet per year under the permit.³⁰

Aside from new groundwater withdrawal permits, landowners may gain or maintain groundwater rights in an AMA through exempt wells. Exempt wells are defined as non-irrigation wells drilled for domestic use with a maximum pumping capacity of 35 gallons per minute.³¹ Domestic uses include: growing crops and animals for personal consumption on less than two acres, stock watering, and the operations of private residences.³² Exempt wells drilled before April 28th, 1983, are granted grandfathered rights, while wells drilled after April 28th, 1983, require a notice of intent to drill filed with ADWR.³³ No more than one exempt well for the same non-irrigation purpose may be allowed on a single parcel of land without meeting the following requirements: the first exempt well cannot produce three gallons per minute, the parcel is at least one acre in size, all water is used on the same parcel from which it is withdrawn, the combined use of water does not harm public health and welfare, and the combined production from the wells does not exceed five acre-feet per year.³⁴

The standard for groundwater pumping in Arizona is beneficial use or using water in a manner which benefits the land. In the statutory system applied to AMAs, holders of water rights must adhere to stipulations set forth in their permit or grandfathered right. For example, irrigation grandfathered rights must only use groundwater for irrigation purposes, and the ADWR determines the allowable quantity of water in accordance with the AMA's management plan.³⁵

Sess. Fifty-Fourth Leg. (2020)).

²⁹ Ariz. Rev. Stat. Ann. § 45-519(B)1-3 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

³⁰ Ariz. Rev. Stat. Ann. § 45-520(A) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

³¹ Ariz. Rev. Stat. Ann. § 45- 454 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

³² Ariz. Rev. Stat. Ann. § 45- 454(M)(1) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

³³ Ariz. Rev. Stat. Ann. §§ 45-454(A)(2), 45-454(M)(1) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

³⁴ Ariz. Rev. Stat. Ann. § 45-454(I)(1-5) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

³⁵ Ariz. Rev. Stat. Ann. § 45-465(B) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg.

Although AMAs regulate groundwater extensively within their boundaries, Arizona applies its version of the American Rule in all other areas. When the two regimes interact, such as when water is transported into or out of an AMA, the Groundwater Code allows for some exceptions to a pure application of the American Rule.

2. Sources of Law

Prior to 1980, the American Rule governed Arizona's groundwater allocation and use, which has been adopted and affirmed by the Arizona Supreme Court. However, spurred by water security concerns and urging by the U.S. federal government, Arizona enacted the Groundwater Management Act of 1980 (GMA).³⁶ The GMA, or the Groundwater Code, primarily governs groundwater regulation in Arizona. While some precedential cases are important for understanding the maturation of Arizona groundwater law, cases decided after 1980 hold the most precedential and analytical value due to the fact that much of the case law prior to 1980 was made moot by the GMA. The Groundwater Code is predominantly the primary source for rules on permitting, allocation, determining rights, and other components of groundwater regulation. Also, Native American tribal water rights settlements and their related implementing legislation frequently have provisions relevant to groundwater management.

Additionally, the Central Arizona Water Conservation District (CAWCD) administers the Central Arizona Project (CAP), which delivers a portion of Arizona's Colorado River allocation into central Arizona, and maintains contracts with certain customers to deliver Colorado River water for groundwater recharge. The CAWCD also operates the Central Arizona Groundwater Replenishment District (CAGR), which recharges central Arizona aquifers on behalf of developers, municipalities, and water utilities.

3. Scope of Right

a. Groundwater Ownership

Groundwater in Arizona is unowned prior to capture, and private rights to use groundwater are usufructuary. Initially, the Arizona Supreme Court held percolating

Sess. Fifty-Fourth Leg. (2020)).

³⁶ Water Education Foundation and The University of Arizona Water Resources Research Center, *Arizona Water*, https://wrrc.arizona.edu/sites/wrrc.arizona.edu/files/Layperson%27s_Guide_to_Arizona_Water.pdf (last visited June 22, 2020).

groundwater to be included within the soil for purposes of ownership.³⁷ During constitutional challenges to the GMA, the Supreme Court reversed and held that “there can be no ownership in seeping and percolating waters until they are reduced to actual possession and control by the person claiming them. . . the right of the owner of the overlying land is simply to the usufruct of the water.”³⁸

b. Scope of Use

i. Permitted and Preferred Uses

Because Arizona follows both the American Rule and a statutory apparatus, allowable types of use vary based upon the right held by a landowner. Outside AMAs and INAs, any use that benefits the land is acceptable so long as the groundwater is not transported away from the land in a manner that violates the rules outlined in section 3(b)(ii) of this survey.³⁹ Although the term “beneficial use” is not defined in the Code, mining, domestic use, stock watering, dewatering, drainage, agriculture, and many other uses are endorsed throughout the code and case law. Within AMAs, rights holders must adhere to the stipulations of their permitted or grandfathered right and follow the rules articulated in the Code. Groundwater rights must also comply with AMA management plans. While certain types of transportation trigger liability for damages, the transportation itself will not be considered a *per se* cause of harm to neighboring landowners.⁴⁰ Hence, transportation will be deemed a suspected cause of harm, and the transporter’s efforts to mitigate its effects will be considered.⁴¹

Arizona does not maintain a conventional preference for uses, but certain permits contain a hierarchy of uses regarding excess water or remediation of damage. However, federal reserved rights are superior to all other rights. Pursuant to a groundwater withdrawal permit, excess water not needed for mining operations must be distributed by ADWR in accordance with the following priority:

First, to a city, town, private water company or farm and any other person

³⁷ *Bristor v. Cheatham*, 255 P.2d at 180.

³⁸ *Town of Chino Valley v. City of Prescott*, 638 P.2d 1324, 1328 (1981).

³⁹ Ariz. Rev. Stat. Ann. § 45-453 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁴⁰ Ariz. Rev. Stat. Ann. § 45-545(A) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁴¹ *Id.* at § 45-545(B).

whose respective ability to withdraw groundwater has been adversely affected by a dewatering permit. Second, to municipal, commercial, domestic and industrial needs of communities and residential areas directly related to the mineral extraction. Third, to irrigate land owned or controlled by the permittee which is entitled to the use of groundwater for irrigation. Fourth, to the director for such distribution as will best achieve the goals and purposes of the management plan for the active management area.⁴²

Federal reserved rights to groundwater enjoy protection from all other groundwater withdrawals.⁴³ However, reserved rights to groundwater may only be acquired upon a showing that the federal government intended to reserve rights when it withdrew the reservation from the public domain, and the reservation cannot satisfy its needs through nearby alternative sources.⁴⁴ Additionally, the reserved right is limited only to the extent that groundwater is necessary to accomplish the purpose of the reservation.⁴⁵

ii. Location of Use

Generally, water must be used to benefit overlying land per the American Rule. However, transport for use elsewhere is allowed for irrigation and water company service districts, historical uses, and in certain circumstances by the Groundwater Code. Groundwater may be transported from one area to another under various conditions and in certain circumstances discussed herein. Within an AMA, groundwater may be transported within a sub-basin without payment of damages.⁴⁶ Additionally, cities and towns may transport groundwater within and throughout their service area, which they have pumped from within their service areas inside a sub-basin in an AMA.⁴⁷ An irrigation district may transport groundwater according to the same stipulations.⁴⁸ A city, town, or private water company may also transport water to another city, town, or

⁴² Ariz. Rev. Stat. Ann. § 45-513(C)(1-5) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁴³ *In re Gen. Adjudication of all Rights to Use Water in the Gila River Sys. & Source*, 989 P.2d 739, 744 (Ariz. 1999).

⁴⁴ *Id.*

⁴⁵ *Id.* at 750.

⁴⁶ Ariz. Rev. Stat. Ann. § 45-541(A) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁴⁷ *Id.* at § 45-541(B).

⁴⁸ *Id.* at § 45-541(D).

private water company within the same AMA, so long as the transportation comports to the AMA's management plan.⁴⁹

Groundwater withdrawn pursuant to a Type 2 Non-irrigation grandfathered right, new withdrawal permit, or exempt well may be transported between sub-basins or away from an AMA, but such transportation is subject to payment of damages.⁵⁰ Groundwater withdrawn pursuant to a Type 1 Non-irrigation grandfathered right may be transported between sub-basins or away from AMA without payment of damages but only under certain circumstances.⁵¹ For example, groundwater may be transported outside the Tucson AMA without liability if the groundwater is used for mineral extraction.⁵² Statutory exemptions exist for specific groundwater transport projects, particularly involving pumping in the Big Chino Basin for transport to the City of Prescott. Outside AMAs, groundwater may generally be transported, without payment of damages, within a sub-basin, or within a basin, if no sub-basins in the area exist.⁵³ However, groundwater may not be transported away from a basin.⁵⁴ In addition, groundwater may not be transported into an AMA from outside an AMA unless the transportation is specifically exempt by the Groundwater Code.⁵⁵ Aside from these stipulations, the American Rule governs groundwater transportation outside of AMAs.

c. Loss of Water Rights

ADWR can seek a cease and desist order or an injunction (temporary or permanent) against a person or entity for violating any rule or statute outlined in the Groundwater Code or promulgated by ADWR. Water rights may be lost through a permanent

⁴⁹ *Ariz. Rev. Stat. Ann.* § 45-541(C) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)); *Ariz. Rev. Stat. Ann.* § 45-492(C) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁵⁰ *Ariz. Rev. Stat. Ann.* § 45-543(A) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁵¹ *Ariz. Rev. Stat. Ann.* § 45-542(B) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁵² *Ariz. Rev. Stat. Ann.* § 45-542(B)(1-2) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁵³ *Ariz. Rev. Stat. Ann.* § 45-544(A)(1) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁵⁴ *Id.* at § 45-544(A)(2).

⁵⁵ *Ariz. Rev. Stat. Ann.* § 45-551(A),(C) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

injunction or abandonment. If upon examination of an entity's records or physical investigation of the well, ADWR determines that the rights holder is engaged in a violation of the Groundwater Code or an ADWR regulation, ADWR "may give the person written notice that the person may appear and show cause at an administrative hearing why the person should not be ordered to cease and desist from the violation."⁵⁶ If, after a final order made by ADWR imposing a cease and desist order or assessment of civil penalties, the violations continue, ADWR may seek a permanent injunction prohibiting current and future withdrawals.⁵⁷ A well may be abandoned, but such abandonment requires notice to ADWR.⁵⁸

4. Well Drilling

Arizona regulates well quality, efficiency, and drilling through the Groundwater Code and administrative regulations. The state requires a notice of intent to drill for all new and replacement wells.⁵⁹ The notice includes information such as: the use to which the groundwater shall be put, the location of the well, the expected quantity and rate of withdrawal, the estimated date(s) of operation, and information regarding the well driller. All wells must be drilled and constructed according to ADWR standards, and ADWR must license the driller.⁶⁰ Within 30 days of completion, the well driller must file a report to ADWR regarding the bore casing of the completed well, and the owner of the well must file a report to ADWR regarding equipment, depth, and capacity of the well.⁶¹ Waste and inefficiency are discouraged, and ADWR promulgates regulations requiring that leaky or defective wells be properly repaired and maintained, and flowing artesian wells be equipped with a valve to stop water from flowing when not in use.⁶²

⁵⁶ Ariz. Rev. Stat. Ann. § 45-634(A) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁵⁷ *Id.* at § 45-634(D).

⁵⁸ Arizona Department of Water Resources, *Well Abandonment Handbook*, <http://infoshare.azwater.gov/docushare/dsweb/Get/WellRegDoc-371986/Well%20Abandonment%20Handbook.pdf> (last visited Feb. 21, 2020).

⁵⁹ Ariz. Rev. Stat. Ann. § 45-596 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁶⁰ Ariz. Rev. Stat. Ann. § 45-594 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)); Ariz. Rev. Stat. Ann. § 45-595 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁶¹ Ariz. Rev. Stat. Ann. § 45-600 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁶² Ariz. Rev. Stat. Ann. § 45-602 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess.

5. Hydraulic Connection and Regulation

Arizona treats groundwater and surface water independently of one another. However, Arizona recognizes groundwaters that “slowly find their way through the sand and gravel constituting the bed of the stream, or the lands under or immediately adjacent to the stream, and are themselves a part of the surface stream.”⁶³ Thus, the entire alluvial aquifer is not included; only those waters adjacent to the stream bed. The area in which these waters flow is known as the “sub-flow zone.” The Arizona Supreme Court defined the sub-flow zone as the “saturated Holocene alluvium.” The Court affirmed several factors in determining the Holocene alluvium, outlined as follows:

First, the water level elevation of the “subflow” zone must be relatively the same as the stream flow’s elevation. Second, the gradient of these elevations for any reach must be comparable with that of the levels of the stream flow. Third, there must be no significant difference in chemical composition that cannot be explained by some local pollution source which has a limited effect. Fourth, where there are connecting tributary aquifers or floodplain alluvium of ephemeral streams, the boundary of the “subflow” zone must be at least 200 feet inside of that connecting zone so that the hydrostatic pressure effect of the side recharge of this tributary aquifer is negligible and the dominant direction of flow is the stream direction. Fifth, where there is a basin-fill connection between saturated zones of the floodplain Holocene alluvium and a saturated zone of basin fill, the boundary of the “subflow” zone must be 100 feet inside of the connecting zone so that the hydrostatic pressure effect of the basin-fill’s side discharge is overcome and the predominant direction of flow of all of the “subflow” zone is the same as the stream’s directional flow.⁶⁴

Thus, Arizona law considers groundwater within a river’s saturated floodplain Holocene alluvium to be part of the appropriable surface stream. Wells that withdraw groundwater from within a river’s Holocene alluvium must obtain an appropriative right through the laws governing surface water in Arizona and are subject to Arizona’s system of prior

Fifty-Fourth Leg. (2020)).

⁶³ *Maricopa County Mun. Water Conservation Dist. No. 1 v. Sw. Cotton Co.*, 4 P.2d 369, 380 (1931).

⁶⁴ *In re Gen. Adjudication of All Rights to Use Water in Gila River Sys. & Source*, 9 P.3d 1069, 1074 (Ariz. 2000).

appropriation. If a well lies outside the Holocene alluvium, but its cone of depression reaches into the Holocene alluvium, the well owner is subject to prior appropriation.

6. Aquifer Recharge or Underground Storage

A driving force for implementation and administration of water storage programs in Arizona was the fact that large amounts of Arizona's share of the Colorado River were unused, and Arizona had concerns of losing their appropriation to California. Accordingly, ADWR sought to store Arizona's appropriation underground as a "use" in order to recharge depleted aquifers and save Arizona's Colorado River appropriation for further development.⁶⁵ Thus, Arizona provides for several underground storage and recharge programs, including direct recharge through underground storage facilities (USF), indirect recharge through groundwater savings facilities (GSF), and water banking and storage programs. The source of water for storage is often Central Arizona Project (CAP) water (Arizona's Colorado River appropriation) through the CAGR or effluent water. People who store groundwater gain storage credits for later withdrawal.

USFs are a method of direct aquifer recharge, where a permittee places water in an area to percolate into the underlying aquifer. USFs can be managed or constructed.⁶⁶ A managed USF consists of placing water in a dry riverbed or another dry waterbody for percolation into the aquifer. A constructed USF consists of digging and maintaining one or multiple basins for water to be placed in for percolation to the aquifer. In either case, ADWR will only grant a permit if the applicant has the technical and financial capability to construct and/or operate the USF, the storage is hydrologically feasible, unreasonable harm will not be caused to neighboring land uses, and the USF will not harm the aquifer's health.⁶⁷

Groundwater Savings Facilities

GSFs are groundwater users, often farmers, who substitute their groundwater use with "in-lieu" water from another source, such as CAP water. In this manner, groundwater is

⁶⁵ Water Resources Research Center, *Arizona Water Banking, Recharge, and Recovery* (2017), <https://wrrc.arizona.edu/sites/wrrc.arizona.edu/files/attachment/Arroyo-2017.pdf> (last visited June 22, 2020).

⁶⁶ Ariz. Rev. Stat. Ann. § 45-811.01(A) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁶⁷ *Id.* at § 45-811.01(C)(1-5).

“saved” due to the use of alternative sources. The water supplier and water recipient develop and agree to a plan between them for use of the “in-lieu” water, but ADWR must approve the plan before a permit is issued.⁶⁸

Water Banking

The Arizona Water Bank buys water rights and water credits to store underground for future use. Each acre-foot of water stored underground is designated for a specific future purpose, such as municipal, agricultural, or industrial use.⁶⁹ In addition to raising aquifer levels, water banking ensures future water supplies, maintains Arizona’s CAP rights, and ensures that Arizona’s obligations to Native American tribes are met.⁷⁰

Long Term Storage Credits

Long Term Storage Credits (LTSCs) are issued to those who store water, where one credit is equal to one-acre foot of water stored for at least one year.⁷¹ LTSCs are used to gain the right to withdraw stored water in the future and can be traded and sold. Water can be withdrawn using LTSCs anywhere within the same AMA in which the water was stored, not just at the storage facility to which the credits were issued.⁷² The Arizona Department of Water Resources issues permits and implements regulations regarding USFs, GSFs, and storage credits.

7. Water Management Plan(s)

Arizona does not develop a state-wide water management plan but develops plans for existing AMAs and INAs. Although plans do not exist at the state level for areas outside AMAs and INAs, local communities may make their own water management plans.⁷³

⁶⁸ Ariz. Rev. Stat. Ann. § 45-812.01(A-B) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁶⁹ Ariz. Rev. Stat. Ann. § 45-2401 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁷⁰ *Id.*

⁷¹ Ariz. Rev. Stat. Ann. § 45-802.01 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁷² Ariz. Rev. Stat. Ann. § 45-834.01 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁷³ Arizona Water Atlas, ADWR, vol. 1 (2010).

To aid in this planning, ADWR publishes a Water Atlas detailing water supplies, demands, and projections for various “planning areas” around the state.⁷⁴ ADWR develops management plans for the existing AMAs and INAs with stakeholder involvement via public hearings.⁷⁵ Management plans are developed by ADWR for ten-year periods, known as “planning periods.”⁷⁶ Management plans for each AMA include: conservation requirements and goals, assured and adequate water supply requirements, and well-drilling requirements, which are binding on the AMA and its constituent water rights holders.

8. Regulatory Authorities

Arizona Water Resources Department: <http://www.azwater.gov/azdwr/>

AWDR issues permits and regulations, enforces and implements the Groundwater Code, and creates and enforces management plans for AMAs and INAs.

9. Special Districts

The Groundwater Code created Active Management Areas and Irrigation Non-expansion Areas. Together, these districts manage a majority of Arizona groundwater use and implement much of the Groundwater Code.

First, AMAs may be created by statute, by ADWR, or by local petition.⁷⁷ There are currently five AMAs, all of which were created by statute. ADWR appoints one director for each AMA, although one person may serve as director for multiple AMAs.⁷⁸ Directors assist ADWR in implementing the Groundwater Code and enforcing and implementing management plans.⁷⁹ A key policy of all AMAs is the requirement of an

⁷⁴ *Id.*

⁷⁵ Ariz. Rev. Stat. Ann. § 45-563 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁷⁶ ADWR, *Water Management*, <https://new.azwater.gov/ama> (last visited June 22, 2020).

⁷⁷ Ariz. Rev. Stat. Ann. § 45-412 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)); Ariz. Rev. Stat. Ann. § 45-415 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁷⁸ Ariz. Rev. Stat. Ann. § 45-418(A) (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁷⁹ Ariz. Rev. Stat. Ann. § 45-419 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

“assured water supply” for new development. Any new residential development within an AMA must prove to the AMA director and ADWR that the development will have enough water of sufficient quality to sustain it for 100 years.⁸⁰ Additionally, new irrigation acreage in an AMA is prohibited. AMAs include Phoenix AMA, Tucson AMA, Prescott AMA, Santa Cruz AMA, and Pinal AMA.⁸¹

Second, INAs may be created by statute, the ADWR, or local petition.⁸² There are currently three INAs, all created by statute. Within an INA, additional agricultural irrigation is prohibited, and groundwater pumping is limited to the maximum acreage of land irrigated at any time during the five preceding years of the designation of the INA.⁸³ While assured water supply is not required, developers outside AMAs may develop, and ADWR may certify “adequate water supply plans,” showing that there will be adequate water for the next 100 years for the development.⁸⁴ INAs include Joseph City INA, Douglas INA, and Harguahala INA.

10. Transboundary Arrangements

Arizona has agreed to store water underground from Nevada for Nevada’s future use. The Southern Nevada Water Authority (SNWA) stores up to 600,000 acre-feet of water underground in Arizona via the Arizona Water Banking Authority. SNWA must put this water to use by 2063, and it will do so by diverting Arizona’s apportionment of Colorado River water. Arizona will subsequently withdraw the stored water to make up the difference.⁸⁵

⁸⁰ ADWR, *Assured and Adequate Water Supply*, <https://new.azwater.gov/aaws> (last visited June 22, 2020).

⁸¹ Ariz. Rev. Stat. Ann. § 45-411 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)); Ariz. Rev. Stat. Ann. § 45-411.03 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁸² Ariz. Rev. Stat. Ann. § 45-431 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)); Ariz. Rev. Stat. Ann. § 45-432 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)); Ariz. Rev. Stat. Ann. § 45-433 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁸³ Ariz. Rev. Stat. Ann. § 45-434 (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁸⁴ ADWR, *Assured and Adequate Water Supply*, <https://new.azwater.gov/aaws> (last visited June 22, 2020).

⁸⁵ Arizona Water Banking Authority, *Annual Accounting of the Southern Nevada Water Authority Interstate Account* (2014), <https://www.usbr.gov/lc/region/g4000/4200Rpts/DecreeRpt/2014/16%202014%20ABWA%20CY%20>

11. Native American Rights

Native American Reservations are eligible for reserved water rights, including rights to groundwater.⁸⁶ Arizona has settled water issues with two tribes, the Gila River Indian Community and the Tohono O’odam Reservation.⁸⁷ These settlements were finalized through the Arizona Water Settlements Act adopted by Congress.⁸⁸ Certain protections are afforded to various zones to prevent overdraw of Indian reserved groundwater and to replenish areas where overdraw of Indian groundwater is occurring.⁸⁹

[2013%20final%20verified%20accounting%20report.pdf](#)

⁸⁶ *In re Gen. Adjudication of All Rights to Use Gila River Sys. & Source*, 35 P.3d 68, 73 (Ariz. 2001).

⁸⁷ Ariz. Rev. Stat. Ann. § 45-2601 et. seq. (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

⁸⁸ Arizona Department of Water Resources Data, *Arizona Water Settlements Act* (2004), <https://infoshare.azwater.gov/docushare/dsweb/View/Collection-19477> (last visited June 22, 2020).

⁸⁹ Ariz. Rev. Stat. Ann. § 45-2601 et. seq. (West, Westlaw through legis. effec. Feb. 3, 2020 Second Reg. Sess. Fifty-Fourth Leg. (2020)).

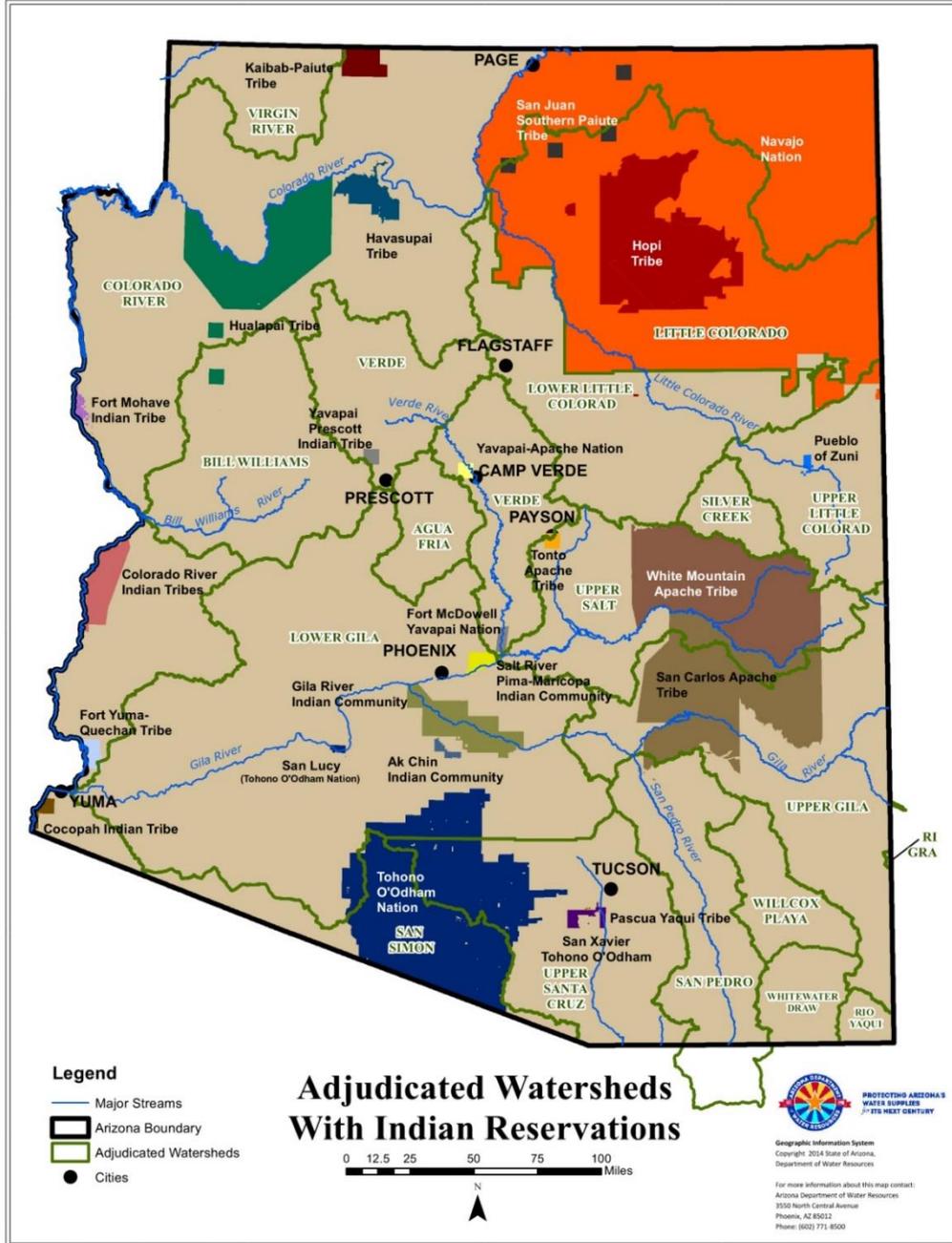


Fig. B.2. Arizona Adjudicated Watersheds with Indian Reservations⁹⁰

⁹⁰ Arizona Department of Water Resources, Adjudicated Watersheds with Indian Reservations, <https://new.azwater.gov/sites/default/files/AdjWSwithReservations.pdf>.

C. California

The state of California employs an overlying rights doctrine combined with prior appropriation and prescription.¹ All groundwater rights are limited to reasonable, beneficial use.² Local agencies may regulate groundwater use to prevent waste, unreasonable use, and overdraft. When there is surplus groundwater in the shared supply, defined as any water not needed for existing groundwater rights holders' reasonable and beneficial uses, that surplus groundwater may be appropriated by non-overlying landowners for beneficial uses.³ California also recognizes pueblo rights, which give historically designated cities a paramount right to the beneficial use of groundwater from the watershed of a stream flowing through the original pueblo.⁴

1. Definitions, Basis of Rights, Standards, and Interactions

The California Water Code is the primary source for definitions pertinent to groundwater allocation and management. “[G]roundwater” is “water beneath the surface of the earth within the zone below the water table in which soil is completely saturated with water, but does not include water that flows in known and definite channels.”⁵ The Code defines “basin” as basins listed in the Water Resource Department’s Bulletin 118, which is revised every five years.⁶ “[S]ustainable yield” means “the maximum quantity of water, calculated over a base period representative of long term conditions in the basin and including any temporary surplus, that can be withdrawn annually from groundwater supply without causing an undesirable result.”⁷ An “undesirable result” includes the “[c]hronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply” and the “significant and unreasonable reduction of groundwater storage.”⁸

¹ *Pasadena v. Alhambra*, 207 P. 2d 17, 28 (Cal. 1949).

² *Id.*

³ *Id.* at 29.

⁴ *City of Los Angeles v. City of Glendale*, 142 P.2d 289, 292 (Cal. 1943).

⁵ Cal. Water Code § 10721(g) (West, Westlaw through 2021 Reg. Sess.).

⁶ *Id.* § 10721(b); *Id.* § 12924.

⁷ *Id.* § 10721(w).

⁸ *Id.* § 10721(x).



Fig. C.1 Hydrogeologic Provinces for California⁹

⁹ U.S. Geological Survey, Hydrogeologic Provinces for California based upon established groundwater basins and watershed polygons, <https://data.doi.gov/dataset/hydrogeologic-provinces-for-california-based-upon-established-groundwater-basins-and-watershed-> (last visited Sept. 27, 2021).

California recognizes rights on overlying land as well as rights gained by non-overlying landowners.¹⁰ For correlative rights, which apply when two or more parties have an equal right to an insufficient supply of groundwater, a landowner must own land overlying a basin and use the groundwater produced from the basin on the land overlying the basin.¹¹ The quantity of groundwater each landowner overlying a shared supply may use is limited to their “fair and just proportion.”¹² The overlying landowner may extract percolating groundwater and use it without the approval from the State Board or a court, so long as the water is used for beneficial use.¹³ The right is limited to the overlying land and cannot be used outside the basin unless the landowner does so through an appropriative right.¹⁴ Correlative rights are “special rights to use groundwater under the owner’s property” and operate like riparian surface rights.¹⁵ Landowners overlying a common source may use reasonable amounts of water for beneficial use but cannot do harm, or “injure,” other water rightholding landowners.¹⁶

Because California’s policy is to promote the greatest number of beneficial uses for a water source, any groundwater remaining after prior rights holders’ satisfy all existing uses, referred to as “surplus water,” may be acquired by non-overlying landowners for uses outside the basin under the prior appropriation system.¹⁷ “The appropriator may take all the regular supply to distant land until such landowner is prepared to use it and begins to do so.”¹⁸ Appropriative rights are obtained on a “first in time, first in right” prior appropriation basis.¹⁹

It is crucial to note that total water use between overlying and non-overlying users is

¹⁰ *Barstow v. Mojave Water Agency*, 5 P.3d 853, 863 (Cal. 2000).

¹¹ *Katz v. Wilkeshaw*, 74 P. 766, 772 (Cal. 1903).

¹² *Id.*

¹³ California Water Boards: State Water Resources Control Board, *The Water Rights Process*,

https://www.waterboards.ca.gov/waterrights/board_info/water_rights_process.html#rights (last visited Sept. 25, 2021).

¹⁴ *Barstow*, 5 P.3d at 863.

¹⁵ *Id.*

¹⁶ *Burr v. Maclay Rancho Water Co.*, 116 P. 715, 718 (Cal. 1911).

¹⁷ *Peabody v. Vallejo*, 40 P.2d 486, 492 (Cal. 1935); *see also Barstow*, 5 P.3d at 863.

¹⁸ *Peabody*, 40 P.2d at 493.

¹⁹ *Katz*, 74 P. at 772.

limited to the safe yield of the basin.²⁰ Safe yield is generally defined as the maximum amount of water that could be extracted each year without depleting the basin in the future, and is calculated as the net of inflows less subsurface and surface outflows.²¹ Any water used in excess of the safe yield is wrongful and overlying landowners receive priority of use over appropriative rights holders.²² Use amongst overlying landowners in these scenarios is correlative, as “each may use only his reasonable share when water is insufficient to meet the needs of all.”²³ Additionally, senior appropriative rights receive priority over junior rights holders and may enjoin the junior holder’s use through legal proceedings.²⁴

Mutual prescription occurs where multiple parties appropriate a source of groundwater in equal priority.²⁵ Under this doctrine, prescriptive rights are obtained in a similar fashion to adverse possession, where another overlying landowner using groundwater wrongly pumps groundwater that is not surplus water.²⁶ Prescription may occur when the use of the groundwater is actual, open and notorious, hostile and adverse to the original water right owner, uninterrupted for a statutory period of five continuous years, and under a claim of right.²⁷ When the water is over-drafted, the party causing the overdraft is deemed to be extracting non-surplus groundwater.²⁸ This is considered adverse to the overlying landowner’s use of the water.²⁹ Public entities cannot lose groundwater rights to private parties through prescription.³⁰

When a landowner fails to obtain an injunction to stop the prescriptive right, the landowner may protect their water right by “self-help.”³¹ Self-help occurs when the landowner begins to concurrently pump non-surplus water along with the adverse

²⁰ *Pasadena*, 207 P.2d at 31 (Cal. 1949) (while the California Water Code uses the term “sustainable yield,” courts have interchangeably used the term “safe yield”).

²¹ See *id.* at 30.

²² *Santa Maria v. Adam*, 211 Cal. App. 4th 266, 279, 149 Cal. Rptr. 3d 491, 502 (2012).

²³ *Id.*

²⁴ See *id.*

²⁵ See *Barstow*, 5 P.3d at 865.

²⁶ *Pasadena*, 207 P.2d at 29.

²⁷ *Id.*

²⁸ See *id.* at 30-31.

²⁹ *Id.* at 31.

³⁰ *Los Angeles v. San Fernando*, 537 P.2d 1250, 1303 (Cal. 1975).

³¹ *Santa Maria*, 211 Cal. App. at 279, 149 Cal. Rptr. 3d at 501-02.

users.³² This allows the landowner to retain a portion of their overlying rights and only lose the amount of the prescriptive taking.³³

With the exception of subterranean streams, California does not operate a statewide permitting or allocation system for groundwater, even for appropriative groundwater rights.³⁴ Rights are permitted or determined either through mutual stipulations or court adjudications.³⁵

A unique type of water right in California is that of the pueblo right. A pueblo right gives a city organized under Spanish or Mexican law a right to the surface and groundwater near and below it.³⁶ This right is superior to all other rights and is limited only by the amount the city needs to meet its needs.³⁷

The standard for groundwater rights is reasonable beneficial use without waste and within the safe yield of the basin.³⁸ California policy provides that the state's waters must be "put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented[.]"³⁹ This extends to both overlying landowners and appropriators.⁴⁰

Similarly, correlative rights holders can only use a reasonable amount of water to satisfy their beneficial use and may be ordered to reduce their pumping to resolve overdraft and prevent harm to other overlying wells.⁴¹ While, as mentioned previously, a pueblo right is superior to all other water rights, it is limited to the beneficial use of only the amount essential for the right holder to meet their needs.⁴²

³² *Id.*

³³ *Id.*

³⁴ California Water Boards: State Water Resources Control Board, *The Water Rights Process*, https://www.waterboards.ca.gov/waterrights/board_info/water_rights_process.html#rights (last visited July 21, 2020).

³⁵ *See id.*

³⁶ *See generally Lux v. Hetton*, 4 P. 919 (Cal. 1884).

³⁷ *Los Angeles v. Glendale*, 142 P.2d 289, 291 (Cal. 1943).

³⁸ Cal. Const. art. X § 2; *see also Pasadena*, 207 P.2d at 28.

³⁹ *Id.*

⁴⁰ *Pasadena*, 207 P.2d at 28.

⁴¹ *See Id.* at 28-29.

⁴² *See generally Los Angeles*, 537 P.2d at 1291.

California’s groundwater law combines a correlative overlying right system with a prior appropriation non-overlying right system. Interactions between the two systems relate to each other’s uses and the overall available groundwater supply in the basin: correlative overlying rights are superior to non-overlying appropriative rights, and when a shortage occurs, appropriative users must yield to overlying users unless prescription has occurred.⁴³ However, between appropriative users, the earliest date of priority is superior, and during times of shortage when appropriative rights can still be exercised, the most senior right must be fulfilled first.⁴⁴ Junior users can attempt to prescript senior appropriative rights through continued use during periods of overdraft.⁴⁵

2. Sources of Law

California does not have a comprehensive, centralized groundwater allocation system. However, Article 10, Section 2 of the California Constitution contains “anti-waste” language requiring that water be put to reasonable, beneficial use, and that the waste of water is prevented.⁴⁶

In 2014, California enacted the Sustainable Groundwater Management Act (“SGMA”).⁴⁷ SGMA does not establish a statewide system for groundwater management or regulation but rather subjects groundwater allocation to the general allocation principles established by California courts.⁴⁸ SGMA requires the State of California to designate a priority level for all of the non-adjudicated groundwater basins in California.⁴⁹ The priority levels include high , medium , low, and very low priorities by the California Department of Water Resources (DWR).⁵⁰ All high and medium priority basins designated by the DWR that are subject to critical overdraft are required to have a groundwater sustainability plan by 2020.⁵¹ Under the SGMA, a basin “is subject to critical overdraft when continuation of present water management practices

⁴³ *Id.*

⁴⁴ *Pasadena*, 207 P.2d at 29.

⁴⁵ *See Id.*

⁴⁶ Cal. Const. art. X § 2.

⁴⁷ Cal. Water Code, § 10720 (West, Westlaw through 2021 Reg. Sess.).

⁴⁸ *See generally Id.* § 10720.1.

⁴⁹ *Id.* § 10722.4.

⁵⁰ *Id.*

⁵¹ *Id.* § 10720.7(a)(1).

would probably result in significant adverse overdraft-related environmental, social, or economic impacts.”⁵² All high and medium priority basins not subject to critical overdraft are required to have a groundwater sustainability plan by 2022.⁵³ Low and very low priority basins do not require a groundwater sustainability plan requirement or deadline, although the legislation encourages the development of a groundwater sustainability plan regardless.⁵⁴

The California Water Code includes provisions that authorize the creation of special groundwater districts. Districts with groundwater management authority currently include: Honey Lake Valley Groundwater Management District,⁵⁵ Long Valley Groundwater Management District,⁵⁶ Sierra Valley Groundwater Management District,⁵⁷ Mono County Tri-Valley Groundwater Management District,⁵⁸ Mendocino County Water Agency District,⁵⁹ Pajaro Valley Water Management Agency,⁶⁰ Ojai Basin Groundwater Management Agency,⁶¹ Fox Canyon Groundwater Management Agency,⁶² Orange County Water District,⁶³ Monterey Peninsula Water Management District,⁶⁴ Santa Clara Valley Water District,⁶⁵ and Willow Creek Valley Groundwater Management District.⁶⁶

Counties can also regulate groundwater and are not preempted by state law, particularly in situations where groundwater is pumped from within the basin and exported outside

⁵² Sustainable Groundwater Management Act,

⁵³ *Id.* § 10720.7(a)(2).

⁵⁴ *Id.* § 10720.7(b).

⁵⁵ Cal. Water Code. App. § 129-101 (West, Westlaw through 2021 Reg. Sess.).

⁵⁶ *Id.* § 119-101.

⁵⁷ *Id.*

⁵⁸ *Id.* § 128-1.

⁵⁹ *Id.* § 54-1.

⁶⁰ *Id.* § 124-1.

⁶¹ *Id.* § 131-101.

⁶² *Id.* § 121-102.

⁶³ *Id.* § 40-1.

⁶⁴ *Id.* § 118-1.

⁶⁵ *Id.* § 60-1.

⁶⁶ *Id.* § 135-101.

the basin. For instance, a state district court upheld the County of Tehama’s ordinance prohibiting the export of groundwater for use on land other than the land where the extraction occurs.⁶⁷ In September 2018, the Third District Court of Appeals held that the public trust doctrine applies to groundwater requiring counties to consider adverse effects on groundwater that negatively impact navigable waterways pursuant to the public trust doctrine.⁶⁸

Mutual Water Companies⁶⁹ (“MWCs”) can also distribute groundwater in California. Organized under the California Corporations Code,⁷⁰ some MWCs have stockholders who hold their stock in groundwater rights, connecting the right to receive the water to stock ownership.⁷¹ In some older MWCs, stock in the groundwater right is severed from land ownership.⁷²

Additionally, there are adjudicated groundwater areas. Adjudications occur when water users within a basin dispute legal rights to the water and can cover “an entire basin, a portion of a basin, or a group of basins and all non-basin locations between.”⁷³ A watermaster is typically appointed by the court to administer their decree.⁷⁴ The court determines who the water rights owners are, the amount of water they can extract, and how the area will be managed.⁷⁵

⁶⁷ *Baldwin v. Tehama*, 31 Cal. App. 4th 166, 182-84, 36 Cal. Rptr. 2d 886, 896-97 (3d Dist. 1994) (holding that the regulation of groundwater is not outside the county’s police powers and is not preempted by state law).

⁶⁸ *Env’t. L. Found. v. State Water Res. Control Bd.*, 26 Cal. App 5th 844, 867, 237 Cal.Rptr.3rd 393, 409 (3d Dist. 2018).

⁶⁹ Cal. Corp. Code § 14300 (West, Westlaw through 2021 Reg. Sess.) (defining a “mutual water company” as any corporation that is “organized for or engaged in the business of selling, distributing, supplying, or delivering water for irrigation purposes” or “any corporation organized for or engaged in the business of selling, distributing, supplying, or delivering water for domestic use”).

⁷⁰ Cal. Corp. Code § 14300 (West, Westlaw through 2021 Reg. Sess.).

⁷¹ CalMutuals, *About Mutuals*, California Association of Mutual Water Companies, <https://calmutuals.org/about-mutuals/> (last visited Sept. 25, 2021).

⁷² *Id.*

⁷³ *Adjudicated Areas*, California Department of Water Resources, <https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Adjudicated-Areas> (last visited April 5, 2022).

⁷⁴ *Id.*

⁷⁵ *Id.*

In adjudication proceedings, “when apportioning water in an overdrafted basin among correlative rights holders, a court should employ equitable apportionment principle and eschew mechanically based calculations to the extent necessary to reach an equitable apportionment of available water.”⁷⁶ Dormant correlative rights holders, those owners of land overlying the aquifer who had not produced groundwater in the recent past, are not allocated groundwater rights in adjudication proceedings.⁷⁷ If those landowners wish to pump groundwater in the future, they must apply to the area watermaster for permission.⁷⁸

When SGMA was passed, 27 groundwater areas were treated as adjudicated by SGMA and two additional areas have been added since.⁷⁹ The adjudicated water basins include:

Beaumont Basin	San Bernardino Basin Area
Brite Basin	San Jacinto Basin
Central Basin	Santa Margarita River Watershed
Chino Basin	Santa Maria Valley Basin
Cucamonga Basin	Santa Paula Basin
Cummings Basin	Scott River Stream System
Goleta Basin	Seaside Basin
Lytle Basin	Six Basins
Main San Gabriel Basin	Tehachapi Basin
Mojave Basin Area	Upper Los Angeles River Area
Puente Basin	Warren Valley Basin
Raymond Basin	West Coast Basin
Rialto-Colton Basin	The Antelope Valley Basin
Riverside Basin	The Los Osos Groundwater Basin ⁸⁰

⁷⁶ *Antelope Valley Groundwater Cases*, 277 Cal. Rptr. 3d 333, 370 (Cal. App. 5th Dist. 2021), reh'g denied (Apr. 6, 2021), review denied (July 21, 2021).

⁷⁷ *Id.* at 387.

⁷⁸ *Id.* at 389.

⁷⁹ *Id.*

⁸⁰ Cal. Water Code § 10720.8 (West, Westlaw through 2021 Reg. Sess.).

The watermaster or local agency must submit a copy of a governing final judgement or other judicial order or decree within 90 days of entry by the court.⁸¹ They must also submit a report to the department a report containing elevation data, annual aggregated data identifying groundwater extraction, surface water supply used for or available for use for groundwater recharge or lieu use, total water use, change in groundwater storage, and the annual report submitted to the court.⁸²

3. Scope of Right

a. Groundwater Ownership

In California the state “owns” groundwater in a regulatory sense, but does not own groundwater in a possessory or proprietary sense.⁸³ The California Water Code contains a provision stating that, “[a]ll water within the state is the property of the people of the State[.]”⁸⁴ California courts have interpreted this provision to confer regulatory authority to the State of California, but not actual title.⁸⁵ In *California v. Superior Court of Riverside County*, the court held that the use of the phrase “the people” rather than “the State” showed legislative intent to grant regulatory powers to the state, but not actual title.⁸⁶ Individuals cannot hold title to groundwater either, only the right to its use.⁸⁷ As such, groundwater rights in California are usufructuary, though once groundwater has been severed from the land, individuals may “own” that particular volume of water and sell it as a commodity.⁸⁸

⁸¹ *Id.* § 10720.8(f)(1)-(2).

⁸² *Id.* § 10720.8(f)(3)(A)-(F).

⁸³ *Santa Maria*, 211 Cal. App. 4th at 279, 149 Cal. Rptr. 3d at 501.

⁸⁴ Cal. Water Code § 102 (West, Westlaw through 2021 Reg. Sess.).

⁸⁵ *Cal. v. Super. Ct. of Riverside Cnty.*, 78 Cal. App. 4th 1019, 1026, 93 Cal. Rptr. 2d 276, 282, (4th Dist. 2000).

⁸⁶ *See id.*

⁸⁷ *See Riverside Cnty.*, 78 Cal. App. 4th at 1023, 93 Cal. Rptr. 2d at 280; *see also Santa Maria*, 211 Cal. App. 4th at 279, 149 Cal. Rptr. 3d at 501.

⁸⁸ *Lewis v. Scazighini*, 20 P.2d 359, 360 (4th Dist. 1933).

b. Scope of Use

i. Permitted and Preferred Uses

California allows the beneficial and reasonable use of water, as mandated by the California Constitution.⁸⁹ The State Water Resources Control Board (SWRCB) lists a variety of uses as “beneficial,” including agriculture, aquaculture, groundwater recharge, industrial use, recreation, and wildlife conservation.⁹⁰ Regional Water Boards may list their own beneficial uses in addition to the state-wide uses identified by SWRCB.⁹¹ Cities with Pueblo rights have a paramount right to the beneficial use of groundwater in the original pueblo watershed.⁹² Pueblo water rights cannot be lost by non-use or failure to assert an interest in the groundwater.⁹³ In addition, the pueblo's claim expands with the needs of the city and may be used to supply the needs of areas that are later annexed to the city.⁹⁴

California's Water Code holds domestic use as the highest priority use of water, with irrigation second.⁹⁵ Additionally, a municipalities' water rights are immune from adverse possession claims by private parties.⁹⁶

⁸⁹ Cal. Const. art. X § 2.

⁹⁰ California Water Resources Control Board, *Beneficial Use Definitions*, https://www.waterboards.ca.gov/about_us/performance_report_1617/plan_assess/docs/bu_definitions_012114.pdf (last visited Sept. 25, 2021).

⁹¹ *Id.*

⁹² *City of Los Angeles v. City of Glendale*, 142 P.2d 289, 292 (Cal. 1943).

⁹³ *San Diego v. Cuyamaca Water Co.*, 209 Cal. 105 (1930).

⁹⁴ *Id.*

⁹⁵ Cal. Water Code § 106 (West, Westlaw through 2021 Reg. Sess.).

⁹⁶ *Los Angeles*, 537 P.2d at 1303.

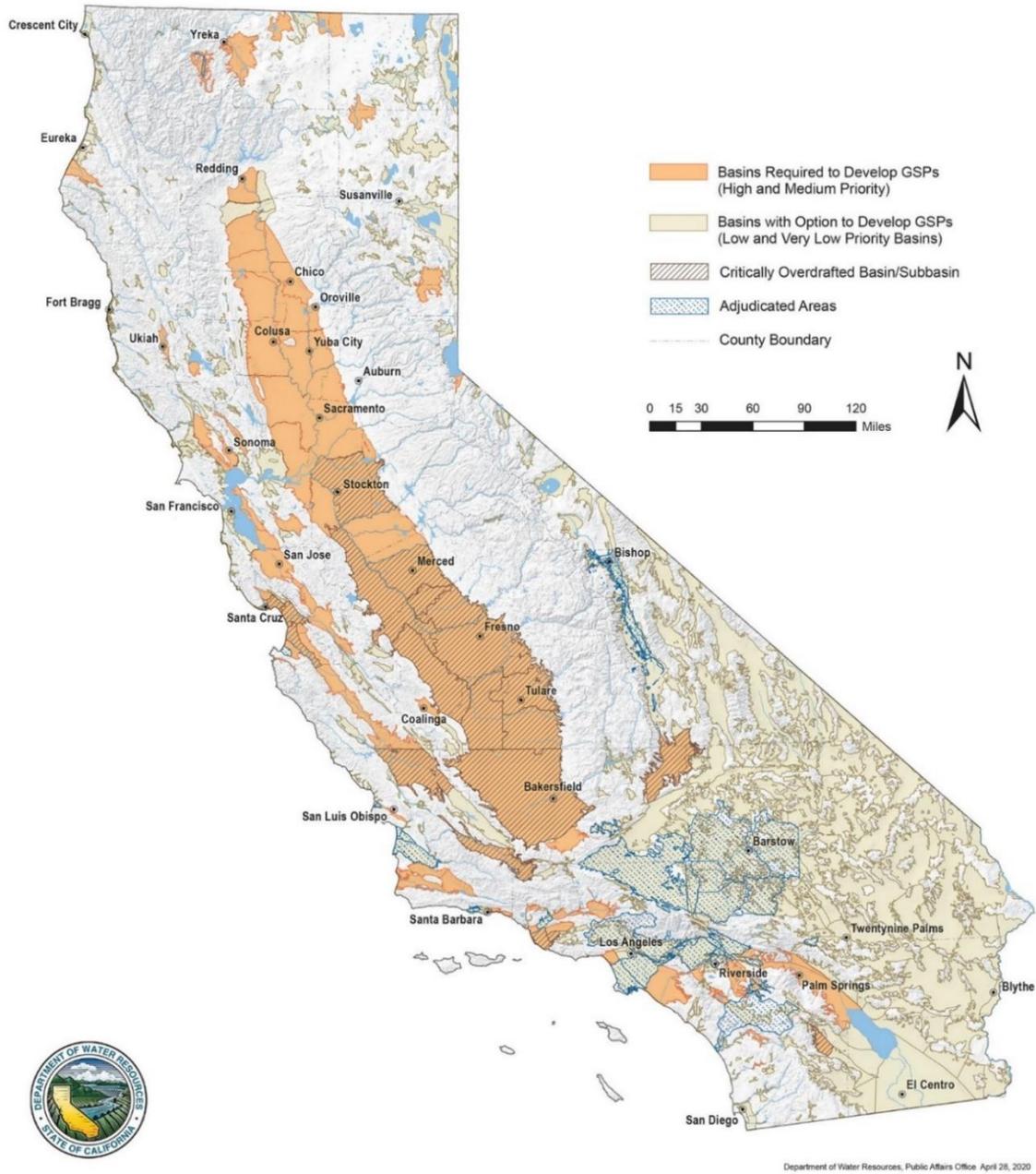


Fig. C.2 Basin Prioritization in California⁹⁷

⁹⁷ California Department of Water Resources, Basin Prioritization, <https://water.ca.gov/programs/groundwater-management/basin-prioritization> (last visited Sept. 27, 2021).

ii. Location of use

The location of use depends on the type of right. Groundwater withdrawn under correlative rights may only be used on land within the basin, while groundwater withdrawn under an appropriative right may be used outside the basin.⁹⁸ An owner of land within a basin does not have the right to transport water to lands outside the basin if that transportation deprives other overlying landowners within the basin of water.⁹⁹ However, when surplus groundwater is identified, that groundwater may be used on land outside the basin.¹⁰⁰

Some groundwater districts, such as the Malaga County Water District, have statutory authority to institute groundwater transfer rules.¹⁰¹ These rules may enable the transport of groundwater outside the basin¹⁰² and enter into agreements with other public agencies for the purpose of participating in basin-wide groundwater management activities.¹⁰³ Districts can also drain and reclaim lands “either through surface and groundwater” and “may acquire, by appropriation or other lawful means, and divert, store, conserve, transport or dispose of water resulting from such operations.”¹⁰⁴

c. Loss of Water Rights

California does not have a state-wide system of groundwater allocation, so there is no comprehensive scheme through the state to forfeit or lose groundwater rights. However, appropriative users can lose their rights due to non-use.¹⁰⁵ When this happens, the “unused water may revert to the public and shall, if reverted, be regarded as unappropriated public water.”¹⁰⁶ Similarly, water rights may be lost through

⁹⁸ *Barstow*, 5 P.3d at 863.

⁹⁹ *San Bernardino v. Riverside*, 198 P. 784, 788 (Cal. 1921).

¹⁰⁰ *Barstow*, 5 P.3d at 863.

¹⁰¹ Cal. Water Code § 31144.71 (West, Westlaw through 2021 Reg. Sess.).

¹⁰² *Id.* § 31144.71(a)(5).

¹⁰³ *Id.* § 31144.71(a)(5)(b).

¹⁰⁴ *Id.* § 31033.

¹⁰⁵ Cal. Water Code § 1241 (West, Westlaw through 2021 Reg. Sess.).

¹⁰⁶ *Id.*

prescription.¹⁰⁷ Prescription requires that the use of groundwater is actual, open and notorious, hostile and adverse to the original water right owner, uninterrupted for a statutory period of five continuous years, and under a claim of right.¹⁰⁸ Prescriptive rights can also be lost by nonuse.¹⁰⁹ Groundwater rights may be lost through eminent domain proceedings.¹¹⁰

4. Well Drilling

Well drilling in California is regulated at the state and local level. Without exception, drilling and construction of water wells cannot be performed without a license issued by the Contractors State Licensing Board.¹¹¹ The California SWRCB adopts model standards for well construction, maintenance, and abandonment, and publishes those standards to Bulletin 74-81 (supplemented by Bulletin 74-90).¹¹² Cities, counties, and water agencies may adopt these or more stringent standards.¹¹³ If a city, county, or water agency does not adopt any standards, the standards contained in Bulletin 74-81 apply.¹¹⁴ Local agencies may also incorporate well standards in groundwater management plans made pursuant to SGMA.¹¹⁵ In basins subject to management by Groundwater Sustainability Agencies (GSAs), those GSAs must include well construction policies and well abandonment programs in their management plans.¹¹⁶

¹⁰⁷ *Barstow*, 5 P.3d at 863.

¹⁰⁸ *Id.*

¹⁰⁹ *Smith v. Hawkins*, 42 P. 453, 453(Cal. 1895).

¹¹⁰ *See L.A. Dept. of Water & Power v. Cnty. of Inyo*, 283 Cal. Rptr. 3d 119, 126 (Cal. App. 5th Dist. 2021).

¹¹¹ Cal. Water Code § 13750.5 (West, Westlaw through the 2021 Reg. Sess.); *See generally Cal. Groundwater Assn. v. Semitropic Water Storage Dist.*, 178 Cal. App. 4th 1460, 1463-64, 101 Cal. Rptr. 3d 261, 263-64 (5th Dist. 2009).

¹¹² Cal. Water Code § 13801(b) (West, Westlaw through the 2021 Reg. Sess.).

¹¹³ *Id.* § 13801(c).

¹¹⁴ *Id.* § 13801(d).

¹¹⁵ *Id.* § 10753.8.

¹¹⁶ *Id.* § 10727.4(g); *Id.* § 10727.4(d).

5. Hydraulic Connection and Regulation

Although groundwater and surface water were traditionally accorded separate treatment, California has recently required that hydraulically connected water follow the public trust doctrine.¹¹⁷

Under SGMA, local groundwater agencies must include information regarding groundwater and surface water interactions, management, and monitoring in their Groundwater Sustainability Plans (GSPs).¹¹⁸ When an entity utilizing groundwater resides in a location subject to a groundwater sustainability plan, they must report all diversions of surface water to underground storage to the GSA for the relevant section of the basin.¹¹⁹

There is no explicit preference afforded to particular uses of hydrologically connected surface and groundwater. However, the California Water Code states that GSAs shall consider the interests of “[s]urface water users, if there is a hydrologic connection between surface and groundwater bodies,” when implementing GSPs.¹²⁰

6. Aquifer Recharge and Underground Storage

The California SWRCB regulates aquifer recharge and underground storage permitting processes.¹²¹ Generally, an applicant must have an existing appropriative water right in order to receive permission from the Board to divert surface water to recharge aquifers.¹²² The applicant must also specify the beneficial use of the water diverted into underground storage.¹²³ Groundwater recharge itself is not considered a beneficial use

¹¹⁷ Telephone Interview with David Sandino, Chief Counsel, California Department of Water Resources (July 6, 2020).

¹¹⁸ See Cal. Water Code § 10727.2 (West, Westlaw through the 2021 Reg. Sess.); see generally *Pleasant Valley Cnty. Water Dist. v. Fox Canyon Groundwater Mgmt. Agency*, 2017 WL 5589178 (Cal. Ct. App. 2017).

¹¹⁹ Cal. Water Code § 10726 (West, Westlaw through the 2021 Reg. Sess.).

¹²⁰ *Id.* § 10723.2 (West, Westlaw through 2021 Reg. Sess.).

¹²¹ California State Water Resources Control Board, Water Rights for Groundwater Recharge, https://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/groundwater_recharge/ (last visited Sept. 25, 2021).

¹²² *Id.*

¹²³ *Id.*

of water, so the applicant must specify the subsequent beneficial use of the water (i.e., industry, municipal, agriculture, etc.).¹²⁴

Permits for diversions of water into aquifers can be temporary or standard.¹²⁵ Temporary permits last 180 days, while standard permits may last several years.¹²⁶

7. Water Management Plan(s)

SGMA establishes a framework for groundwater management by local GSAs. SGMA requires local GSAs in critically overdrafted high and medium-priority basins to develop GSPs, or an alternative, by January 31, 2020; all other high- and medium-priority basins must submit their plans by January 21, 2022.¹²⁷ Local GSAs in low and priority basins are not required to submit GSPs.¹²⁸

The plans, evaluated and approved by the California Board of Water Resources for compliance, must include discussion of groundwater quantity and quality, measurable objectives, a description of how the plan helps meet each objective, and other criteria spelled out in § 10727.2 of the Water Code.¹²⁹

8. Regulatory Authorities

California does not have a centralized, comprehensive groundwater management system vested under a single regulatory authority. In California, water rights are determined through adjudication.¹³⁰

¹²⁴ *Id.*

¹²⁵ *Id.*

¹²⁶ *Id.*

¹²⁷ Cal. Water Code § 10720.7.

¹²⁸ *Id.*

¹²⁹ *Id.* § 10727.2.

¹³⁰ *Id.* § 10737.

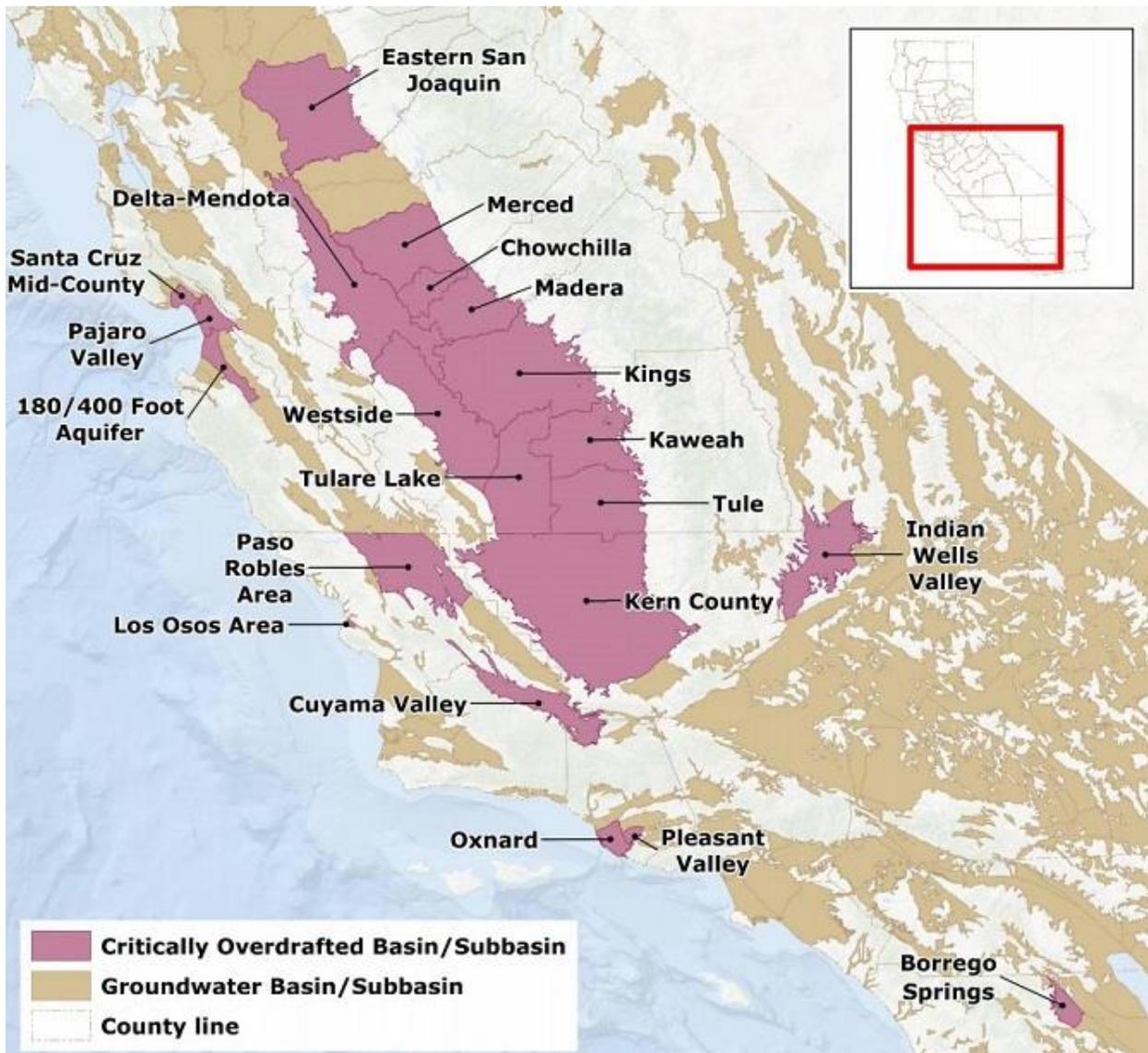


Fig. C.3 Critically Overdrafted Basins in California¹³¹

¹³¹ California Department of Water Resources, Critically Overdrafted Basins, <https://water.ca.gov/programs/groundwater-management/bulletin-118/critically-overdrafted-basins> (last visited 12/24/2021).

Under SGMA, the Department of Water Resources evaluates and approves GSPs submitted by local GSAs.¹³² The GSAs themselves have authority to administer the GSPs within their respective jurisdictions.¹³³ In specific situations, including when a GSA fails to issue a plan for their basin (or their plan is inadequate), the Water Resources Control Board may intervene on behalf of the state to administer the basin.¹³⁴

Through SGMA, the California SWRCB and GSAs jointly regulate well drilling through the imposition of well construction standards.¹³⁵ However, wells are separately licensed by the Contractors State Licensing Board.¹³⁶

The SWRCB regulates aquifer recharge and underground storage through a permitting program.¹³⁷

9. Special Districts

There are 9 Regional Water Boards in California that are semi-autonomous and that regulate surface and groundwater.¹³⁸ Each board “makes critical water quality decisions for its region, including setting standards, issuing [waste-discharge] permits, determining compliance with those requirements, and taking appropriate enforcement actions.”¹³⁹ The following are the regional water boards:

North Coast Regional Water Board (Region 1)

San Francisco Bay Regional Water Board (Region 2)

¹³² *Id.* § 10733.

¹³³ *See generally id.* § 10725-726.9.

¹³⁴ *See generally id.* § 10735-736.6.

¹³⁵ *Id.* § 13801(b); *Id.* § 13801(c).

¹³⁶ *Id.* § 13750.5; *See generally Cal. Groundwater Assn. v. Semitropic Water Storage Dist.*, 178 Cal. App. 4th 1460, 1463-64, 101 Cal. Rptr. 3d 261, 263-64 (5th Dist. 2009).

¹³⁷ California Water Boards: State Water Resources Control Board, *Water Rights for Groundwater Recharge*, https://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/groundwater_recharge/ (last visited Sept. 25, 2021).

¹³⁸ California Water Boards: State Water Resources Control Board, *How do the Water Boards Protect groundwater?*, https://www.waterboards.ca.gov/water_issues/programs/groundwater/protecting_gw.html (last visited Sept. 25, 2021).

¹³⁹ *Id.*

Central Coast Regional Water Board (Region 3)
Los Angeles Regional Water Board (Region 4)
Central Valley Regional Water Board (Region 5)
Lahontan Regional Water Board (Region 6)
Colorado River Basin Regional Water Board (Region 7)
Santa Ana Regional Water Board (Region 8)
San Diego Regional Water Board (Region 9)¹⁴⁰

Additionally, the California legislature has 14 special act districts within the state, each with separately defined local authority to manage groundwater within their jurisdiction:

Orange County Water District¹⁴¹
Santa Clara Valley Water District¹⁴²
Alameda County Flood Control and Water Conservation District, Zone 7¹⁴³
Monterey Peninsula Water Management District¹⁴⁴
Desert Water Agency¹⁴⁵
Mendocino City Community Services District¹⁴⁶
Fox Canyon Groundwater Management Agency¹⁴⁷
Pajaro Valley Water Management Agency¹⁴⁸
Ojai Basin Groundwater Management Agency¹⁴⁹
Mono County Tri-Valley Groundwater Management District¹⁵⁰
Honey Lake Valley Groundwater Management District¹⁵¹

¹⁴⁰ *Id.*

¹⁴¹ Cal. Water Code, App. § 121-102 (West, Westlaw through 2021 Reg. Sess.).

¹⁴² *Id.* § 60-1.

¹⁴³ *Id.* § 55-1.

¹⁴⁴ *Id.* § 40-1.

¹⁴⁵ *Id.* § 100-2.

¹⁴⁶ *Id.* § 54-1.

¹⁴⁷ *Id.* § 121-102.

¹⁴⁸ *Id.* § 124-1.

¹⁴⁹ *Id.* § 131-101.

¹⁵⁰ *Id.* § 128-1.

¹⁵¹ *Id.* § 129-101.

Long Valley Groundwater Management District¹⁵²
Sierra Valley Groundwater Management District¹⁵³
Willow Creek Valley Groundwater Management District¹⁵⁴

10. Transboundary Agreements

California is subject to the Truckee River Operating Agreement (“TROA”). TROA is a settlement agreement concerning water access and usage signed by California, Nevada, the Department of the Interior, the Pyramid Lake Paiute Tribe, and numerous smaller parties.¹⁵⁵ The settlement agreement covers the Lake Tahoe, Truckee River, and Carson River Basins, and includes all natural diversions of water, including groundwater, from the basins.¹⁵⁶ In the Lake Tahoe Basin, the State of California is permitted to divert 23,000 acre-feet per year (“AFY”) including groundwater.¹⁵⁷ In the Truckee River Basin, the State of California is permitted to divert 32,000 AFY including groundwater.¹⁵⁸ The allocations took effect December 2015.¹⁵⁹ There is no definitive end date set for the duration of the TROA, but the agreement has a detailed renewal process that includes a clause that allows for the TROA to be terminated in certain situations where parties cannot agree on adjustment to operations and negotiations fail.¹⁶⁰ Any storage contracts consistent with the Agreement are for a period of 40 years, with the opportunity for renewal.¹⁶¹

¹⁵² *Id.* § 119-101.

¹⁵³ *Id.* § 119-1301.

¹⁵⁴ *Id.* § 135-101.

¹⁵⁵ *Truckee River Operating Agreement*, R-1 (Sept. 2008)
https://www.troa.net/documents/TROA_Sep2008/troa_final_09-08_full.pdf (last visited Sept. 26, 2021).

¹⁵⁶ *Id.* at R-3.

¹⁵⁷ California Water Boards: State Water Resources Control Board, *Lake Tahoe and Truckee River Basins*, https://www.waterboards.ca.gov/waterrights/water_issues/programs/tahoe_truckee/ (last visited Sept. 26, 2021).

¹⁵⁸ *Id.*

¹⁵⁹ *Id.*

¹⁶⁰ *Truckee River Operating Agreement*, § 13.D.5 (Sept. 2008),
https://www.usbr.gov/mp/troa/final/troa_final_09-08_full.pdf (last visited Sept. 25, 2021).

¹⁶¹ *Id.* § 7.A.2(b)(2).

11. Native American Rights

Under California law, tribal entities may join GSAs and participate equally in the planning, financing, and management of applicable groundwater basins so long as such exercise of regulatory authority is pursuant to the Tribe's independent authority.¹⁶² Tribes that are within a GSA's permitting jurisdictions may join that GSA by notifying the GSA in writing as soon as possible.¹⁶³ Tribes may join any of the GSAs that their land is located in and are not restricted to joining only one GSA.¹⁶⁴ GSAs are also required to consider the interests of all beneficial users and users of groundwater when implementing groundwater sustainability programs, including Tribes that overly water rights.¹⁶⁵ Additionally, pursuant to the Water Quality, Supply, and Infrastructure Act of 2014, Tribes are eligible to apply and receive funding for projects that benefit the customers of the water system.¹⁶⁶ Tribes may use their independent sovereign authority to manage their groundwater resources and achieve sustainability goals regardless of whether they participate in a GSA or GSP.¹⁶⁷

In 2017, the Ninth Circuit held that the Agua Caliente Band of Cahuilla Indians possessed an impliedly reserved right to groundwater underneath their reservation in the Coachella Valley in California.¹⁶⁸ The Ninth Circuit based their reasoning on the Winters Doctrine, which holds that federal reserved water rights are directly applicable "to Indian reservations and other [federally declared] enclaves, encompassing water rights in navigable and nonnavigable streams."¹⁶⁹ However, the court clarified that this

¹⁶² Cal. Water Code § 10720.3 (West, Westlaw through 2021 Reg. Sess.).

¹⁶³ California State Water Resources Control Board, *Discussion Questions Relating to Tribal Governments Engagement with Groundwater Sustainability Agencies*, https://water.ca.gov/-/media/DWR-Website/Web-Pages/About/Tribal/Files/Publications/Discussion-Questions-Tribal%20Govt_GSA.pdf (last visited Sept. 25, 2021).

¹⁶⁴ *Id.*

¹⁶⁵ Cal. Water Code § 10723.2 (West, Westlaw through 2021 Reg. Sess.).

¹⁶⁶ *Id.* § 79712.

¹⁶⁷ California State Water Resources Control Board, *Discussion Questions Relating to Tribal Governments Engagement with Groundwater Sustainability Agencies*, https://water.ca.gov/-/media/DWR-Website/Web-Pages/About/Tribal/Files/Publications/Discussion-Questions-Tribal%20Govt_GSA.pdf (last visited Sept. 25, 2021).

¹⁶⁸ *Agua Caliente Band of Cahuilla Indians v. Coachella Valley Water Dist.*, 849 F.3d 1262, 1265 (3d. Cir. 2017).

¹⁶⁹ *Id.* at 1268.

D. Connecticut

Connecticut applies the “rule of capture” or “absolute ownership rule” to its groundwater resources as established under common law.¹ The rule of capture is modified by case law² and regulations related to well-drilling and public trust.

1. Definition, Basis of Rights, Standards, and Interactions

Connecticut law broadly defines water as “waters of the state.”³ This definition includes

“all tidal waters, harbors, estuaries, rivers, brooks, watercourses, waterways, wells, springs, lakes, ponds, marshes, drainage systems and all other surface or underground streams, bodies or accumulations of water, natural or artificial, public or private, which are contained within, flow through or border upon this state or any portion thereof.”⁴

The state defines groundwater in a number of state laws, regulations, and agency guidance. Connecticut law defines “groundwater” as “subsurface water” in well-drilling statutes, but does not define subsurface water further.⁵ While an unofficial definition, the Connecticut Department of Energy & Environmental Protection Agency (“DEEP”), one of the state’s primary water management authorities, defines groundwater as “water, lying below the water table, in the saturated zone” in a glossary of definitions on the agency website.⁶ Another definition for groundwater in Connecticut can be found in

¹ *Roath v. Driscoll*, 20 Conn. 533, 541 (1850).

² *Swift & Co. v. People’s Coal & Oil Co.*, 121 Conn. 579, 588 (1936) (“To deny to a landowner a right to make a certain use of his property because of a mere possibility that the water percolating from it to the land of another may be polluted to the injury of that other would unjustifiably restrict property rights. Unless and until the landowner knows or should know that his use of his land will cause injury to another, he should not be fettered in his right to enjoy it”); see also *Hartford Rayon Corp. v. Cromwell Water Co.*, 126 Conn. 194, 10 A.2d 587 (1940).

³ Conn. Gen. Stat. Ann. § 22a-367 (West, current through the 2019 Dec. Spec. Sess.).

⁴ *Id.*

⁵ Conn. Gen. Stat. Ann. § 25-126 (West, current through the 2019 Dec. Spec. Sess.) (see the definition for purposes of Chapter 482, Well Drilling).

⁶ *Understanding Groundwater Glossary*, Dept. of Energy & Env’tl. Protection, <https://portal.ct.gov/DEEP/Aquifer-Protection-and-Groundwater/Ground-Water/Understanding-Ground-Water/Glossary> (last visited Feb. 13, 2022) (unofficial agency definition).

DEEP's Glossary of Terms for the Aquifer Protection Area Program, which states that groundwater is "water that lies below the surface of the earth, filling the spaces or pores in soil and rock."⁷

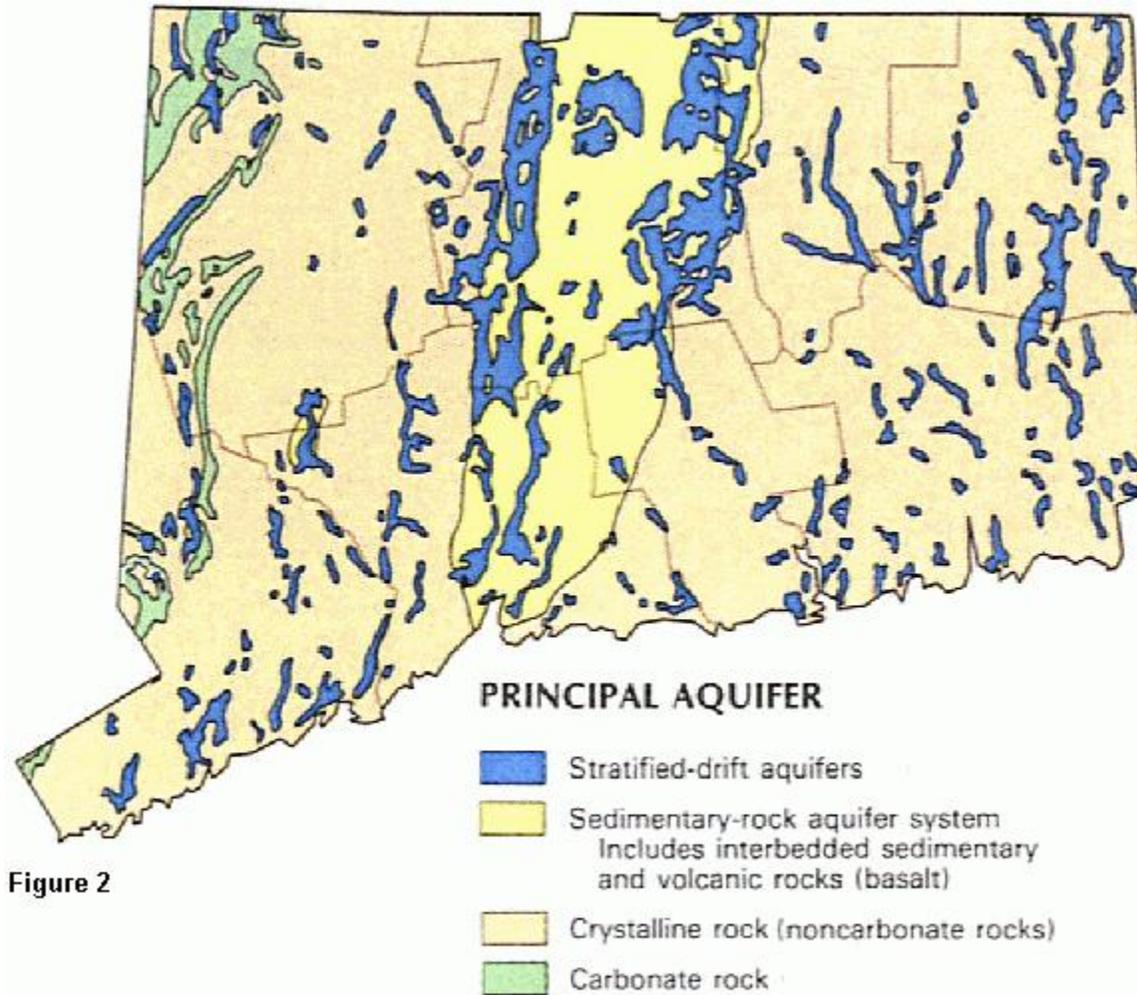


Figure 2

Fig. D.1. Principal Aquifers of Connecticut⁸

⁷ *Aquifer Protection Area Program Glossary*, Dep't of Energy & Env'tl. Protection, https://portal.ct.gov/-/media/DEEP/aquifer_protection/municipal_manual/15Glossarypdf.pdf?la=en (last visited Apr. 7, 2020).

⁸ *Principal Aquifers, Overview of the Ground Water Flow System in Connecticut*, <https://portal.ct.gov/DEEP/Aquifer-Protection-and-Groundwater/Ground-Water/Ground-Water-Flow-System-in-Connecticut> (last visited June 25, 2021).

Connecticut’s State Department of Public Health (“DPH”), another regulatory authority, distinguishes “groundwater” and “groundwater under the direct influence of surface water,” defining the former as “water beneath the surface of the ground . . . that systems pump and treat from aquifers (natural reservoirs below the earth’s surface).”⁹ “Groundwater under the direct influence of surface water” is defined as “any water beneath the surface of the ground with either significant occurrence of insects or other macro-organisms, algae, or large diameter pathogens such as *Giardia lamblia*, or significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to surface water conditions.”¹⁰

Connecticut does not currently have a comprehensive water allocation system in place.¹¹ Rather, it applies the common law “rule of capture” or “absolute ownership rule,”¹² as modified by case law¹³ and regulations for well-drilling and public trust. Connecticut’s rule of capture is derived from the English common law, which began with the case of *Acton v. Blundell*.¹⁴ The Supreme Court of Errors of Connecticut first adopted the rule of capture in *Roath v. Driscoll* in 1850.¹⁵ Under this doctrine, any private landowner takes ownership not only of the land but also the groundwater beneath it.¹⁶ In *Swift & Co. v. People’s Coal and Oil Co.*, the Connecticut Supreme Court of Errors analyzed relevant case law from its own jurisprudence and that of surrounding states to determine that landowners have an absolute right over all groundwater underneath them unless

⁹ *Glossary of Terms*, Dep’t of Pub. Health, https://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/drinking_water/pdf/31icglosstermspdf.pdf (last visited Apr. 7, 2020).

¹⁰ *Id.*

¹¹ *State Water Allocation Report*, Dep’t of Energy & Envtl. Protection, 14, <https://portal.ct.gov/DEEP/Water/Diversions/State-Water-Allocation-Policies-Report> (last visited Apr. 7, 2020).

¹² *Roath v. Driscoll*, 20 Conn. 533, 541 (1850).

¹³ *Swift & Co. v. People’s Coal & Oil Co.*, 121 Conn. 579, 588 (1936). (“To deny to a landowner a right to make a certain use of his property because of a mere possibility that the water percolating from it to the land of another may be polluted to the injury of that other would unjustifiably restrict property rights. Unless and until the landowner knows or should know that his use of his land will cause injury to another, he should not be fettered in his right to enjoy it”); see also *Hartford Rayon Corp. v. Cromwell Water Co.*, 126 Conn. 194, 10 A.2d 587 (1940).

¹⁴ See *Acton v. Blundell*, 12 Mees. & Wels. 324 (1843).

¹⁵ *Roath v. Driscoll*, 20 Conn. 533, 541 (1850).

¹⁶ *Id.*

their actions knowingly cause injury to another.¹⁷ Unless and until a landowner reasonably knows or should know that use of his land may cause injury to another, that owner's right to pump from their well is absolute, even if it pumps his neighbor's well dry.¹⁸

Overlying land ownership dictates groundwater ownership in Connecticut. "Each owner has an equal and complete right to the use of his land, and to the water which is in it."¹⁹ "Water combined with the earth, or passing through it, by percolation, or by filtration, or chemical attraction, has no distinctive character of ownership from the earth itself; not more than the metallic oxides of which the earth is composed."²⁰

Although the absolute ownership rule allows a landowner to pump his neighbor's well dry, it does not allow a landowner to *knowingly* cause injury to another.²¹ Further, courts have analogized gaps in the absolute ownership rule with nuisance law. The *Swift* court stated:

"Because the owner has the right to make an appropriation of all the underground water, and thus prevent its use by another, he has no right to poison it, however innocently, or to contaminate it, so that when it reaches his neighbor's land it is in such a condition as to be unfit for use either by man or beast."²²

The General Assembly enacted the Connecticut Water Diversion Policy Act in 1982, granting limited authority to regulate the withdrawal and use of groundwater and surface waters of the state.²³ The Act included a provision for pre-existing diversions obtained through the rule of capture, allowing them to continue without being subject to new

¹⁷ *Swift & Co. v. People's Coal & Oil Co.*, 121 Conn. 579, 632 (1936).

¹⁸ *Id.* at 633.

¹⁹ *Roath v. Driscoll*, 20 Conn. 533, 541 (1850).

²⁰ *Id.*

²¹ *Swift & Co. v. People's Coal & Oil Co.*, 121 Conn. 579, 592, 629, 634 (1936).

²² *Swift & Co. v. People's Coal & Oil Co.*, 121 Conn. 579, 634 (1936) (quoting Lindley, Lord Justice, in *Ballard v. Tomlinson*, L.R. 29 Ch. Div. 115, 126).

²³ Conn. Gen. Stat. Ann. § 22a-373 (West, current through the 2019 Dec. Spec. Sess.).

regulation.²⁴ Permits are required for groundwater extraction for withdrawals of more than 50,000 gpd,²⁵ and are issued based on water supply needs, effects on existing and planned uses, and impact on fish, wildlife, and recreation. Permits are issued for a maximum duration of 25 years.²⁶

2. Sources of Law

The doctrine of absolute ownership used in Connecticut was derived from the English 1843 case of *Acton v. Blundell*.²⁷ This doctrine was followed by the landmark Connecticut case *Roath v. Driscoll*, in which an excavation made on one person's property affected the water level on his neighbor's land.²⁸ The Connecticut Supreme Court, after finding that the first property owner did not intend to harm his neighbor when he excavated the land, held that he had a right to lawfully excavate his property.²⁹

The court held "each owner has an equal and complete right to the use of his land, and to the water which is in it."³⁰ The court further stated that "water that is combined with the earth, or which passes through it by percolation, filtration, or chemical attraction, has no distinctive character of ownership from the earth itself."³¹

3. Scope of Right

a. Groundwater Ownership

Connecticut General Statute § 22a-15 provides that water and other natural resources

²⁴ Conn. Gen. Stat. Ann. § 22a-368 (West, current through the 2019 Dec. Spec. Sess.).

²⁵ Conn. Gen. Stat. Ann. §§ 22a-369, 22a-377 (West, current through the 2019 Dec. Spec. Sess.) (stating what is required for the application).

²⁶ Conn. Gen. Stat. § 22a-377, *Water Diversion Individual Permits*, Dep't of Energy & Env'tl. Protection, <https://portal.ct.gov/DEEP/Permits-and-Licenses/Factsheets-Inland-Water/Water-Diversion-Fact-Sheet> (last visited Aug. 15, 2020).

²⁷ *Acton v. Blundell*, 12 Mees. & Wels. 324 (1843).

²⁸ *Roath v. Driscoll*, 20 Conn. 533, 540 (1850).

²⁹ *Id.* at 541.

³⁰ *Id.*

³¹ *Id.*

are held in public trust by the state.³² The title of the statutory provision defines this as a “Declaration of policy,” while the statute further asserts “that it is in the public interest to provide all persons with an adequate remedy to protect the air, water and other natural resources from unreasonable pollution, impairment or destruction.”³³ While Connecticut has categorized ‘water’ as a public trust for over forty years, an action plan for water (including groundwater) preservation was not formalized until 2018.³⁴ Nonetheless, the common law doctrine of absolute ownership of groundwater appears to continue to apply,³⁵ and Connecticut legislature and courts have yet to address how the public trust applies to groundwater in the state.³⁶

b. Scope of Use

i. Permitted and Preferred Uses

Although the property owner owns the groundwater under his land, a number of state laws and regulations affect groundwater use.³⁷ Private well owners are responsible for testing the quality of their own drinking water and maintaining their own wells, but local health departments have authority over these wells for proper siting and approval before construction.³⁸ For example, a local health department must test a private well before it can be used for drinking,³⁹ bathing,⁴⁰ or other domestic uses;⁴¹ the state Well Drilling Code requires that wells produce a certain yield;⁴² and local health departments maintain a general authority vested in them from state environmental laws that recognize a general “public trust” in the state’s air, water, and other natural resources.⁴³ Further, the

³² Conn. Gen. Stat. Ann. § 22a-15 (West, current through the 2019 Dec. Spec. Sess.).

³³ *Id.*

³⁴ Dannell Malfoy, Conn. Exec. Order No. 66 (June 14, 2018).

³⁵ *See Roath v. Driscoll*, 20 Conn. 533 (1850).

³⁶ Water Sys. Council, *Who Owns the Water?*, at 23 (2016 ed.).

³⁷ Paul Frisman, *Groundwater Ownership*, Conn. Off. of Legis. Rep. (2005).

³⁸ Conn. Gen. Stat. § 19a-37 (West, current through the 2019 Dec. Spec. Sess.).

³⁹ Conn Gen. Stat. Ann. § 19-13-B88 (West, current through the 2019 Dec. Spec. Sess.).

⁴⁰ Conn. Gen. Stat. Ann. § 19-13-B93 (West, current through the 2019 Dec. Spec. Sess.).

⁴¹ Conn. Gen. Stat. Ann. §§ 19-13-B90–B92, B94 (West, current through the 2019 Dec. Spec. Sess.).

⁴² Conn. Gen. Stat. Ann. § 25-128-39 (West, current through the 2019 Dec. Spec. Sess.).

⁴³ Conn. Gen. Stat. Ann. § 22a-1 (West, current through the 2019 Dec. Spec. Sess.).

Commissioner of Energy and Environmental Protection may “acquire in the name of the state and for the benefit of the public, by purchase, lease, gift, devise or exchange,” waters, or rights in waters, by eminent domain,⁴⁴ “compatible with the functions of the Department of Energy and Environmental Protection.”⁴⁵

The 2018 State Water Plan (“SWP”) does not rule out any type of water use or prioritize one water use above another.⁴⁶ “Likewise, specific uses of water, if currently authorized by state law and regulation, are neither advocated nor diminished relative to other uses.”⁴⁷ The 2018 SWP differentiates between out-of-stream uses, such as removing water from an aquifer or stream or drilling a well (often called “consumptive” water uses), and instream water uses, which refer to water that stays in its natural location, be it geological, recreational, or aesthetic.⁴⁸ Both surface water and groundwater can be instream or out-of-stream.⁴⁹ The state bans uses that might or will pollute both groundwater and surface water.⁵⁰

Although there is no specific hierarchy for purposes of use, there is a special exception for farmers in the Connecticut Well Drilling Code, exempting any “person who constructs a well on his own or leased property, intended for use only for farming purposes on his farm” from obtaining a certificate of registration or permit otherwise required before drilling a well.⁵¹

ii. Location of Use

The location of use for groundwater use is currently not specifically regulated by statute, but groundwater use is still subject to the permitting requirements established in the

⁴⁴ ‘Eminent domain’ is defined in Conn. Gen. Stat. Ann. § 48-12 (West, current through the 2019 Dec. Spec. Sess.).

⁴⁵ Conn. Gen. Stat. Ann. § 22a-25 (West, current through the 2019 Dec. Spec. Sess.).

⁴⁶ Water Sys. Council, *Final Report, Connecticut State Water Plan, ES-8* (2018), [https://www.dropbox.com/s/mcl6x9lf64mxibp/Connecticut State Water Plan_FINAL REPORT.pdf?dl=1](https://www.dropbox.com/s/mcl6x9lf64mxibp/Connecticut%20State%20Water%20Plan_FINAL_REPORT.pdf?dl=1) (last visited Nov. 14, 2020).

⁴⁷ *Id.* at ES-7.

⁴⁸ *Id.* at Terms-7.

⁴⁹ *Id.* at 7-3.

⁵⁰ Conn. Gen. Stat. Ann. § 22a-16 (West, current through the 2019 Dec. Spec. Sess.).

⁵¹ Conn. Gen. Stat. Ann. § 25-123 (West, current through 2019 Dec. Spec. Sess.).

state’s General Statutes. Furthermore, Connecticut currently does not regulate interbasin transfers for groundwater, but does implicitly regulate the interbasin transfer of surface water. Connecticut provides several exemptions to the Water Diversion Policy Act, unless the volume of water transferred meets the thresholds established in the state’s General Statutes that require the user to obtain a permit.⁵² Also, Connecticut’s regulation of bulk water hauling establishes the allowed interbasin transfer of water, subject to the requirements of bulk water hauling, such as obtaining the proper license to haul the water.⁵³

c. Loss of Water Rights

Water rights can be lost through eminent domain.⁵⁴ The Commissioner of Energy and Environmental Protection may “acquire in the name of the state and for the benefit of the public, by purchase, lease, gift, devise or exchange,” waters, or rights in waters, “compatible with the functions with the functions of the Department of Energy and Environmental Protection” by lawful eminent domain action.⁵⁵

4. Well Drilling

Connecticut has statutes and regulations regarding well drilling, which are under the authority of the Connecticut Department of Consumer Protection and the Connecticut Department of Public Health.⁵⁶ The Department of Consumer Protection regulates the location of wells, the depth of wells, yield tests, and other aspects of well drilling.⁵⁷

Connecticut state authorities regulate the registration of well drilling contractors,⁵⁸

⁵² Exemptions from the Connecticut water diversion policy act § 22a-377(b)-1(a)(6)-(a)(9)[8], (2017) accessed at <https://www.cga.ct.gov/2017/rrdata/pr/2017REG2017-007-RC.PDF>.

⁵³ Bulk Water Hauling, Connecticut State Department of Public Health, accessed at <https://portal.ct.gov/DPH/Drinking-Water/DWS/Bulk-Water-Hauling>.

⁵⁴ Conn. Gen. Stat. Ann. § 22a-25 (West, current through the 2019 Dec. Spec. Sess.).

⁵⁵ *Id.*

⁵⁶ Conn. Gen. Stat. Ann. §§ 25-125–137 (West, current through the 2019 Dec. Spec. Sess.); PHC § 19-13-B51(a)-(m).

⁵⁷ Conn. Agencies Reg. § 25-128-33 et seq. (West, current through the 2019 Dec. Spec. Sess.).

⁵⁸ Conn. Gen. Stat. Ann. § 25-129 (West, current through the 2019 Dec. Spec. Sess.).

permits for drilling,⁵⁹ drilling records,⁶⁰ wells for farming purposes,⁶¹ and inspection of water supply wells.⁶² The Department of Public Health approves siting of new water supply wells and establishes standards and minimum well separation distances for sewage disposal and other sources of pollution.⁶³

The Commissioner of the Department of Consumer Protection⁶⁴ promulgates the regulations for the well drilling industry in cooperation with the Department of Public Health and the Department of Energy and Environmental Protection.⁶⁵ Such regulations, together with the regulatory provisions of Chapter 482 of the Connecticut General Statutes and the section of the Public Health Code relating to wells⁶⁶ are collectively known as the Connecticut Well Drilling Code.

5. Hydraulic Connection and Regulation

Hydraulic connection and regulation are not expressly addressed in Connecticut law. However, in the state water plan, all river basins are evaluated for ground and surface water recharge, keeping in mind their interaction.⁶⁷

6. Aquifer Recharge and Underground Storage

Connecticut's Aquifer Protection Area Program ("APAP"), codified in Conn. Gen. Stat. §§ 22a-354a, et seq., was established to help protect against groundwater pollution and

⁵⁹ Conn. Gen. Stat. Ann. § 25-130 (West, current through the 2019 Dec. Spec. Sess.).

⁶⁰ Conn. Gen. Stat. Ann. § 25-131(a), (c) (West, current through the 2019 Dec. Spec. Sess.).

⁶¹ Conn. Gen. Stat. Ann. § 25-132 (West, current through the 2019 Dec. Spec. Sess.).

⁶² Conn. Gen. Stat. Ann. § 19a-37 (West, current through the 2019 Dec. Spec. Sess.).

⁶³ Conn. Pub. Health Code § 19-13-B51 (West, current through the 2019 Dec. Spec. Sess.).

⁶⁴ The Commissioner used to be aided by a Connecticut Well Drilling Board, but the Board lost its jurisdiction in 2018. *See* Conn. Gen. Stat. Ann. § 25-127 (West, current through the 2019 Dec. Spec. Sess.).

⁶⁵ Conn. Gen. Stat. Ann. § 25-128 (b)(1) (West, current through the 2019 Dec. Spec. Sess.).

⁶⁶ Conn. Gen. Stat. Ann. § 19-13-B51(a)-(m) (West, current through the 2019 Dec. Spec. Sess.).

⁶⁷ Water Sys. Council, *Final Report, Connecticut State Water Plan, ES-11* (2018), [https://www.dropbox.com/s/mcl6x9lf64mxibp/Connecticut State Water Plan_FINAL REPORT.pdf?dl=1](https://www.dropbox.com/s/mcl6x9lf64mxibp/Connecticut%20State%20Water%20Plan_FINAL%20REPORT.pdf?dl=1) (last visited Nov. 14, 2020).

ensure aquifer recharge in the state.⁶⁸ While each municipality is required to establish its own ordinances to take part in the program, state law requires the DEEP Commissioner to provide an example ordinance for municipalities to use.⁶⁹ Municipalities in Connecticut are primarily responsible for maintaining state aquifer recharge, however, they share this relationship with DEEP, the APAP, and public water utilities.⁷⁰

Connecticut's APAP has promulgated rules, guidelines, and procedures for each municipality to follow in protecting the state's aquifers.⁷¹ The APAP's primary responsibility is oversight of all approved APA municipalities.⁷² Connecticut law states that each municipality is responsible for appointing its own board or commission to act as its Aquifer Protection Agency.⁷³

The administration of the APAP is aimed at protecting the public water supply and regulating types of land use that could affect the quality and quantity of water in these aquifer protection areas.⁷⁴ Overall, DEEP is still responsible for APAP's administration and ensuring that APAP provides municipalities with the tools they need to better serve the public's groundwater supply.⁷⁵ DEEP also establishes the various land and water

⁶⁸ See Conn. Gen. Stat. Ann. §§ 22a-354a, et seq. (West, current through the 2019 Dec. Spec. Sess.); see also Conn. Dept. of Energy & Env'tl. Protection, Connecticut's Aquifer Protection Area Program: Municipal Manual (2011), https://portal.ct.gov/-/media/DEEP/aquifer_protection/municipal_manual/0IntroAPAMannualpdf.pdf?la=en (last visited Apr. 7, 2020).

⁶⁹ See Conn. Gen. Stat. Ann. § 22a-354l (West, current through the 2019 Dec. Spec. Sess.).

⁷⁰ Conn. Dept. of Energy & Env'tl. Protection, *Aquifer Protection Area Program*, <https://portal.ct.gov/DEEP/Aquifer-Protection-and-Groundwater/Aquifer-Protection/Aquifer-Protection-Program> (last visited Apr. 7, 2020).

⁷¹ Conn. Gen. Stat. Ann. § 22a-354o (West, current through the 2019 Dec. Spec. Sess.).

⁷² Conn. Dept. of Energy & Env'tl. Protection, Connecticut's Aquifer Protection Area Program: Municipal Manual (2011), at 1, https://portal.ct.gov/-/media/DEEP/aquifer_protection/municipal_manual/0IntroAPAMannualpdf.pdf?la=en (last visited Apr. 7, 2020).

⁷³ Conn. Gen. Stat. Ann. § 22a-254o(a) (West, current through the 2019 Dec. Spec. Sess.).

⁷⁴ Conn. Dept. of Energy & Env'tl. Protection, *Aquifer Protection Area Program*, <https://portal.ct.gov/DEEP/Aquifer-Protection-and-Groundwater/Aquifer-Protection/Aquifer-Protection-Program> (last visited Apr. 7, 2020).

⁷⁵ *Id.*

use regulations that are then enforced through the APAP on the municipal level.⁷⁶ An interactive map of all of the various aquifer distinctions can be found at: <https://ctdeep.maps.arcgis.com/apps/webappviewer/index.html?id=6b33fc05fccc4c5286fafae1b2cccbbfb>.

7. Water Management Plan(s)

Connecticut and its Water Planning Council (WPC) are required by statute to prepare the SWP.⁷⁷ The WPC started preparing the first comprehensive SWP in 2017⁷⁸, and submitted that plan for approval to the General Assembly and the Governor in January 2018.⁷⁹ Growing debate surrounding the inclusion of Public Trust language halted approval of the plan by the General Assembly,⁸⁰ but an executive order issued by the Governor on June 14, 2018, ordered state agencies to immediately begin implementing the SWP as originally drafted regardless of the legislature's inaction.⁸¹ The order directed the WPC to resubmit by December 1, 2018, the State Water Plan as originally sent to the General Assembly in January 2018 for its review and approval.⁸² Governor Malloy's order left intact the "water is a public trust" language that was the subject of contention by the legislature.⁸³ The WPC is recommended to update the plan every five years and to advise the state legislature of any planned updates at least two years in advance.⁸⁴

⁷⁶ *Id.*

⁷⁷ Conn. Gen. Stat. Ann. § 22a-352 (West, current through the 2019 Dec. Spec. Sess.); *See* Water Sys. Council, *Final Report, Connecticut State Water Plan* (2018), at [https://www.dropbox.com/s/mcl6x9lf64mxibp/Connecticut State Water Plan_FINAL REPORT.pdf?dl=1](https://www.dropbox.com/s/mcl6x9lf64mxibp/Connecticut%20State%20Water%20Plan_FINAL_REPORT.pdf?dl=1) (last visited Apr. 7, 2020).

⁷⁸ Water Sys. Council, *Final Report, Connecticut State Water Plan* (2018), [https://www.dropbox.com/s/mcl6x9lf64mxibp/Connecticut State Water Plan_FINAL REPORT.pdf?dl=1](https://www.dropbox.com/s/mcl6x9lf64mxibp/Connecticut%20State%20Water%20Plan_FINAL_REPORT.pdf?dl=1) (last visited Apr. 7, 2020).

⁷⁹ Conn. Gen. Stat. Ann. § 22a-352 (West, current through the 2019 Dec. Spec. Sess.).

⁸⁰ Dannell P. Malloy, *Gov. Malloy Signs Order Implementing the State Water Plan* (June 2018), <https://portal.ct.gov/Malloy-Archive/Press-Room/Press-Releases/2018/06-2018/Gov-Malloy-Signs-Order-Implementing-the-State-Water-Plan>.

⁸¹ Dannell P. Malloy, *Conn. Exec. Order No. 66* (June 14, 2018).

⁸² *Id.*

⁸³ *Id.*

⁸⁴ Water Sys. Council, *Final Report, Connecticut State Water Plan* (2018), at 5-22, accessed at [https://www.dropbox.com/s/mcl6x9lf64mxibp/Connecticut State Water Plan_FINAL](https://www.dropbox.com/s/mcl6x9lf64mxibp/Connecticut%20State%20Water%20Plan_FINAL)

8. Regulatory Authorities

Connecticut's WPC, charged with oversight and regulatory responsibility of water management in the state, is comprised of four state agencies: Public Utilities Regulatory Authority, Office of Policy and Management, DEEP, and DPH.⁸⁵ The organic statute creating the WPC states that the WPC will work in conjunction with representatives from municipalities to report on, among other things, water quantity and water quality.⁸⁶

Connecticut's Department of Energy & Environmental Protection (DEEP) can be accessed here: <http://www.ct.gov/deep>. DEEP is the primary keyholder for most of the state's groundwater regulations and administration. It is responsible for managing the Connecticut's groundwater protection programs, and for maintaining the "sound environmental quality" of groundwater in the state.⁸⁷ DEEP works with municipalities in permitting and monitoring through the joint aquifer protection program.⁸⁸

Connecticut's Department of Public Health (DPH) can be accessed here: <http://www.portal.ct.gov/dph>. DPH works in a primarily supplementary role to DEEP as many of their functions overlap regarding water regulations.⁸⁹ DPH has specific responsibilities for protecting and regulating public water supplies and water quality—some of the responsibilities are delegated to the water utilities or to local or regional health districts under DPH oversight.⁹⁰

Connecticut's Department of Consumer Protection (DCP) can be accessed here:

[REPORT.pdf?dl=1](#) (last visited Apr. 7, 2020).

⁸⁵ Conn. Gen. Stat. Ann. § 25-33o (West, current through the 2019 Dec. Spec. Sess.).

⁸⁶ *Id.*

⁸⁷ Conn. Gen. Stat. Ann. § 22a-426 (West, current through the 2019 Dec. Spec. Sess.); *see also* http://www.ct.gov/deep/lib/deep/aquifer_protection/groundwater/protectingconnecticutsgroundwater_m ainsections.pdf.

⁸⁸ Conn. Dept. of Energy & Env'tl. Protection, Connecticut's Aquifer Protection Area Program: Municipal Manual (2011), at 1, https://portal.ct.gov/-/media/DEEP/aquifer_protection/municipal_manual/0IntroAPAManualpdf.pdf?la=en (last visited Jan. 21, 2021).

⁸⁹ *Id.*

⁹⁰ Conn. Water Planning Council, *Water Management*, <https://ct.gov/water/cwp/view.asp?a=4801&q=574960> (last visited Apr. 7, 2020).

<http://www.ct.gov/dcp>. The DCP’s primary concerns help with water quality and protecting public health.

Municipalities permit and monitor through land use activities in certain aquifer areas to protect existing and future groundwater supplies.⁹¹

9. Special Districts

DEEP has eight designated basins in Connecticut, which are broken down into forty-four regional basins, 337 sub-regional basins, 2,898 local basins, and 7,067 small drainage basins.⁹² Each of the eight designated basins was evaluated for water availability that included potential groundwater recharge, but otherwise are mostly for purposes of surface water regulation.⁹³ The eight designated basins include:

1. Pawcatuck River
2. Southeast Coast
3. Thames River
4. Connecticut River
5. South Central Coast
6. Housatonic River
7. Southwest Coast
8. Hudson River⁹⁴

Connecticut does not have any critical groundwater management areas, but DEEP has designated what it calls “aquifer protection areas” or “wellhead protection areas”; a term describing “127 active well fields in eighty towns in Connecticut in sand and gravel aquifers that serve more than 1,000 people.”⁹⁵

⁹¹ Conn. Gen. Stat. Ann. § 25-33o (West, current through the 2019 Dec. Spec. Sess.), Conn. Dept. of Energy & Env’tl. Protection, Connecticut’s Aquifer Protection Area Program: Municipal Manual (2011), at 1, https://portal.ct.gov/-/media/DEEP/aquifer_protection/municipal_manual/0IntroAPAManualpdf.pdf?la=en (last visited Jan. 21, 2021).

⁹² Conn. Env’tl. Conditions Online, *Local Drainage Basins*, https://cteco.uconn.edu/guides/Local_Basin.htm (last visited Apr. 7, 2020).

⁹³ Water Sys. Council, *Final Report, Connecticut State Water Plan* (2018) ES-11, [https://www.dropbox.com/s/mcl6x9lf64mxibp/Connecticut State Water Plan_FINAL REPORT.pdf?dl=1](https://www.dropbox.com/s/mcl6x9lf64mxibp/Connecticut%20State%20Water%20Plan_FINAL_REPORT.pdf?dl=1) (last visited Jan. 6, 2021).

⁹⁴ Conn. Env’tl. Conditions Online, *Major Basins*, https://cteco.uconn.edu/guides/Major_Basin.htm (last visited March 25 2022).

⁹⁵ Conn. Water Planning Council, *Water Management*, <https://ct.gov/water/cwp/view.asp?a=4801&q=574960> (last visited Apr. 7, 2020).

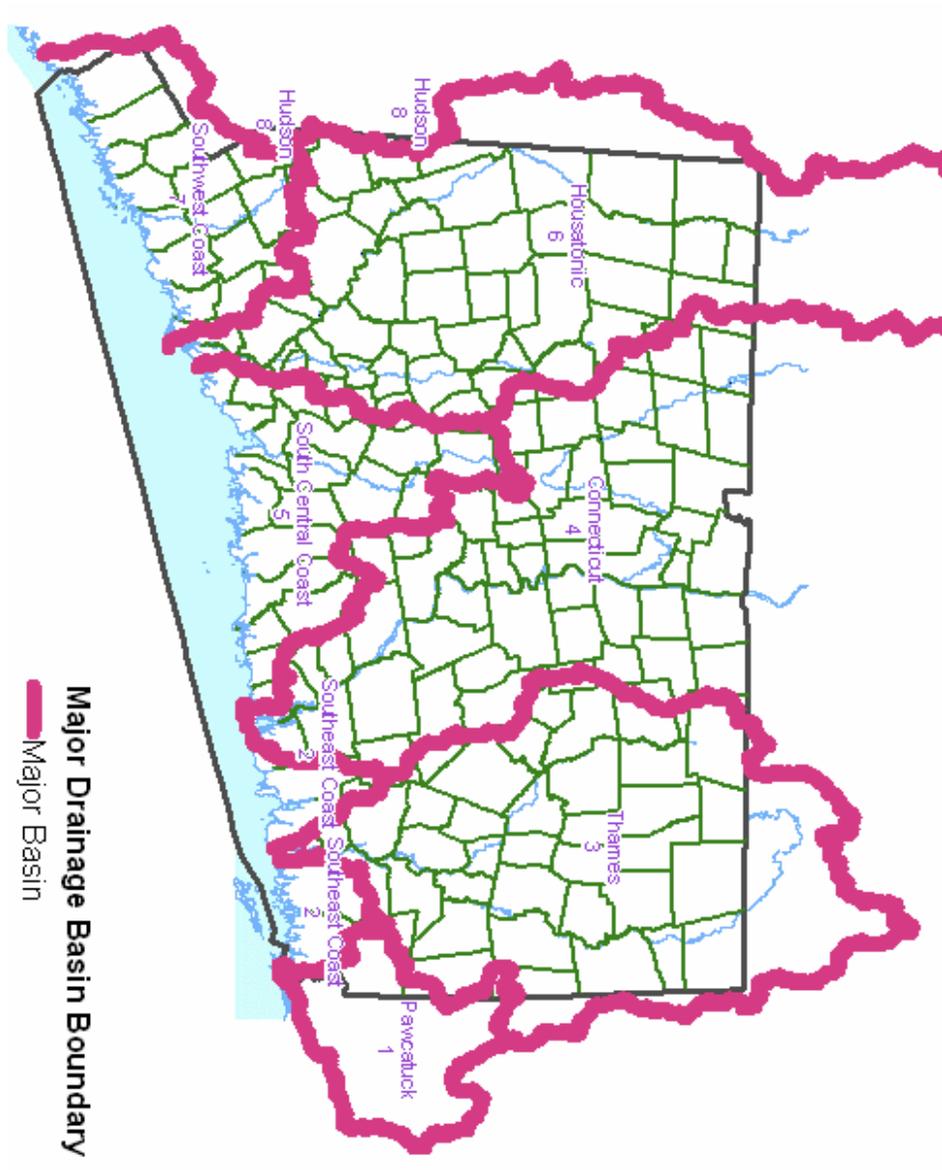


Fig. D.2. Major Drainage Basins in Connecticut⁹⁶

⁹⁶ Connecticut Environmental Conditions Online, Major Drainage Basins, https://cteco.uconn.edu/guides/Major_Basin.htm (last visited March 25 2022).

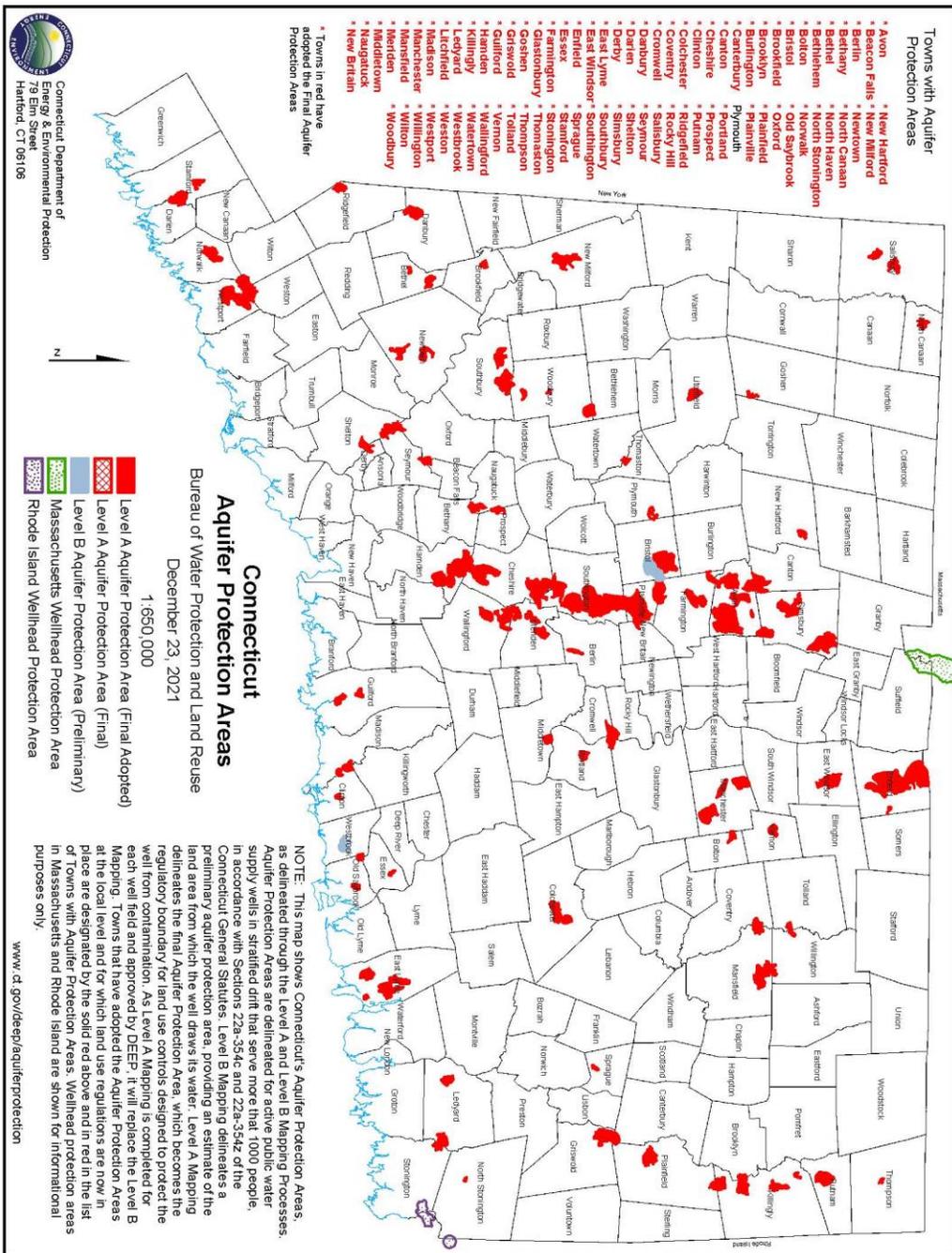


Fig. D.3. Connecticut Aquifer Protection Areas⁹⁷

⁹⁷ Connecticut Department of Energy and Environmental Protection, Connecticut Aquifer Protection Areas, <http://cteco.uconn.edu/maps/state/stateAPA.pdf> (last visited March 25 2022).

10. Transboundary Arrangements

Connecticut is not party to any interstate or transboundary agreement or arrangement or transboundary conflicts related to groundwater resources.

11. Native American Rights

Connecticut recognizes five Native American nations within its borders. Connecticut has not granted any exemptions, benefits, or concessions to Native American Tribes pertaining to groundwater resources.⁹⁸

⁹⁸ Christopher Reinhart, *Connecticut Law on Indian Tribes*, Conn. Off. of L. Res. (2007), <https://www.cga.ct.gov/2007/rpt/2007-R-0475.htm> (last visited Apr. 6, 2020).

E. Idaho

Idaho follows the prior appropriation doctrine.¹ Idaho administers water rights based on their relative priorities: the first in time is first in right.² Water rights in Idaho may only be acquired “under an application, permit, and licensing procedure” detailed in the applicable Idaho statute.³ However, if groundwater will be used for a “domestic purpose,” a permit or license is not required.⁴ A water right in Idaho is a legal right to the use of water for beneficial purposes.⁵

1. Definition, Basis of Rights, Standards, and Interactions

Idaho defines “ground water” as “all water under the surface of the ground whatever may be the geological structure in which it is standing or moving.”⁶ A “ground water user” is the “legal or beneficial owner of a ground water right, or the user of a ground water right pursuant to lease or contract of a ground water right to divert ground water . . . for a beneficial use of purpose, except for those diverting under rights used solely for domestic or stock use.”⁷

Idaho classifies groundwater by its temperature. A “low temperature geothermal resource” is “ground water [that has] a temperature greater than eighty-five degrees Fahrenheit and less than two hundred twelve degrees Fahrenheit in the bottom of a well.”⁸ “Ground water [that has] a temperature of two hundred twelve degrees Fahrenheit or more in the bottom of a well [is] classified as a geothermal resource.”⁹ The term “geothermal resource” is defined as:

the natural heat energy of the earth, the energy, in whatever form, which

¹ IDAHO CONST. art. XV, § 3.

² *Id.*; IDAHO CODE ANN. § 42-106 (2021).

³ *Id.* at § 42-103.

⁴ *Id.* at § 42-227.

⁵ *Id.* at § 42-230(e).

⁶ *Id.*

⁷ *Id.* at § 42-5201(8).

⁸ *Id.* at § 42-230(a)(1).

⁹ *Id.* at § 42-4002(c); *see also id.* at § 42-230(a)(2).

may be found in any position and at any depth below the surface of the earth present in, resulting from, or created by, or which may be extracted from such natural heat, and all minerals in solution or other products obtained from the material medium of any geothermal resource.¹⁰

A “well” is defined as “an artificial excavation or opening in the ground more than eighteen feet in vertical depth below land surface by which groundwater of any temperature is sought or obtained.”¹¹ Additionally, an “artesian well” is “any well . . . which encounters pressurized groundwater or low temperature geothermal resource under sufficient head to rise above the elevation at which it was first encountered whether or not the fluid flows at land surface. If the fluid level stands above land surface, the well is a flowing artesian well.”¹²

An “injection well” is:

any feature that is operated to allow injection which also meets at least one of the following criteria: (a) a bored, drilled or driven shaft whose depth is greater than the largest surface dimension; (b) a dug hole whose depth is greater than the largest surface dimension; (c) an improved sinkhole; or (d) a subsurface fluid distribution system.¹³

“Well drilling” is “the act of constructing a new well or deepening or modifying an existing well by any percussion, rotary, boring, digging, jetting, or augering method.”¹⁴ A “well driller” is “any person or group of persons who excavate or open a well or wells for compensation or otherwise upon the land of the well driller or upon other land.”¹⁵ The definition of “well driller,” however, “does not include those persons who construct a well on their own property for their own use without the aid of any power driven mechanical equipment.”¹⁶

¹⁰ *Id.* at § 42-4002(c).

¹¹ IDAHO CODE § 42-230(b).

¹² *Id.* at § 42-1604.

¹³ *Id.* at § 42-3902(10).

¹⁴ *Id.* at § 42-230(d).

¹⁵ *Id.* at § 42-230(c).

¹⁶ *Id.*

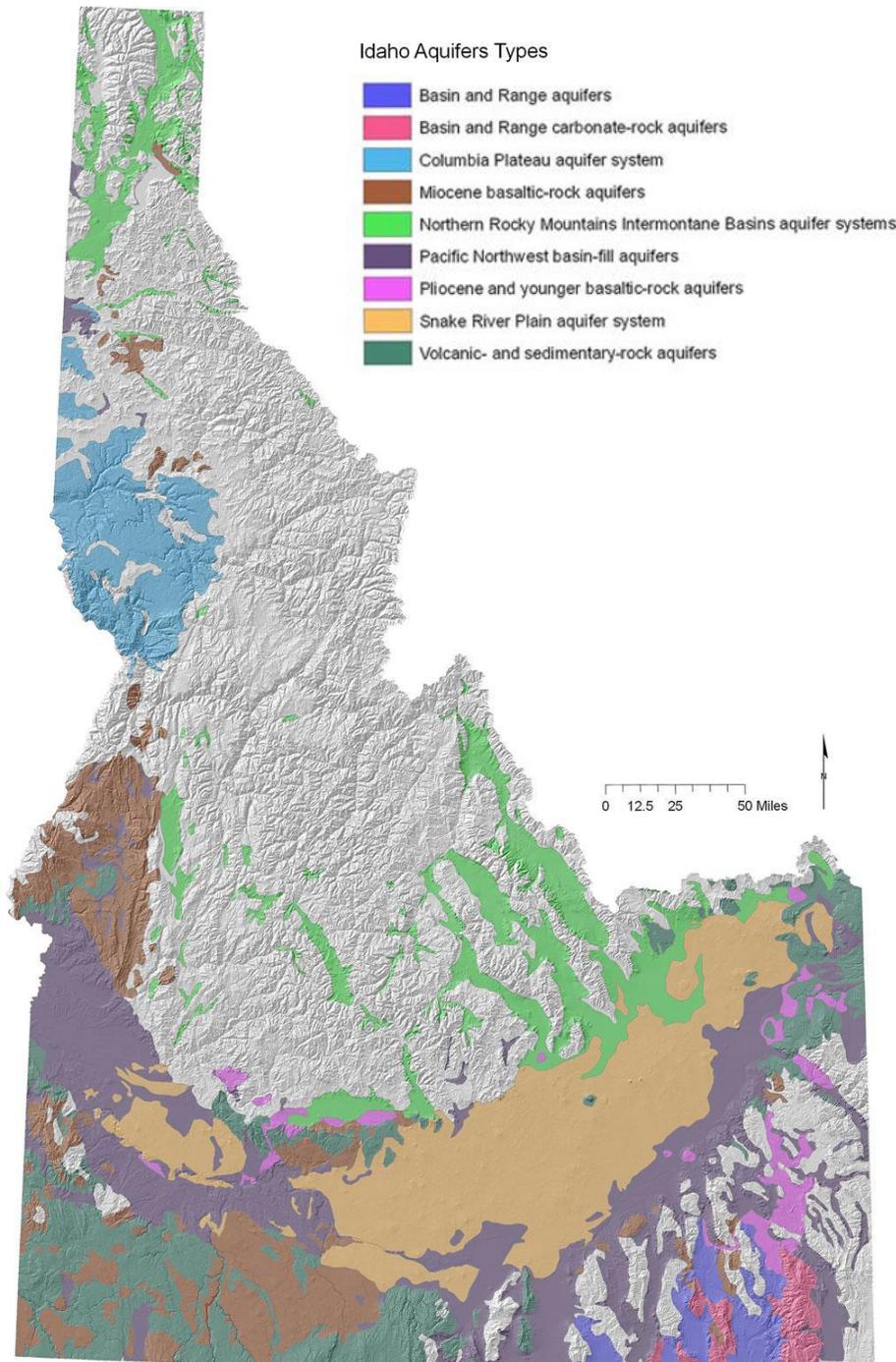


Fig. E.1 Aquifers Types in Idaho¹⁷

¹⁷ *Snake River Plain Aquifer*, DIGIT. GEOLOGY OF IDAHO, https://digitalgeology.aws.cose.isu.edu/Digital_Geology_Idaho/Module15/mod15.htm (last visited Jan.

The terms “domestic purposes” or “domestic uses” are defined as (a) “[t]he use of water for homes, organization camps, public campgrounds, livestock and for any other purpose in connection therewith, including irrigation of up to one-half acre of land, if the total use is not in excess of thirteen thousand gallons per day, or (b) “[a]ny other uses, if the total use does not exceed a diversion rate of four one-hundredths cubic feet per second and a diversion volume of twenty-five hundred gallons per day.”¹⁸ Persons whose groundwater use falls within these statutory definitions of “domestic purposes” are not required to obtain a permit or license.¹⁹

Idaho’s water code defines the term “department” to mean the Idaho Department of Water Resources (often referred to as “IDWR”).²⁰ The term “director” is defined to mean the Director of the Idaho Department of Water Resources.²¹ IDWR has authority over water quantity related issues in Idaho, including the approval and administration of surface and groundwater rights.

The Idaho Water Resource Board (“IWRB”) is separate from the Idaho Department of Water Resources, although IDWR provides it with administration and staff support. IWRB’s functions are divided into three general categories: comprehensive state water planning, water management activities, and financial programs.

Idaho recognizes permits, licenses, and decreed water rights in its water rights regime.²² To obtain a license, a valid water right, a person must first apply for a permit to appropriate water from the IDWR.²³ When the user shows that they are using the water in accordance with the terms of the permit and applying the water to a beneficial use, the IDWR issues a license.²⁴ A decreed right is equivalent to a license, but pertains to

10, 2022).

¹⁸ *Id.* at §§ 42-111(1)(a)-(b).

¹⁹ *Id.* at § 42-227.

²⁰ *Id.* at § 42- 4002(a).

²¹ *Id.* at § 42- 4002(b).

²² *A Water Users Information Guide*, IDAHO DEP’T OF WATER RES., <https://binghamgroundwater.com/wp-content/uploads/2019/07/water-users-information-guide-1.pdf> (last visited Jan. 10, 2022).

²³ *Id.*

²⁴ *Id.*

water rights that predate the permit/license statutory system and requires the water rights holder to have their water right judicially validated.²⁵

Idaho follows the prior appropriation doctrine administered through a permit and licensing system,²⁶ basing water rights on the beneficial use and diversion of water.²⁷ Appropriators must, however, maintain reasonable groundwater pumping levels, which are determined by the director of the Department of Water Resources (the Director).²⁸

Idaho's constitution authorizes appropriations from "natural streams," but does not mention groundwater.²⁹ Nonetheless, nine years after statehood, Idaho's Legislature asserted its authority over "subterranean waters," and declared that they were subject to appropriation.³⁰ The Idaho Code now expressly states that "[a]ll ground waters in this state are declared to be the property of the state, whose duty it shall be to supervise their appropriation and allotment to those diverting the same for beneficial use."³¹

The surface and groundwater resources in Idaho are owned by the people of Idaho.³² Although a water right is a property right, the owner does not own the water itself. The owner merely owns the right to use the water for a specific beneficial purpose consistent with various conditions and constraints. The water remains "impressed with the public trust to apply it to a beneficial use."³³ Water rights, therefore, often are described as "usufructuary," meaning a right to use a thing, not ownership of the thing itself. Perfected usufructuary rights are nevertheless property rights—a type of real property.³⁴

²⁵ *Id.*

²⁶ IDAHO CODE § 42-106.

²⁷ *Id.* at § 42-1502(a); *id.* at § 42-226; *see also Terminology*, IDAHO DEP'T OF WATER RES., <https://idwr.idaho.gov/about-idwr/terminology/> (last visited Jan. 10, 2022).

²⁸ IDAHO CODE § 42-226.

²⁹ *Id.*

³⁰ *See* 1899 Sess. Laws 380 (codified at IDAHO CODE 42-103); IDAHO CODE § 42-101.

³¹ IDAHO CODE § 42-226.

³² *Poole v. Olaveson*, 356 P.2d 61, 64 (Idaho 1960).

³³ *Wash. Cnty. Irrigation Dist. v. Talboy*, 43 P.2d 943, 945 (Idaho 1935); *see also Glavin v. Salmon River Canal Co.*, 258 P. 532, 534 (Idaho 1927); *Am. Falls Reservoir Dist. No. 2 v. Idaho Dep't of Water Res.*, 154 P.3d 433 (Idaho 2007) (Trout, J.).

³⁴ IDAHO CODE § 55-101(1) (definition of real property); *Reno v. Richards*, 178 P. 81 (Idaho 1918); *In re: Robinson*, 103 P.2d 693 (Idaho 1940); *Anderson v. Cummings*, 340 P.2d 1111, 1115 (Idaho 1959);

Idaho administers water rights based on their relative priorities, such that “[a]s between appropriators, the first in time is first in right.”³⁵ According to the IDWR, “the appropriation doctrine has also been called ‘first in time is first in right’ because the priority date determines who gets water when there is a shortage.”³⁶ Today, the “right to the use of the unappropriated waters of rivers, streams, lakes, springs, and of subterranean waters or other sources” in Idaho are “acquired only by appropriation under the application, permit and license procedure as provided for” in Title 42 of the Idaho Code.³⁷

Prior to 1963,³⁸ groundwater could be appropriated under the so-called “constitutional method” by simply diverting the water and putting it to beneficial use, without undertaking any application, permit or license procedures.³⁹ However, groundwater rights that were established by diversion and application to beneficial use before 1963 remain valid and retain their seniority as to later-established water rights.⁴⁰

Water rights in Idaho currently may be acquired only under an application, permit, and licensing procedure.⁴¹ Since 1963, the application, permit, and license procedure has been mandatory for groundwater rights.⁴² The filing of an application for appropriation secures the applicant’s priority date as of the date of filing.⁴³ Chapter 2 of Title 42, Idaho Code, details the application, permit, and license procedures.

Crow v. Carlson, 690 P.2d 916 (Idaho 1984).

³⁵ IDAHO CONST. art. XV, § 3; IDAHO CODE § 42-106.

³⁶ *Terminology*, IDAHO DEP’T OF WATER RES., <https://idwr.idaho.gov/about-idwr/terminology/> (last visited Jan. 10, 2022).

³⁷ IDAHO CODE §§ 42-103 & 229.

³⁸ 1963 Idaho Sess. Laws, ch. 216 (codified at IDAHO CODE § 42-229) (effective March 25, 1963).

³⁹ *Sand Point Water & Light Co. v. Panhandle Dev. Co.*, 83 P. 347, 349 (Idaho 1905); *Olson v. Bedke*, 555 P.2d 156, 160-61 (Idaho 1976); *State v. United States*, 996 P.2d 806 (Idaho 2000) (“Smith Springs” case).

⁴⁰ IDAHO CODE §§ 42-201 & 229.

⁴¹ *Id.* at § 42-103.

⁴² 1963 Idaho Sess. Laws, ch. 216 (codified at IDAHO CODE § 42-229) (effective March 25, 1963).

⁴³ IDAHO CODE § 42-204.

A person seeking to use groundwater must first apply for a water rights permit from IDWR.⁴⁴ After an application for permit is submitted to IDWR, the agency publishes notice of the application in the local newspaper or newspaper of general circulation in the area, and on the agency's website.⁴⁵ Any person, firm, association, or corporation may protest the application,⁴⁶ which initiates a hearing procedure to determine whether the application should be approved.⁴⁷

Regardless of whether an application is protested, IDWR considers seven criteria when determining whether to approve or deny a permit application.⁴⁸ These are:

- (a) whether it will reduce the quantity of water under existing water rights;
- (b) whether the water supply itself is insufficient for the purpose for which it is sought to be appropriated;
- (c) whether it appears to the satisfaction of the director that such application is not made in good faith, is made for delay or speculative purposes;
- (d) whether the applicant has not sufficient financial resources with which to complete the work involved therein;
- (e) whether it will conflict with the local public interest as defined in section 42-202B, Idaho Code;
- (f) whether it is contrary to conservation of water resources within the state of Idaho; and
- (g) whether that it will adversely affect the local economy of the watershed or local area within which the source of water for the proposed use originates, in the case where the place of use is outside of the watershed or local area where the source of water originates.⁴⁹

In addition to the standard criteria, applications for certain groundwater uses have additional requirements. If the application proposes a large irrigation project diverting groundwater for 5,000 or more acres, or a total volume in excess of 10,000 acre-feet per

⁴⁴ *Id.* at § 42-202.

⁴⁵ *Id.* at §§ 42-203A(1)-(3).

⁴⁶ *Id.* at § 42-203A(4).

⁴⁷ *Id.* at §§ 42-203A(4)-(5); *see* IDAHO ADMIN. CODE r. 37.01.01 (2021); *see also* IDAHO ADMIN. CODE r. 37.03.08.

⁴⁸ IDAHO CODE § 42-203A(5).

⁴⁹ *Id.* at § 42-203A(5); *see also* IDAHO ADMIN. CODE r. 37.03.08.

year, to a different basin, the application must be approved by IDWR and the Idaho Legislature, each of which “shall give due consideration to the local economic and ecological impact of the project or development so proposed.”⁵⁰

To divert and use low temperature geothermal resources, appropriators are required to use the resource primarily for heat value and only secondarily for its value as water.⁵¹

If an appropriation application is approved and a permit issued, the holder of the permit is authorized to divert and use water under the terms of the permit.⁵² A water right permit is considered to be personal property.⁵³

After a certain period of time specified in the permit, generally not to exceed five years,⁵⁴ the permit holder must submit proof of beneficial use according to the terms of the permit.⁵⁵ A field survey is then conducted by IDWR or a certified water right examiner retained by the water right holder.⁵⁶ A field examination consists of “[a]n on-site inspection or investigation to determine the extent of application of water to beneficial use and to determine compliance with terms and conditions of the water right permit.”⁵⁷ The examiner will produce a field exam report in accordance with the specifications provided in the Idaho Administrative Code.⁵⁸

After inspecting the field exam report and all other evidence in relation to the proof of beneficial use, IDWR will issue a license corresponding to the actual beneficial use “if the department is satisfied that the law has been fully complied with and that the water is being used at the place claimed and for the purpose for which it was originally

⁵⁰ IDAHO CODE § 42-226.

⁵¹ *Id.* at § 42-233(1).

⁵² *Id.* at § 42-204(2).

⁵³ *Big Wood Canal Co. v. Chapman*, 263 P. 45, 52 (Idaho 1927); *Hardy v. Higginson*, 849 P.2d 946, 951 (Idaho 1993).

⁵⁴ IDAHO CODE § 42-204(3) (extensions are available).

⁵⁵ *Id.* at § 42-217.

⁵⁶ *Id.* at § 42-217(2).

⁵⁷ IDAHO ADMIN. CODE r. 37.03.02.010(11) (2021).

⁵⁸ *Id.* at 37.03.02.035.

intended.”⁵⁹ The priority date of the license relates back to the date of the application for the permit.⁶⁰ A licensed water right is real property “appurtenant to . . . the land for which the right of use is granted.”⁶¹ At this point, the license supersedes the permit and the applicable water right is the license, not the permit.⁶²

An important exception to the application, permit, and license procedure required to obtain a groundwater right concerns wells drilled for “domestic purposes.”⁶³ Persons whose groundwater use falls within the statutory definitions of “domestic purposes” in Idaho Code § 42-111 are not required to obtain a permit or license.⁶⁴ They may simply construct a well without filing any application or other notice with IDWR, except for obtaining authorization to drill the well.⁶⁵ Although unrecorded, these rights are bona fide water rights with priority dates that can be administered. These rights are first decreed through an adjudication to establish their priority and other elements and then the rights are administered.

The maximum amount of water that can be put to beneficial use is the amount authorized under the water right.⁶⁶ “It is unlawful for any person to divert or use water from a natural watercourse or from a ground water source without having obtained a valid water right to do so, or to divert or use water not in conformance with a valid water right.”⁶⁷ IDWR may issue a written notice of violation to a person illegally diverting or using water, or “may file an action seeking injunctive relief directing the person to cease and desist the activity or activities alleged to be in violation of applicable law or any existing water right.”⁶⁸

⁵⁹ IDAHO CODE § 42-219; Telephone Interview with Tim Luke, Water Compliance Bureau Chief, Idaho Dep’t of Water Res. (July 7, 2020).

⁶⁰ IDAHO CODE § 42-219(4).

⁶¹ *Id.* at § 42-220; *see also id.* at § 55-101.

⁶² *Id.* at § 42-220; *see also id.* at § 55-101.

⁶³ *Id.* at § 42-227.

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ *Id.* at § 42-219; *see Terminology*, IDAHO DEP’T OF WATER RES., <https://idwr.idaho.gov/about-idwr/terminology/> (last visited Jan. 10, 2022).

⁶⁷ IDAHO CODE § 42-351(1).

⁶⁸ *Id.* at §§ 42-351(3)-(4).

If the water appropriated is no longer used for a beneficial use, the right terminates.⁶⁹ “Neither the Idaho Constitution, nor statutes, permit irrigation districts and individual water right holders to waste water or unnecessarily hoard it without putting it to some beneficial use.”⁷⁰

Although there are some exceptions,⁷¹ a water right is subject to being forfeited “by a failure for the term of five years to apply it to the beneficial use for which it was appropriated and when any right to the use of water shall be lost through nonuse or forfeiture such rights to such water shall revert to the state and be again subject to appropriation.”⁷²

Idaho is a pure prior appropriation state. Today, water rights can be established only by following the application, permit, and license procedures set forth in statutes.⁷³ However, prior to 1963 groundwater⁷⁴ water rights also could be established by diverting water and applying it to a beneficial use.⁷⁵ This historical do-it-yourself approach is sometimes referred to as the “constitutional method” of appropriation, referencing the recognition that even without specific statutory authorization, appropriations are lawful under the Idaho Constitution.⁷⁶ Although unrecorded, these rights are bona fide water rights with priority dates. Before the water rights are administered, the rights are decreed through an adjudication process. This adjudication must be requested by the holder of the claimed right⁷⁷ and establishes priority and other elements that define the water right.

⁶⁹ *Id.* at § 42-104.

⁷⁰ *Am. Falls Reservoir Dist. No. 2 v. Idaho Dep’t of Water Res.*, 154 P.3d 433, 451 (Idaho 2007).

⁷¹ IDAHO CODE § 42-223.

⁷² *Id.* at § 42-222(2).

⁷³ *Id.* at § 42-103.

⁷⁴ 1963 Idaho Sess. Laws, ch. 216 (codified at IDAHO CODE § 42-229) (effective March 25, 1963).

⁷⁵ *Sand Point Water and Light Co. v. Panhandle Dev. Co.*, 83 P. 347, 349 (Idaho 1905); *Olson v. Bedke*, 555 P.2d 156, 160-61 (Idaho 1976); *State v. United States*, 996 P.2d 806 (Idaho 2000) (“Smith Springs” case).

⁷⁶ IDAHO CONST. art. XV, § 3.

⁷⁷ IDAHO CODE § 42-1404.

2. Sources of Law

The Idaho Code is the primary source of law for the groundwater allocation system, specifically Title 42 of the Idaho Code. Additionally, Title 37 of the Idaho Administrative Code provides regulations for the Department of Water Resources and the management of water resources.

3. Scope of Right

a. Groundwater Ownership

In Idaho, groundwater is owned by the people of the state.⁷⁸ “All ground waters in this state are declared to be the property of the state, whose duty it shall be to supervise their appropriation and allotment to those diverting the same for beneficial use.”⁷⁹ Even when groundwater has been appropriated it remains “impressed with the public trust to apply it to a beneficial use.”⁸⁰

The right to use water, including groundwater, can therefore be characterized as “usufructuary,” meaning that the holder of a water right has a right to *use* the water, but does not own the water itself.⁸¹ That said, decreed and licensed water rights in Idaho are real property rights.⁸² A decreed water right is a right that preexisted the statutory system and established through an adjudication process.⁸³ A licensed water right is a water right established by following the application, permit and licensing procedures

⁷⁸ IDAHO CONST. art. XV, § 3.

⁷⁹ IDAHO CODE § 42-226.

⁸⁰ *Wash. Cnty. Irrigation Dist. v. Talboy*, 43 P.2d 943, 945 (Idaho 1935); *see also Glavin v. Salmon River Canal Co.*, 258 P. 532, 534 (Idaho 1927); *Am. Falls Reservoir Dist. No. 2 v. Idaho Dep’t of Water Res.*, 154 P.3d 433 (Idaho 2007) (Trout, J.).

⁸¹ *Water Rights Overview*, IDAHO DEP’T OF WATER RES., <https://idwr.idaho.gov/water-rights/> (last visited Jan. 10, 2022).

⁸² IDAHO CODE § 42-220 (licensed rights appurtenant to land); IDAHO CODE § 42-1402 (decreed rights appurtenant to land); IDAHO CODE § 55-101(1) (definition of real property); *Reno v. Richards*, 178 P. 81 (Idaho 1918); *In re: Robinson*, 103 P.2d 693 (Idaho 1940); *Anderson v. Cummings*, 340 P.2d 1111, 1115 (Idaho 1959); *Crow v. Carlson*, 690 P.2d 916 (Idaho 1984).

⁸³ *A Water Users Information Guide*, IDAHO DEP’T OF WATER RES., <https://binghamgroundwater.com/wp-content/uploads/2019/07/water-users-information-guide-1.pdf> (last visited Jan. 10, 2022).

laid out in the Idaho statutes.⁸⁴

The state, through IDWR, is tasked with supervising the appropriation and allotment of groundwater to those diverting it for beneficial use.⁸⁵ IDWR has “exclusive authority over the appropriation of the . . . ground waters of the state”⁸⁶ and grants individuals the right to use groundwater through the statutory application, permitting, and licensing system.⁸⁷

b. Scope of Use

i. Permitted and Preferred Uses

Idaho’s constitution only names agriculture, domestic, manufacturing, mining, and hydropower as beneficial uses for which water may be appropriated;⁸⁸ however, the Idaho Supreme Court has ruled that this is not an exclusive list.

With the exception of those uses elevated to beneficial status by Article 15, § 3, of the Constitution, the concept of what is or is not a beneficial use must necessarily change with conditions. . . . The notion of beneficiality of use must include a requirement of reasonableness.⁸⁹

While it is well established in western water law that an appropriation of water must be made for a ‘beneficial use,’ nevertheless in Idaho at least the generic term ‘beneficial use’ has never been judicially or statutorily defined.⁹⁰

Thus, the term “beneficial use” in Idaho is not defined exclusively, and includes, without

⁸⁴ *Id.*

⁸⁵ IDAHO CODE § 42-226.

⁸⁶ *Id.* at § 42-201(7).

⁸⁷ *Id.* at § 42-229.

⁸⁸ IDAHO CONST. art. XV, § 3.

⁸⁹ *Idaho, Dep’t of Parks v. Idaho Dep’t of Water Admin.*, 530 P.2d 924, 931 (Idaho 1974) (Bakes, J. concurring).

⁹⁰ *Id.* at 927.

limitation, “domestic use, irrigation, stock-watering, manufacturing, mining, hydropower, municipal, aquaculture, recreation, as well as fish and wildlife.”⁹¹

Idaho’s constitution ranks certain beneficial uses in terms of “preferences.” Domestic uses are first, agricultural uses second, and manufacturing purposes third, except that in an “organized mining district,” an historical anachronism, mining uses have preference over all but domestic uses.⁹²

These preferences mean much less than might appear. They provide neither “super-priority” status in the priority system nor authority for IDWR to “prefer” certain water uses over others in the approval or administration of rights. Rather, this constitutional preference simply confers on the preferred water user the right to condemn the water rights of a less preferred user.⁹³ Indeed, this has been made explicit: “But the usage by such subsequent appropriators shall be subject to such provisions of law regulating the taking of private property for public and private use, as referred to in section 14 of article I of this Constitution.”⁹⁴

ii. Location of Use

A groundwater right must be used within the place of use set forth in the permit, license, or decree. Because all groundwater is the property of the state,⁹⁵ an overlying landowner does not have any interest in underlying groundwater except as may be set forth in a permit, license, or decree.

A person may transport and use groundwater away from the immediate overlying groundwater basin, but one must acquire approval by IDWR and the Idaho Legislature to divert water to a different basin for large irrigation projects that are 5,000 or more acres or total volume in excess of 10,000 acre-feet per year.⁹⁶ During such an approval

⁹¹ *Terminology*, IDAHO DEP’T OF WATER RES., <https://idwr.idaho.gov/about-idwr/terminology/> (last visited Jan. 10, 2022).

⁹² IDAHO CONST. art. XV, § 3.

⁹³ *Montpelier Milling Co. v. City of Montpelier*, 113 P. 741 (Idaho 1911).

⁹⁴ This language was noted, in support of this proposition, in *Am. Falls Reservoir Dist. No. 2 v. Idaho Dep’t of Water Res.*, 154 P.3d 433, 451-52 (Idaho 2007).

⁹⁵ IDAHO CODE ANN. § 42-226 (2021).

⁹⁶ *Id.* at § 42-226.

process, the Director and Idaho Legislature must take the local economic and ecological effects of the transport into account.⁹⁷

Regarding existing water rights, although a water right is considered appurtenant to the land, changes may be made to the location of a place of use and most other elements of the right. The process and requirements for requesting such a change, known in Idaho as a “transfer,” are set forth in Idaho Code § 42-222.⁹⁸

In addition, a person entitled to divert water under a water right may commingle that water with the water in “the channel of a natural waterway” and then reclaim the water for use within the scope and limitations of the water right, including the geographic limit of its place of use.⁹⁹ However, when the person reclaims the water, the “amount of water to which prior appropriators may be entitled shall not be diminished, and due allowance shall be made for loss by evaporation and seepage.”¹⁰⁰

c. Loss of Water Rights

Generally, in Idaho, any water right can be lost by abandonment or forfeiture for nonuse.¹⁰¹

In Idaho, water rights are subject to the common law doctrine of abandonment, wherein a water right holder (1) intends to give up the right, and (2) actually relinquishes or surrenders the right.¹⁰² However, abandonment is not a concept frequently encountered in Idaho because of the difficulty in proving the intent requirement. Abandonments and forfeitures are not favored by the Idaho Supreme Court.¹⁰³

Forfeiture for nonuse is a statutory mechanism whereby a water right that is not put to

⁹⁷ *Id.*

⁹⁸ *Id.* at § 42-108; *see also Anderson v. Cummings*, 340 P.2d 1111 (Idaho 1959).

⁹⁹ IDAHO CODE § 42-105.

¹⁰⁰ *Id.*

¹⁰¹ *Id.* at §§ 42-237 & 42-222.

¹⁰² *Jenkins v. State, Dep’t of Water Res.*, 647 P.2d 1256 (Idaho 1982); *Sears v. Berryman*, 623 P.2d 455 (Idaho 1981); *Gilbert v. Smith*, 552 P.2d 1220 (Idaho 1976).

¹⁰³ *Sagewillow v. Idaho Dep’t of Water Res.*, 70 P.3d 669, 674 (Idaho 2003).

beneficial use for five consecutive years may be deemed to have been forfeited.¹⁰⁴ The Idaho Supreme Court has confirmed that a water right may be partially forfeited, where a portion of the beneficial use served by a water right goes unused, without adequate excuse, for the statutory five-year period.¹⁰⁵ Forfeiture is not effective if the original owner resumes use of the water prior to the claim of right by a third party.¹⁰⁶

Exceptions to statutory forfeiture are listed in Idaho Code § 42-223. One notable exception involves water rights held by a municipal provider for “reasonably anticipated future needs,” which “shall be deemed to constitute beneficial use, and such rights shall not be lost or forfeited for nonuse unless the planning horizon specified in the license has expired and the quantity of water authorized for use under the license is no longer needed to meet reasonably anticipated future needs.”¹⁰⁷

Additionally, with some exceptions, a water right may be lost if a party fails to file a notice of claim to an existing water right in a general adjudication commenced under the provisions of chapter 14, title 42, Idaho Code.¹⁰⁸

A permit will “lapse and be of no further force nor effect” if the holder fails to timely submit proof of beneficial use or obtain an extension of time to file proof.¹⁰⁹

Generally, a water right is not considered to be lost or forfeited unless and until such a determination is made by IDWR or a court after some process has occurred. Each of the various means of losing or forfeiting a water right involve some kind of process.

¹⁰⁴ IDAHO CODE § 42-222(2).

¹⁰⁵ *State v. Hagerman Water Right Owners* (“*Hagerman P*”) (“*Basin-Wide Issue 10*”), 947 P.2d 400 (Idaho 1997).

¹⁰⁶ *Sagewillow*, 70 P.3d at 674 (quoting *Carrington v. Crandall*, 147 P.2d 1009 (Idaho 1944)).

¹⁰⁷ IDAHO CODE § 42-223(2).

¹⁰⁸ *Id.* at § 42-1420. Idaho Code § 42-243 requires the filing of claims to water rights with IDWR by June 30, 1983, and that party “waive[s] and relinquish[e] any right, title or interest in said right” if no claim is filed. Idaho Code § 42-245. However, the waiver and relinquishment provisions “shall not apply if a claim to the right is filed in a general water rights adjudication proceeding commenced under the provisions of chapter 14, title 42, Idaho Code.” *Id.* at § 42-245. Thus, Section 42-243’s “claim requirement has been overtaken by Idaho’s various adjudications, including the already completed Snake River Basin Adjudication.

¹⁰⁹ *Id.* at § 42-218a.

Concerning statutory forfeiture, a determination typically occurs through an adjudication or administrative process. In an adjudication, the process generally involves: (1) the holder of a water right filing a claim, (2) IDWR issuing a “recommendation” to the adjudication Court as to how the claim should be decreed, (3) a trial process if there are objections to IDWR’s recommendation, and (4) a court decision on the merits of the claim that results in the issuance of a “partial decree.”¹¹⁰ In the administrative realm, forfeiture questions usually arise when a water right is presented to IDWR through a petition, application, or other means. To date, IDWR has not proactively policed water rights for forfeiture.

A typical scenario involves an application to transfer (i.e. change) a water right. One of IDWR’s first steps in evaluating such an application is to determine the water right’s validity.¹¹¹ IDWR will review its records, and also any evidence provided by the applicant.¹¹² If the water right is not found to have been forfeited by IDWR in its initial review, other parties who might protest the application may allege that it has been forfeited. The party asserting that a water right has been forfeited has the burden of proving the forfeiture by clear and convincing evidence.¹¹³ The Idaho Supreme Court has frequently stated that “[f]orfeitures are abhorrent and all intendments are to be indulged against a forfeiture.”¹¹⁴

When a water right is lost through forfeiture or other means (except for adverse possession), it reverts to the state of Idaho as unappropriated water and is either subject to further appropriation, or serves to satisfy the rights of existing junior appropriators from the same water source.¹¹⁵

Moreover, a permit may be canceled and voided by IDWR if the holder “shall fail to comply with the requirements of his permit as to the commencing of work or the filing of bond thereunder, or the completion of one-fifth of the construction work within one-

¹¹⁰ See generally Chapter 14, Title 42, Idaho Code.

¹¹¹ *Idaho Dep’t of Water Res. Administrator’s Memorandum – Transfer Processing No. 24* at 22 (Dec. 21, 2009).

¹¹² *Id.* at 22-23.

¹¹³ IDAHO CODE § 42-222(2).

¹¹⁴ *Hidden Springs Trout Ranch, Inc. v. Hagerman Water Users, Inc.*, 619 P.2d 1130, 1134 (Idaho 1980).

¹¹⁵ *Jenkins v. State Dep’t of Water Resources*, 647 P.2d 1256 (Idaho 1982).

half the time allowed for the entire completion of such construction work, or shall fail to complete the entire construction work within the time specified in his permit.”¹¹⁶

A person may petition IDWR for the cancellation of a permit.¹¹⁷ IDWR may also cancel a permit if it finds that “at any time after a permit is issued but prior to license, that the permittee has refused or failed to comply with any of the conditions in the permit, or has refused or failed to comply with the provisions of the law governing the permit.”¹¹⁸

IDWR may revoke a license if it finds that “the licensee has ceased to put the water to a beneficial use for a period of five continuous years or that the licensee has willfully or intentionally failed to comply with any of the conditions in the license, or has willfully or intentionally failed to comply with provisions of the law governing the license.”¹¹⁹

Additionally, it is possible for water rights to be adversely possessed in Idaho.¹²⁰ To claim adverse possession in Idaho, the claiming party has the burden to prove that the possession was actual, open, visible, notorious, continuous and hostile to the party against whom the claim is made, and that they have paid all taxes on the property, all for a period of twenty years.¹²¹ However, a water right cannot be adversely possessed if it is located within an active water district with a watermaster.¹²²

The process for establishing that a water right has been adversely possessed involves a judicial action to quiet title. The processes for IDWR revoking a license or canceling a permit are set forth in Idaho Code §§ 42-350 and 42-311, respectively, and both state that licensees and permittees have a right to an administrative evidentiary hearing and judicial review. Voiding of a permit under Idaho Code §§ 42-301 and 42-302 similarly involves notice and administrative hearing and a right to judicial review.¹²³ The lapsing of a permit for failure to timely submit proof of beneficial use, or obtain an extension

¹¹⁶ IDAHO CODE § 42-301.

¹¹⁷ *Id.* at § 42-302.

¹¹⁸ *Id.* at § 42-311.

¹¹⁹ *Id.* at § 42-350.

¹²⁰ *See Mountain Home Irrigation Dist. v. Duffy*, 319 P.2d 965 (Idaho 1957).

¹²¹ *Luce v. Marble*, 127 P.3d 167, 175 (Idaho 2005); IDAHO CODE § 5-210.

¹²² IDAHO CODE § 42-607.

¹²³ *Id.* at §§ 42-303 & 304.

thereof, requires IDWR to notify the permittee of the lapse, and an opportunity for the permittee to cure the lapse within sixty days of the notice.¹²⁴ If the permittee shows that a beneficial use occurred during the authorized time period and there was a reasonable cause for filing a late proof of beneficial use, the permit will be reinstated with a priority date advanced to the date the proof of beneficial use was received.¹²⁵

4. Well Drilling

A driller or well owner must “obtain a permit from the director of the department of water resources to protect the public health, safety and welfare and the environment, and to prevent the waste of water or mixture of water from different aquifers” before beginning a well-construction project.¹²⁶ Further, the drillers themselves must be individually licensed, as wells may only be drilled by or under the charge of a licensed driller.¹²⁷ There is a separate permitting requirement for the subordinates of licensed drillers.¹²⁸ The exception to the rule requiring a license is that property owners may construct wells on their own property without a license.¹²⁹ In Idaho, it is unlawful for any person to drill a well without complying with the provisions of chapter 42-238 including those wells excepted under 42-227 and 42-228.¹³⁰

The Idaho Water Resource Board (“Board”) is responsible for adopting rules for licensing and license renewal.¹³¹ In creating the rules for licensing and license renewal, the Board considered factors regarding applicants’ knowledge of drilling, water laws, and geology. If an applicant meets the standard set by the Board, then the Director must issue a license upon the filing of a surety or cash bond in accordance with Idaho Code § 42-238(7). If the applicant fails to meet the standard set by the Board, then the application will be denied.¹³²

¹²⁴ *Id.* at § 42-218a.

¹²⁵ *Id.*

¹²⁶ *Id.* at § 42-235.

¹²⁷ IDAHO ADMIN. CODE r. 37.03.10.020 (2021).

¹²⁸ *Id.* at 37.03.10.020(03).

¹²⁹ *Id.* at 37.03.10.020.

¹³⁰ IDAHO CODE § 42-238(2).

¹³¹ *Id.* at § 42-238(6).

¹³² *Id.* at § 42-238(7).

The Idaho Code provides that “[e]mployees of drilling firms, copartnerships, corporations or associations are authorized to operate drilling equipment for the driller after obtaining an operator’s permit from the director.”¹³³ Drilling licenses and operator’s permits “expire on March 31 in the second year after issuance or upon revocation of the license by the director.”¹³⁴ If the license or permit holder renews their license or permit, the renewal is effective on April 1, the day following what would have been the expiration date.¹³⁵

Failure to obtain a license before drilling is a criminal misdemeanor, and, if the Director “determines that any person is in substantial violation of [drilling standards], the director may commence an administrative enforcement action.”¹³⁶ Failure to keep a daily well log and pertinent data concerning each well available for inspection at the well site gives cause for the Director to revoke or refuse to renew a license until the “well driller’s report or reports are properly completed and on file in the office of the director.”¹³⁷ Failure to adhere to the well construction standards adopted by the Idaho Water Resource Board “will allow the director to proceed to repair, reconstruct or abandon a well so that it complies with the adopted minimum standards of well construction and abandonment.”¹³⁸ Costs associated with such action are “charged against the driller’s bond.”¹³⁹ Lastly, not complying to these standards “is also cause for the director to revoke an active license or refuse to renew a license until such time as the well driller has repaired or reconstructed the well or wells so that they meet the adopted minimum standards.”¹⁴⁰ A person who has had their drilling license refused or revoked may “seek a public hearing before the water resource board.”¹⁴¹

If a person is drilling or modifying an existing well in a designated “area of drilling

¹³³ *Id.* at § 42-238(8).

¹³⁴ *Id.* at § 42-238(9).

¹³⁵ *Id.*

¹³⁶ *Id.* at § 42-238(13).

¹³⁷ *Id.* at §§ 42-238(13)(a) & 42-239(11).

¹³⁸ *Id.* at §§ 42-238(13)(b) & 42-239(12).

¹³⁹ *Id.* at §§ 42-238(13)(b) & 42-239(12).

¹⁴⁰ *Id.* at §§ 42-238(13)(c) & 42-239(12).

¹⁴¹ *Id.* at § 42-238(14).

concern,” then that person must comply with additional requirements, such as additional bonding requirements, experience and knowledge, and documentation.¹⁴² The person must also provide “a notice of intent to drill, deepen or modify a well” and receive the Director’s written approval before beginning work.¹⁴³

The Director of IDWR is responsible for both regulating the drilling of wells and issuing licenses to well drillers and operating permits to drill operators. The Idaho Water Resource Board is responsible for adopting rules for licensing and license renewal.¹⁴⁴

5. Hydraulic Connection and Regulation

The Idaho Administrative Rules contain provisions for the conjunctive management of surface and groundwater resources. “Conjunctive management” is the “[l]egal and hydrologic integration of administration of the diversion and use of water under water rights from surface and ground water sources, including areas having a common ground water supply.”¹⁴⁵ An “area having a common ground water supply” is “[a] ground water source within which the diversion and use of ground water or changes in ground water recharge affect the flow of water in a surface water source or within which the diversion and use of water by a holder of a ground water right affects the ground water supply available to the holders of other ground water rights.”¹⁴⁶ Currently, the Eastern Snake Plain Aquifer is the only area determined to have a common groundwater supply.¹⁴⁷

There does not appear to be a priority among users of hydraulically linked surface and ground waters other than the priority established by the prior appropriation doctrine. Because there is no priority among users of hydraulically linked surface and ground waters, there is no liability for interference specific to this situation.

In *Musser v. Higinson* the Supreme Court of Idaho held that IDWR must follow conjunctive management under prior appropriation when junior groundwater use

¹⁴² *Id.* at § 42-238(15).

¹⁴³ *Id.*

¹⁴⁴ *Id.* at §§ 42-238(1), (6).

¹⁴⁵ IDAHO ADMIN. CODE r. 37.03.11.010(3) (2021).

¹⁴⁶ *Id.* at 37.03.11.010(1) (referencing IDAHO CODE § 42-237a).

¹⁴⁷ IDAHO ADMIN. CODE r. 37.03.11.050.

interferes with senior surface water use.¹⁴⁸ Further, in *American Falls Reservoir District #2 v. IDWR*, that same court upheld the constitutionality of the Rules for Conjunctive Management of Surface and Ground Water Resources, including that the senior user must show material injury to assert a call against a junior user.¹⁴⁹

Priority is generally given to senior surface water users because, “when there is insufficient water to satisfy both the senior appropriator’s and the junior appropriator’s water rights, giving the junior appropriator a preference to the use of the water constitutes a taking for which compensation must be paid.”¹⁵⁰

Groundwater users that infringe on the rights of hydraulically linked surface water users are subject to curtailment.¹⁵¹ The curtailment orders apply even if the economic impact of the loss is greater to the junior user than the senior user.¹⁵²

6. Aquifer Recharge and Underground Storage

As stated in Idaho Code § 42-234(1),

[i]t is the policy of the state of Idaho to promote and encourage the optimum development and augmentation of the water resources of this state. The legislature deems it essential, therefore, that water projects designed to advance this policy be given maximum support. The legislature finds that the use of water to recharge ground water basins in accordance with Idaho law and the state water plan may enhance the full realization of our water resource potential by furthering water conservation and increasing the water available for beneficial use.¹⁵³

¹⁴⁸ *Musser v. Higginson*, 871 P.2d 809, 811 (Idaho 1994).

¹⁴⁹ *Am. Falls Reservoir Dist. #2 v. Idaho Dep’t of Water Res.*, 154 P.3d 433 (Idaho 2007).

¹⁵⁰ *Clear Springs Foods, Inc v. Spackman*, 252 P.3d 71, 79 (Idaho 2011) (citing *Montpelier Milling Co. v. City of Montpelier*, 113 P. 741, 743 (Idaho 1911); IDAHO CONST. Art. XV, § 3).

¹⁵¹ *Spackman*, 252 P.3d at 79.

¹⁵² *Id.* at 82.

¹⁵³ IDAHO CODE ANN. § 42-234(1) (2021).

For the reasons and policy concerns stated above, “the appropriation of water for purposes of ground water recharge shall constitute a beneficial use of water.”¹⁵⁴

Groundwater districts may apply to the IDWR for permission to store or recharge waters in “ground water basins within the district to aid in the efficient irrigation of district lands, to serve domestic, commercial, municipal, or industrial uses within the district, or to carry out a mitigation plan.”¹⁵⁵ A “mitigation plan,” specific to groundwater districts, is “a plan to prevent or compensate for material injury to holders of senior water rights caused by the diversion and use of water by the holders of junior priority ground water rights who are participants in the mitigation plan.”¹⁵⁶ Projects to construct and operate groundwater recharge and storage are, however, “subject to such additional conditions and limitations as shall be imposed by the director pursuant to sections 42-203A, 42-222 and 42-234, Idaho Code.”¹⁵⁷ Specifically, one needs a water right to perform an aquifer recharge.¹⁵⁸ Additionally, the Director may order the cessation of a storage or recharge project if he determines the project is “adversely affecting existing water rights or are creating conditions adverse to the beneficial use of water under existing water rights.”¹⁵⁹ The project cannot be resumed “until such alterations as may be ordered by the director have been accomplished or such adverse effects otherwise have been corrected.”¹⁶⁰

Aquifer recharge districts are created “for the purpose of raising assessments to manage recharge facilities and conduct recharge projects.”¹⁶¹ They may be formed by petitioning the IDWR. The petition should “set forth the object of the organization of the district and the benefits to be provided by the district” and “be accompanied by a map of the proposed district” meeting all specifications required by section 42-4202, Idaho

¹⁵⁴ *Id.* at § 42-234(2).

¹⁵⁵ *Id.* at § 42-5225.

¹⁵⁶ *Id.* at § 42-5201(13).

¹⁵⁷ *Id.* at § 42-5225.

¹⁵⁸ *Id.*

¹⁵⁹ *Id.* at § 42-234(4).

¹⁶⁰ *Id.*

¹⁶¹ *Aquifer Recharge Districts*, IDAHO DEP’T OF WATER RES., <https://idwr.idaho.gov/water-rights/aquifer-recharge-districts/> (last visited Jan. 10, 2022).

Code.¹⁶² Additionally, a statement must be submitted with the petition detailing “the contemplated diversion works and facilities and an estimate of the cost of constructing such works and facilities,” and the petition must be signed by at least “fifty percent of the water users located within the proposed boundaries of the district.”¹⁶³

The Idaho Legislature approved the creation of an aquifer recharge district “for the purposes of ground water recharge . . . for the appropriation and underground storage of the unappropriated waters of the Snake River in Jerome, Lincoln and Gooding counties and its tributaries in Gooding and Lincoln counties” and authorized the IDWR to issue a permit to the district for the project.¹⁶⁴ The Lower Snake River Aquifer Recharge District is currently the only active aquifer recharge district.¹⁶⁵

One specific aquifer recharge program involves the Eastern Snake Plain Aquifer (ESPA).¹⁶⁶ The goal of the recharge involves 250,000 acre-feet of recharge per year.¹⁶⁷ To recharge ESPA surface water from the Snake, Big Wood, and Little Wood Rivers are diverted.¹⁶⁸ IWRB currently has three surface water rights for the Snake River and one water right for Big and Little Wood Rivers.¹⁶⁹ Water availability for ESPA recharge depends on the needs of other water users as senior surface water users have priority of junior groundwater users.¹⁷⁰ Funding for this project comes from a variety of sources including water users and IWRB.¹⁷¹ To ensure the long-term goals of the recharge project are met, IDWR has an extensive network of more than 460 wells throughout

¹⁶² IDAHO CODE § 42-4202.

¹⁶³ *Id.*

¹⁶⁴ *Id.* at § 42-4201(2).

¹⁶⁵ *Aquifer Recharge Districts*, IDAHO DEP’T OF WATER RES., <https://idwr.idaho.gov/water-rights/aquifer-recharge-districts/> (last visited Jan. 10, 2022).

¹⁶⁶ Noah Stewart Maddox et. al, *Restoring a World Class Aquifer*, THE WATER REPORT, Vol. 173 (July 15, 2018).

¹⁶⁷ Kathleen Miller et. al., *Case Study: Eastern Snake Plain Aquifer Recharge Program, Incentivizing Groundwater Recharge*, 5 (Sept. 3, 2019).

¹⁶⁸ *Id.*

¹⁶⁹ *Id.*

¹⁷⁰ *Id.*

¹⁷¹ *Id.*

ESPA.¹⁷² These wells are measured throughout the year and the data is used to determine the water levels throughout the aquifer.¹⁷³

The Director of IDWR is responsible for issuing licenses confirming the right to appropriate surface water for aquifer recharge and underground storage.¹⁷⁴ Idaho Code § 42-4201 gives IDWR authority to regulate the Aquifer Recharge District created by the Legislature in Jerome, Lincoln and Gooding counties.¹⁷⁵ Idaho Code §42-4212 authorizes IDWR to regulate all Aquifer Recharge Districts in the state. IWRB oversees the aquifer recharge programs, abiding by the regulations set forth by the IDRW.¹⁷⁶ In addition, IDWR has been granted authority over water rights for groundwater recharge in Idaho Code §42-234.

7. Water Management Plan(s)

The Idaho Constitution, specifically Article XV, section 7, gives the Idaho Water Resource Board authority to prepare a state water plan, and the requisite contents of the plan are described in Idaho Code § 42-1734A.¹⁷⁷ The process for amending the state plan begins with a petition to the board by any state agency, which the board must review within six months of the petition being filed.¹⁷⁸ If the board adopts any changes to the plan, it must submit the changes to the Idaho Legislature.¹⁷⁹

On November 28, 2012, the Idaho Water Resource Board adopted a revised Idaho Comprehensive State Water Plan (“Plan”), which added a sustainability section to the Plan. The overarching goal of the Plan is to “guide the development, management, and use of the state’s water and related resources” to “ensure that through cooperation,

¹⁷² Noah Stewart Maddox et. al, *Restoring a World Class Aquifer*, THE WATER REPORT, Vol. 173, 7 (July 15, 2018).

¹⁷³ *Id.*

¹⁷⁴ IDAHO CODE ANN. § 42-4201 (2021); IDAHO CODE § 42-4212.

¹⁷⁵ *Id.* at §§ 42-4201 & 42-4212.

¹⁷⁶ Kathleen Miller et. al., *Case Study: Eastern Snake Plain Aquifer Recharge Program, Incentivizing Groundwater Recharge*, 5 (Sept 3, 2019).

¹⁷⁷ IDAHO CODE § 42-1734A.

¹⁷⁸ *Id.* at § 42-1734B.

¹⁷⁹ *Id.* (citing IDAHO CONST. art. XV, § 7).

conservation, and good management, future conflicts will be minimized and the optimum use of the state's water resources will benefit the citizens of Idaho." The primary objectives of the Plan are water management, public interest, economic development, environmental quality, and public safety.¹⁸⁰

There is no set schedule on when a new Plan must be prepared and adopted. A full overview of the Plan, including the proposed sustainability addition can be found on the IDWR's website.¹⁸¹

8. Regulatory Authorities

The Idaho Department of Water Resources and the Idaho Water Resource Board are the main departments that regulate Idaho's water.¹⁸²

Idaho Department of Water Resources

Website: <https://idwr.idaho.gov/>

Mailing Address: PO Box 83720, Boise, ID 83720-0098.

Phone Number: (208)287-4800

The Idaho Department of Water Resources has the "exclusive authority over the appropriation of the public surface and ground waters of the state."¹⁸³ IDWR is responsible for adopting rules and regulations governing the "management, control, delivery, and use and distribution of water to and from the water supply bank."¹⁸⁴ Any rental from the water supply bank must be approved by the Director of IDWR.¹⁸⁵ The Director of IDWR has the responsibility to direct and control "distribution of water from all natural water sources within a water district to the canals, ditches, pumps and other

¹⁸⁰ Idaho Water Resource Board, Idaho State Water Plan, 6 (2012).

¹⁸¹ *State Water Plan*, IDAHO DEP'T OF WATER RES., <https://idwr.idaho.gov/iwrp/water-planning/state-water-plan/> (last visited Jan. 10, 2022); *Proposed Sustainability Section to the State Water Plan, May 31, 2016*, IDAHO DEP'T OF WATER RES., <https://idwr.idaho.gov/wp-content/uploads/sites/2/iwrp/2016/20160531-Proposed-Sustainability-Section-to-the-SWP.pdf> (last visited Jan. 10, 2022).

¹⁸² IDAHO CODE § 42-1743.

¹⁸³ *Id.* at § 42-201.

¹⁸⁴ *Id.* at § 42-1762.

¹⁸⁵ *Id.* at § 42-1763.

facilities diverting therefrom.¹⁸⁶ Additionally, “[t]he director of the department of water resources is authorized to adopt rules and regulations for the distribution of water from the streams, rivers, lakes, ground water, and other natural water sources as shall be necessary to carry out the laws in accordance with the priorities of the rights of the users thereof.”¹⁸⁷ The Director of IDWR has the responsibility of distributing water in water districts according to the prior appropriation doctrine.¹⁸⁸

Finally, Idaho Code states that reasonable water levels must be maintained and those levels are set by the Director of IDWR.¹⁸⁹ In doing so, the Director must “consider and protect the thermal and/or artesian pressure values for low temperature geothermal resources and for geothermal resources to the extent that he determines such protection is in the public interest.”¹⁹⁰ The Director may also designate “areas of drilling concern” on an aquifer by aquifer basis to “protect public health and to prevent waste or contamination of ground or surface water because of factors such as aquifer pressure, vertical depth of the aquifer, warm or hot groundwater, or contaminated ground or surface water.”¹⁹¹

Idaho Water Resource Board

Website: <https://idwr.idaho.gov/iwrb/>

The Idaho Water Resource Board comprises eight members and is staffed within the Idaho Department of Water Resources.¹⁹² Board members are appointed to four-year terms by the governor of Idaho and are “responsible for the formulation and implementation of a state water plan, financing of water projects, and the operation of programs that support sustainable management of Idaho’s water resources.”¹⁹³

¹⁸⁶ *Id.* at § 42-602.

¹⁸⁷ IDAHO CODE § 42-603.

¹⁸⁸ *Id.*

¹⁸⁹ *Id.* at § 42-226.

¹⁹⁰ *Id.*

¹⁹¹ *Id.* at § 42-238.

¹⁹² *What is the IWRB?*, IDAHO DEP’T OF WATER RES., <https://idwr.idaho.gov/iwrb/#:~:text=IWRB%20is%20responsible%20for%20the,management%20of%20Idaho's%20water%20resources>. (last visited Jan. 10, 2022).

¹⁹³ *Id.*; *see also* IDAHO CONST. art. XV, § 7; IDAHO CODE § 42-1734; IDAHO CODE § 42-1734A.

9. Special Districts

Idaho has four different types of special districts: groundwater districts, critical groundwater areas, groundwater management areas and groundwater management districts.

Groundwater districts are created under the Ground Water District Act.¹⁹⁴ The purpose of groundwater districts is to measure and report on groundwater and to represent its members in water use issues and related legal matters.¹⁹⁵ Further, groundwater districts develop and operate mitigation and recharge plans.¹⁹⁶

A groundwater district may be created “[w]henver fifty or a majority, whichever is less, of the ground water users in a particularly geographic area [who] desire to organize a ground water district . . . propose the organization of a district and the election of its initial board of directors.”¹⁹⁷ To form a groundwater district, a petition is “presented to the county commission of the county in which the greatest proportion of cubic feet per second of ground water rights of the proposed district is situated.”¹⁹⁸ The petition must contain the requirements set forth in Idaho Code § 42-5203, including a proposal of “between three and seven divisions” and “nominations for a director for each division,”¹⁹⁹ and “[a] copy . . . shall be filed with the [IDWR] on the same day the petition is filed with the county commission.”²⁰⁰

A groundwater district is governed by a board of directors that has the duty “[t]o manage and conduct the affairs of the district and to have and exercise all rights and powers necessary or incidental to or implied from the specific powers granted [Idaho Code § 42-5224].”²⁰¹

¹⁹⁴ IDAHO CODE § 42-5201.

¹⁹⁵ *Groundwater Districts*, IDAHO DEP’T OF WATER RES., <https://idwr.idaho.gov/water-rights/groundwater-districts/> (last visited Jan. 10, 2022).

¹⁹⁶ *Id.*

¹⁹⁷ IDAHO CODE § 42-5202.

¹⁹⁸ *Id.* at § 42-5203(1).

¹⁹⁹ *Id.* at §§ 42-5202(1)(g, h).

²⁰⁰ *Id.* at § 42-5206(1).

²⁰¹ *Id.* at § 42-5224(21).

At least as often as once a year after organization, the board of directors shall make a report to the department of the condition of the work of any mitigation plans developed by the district, as to capacity, stability and permanency, and whether or not any such mitigation plans are being successfully carried out, and whether or not in the opinion of the board the funds available will complete and maintain the mitigation plans. Upon the receipt of such report by the department, it may make such suggestions and recommendations to such board of directors as it deems advisable for the best interest of the district.²⁰²

If a well or other point of diversion used by a groundwater user is within the boundary of a groundwater district, that groundwater user falls within that groundwater district.²⁰³ Any groundwater user, including “users of ground water for domestic or stock use,” can “file with the board a petition in writing praying that the land and/or facilities listed under the ground water user’s ground water right(s) may be annexed into the district.”²⁰⁴ The Idaho Department of Water Resources has also provided a Ground Water District Handbook.²⁰⁵

In addition, Idaho has designated several critical groundwater management areas. In Idaho, a “critical ground water area” is:

any ground water basin, or designated part thereof, not having sufficient ground water to provide a reasonably safe supply for irrigation of cultivated lands, or other uses in the basin at the then current rates of withdrawal, or rates of withdrawal projected by consideration of valid and outstanding applications and permits, as may be determined and designated, from time to time, by the director of the department of water resources.²⁰⁶

²⁰² *Id.* at § 42-5229.

²⁰³ *Id.* at § 42-5201(8).

²⁰⁴ *Id.* at § 42-5245.

²⁰⁵ *Idaho Ground Water District Handbook*, IDAHO DEP’T OF WATER RES., <https://idwr.idaho.gov/wp-content/uploads/sites/2/districts/199711-Groundwater-District-Handbook.pdf> (last visited Jan. 10, 2022).

²⁰⁶ IDAHO CODE § 42-233a.

A critical groundwater area can be created in all or part of a groundwater basin that, under current or projected withdrawal rates, will not have adequate groundwater to provide a reasonably-safe supply for irrigation or other specified uses. After an area is designated as a critical groundwater area, the Director of IDWR may approve a groundwater management plan for the area. The Director also may deny an application for a proposed use if the diversion point lies within the designated area, and may require water users to report diversions and other information.²⁰⁷ The following are Critical Ground Water Management Areas in Idaho: Blue Gulch, Cinder Cone Butte, Curlew Valley, Oakley Fan (Artesian City, Cottonwood, Oakley-Kenyon, and West Oakley Fan), and Raft River.²⁰⁸

A groundwater management area is different from a critical groundwater management area and is defined as “any ground water basin or designated part thereof which the director of the department of water resources has determined may be approaching the conditions of a critical ground water area.” Applications for new water appropriations within a groundwater management area may only be approved after the Director of IDWR determines that water supplies are adequate so as not to injure other prior water rights.²⁰⁹ If the Director of IDWR determines that “the ground water supply is insufficient to meet the demands of water rights within all or portions of a [ground]water management area,” the Director must “order those water right holders on a time priority basis, within the area determined by the director, to cease or reduce withdrawal of water until such time as the director determines there is sufficient ground water.”²¹⁰ “Water right holders participating in an approved ground water management plan[, however,] shall not be subject to administration on a time priority basis so long as they are in compliance with the ground water management plan.”²¹¹

Groundwater management districts are created by the Director of IDWR when groundwater users diverting water from an aquifer become concerned with the aquifer

²⁰⁷ *Id.*

²⁰⁸ *Designated Critical Groundwater Areas*, IDAHO DEP’T OF WATER RES., <https://idwr.idaho.gov/water-rights/critical-groundwater-areas/designated/> (last visited Jan. 25, 2022).

²⁰⁹ *Id.* at § 42-233b.

²¹⁰ *Id.*

²¹¹ *Id.*

levels and file a petition to create such a district.²¹² The purpose of groundwater management districts are “to provide for financing of repair or abandonment of wells in aquifers which have experienced or are experiencing declines in water level or water pressures because of flow, leakage, and waste from improper construction, maintenance, and operation of wells drilled into the aquifer.”²¹³ The petition presented to the Director of IDWR must be signed by at least fifty percent of the water users in the proposed boundaries.²¹⁴

10. Transboundary Arrangements

One goal of the Idaho State Water Plan is to develop cooperative arrangements with neighboring states to “avoid water supply conflicts and to optimize utilization of the resources for the citizens of Idaho.”²¹⁵ Idaho is a party to the Bear River Compact with the States of Wyoming and Utah.²¹⁶ Among other things, the Bear River Compact details each state’s rights to use and store water from the Bear River, including groundwater tributary to the river. Aside from the brief mentions of groundwater tributaries to the river, the compact pertains wholly to surface water rights.

²¹² *Groundwater Management Districts*, IDAHO DEP’T OF WATER RES., <https://idwr.idaho.gov/water-rights/groundwater-management-districts/> (last visited Jan. 10, 2022).

²¹³ IDAHO CODE § 42-5101.

²¹⁴ *Id.* at § 42-5102.

²¹⁵ Idaho Water Resource Board, Idaho State Water Plan, 14 (2012).

²¹⁶ IDAHO CODE § 42-3401; IDAHO CODE § 42-3402.

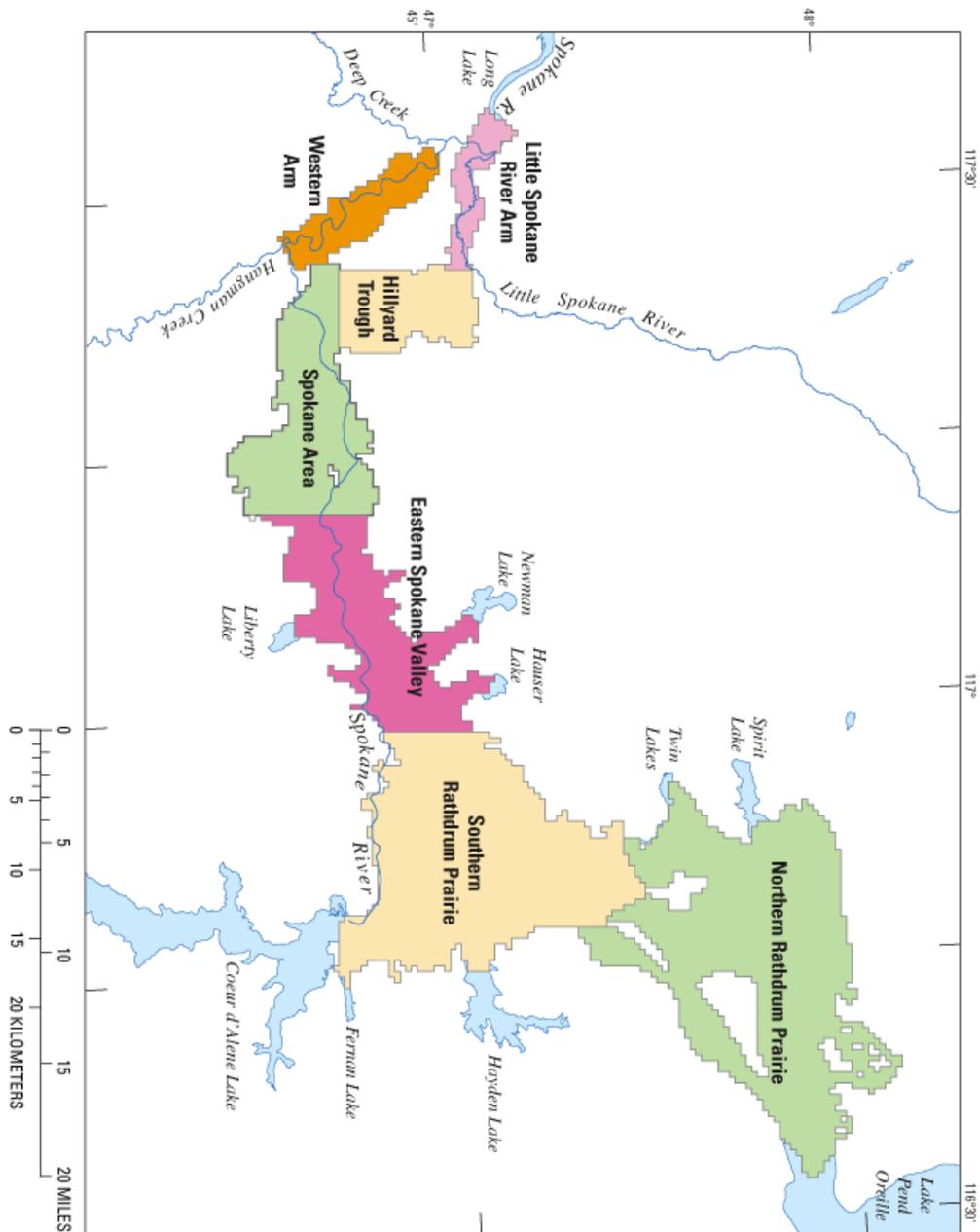


Fig. E.2 The Spokane Valley-Rathdrum Prairie aquifer and its subregions.²¹⁷

²¹⁷ Paul A. Hsieh, et al., "Subregions of the Spokane Valley-Rathdrum Prairie aquifer for water-budget calculations," in *Ground-Water Flow Model for the Spokane Valley-Rathdrum Prairie Aquifer, Spokane County, Washington, and Bonner and Kootenai Counties, Idaho, U.S. GEOLOGICAL SURV., SCI. INVESTIGATIONS REP. 2007-5044*, <https://pubs.usgs.gov/sir/2007/5044/figure51.html> (last visited Jan. 15, 2022).

In 1992, Idaho and Washington State developed the Palouse Basin Groundwater Management Plan to manage water resources in the Palouse Basin Region.²¹⁸ This plan established the Palouse Basin Aquifer Committee (PBAC), which is composed of representatives from the cities of Pullman, Moscow, and Palouse, the counties of Whitman and Latah, the University of Idaho, and Washington State University.²¹⁹

IDWR also participates in studies with Washington State regarding the Spokane Valley-Rathdrum Prairie Aquifer.²²⁰ The aquifer is under close scrutiny because it supplies water to nearly 500,000 citizens in Idaho and Washington combined.²²¹

The Bear River Compact does not specify an expiration date and does not require renewal to remain in effect. The Palouse Basin Groundwater Management Plan provides a timeline for its execution that extends to the year 2065 but does not provide for plans beyond that time.

11. Native American Rights

There are five federally recognized Native American tribes in Idaho: the Shoshone-Bannock, the Shoshone-Paiute, the Coeur d'Alene, the Kootenai, and the Nez Perce.²²² In *Winters v. United States*, the U.S. Supreme Court ruled that federally recognized Native American tribes obtained implied water rights sufficient to fulfill the purposes of the reservation with the treaty establishing the reservation.²²³ In the Ninth Circuit,

²¹⁸ *About*, PALOUSE BASIN AQUIFER COMM., <http://palousebasin.org/about/> (last visited Jan. 10, 2022).

²¹⁹ *2015 Information Update to 1992 Palouse Basin Ground Water Management Plan (2015)*, PALOUSE BASIN AQUIFER COMM., https://secureservercdn.net/192.169.220.85/42u.068.myftpupload.com/wp-content/uploads/2018/06/150331_Final_PBAC_GWMP_Informational_Update.pdf (last visited Jan. 10, 2022).

²²⁰ *Memorandum of Agreement for Maintenance and Utilization of the Numerical Model of Spokane Valley-Rathdrum Prairie Aquifer, between Idaho Department of Water Resources and Washington Department of Ecology*, Oct. 8, 2007 <https://www.internationalwaterlaw.org/documents/regionaldocs/Local-GW-Agreements/Spokane-Rathdrum-Prairie-Aquifer-MoU.pdf>.

²²¹ *Id.*

²²² *Tribal Lands*, U.S. Dep't of Justice, <https://www.justice.gov/usao-id/tribal-lands> (last visited Jan. 10, 2022).

²²³ *Winters v. United States*, 207 U.S. 564, 565 (1908).

these water rights also support claims to groundwater.²²⁴ In 2019, the Supreme Court of Idaho clarified that Native American tribes' reserved water rights are based on the purpose of the tribe's reservation as evidenced in the reservation's formative documents and circumstances.²²⁵ Also noteworthy is the fact that federally reserved water rights, like those of the Native Americans, are not subject to forfeiture by nonuse.

The Shoshone-Bannock Tribes have multiple sources of groundwater regulations and rights.²²⁶ Ratified by Congress, the 1990 Fort Hall Indian Water Rights Agreement (Agreement) resolved claims regarding water rights, including groundwater rights, in the Upper Snake River Basin.²²⁷ This Agreement is incorporated in the Shoshone-Bannock Tribal Water Supply Bank Rules section of the Idaho Administrative Rules.²²⁸ Section 7.2 of the Agreement pertains to rights to groundwater from within the Fort Hall Indian Reservation and from the Bannock Creek Basin.²²⁹ This section specifies the Tribes' groundwater rights regarding, among other things, the annual diversion volume, diversion rate, annual volume of consumptive use, priority date, purposes and periods of use, and place of use.²³⁰ The Agreement also outlines the Tribes' rights to transfer or lease their water rights, including groundwater rights.²³¹

The Shoshone-Paiute Tribes reside in southwestern Idaho and northern Nevada on the Duck Valley Reservation. A detailed list of the Tribes' water rights within Idaho as resolved by the Snake River Basin Adjudication includes a detailed list of regulations.²³²

²²⁴ *United States v. Idaho (In re CSRBA Case No. 49576 Subcase No. 91-7755)*, 448 P.3d 322, 350-51 (Idaho 2019) (citing *Agua Caliente Band of Cahuilla Indians v. Coachella Valley Water Dist.*, 849 F.3d 1262, 1270 (9th Cir. 2017)).

²²⁵ *United States v. Idaho (In re CSRBA Case No. 49576 Subcase No. 91-7755)*, 448 P.3d at 348.

²²⁶ *Tribal Water Resources*, Shoshone-Bannock Tribes, <http://www2.sbtribes.com/water-resources-department/> (last visited Jan. 10, 2022).

²²⁷ Fort Hall Indian Water Rights Act of 1990, Pub. L. No. 101-602, 104 Stat. 3059; 1990 Fort Hall Indian Water Rights Agreement, <http://www.srba.state.id.us/FORMS/1990%20Ft%20Hall.pdf> (last visited Jan. 10, 2022).

²²⁸ IDAHO ADMIN. CODE r. 37.02.04.000 (2021).

²²⁹ 1990 Fort Hall Indian Water Rights Agreement, art. 7.2, <http://www.srba.state.id.us/FORMS/1990%20Ft%20Hall.pdf> (last visited Jan. 10, 2022).

²³⁰ *Id.*

²³¹ *Id.* at art. 7.5.

²³² *United States of America as Trustee on Behalf of the Shoshone-Paiute Tribes of the Duck Valley Indian Reservation*, FIFTH JUDICIAL DIST. CNTY. OF TWIN FALLS – STATE OF IDAHO

This list specifies the source, quantity, priority date, point of diversion, purpose and period of use, and place of use of each water right. While many of the rights are sourced from surface waters, a number are sourced from groundwater. Some groundwater rights have a priority date of April 16, 1877, while others have a priority date of May 4, 1886. Additionally, the groundwater rights vary based on their purpose of use but include only domestic, municipal, irrigation, and stock water uses.

The Coeur d'Alene Tribe's water rights, including groundwater, were recently clarified by the Supreme Court of Idaho in *United States v. Idaho*.²³³ The court ruled that the Coeur d'Alene Tribe has priority access to water so long as the water usage abides by the "homeland purpose theory" (the reservation's purpose as evidenced in its formative documents and circumstances).²³⁴ The court also confirmed the validity of the Tribe's domestic use groundwater claims²³⁵ and held that the accompanying groundwater rights have a priority date of November 8, 1873 (the date of the executive order that created the Coeur d'Alene Reservation).²³⁶ The rights resulting from this case, however, have yet to be quantified.

After over a decade of negotiations, the Nez Perce Tribe resolved its water rights claims with the State of Idaho in the 2004 Snake River Water Rights Agreement. The Agreement has been amended since 2004 but remains pertinent primarily to surface water rights rather than to groundwater rights. The Agreement does note, though, that "[t]he Tribe's on-reservation, consumptive use reserved water right will be quantified in the amount of 50,000 AF per year, with a priority date of 1855."²³⁷

<http://srba.idaho.gov/Images/federal/shopi%20pds.pdf> (last visited Jan. 10, 2022).

²³³ *United States v. Idaho (In re CSRBA Case No. 49576 Subcase No. 91-7755)*, 448 P.3d 322 (Idaho 2019).

²³⁴ *Id.* at 344.

²³⁵ *Id.* at 351.

²³⁶ *Id.* at 335-36.

²³⁷ Attachment 2 to Consent Decree, *In re SRBA Case No. 39576* (Apr. 20, 2004).

F. Kansas

Kansas uses a prior appropriation regime for both groundwater and surface water.¹ The date of priority is a water right's most important attribute because it determines the right to use water in times of decreased water supply when not all water rights can be satisfied.²

1. Definition, Basis of Rights, Standards, and Interactions

Kansas has developed an extensive statute-based series of definitions pertaining to its regulation of groundwater resources. In Kansas, groundwater is defined as “water below the surface of the earth.”³ Kansas describes an aquifer as “any geological formation capable of yielding water in sufficient quantities that can be extracted for beneficial purposes.”⁴ This definition of aquifer is meant to define areas where groundwater management areas may be formed. Although it does not appear in the Kansas Water Appropriation Act of 1945 (the Act), this definition is not contradicted in the Act. Therefore, the definition may not be controlling specifically under the Act.

Diversion is defined as “the act of bringing water under control by means of a well, pump, dam, or other device for delivery and distribution for the proposed use.”⁵

A vested water right is defined as:

the right of a person under a common law or statutory claim to continue the use of water having actually been applied to any beneficial use, including domestic use, on or before June 28, 1945, to the extent of the maximum quantity and rate of diversion for the beneficial use made thereof, and shall include the right to take and use water for beneficial purposes where a person is engaged in the construction of works for the actual application of

¹ KAN. STAT. ANN. § 82a-707(a) (West, Westlaw through 2021 Sess.).

² *See id.* at § 82a-707(b).

³ KAN. ADMIN. REGS. § 5-1-1(ii) (West, Westlaw through Volume 40, No. 25 of 2021 Kan. Admin. Reg. dated June 24, 2021).

⁴ KAN. STAT. § 82a-1021(a)(1).

⁵ KAN. ADMIN. REGS. § 5-1-5(z).

water to a beneficial use on June 28, 1945, provided such works shall be completed and water is actually applied for such use within a reasonable time thereafter by such person, such person's heirs, successors or assigns. Such a right does not include, however, those common law claims under which a person has not applied water to any beneficial use within the periods of time set out.⁶

An appropriation right is defined as:

a right, acquired under the provisions of [Kansas Water Appropriation Act], to divert from a definite water supply a specific quantity of water at a specific rate of diversion, provided such water is available in excess of the requirements of all vested rights that relate to such supply and all appropriation rights of earlier date that relate to such supply, and to apply such water to a specific beneficial use or uses in preference to all appropriations right of later date.⁷

A water right is defined as:

any vested right or appropriation right under which a person may lawfully divert and use water. It is a real property right appurtenant to and severable from the land on or in connection with which the water is used and such water right passes as an appurtenance with a conveyance of the land by deed, lease, mortgage, will, or other disposal, or by inheritance.⁸

At common law, groundwater belonged to the landowner who owned the surface estate. Kansas followed the doctrine of absolute ownership until 1945.⁹ Under this approach, groundwater users could pump as much water as they wished without liability for harm to other landowners.¹⁰

⁶ KAN. STAT. § 82a-701(d).

⁷ KAN. STAT. § 82a-701(f).

⁸ *Id.* at § 82a-701(g).

⁹ *Hawley v. Kan. Dep't of Agric.*, 132 P.3d 870, 879 (Kan. 2006).

¹⁰ *Williams v. City of Wichita*, 374 P.2d 578, 587 (Kan. 1962).

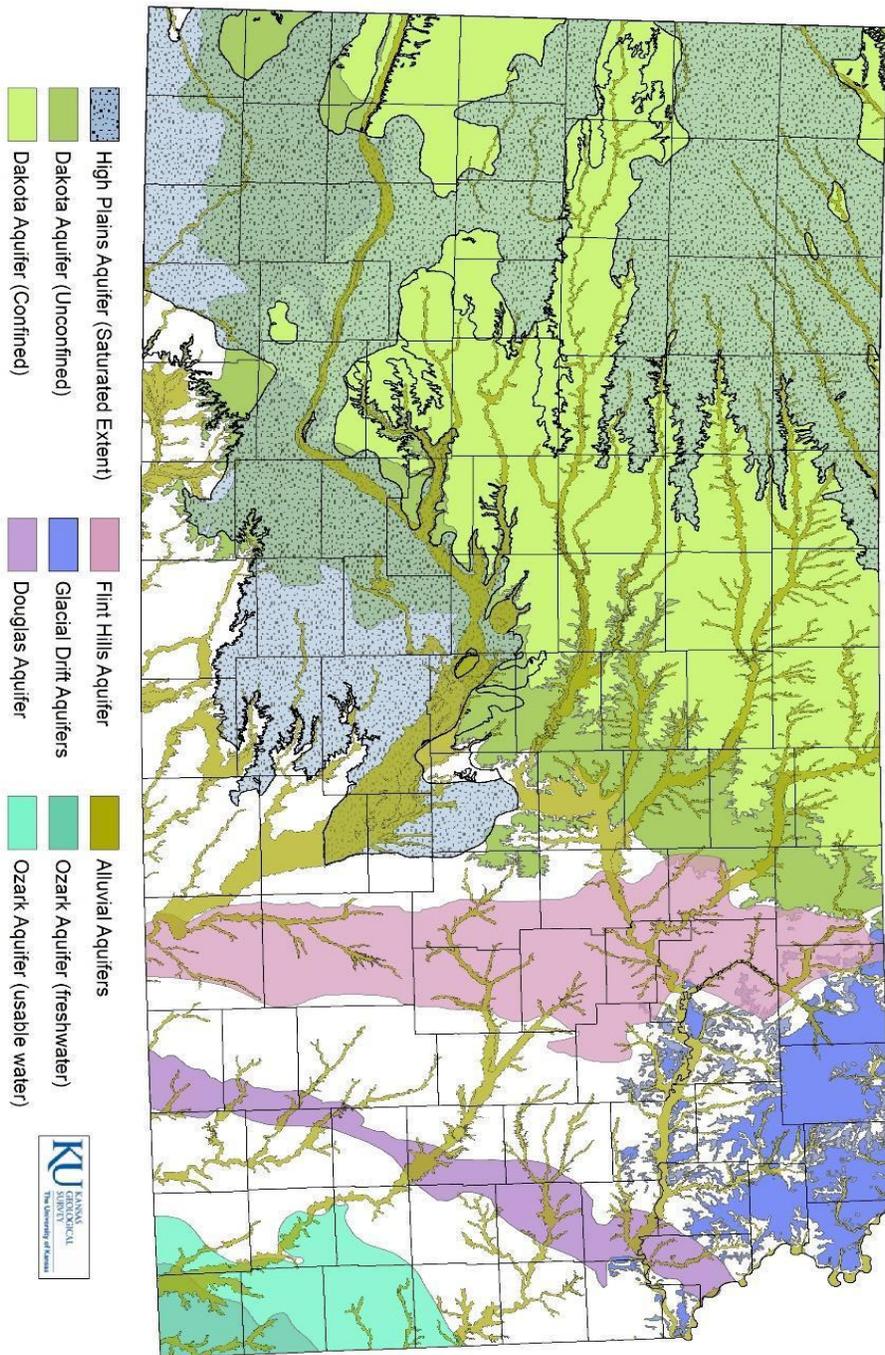


Fig. F.1. Aquifers in Kansas¹¹

¹¹ *Aquifers*, UNIV. OF KAN., KAN. GEOLOGICAL SURV., https://geokansas.ku.edu/sites/default/files/2021-06/aquifers_ks.jpg (last visited July 5, 2021).

The Act transitioned Kansas into a prior appropriation regime for groundwater and surface water.¹² Kansas now follows the commonly known “first in time is the first in right” doctrine.¹³

After the passage of the Act, the Division of Water Resources of the Kansas Department of Agriculture (DWR), was responsible for reviewing the existing users under the common law system and evaluating the beneficial uses of each claimed water right in order to assign a prior appropriation permit.¹⁴ In 1978, section 704 of the Act was repealed and replaced with section 704a of the Act, which provided that all water users claiming a vested right for a beneficial use of water had until July 1, 1980, to file a verified claim for such vested right if their vested right had not already been determined by the prior law in effect before 1978.¹⁵

If a historic water use was determined to be beneficial “such users [could] continue their pre-1945 uses in the same amounts and at the same rate of diversion that were then in effect.”¹⁶ These vested rights carried a common law priority date of June 28, 1945, making them senior to all subsequent appropriations acquired through the permitting system.¹⁷ The purpose of this process was to either acknowledge or terminate all common law rights that existed before the Act and had not been previously adjudicated under section 704.¹⁸ The July 1 deadline was firm and the DWR could not accept a claim to a vested right after the date.¹⁹

The process of obtaining a water right through the permitting system first starts with an applicant filing an application with the DWR.²⁰ If an application is approved the document is called “an approval of application and permit to proceed” or “the permit”

¹² KAN. STAT. § 82a-707(a).

¹³ *Id.* at § 82a-707(c).

¹⁴ *Id.* at § 82a-704 (repealed 1978).

¹⁵ *Id.* at § 82a-704a.

¹⁶ *Williams*, 374 P.2d at 591.

¹⁷ KAN. STAT. § 82a-701(d); KAN. STAT. § 82a-703.

¹⁸ *See id.* at § 82a-704a; *Id.* at § 82a-704 (repealed 1978).

¹⁹ *See id.* at § 82a-704a; *Id.* at § 82a-704 (repealed 1978).

²⁰ *Id.* at § 82a-711.

for short.²¹ At this stage the person has only obtained a paper permit and not a perfected water right.²² If the permit holder fully complies with the conditions laid out in the permit, such as meeting deadlines for construction and the beneficial use authorized, the use by operation of law, creates a water right.²³ The water right attaches to the land on which the water is used, and thus is perfected.²⁴ After the perfection period is over, the DWR inspects the operations and documents for the extent the water was used.²⁵ Calculations of the extent of water used are then used to issue a certificate for appropriation, which documents the extent of the water right.²⁶ The extent of a water right includes the place of use, the point of diversion, the use made of water, and the quantity of water.²⁷ The certificate noting the property right is then filed in the register of deeds office in the county where the point of diversion is located.²⁸

A permit's priority date is based on date the application was filed.²⁹ Permits must be approved before any work is started "in connection with the construction, enlargement or extension of any works for the diversion, storage, and use of water."³⁰ Upon receiving a permit to begin pumping water, a water user must complete the project within a reasonable amount of time or apply for an extension if good cause is shown.³¹ All uses, except municipal uses, must be perfected within four years of the deadline to begin construction.³² Municipal use must begin within twenty years, plus the remainder of the

²¹ John C. Peck, Constance Crittenden Owen, *Loss of Kansas Water Rights for Non-Use*, 43 UNIV. KAN. L. REV. 801, 806 (1995).

²² *Id.*

²³ KAN. ADMIN. REGS. § 5-3-6 (West, Westlaw through Volume 40, No. 25 of 2021 Kan. Admin. Reg. dated June 24, 2021).

²⁴ KAN. STAT. ANN. § 82a-701(g) (West, Westlaw through 2021 Sess.).

²⁵ *Id.* at § 82a-714(a).

²⁶ *Id.*

²⁷ *Id.* at §§ 82a-708b.

²⁸ *Id.* at § 82a-714(a).

²⁹ *See id.* at § 82a-707(c).

³⁰ *Id.* at § 82a-709.

³¹ *Id.* at § 82a-713.

³² KAN. ADMIN. REGS. § 5-3-6(a) (West, Westlaw through Volume 40, No. 25 of 2021 Kan. Admin. Reg. dated June 24, 2021).

year from when the application was approved, to be considered within a reasonable amount of time.³³ If the use does not commence within these time periods, the water right is forfeited.³⁴

If a person appropriates water before receiving a permit, a penalty will be assessed as a Class C misdemeanor³⁵ or through civil penalties, which are more common.³⁶ Water users must report their water use to the DWR annually.³⁷ Additionally, the DWR has “full authority to require any water user to install meters, gages, or other measuring devices” that can be read by DWR agents and “require any water user to report the reading of such meters, gages, or other measuring devices at reasonable intervals.”³⁸

Permits to appropriate groundwater can be denied where the extraction would deplete an aquifer beyond established conservation and depletion goals of a Groundwater Management District (GMD). In 1981, the Kansas Supreme Court held that a water user’s constitutional rights had not been violated under the takings clause when the DWR denied a permit to appropriate groundwater for irrigation where the permit would result in an increased depletion of an aquifer contrary to the GMD established conservation and depletion goals.³⁹

Domestic users are not required to obtain any permit to withdraw groundwater.⁴⁰ Although, the DWR may require domestic users to provide information regarding their usage if required by a city conservation plan.⁴¹ A domestic user is one who uses water for “household purposes, or for the watering of livestock, poultry, farm and domestic animals used in operating a farm, and for the irrigation of lands not exceeding a total of

³³ *Id.* at § 5-8-6(b).

³⁴ *Id.* at § 5-3-6.

³⁵ KAN. STAT. §§ 82a-728(a), (b)(1).

³⁶ *Id.* at § 82a-737(b).

³⁷ *Id.* at § 82a-732(a).

³⁸ *Id.* at § 82a-706c.

³⁹ *F. Arthur Stone & Sons v. Gibson*, 630 P.2d 1164, 1174 (Kan. 1981).

⁴⁰ KAN. STAT. § 82a-705.

⁴¹ *Id.* at § 82a-733(i).

two acres in area for the growing of gardens, orchards and lawns.”⁴² Household water uses “[includes] the use of 1 ½ acre-feet of water or less per calendar year by an industrial user, restaurant, hotel, motel, church, camp, correctional facility, educational institute, or similar entity for household purposes.”⁴³

A water right holder may, without losing priority, “change the place of use, the point of diversion or the use made of water.”⁴⁴ These changes are allowed only after the initial right has been perfected through the original use authorized.⁴⁵ To modify an existing water right, the following requirements must be met: the application is in writing, proposed changes are reasonable and will not impair existing rights, the change in use will authorize use of water from the same local source of supply, and approval is received from the DWR.⁴⁶ When evaluating an application for a permit modification, the DWR must consider the same factors it would for an original appropriation permit.⁴⁷ If the application for change is denied, the original water right remains unchanged.⁴⁸ However, “[a]ny person aggrieved by an order or decision by the chief engineer relating to an application for change may petition for review.”⁴⁹

After a water user has perfected a water right, the DWR cannot later “reduce the rate of diversion and quantity of the water” in the water right; although, the water right may be reduced when a water right holder files a permit change application.⁵⁰

In 1962, Don Williams, a landowner in Harvey County, filed a claim against the City of Wichita after the city received permits from the DWR to begin drilling and pumping

⁴² *Id.* at § 82a-701(c).

⁴³ KAN. ADMIN. REGS. § 5-1-1(kk)(4) (West, Westlaw through Volume 40, No. 25 of 2021 Kan. Admin. Reg. dated June 24, 2021).

⁴⁴ KAN. STAT. § 82a-708b(a).

⁴⁵ *See id.* at § 82a-708b(a).

⁴⁶ *Id.*

⁴⁷ *Id.*

⁴⁸ *Id.*

⁴⁹ *Id.*; *Id.* at § 82a-1901.

⁵⁰ *Clawson v. Kan., Dep’t of Agric., Div. of Water Res.*, 315 P.3d 896, 909 (Kan. Ct. App. 2013); KAN. STAT. § 82a-712.

wells in the vicinity of his land.⁵¹ Williams was upset because city wells had decreased the amount of groundwater available for his use.⁵² Williams claimed that the city's well had affected the productivity of this land and caused his land values to decrease.⁵³ By the time the case made it to the Kansas Supreme Court the only contested issue was whether the Act was constitutional.⁵⁴

At that time, the court recognized a need for Kansas groundwater users to have stability over what the law was and correct the overlying controversy causing uncertainty to groundwater users.⁵⁵ Before this case, there had been many years of federal and state litigation concerning the validity of the Act.⁵⁶ The Court resolved this issue by holding the Act was constitutional.⁵⁷ By upholding the Act the Court protected the law that the waters of the state were "dedicated" to the people of the state and the chief engineer of the DWR had the authority to completely transition to the state to a prior appropriation system and begin permitting the unused water.⁵⁸

Water in Kansas must be appropriated for a beneficial use.⁵⁹ The following have all been considered beneficial uses by the DWR: domestic uses, stockwatering, municipal uses, irrigation, industrial uses, recreational uses, waterpower, artificial recharge, hydraulic dredging, contamination remediation, dewatering, fire protection, thermal exchange and sediment control in a reservoir.⁶⁰

A domestic user is one who uses water for "household purposes, or for the watering of livestock, poultry, farm and domestic animals used in operating a farm, and for the

⁵¹ *Williams v. City of Wichita*, 374 P.2d 578, 580 (Kan. 1962).

⁵² *Id.*

⁵³ *Id.* at 581.

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ *Id.* at 596.

⁵⁸ *Id.* at 593.

⁵⁹ KAN. STAT. ANN. § 82a-703 (West, Westlaw through 2021 Sess.).

⁶⁰ KAN. ADMIN. REGS. §§ 5-1-1(o)(1)-(14) (West, Westlaw through Volume 40, No. 25 of 2021 Kan. Admin. Reg. dated June 24, 2021).

irrigation of lands not exceeding a total of two acres in area for the growing of gardens, orchards and lawns.”⁶¹

Stockwatering is defined as:

the watering of livestock and other uses of water directly related to either of the following: [t]he operation of a feedlot with the capacity to confine 1,000 or more head of cattle; or any other confined livestock operation or dairy that would divert 15 or more acre-feet of water per calendar year.⁶²

Stockwatering does not include irrigating feed grain or other crops.⁶³

Municipal uses include water uses that are “delivered through a common distribution system”, such as “[a] municipality; a rural water district; a water district; a public wholesale water supply district; any person or entity serving 10 or more hookups for residences or mobile homes; or any other similar entity distributing water to other water users for various purposes.”⁶⁴ “Municipal use shall also include the use of water by restaurants, hotels, motels, churches, camps, correctional facilities, educational institutions, and similar entities using water that does not qualify as a domestic use.”⁶⁵

Irrigation means using water to grow crops, water “gardens, orchards, and lawns exceeding two acres” and watering “golf courses, parks, cemeteries, athletic fields, racetrack grounds, and similar facilities.”⁶⁶

Industrial use is defined as:

the use of water in connection with the manufacture, production, transport, or storage of products, or the use of water in connection with providing commercial services, including water used in connection with steam electric

⁶¹ KAN. STAT. § 82a-701(c).

⁶² KAN. ADMIN. REGS. §§ 5-1-1(cccc)(1)(A)-(B).

⁶³ *Id.* at § 5-1-1(cccc)(2).

⁶⁴ *Id.* at §§ 5-1-1(vv)(1)-(6).

⁶⁵ *Id.* at § 5-1-1(vv).

⁶⁶ *Id.* at §§ 5-1-1(rr)(1)-(3).

power plants, greenhouses, fish farms, poultry operations that are not incidental to the operation of a traditional farmstead, . . . secondary and tertiary oil recovery, air conditioning, heat pumps, [and] equipment cooling.⁶⁷

“Recreational use means a use of water in accordance with a water right that provides entertainment, enjoyment, relaxation, and fish and wildlife benefits.”⁶⁸

“Waterpower use means the use of falling water for hydroelectric or hydromechanical power.”⁶⁹

“Artificial recharge means the use of source water to artificially replenish the water supply in an aquifer.”⁷⁰

“Hydraulic dredging means the removal of saturated aggregate from a stream channel, pit, or quarry by means of hydraulic suction and the pumping of the aggregate and water mixture as a slurry to a location where at least 95 percent of the water returns directly to the source of supply.”⁷¹

“Contamination remediation means the diversion of water by a state agency, or under a written agreement or order of an appropriate state agency, for the purpose of improving the water quality.”⁷²

Dewatering involves removing surface or groundwater water to “[f]acilitate the construction of a building, pipeline, or other facility; or protect a building, levee, mining activity, or other facility.”⁷³

⁶⁷ *Id.* at § 5-1-1(qq).

⁶⁸ *Id.* at § 5-1-1(ooo).

⁶⁹ *Id.* at § 5-1-1(nnnn).

⁷⁰ *Id.* at § 5-1-1(g).

⁷¹ *Id.* at § 5-1-1(ll).

⁷² *Id.* at § 5-1-1(t).

⁷³ *Id.* at §§ 5-1-1(x)(1)-(2).

“Fire protection means the use of water for fire protection by a fire department for public protection in general.”⁷⁴

“Thermal exchange means the use of water for climate control in a nondomestic building and in a manner that is essentially nonconsumptive to the source of supply.”⁷⁵

Sediment control in a reservoir is water that is “stored in a reservoir that has no other authorized type of beneficial use, except domestic use” and “is stored only in the part of the reservoir designed and constructed for the storage of sediment.”⁷⁶

The standard for determining how much water to grant in a permit is a reasonable amount standard for the particular beneficial use.⁷⁷ Therefore, an appropriator will only be granted a reasonable amount of water to fulfill their beneficial use.⁷⁸ However, beneficial use remains the touchstone of the right to appropriate water.⁷⁹

2. Sources of Law

The Kansas Water Appropriation Act is the basis for groundwater law in Kansas. The Act was originally passed in 1945, but has since had sections repealed and added as Kansas’s groundwater law has developed. The Department of Agriculture, Division of Water Resources provides regulations on groundwater. Each Groundwater Management District also has its own regulations.⁸⁰

The following acts have an impact on groundwater in Kansas: (1) Groundwater Exploration and Protection Act; (2) State Water Resource Planning Act; (3)

⁷⁴ *Id.* at § 5-1-1(ee).

⁷⁵ *Id.* at § 5-1-1(iiii).

⁷⁶ *Id.* at §§ 5-1-1(xxx)(1)-(2).

⁷⁷ KAN. STAT. ANN. § 82a-707(e) (West, Westlaw through 2021 Sess.).

⁷⁸ *See id.*

⁷⁹ *See Williams v. City of Wichita*, 374 P.2d 578, 592 (Kan. 1962).

⁸⁰ GMD #1: KAN. ADMIN. REGS. § 5-21-1, et seq., (West, Westlaw through Volume 40, No. 25 of 2021 Kan. Admin. Reg. dated June 24, 2021); GMD #2: KAN. ADMIN. REGS. § 5-22-1, et seq.; GMD #3: KAN. ADMIN. REGS. § 5-23-1, et seq.; GMD #4: KAN. ADMIN. REGS. § 5-24-1, et seq.; GMD #5: KAN. ADMIN. REGS. § 5-25-1, et seq.

Groundwater Management District Act; and (4) Kickapoo Tribe in Kansas Water Rights Settlement Agreement Act.

The chief Kansas Supreme Court cases governing groundwater are *Williams v. City of Wichita*⁸¹ and *F. Arthur Stone & Sons v. Gibson*.⁸²

3. Scope of Right

a. Groundwater Ownership

All water within the state of Kansas is “dedicated” to the people of the state, subject to the control and regulation of the state.⁸³ Kansas groundwater users do not have absolute ownership in the water below their land. They have an usufructuary right, which is a right to use the water predicated on an approval system.⁸⁴

When deciding whether to issue a new permit for groundwater use, the DWR must consider whether a proposed use will impair an existing right and if the permit will “prejudicially and unreasonably [affect] the public interest.”⁸⁵ The factors that must be considered for the public interest prong are the following:

- (1) Established minimum desirable streamflow requirements;
- (2) the area, safe yield and recharge rate of the appropriate water supply;
- (3) the priority of existing claims of all persons to use the water of the appropriate water supply;
- (4) the amount of each claim to use water from the appropriate water supply; and
- (5) all other matters pertaining to such question.⁸⁶

⁸¹ *Williams*, 374 P.2d at 578.

⁸² *F. Arthur Stone & Sons v. Gibson*, 630 P.2d 1164 (Kan. 1981).

⁸³ *Water Appropriation Forms*, KAN. DEP’T OF AGRIC., (last visited August 7, 2021), <https://agriculture.ks.gov/divisions-programs/dwr/water-appropriation/water-appropriation-forms> (The permit to appropriate is located in a Word document under the link “Application for Permit to Appropriate Water for Beneficial Use” on this webpage.).

⁸⁴ KAN. STAT. ANN. § 82a-707(a) (West, Westlaw through 2021 Sess.); *Shipe v. Pub. Wholesale Water Supply Dist. No. 25*, 210 P.3d 105, 110 (Kan. 2009).

⁸⁵ KAN. STAT. § 82-711(a).

⁸⁶ *Id.* at §§ 82-711(b)(1)-(5).

For the fifth factor,

the chief engineer shall also take into consideration the quantity, rate and availability of the water necessary to: (1) satisfy senior domestic water rights from the stream; (2) protect senior water rights from being impaired by the unreasonable concentration of naturally occurring contaminants; and (3) over the long term reasonably recharge the alluvium or other aquifers hydraulically connected to the stream.⁸⁷

Unless otherwise provided, it shall “be in the public interest that only the safe yield of any source of water supply, including hydraulically connected sources of water supply, shall be appropriated.”⁸⁸

b. Scope of Use

i. Permitted and Preferred Uses

In Kansas, all groundwater uses must be beneficial.⁸⁹ Reasonable use is a guideline used to determine the amount of water a particular beneficial use requires in the proposed context.⁹⁰ Thus, when a water users applies for a permit, only a reasonable amount of water will be permitted for a water user’s specific beneficial use.⁹¹

In general, a waste of water by a user is not considered a lawful use of water.⁹² Waste is defined as failing to use water for a beneficial use on the land listed in the water right; impairing another water user’s right by unreasonably deteriorating the quality of a water source, causing irrigation water to escape and drain from its authorized place of use; or using an excess amount of water for an authorized beneficial use.⁹³

⁸⁷ KAN. ADMIN. REGS. §§ 5-3-9(a)(1)-(3) (West, Westlaw through Volume 40, No. 25 of 2021 Kan. Admin. Reg. dated June 24, 2021).

⁸⁸ *Id.* at § 5-3-9(b).

⁸⁹ KAN. STAT. § 82a-703.

⁹⁰ *Id.* at § 82a-707(e).

⁹¹ *Id.*

⁹² *Id.* at § 82a-706d.

⁹³ KAN. ADMIN. REGS. §§ 5-1-1(mmmm)(1)-(4).

The Act provides that the date of a permit determines the right to divert and use water, not the purpose of the use.⁹⁴ However, “[w]here lawful uses of water have the same date of priority” the following is the preference given to users based on the purpose of the uses: “[d]omestic, municipal, irrigation, industrial, recreational, and water power uses.”⁹⁵

The DWR regulations provided a method to calculate what a reasonable amount of water is for agriculture uses. After September 22, 2000, “the maximum annual quantity of water reasonably necessary to irrigate crops shall be determined by multiplying the number of irrigated acres by the country value found”⁹⁶ on a map titled “reasonable quantities for irrigation use in Kansas, by county.”⁹⁷ This quantity can be exceeded only if the applicant shows unusual conditions and that the additional water will not be used wastefully or “otherwise prejudicially and unreasonably affect the public interest.”⁹⁸ The regulations also define specific amounts of water reasonable for nondomestic livestock and poultry operations.⁹⁹

When the DWR is determining whether to issue a permit for use of fresh water they must also consider whether the right would impair an existing right or affect the public interest, along with whether there is water source available for the proposed use that is more technologically and economically feasible.¹⁰⁰

ii. Location of Use

The Act describes a water right as “a real property right appurtenant to and severable from the land.”¹⁰¹ Therefore, a water right is transferrable independent from the surface

⁹⁴ KAN. STAT. § 82a-707(b).

⁹⁵ *Id.* at § 82a-707(b).

⁹⁶ KAN. ADMIN. REGS. § 5-3-19(b).

⁹⁷ *Id.* at § 5-3-24.

⁹⁸ *Id.* at § 5-3-20(c).

⁹⁹ *Id.* at § 5-3-22.

¹⁰⁰ KAN. STAT. § 82a-711(a).

¹⁰¹ *Id.* at § 82a-701(g).

estate.¹⁰² A water right can only be severed from the original permit holder's land with permission from the chief engineer of the DWR.¹⁰³ Any person is entitled to apply for a permit to appropriate water and place that water to beneficial use "upon or in connection with the lands of another."¹⁰⁴ As part of the permit application, the applicant must provide a "sworn statement or evidence of legal access to or control of the point of diversion from the landowner, or the landowner's authorized representative" if the application for a permit requests the use of land owned by another person.¹⁰⁵ The permit itself does not grant legal access to another's land.¹⁰⁶ Thus, because the location of land is not a deciding factor, overlying lands do not have an advantage over non-overlying lands.¹⁰⁷

When a water user applies to modify their water right to change the location of use, the application must be in writing and the water user must demonstrate that the proposed change will not impair existing water users, is reasonable, and the new water use will be from the same source as the original water right.¹⁰⁸ This requirement for change in location is the same standard used for other modifications such as change in the point of diversion or change in the use of water.¹⁰⁹

Thus, once a user has a water right, water can only be transported and used on new lands if the use will not impair existing users, affect the public interest, is reasonable, and is from the same source of water as the original use, all of which is necessary for obtaining the requisite approval of the chief engineer.¹¹⁰ Impairment has been interpreted to mean "diminishes, weakens, or injures the prior right" and not "diminishes, weakens, or injures the prior right beyond a reasonable economic limit."¹¹¹

¹⁰² *See id.*

¹⁰³ *See id.* at § 82a-706b.

¹⁰⁴ *Id.* at § 82a-708a(a).

¹⁰⁵ *Id.* at § 82a-709(g).

¹⁰⁶ *See id.*

¹⁰⁷ *Williams v. City of Wichita*, 374 P.2d 578, 590 (Kan. 1962).

¹⁰⁸ KAN. STAT. § 82a-708b(a).

¹⁰⁹ *Id.*

¹¹⁰ *See id.*; *Id.* at § 82a-711(a).

¹¹¹ *Garetson Brothers v. Am. Warrior, Inc.*, 435 P.3d 1153,1170 (Kan. Ct. App. 2019).

The Water Transfer Act does allow an application to be made for groundwater to be transported to any point outside a thirty-five-mile radius of the location of the well at a quantity of “2,000 acre feet or more per year for a beneficial use.”¹¹² Before this transfer can occur, it must be approved by the DWR chief engineer, the secretary of the Department of Health and Environment and the director of the Kansas Water Office.¹¹³ When considering whether to approve this type of water transfer, the following should be considered: the future needs of the water users in the area from which the transfer is occurring,¹¹⁴ the impairment of an existing water right,¹¹⁵ the conservation plan of the water user,¹¹⁶ and “whether the benefits to the state for approving the transfer outweigh the benefits to the state for not approving the transfer.”¹¹⁷

Additionally, the Act allows water users to divert water from inside the state to other states as long as a beneficial use is shown and the use is not against the public interest.¹¹⁸ For these permits the Act does not differentiate between a resident and non-resident.¹¹⁹ Instead, the Act reads “[a]ny person intending to divert and transport water produced from a point or points of diversion located in this state for use in another state, shall” apply for a permit with the DWR.¹²⁰ A person is defined as “a natural person, a partnership, an organization, a corporation, a municipality and any agency of the state or federal government.”¹²¹ These permits can be suspended, modified, or revoked if necessary to protect public health or safety.¹²²

Groundwater users can also obtain approval for the use of a substitute well as long as

¹¹² KAN. STAT. §§ 82a-1501(a)(1), (b)(3).

¹¹³ *Id.* at §§ 82a-1501a(a), 1502(a).

¹¹⁴ *Id.* at § 82a-1502(a).

¹¹⁵ *Id.* at § 82a-1502(b)(1).

¹¹⁶ *Id.* at § 82a-1502(b)(2).

¹¹⁷ *Id.* at § 82a-1502(c).

¹¹⁸ *Id.* at § 82a-726(a).

¹¹⁹ *Id.*

¹²⁰ *Id.*

¹²¹ *Id.* at § 82a-701(a).

¹²² *Id.* at § 82a-726(a).

the new well is being used within two miles of the original well.¹²³ However, a transfer of this sort will not be allowed if other groundwater rights are impaired or if the change would result in water use outside the originally approved source.¹²⁴

Water transfers within a basin cannot occur without filing an application with DWR and receiving a permit to transfer water.¹²⁵ Before an application is filed one of the following has to be approved by the DWR: 1) “a new application to appropriate water”, 2) “an application for a change in any or all of the following: point of diversion, place of use; or use made of water filed pursuant to the [Act]”, or 3) “a contract for the purchase of water pursuant to the state water plan storage act.”¹²⁶ Some of the requirements in an application to transfer water within a basin are: the amount of water and rate of diversion of the proposed use, the proposed location and use, whether alternative waters sources are available and if so why they were not selected to be used, the infrastructure needed for the proposed transfer and the completion date of the needed infrastructure, the benefits of approving the proposed transfer outweigh the benefits of not approving the proposed transfer, the proposed transfer will not affect any existing water rights, and the current beneficial use of the water and any future or foreseeable beneficial uses.¹²⁷ Additionally, there is a prohibition against approving a change that would result in the use of water outside the originally approved source of supply.¹²⁸

c. Loss of Water Rights

Water rights in Kansas can be lost entirely through forfeiture or condemnation. Rights obtained after April 12, 1984 can also be temporarily reduced to protect streamflows, and water rights can be reduced at any time during a change¹²⁹ to another water user.

¹²³ *Id.* at § 82a-743(b)(1).

¹²⁴ *Id.* at § 82a-743(c); *Id.* at § 82a-706b.

¹²⁵ KAN. ADMIN. REGS. § 5-50-2 (West, Westlaw through Volume 40, No. 25 of 2021 Kan. Admin. Reg. dated June 24, 2021).

¹²⁶ *Id.* at §§ 5-50-7(a)-(c).

¹²⁷ *Id.* at § 5-50-2.

¹²⁸ KAN. STAT. ANN. § 82a-706b (West, Westlaw through 2021 Sess.).

¹²⁹ In Kansas a water right transfer from user to another is referred to as a change.

Partial abandonment is not authorized in Kansas.¹³⁰ Additionally, the Act expressly states that “no water rights of any kind may be acquired . . . solely by adverse use, adverse possession, or by estoppel.”¹³¹

With regards to forfeiture, a vested right can only be lost for nonuse.¹³² All unused water belongs to the people of the state.¹³³ In 2006, the Kansas Supreme Court clarified that the Kansas statute relating to the loss of water rights was a forfeiture statute because the water right was terminated after “five successive years of unexcused nonuse” and the intent of the water user was not considered, which is an essential element of abandonment statutes.¹³⁴ The key element in a forfeiture statute is the conduct of the water user, not the water user’s intent.¹³⁵

There are three statutory elements to prove a water right is terminated through forfeiture in Kansas: “(1) nonuse; (2) for 5 successive years; and (3) without due and sufficient cause.”¹³⁶ An economic decision does not constitute due and sufficient cause under the statute.¹³⁷ “Natural precipitation can constitute due and sufficient cause for not irrigating if crops were produced that ‘normally’ require full or partial irrigation.”¹³⁸ Poor health on the part of the water right holder is not a justified reason for nonuse when “no evidence [is] presented to show it [is] reasonable for [a water user] to simply stop irrigating;” a water users must be able to show they “could not have gotten help to irrigate the farm or could not have found a tenant who would have irrigated.”¹³⁹

The Kansas Administrative Regulations list thirteen circumstances that would be

¹³⁰ *Wheatland Elec. Coop., Inc. v. Polansky*, 265 P.3d 1194, 1198, 1206 (Kan. Ct. App. 2011).

¹³¹ KAN. STAT. § 82a-705.

¹³² *Id.* at § 82a-703.

¹³³ *Hawley v. Kan. Dep’t of Agric.*, 132 P.3d 870, 879 (Kan. 2006).

¹³⁴ *Id.* at 880-81.

¹³⁵ *Id.* at 886-87.

¹³⁶ *Frick Farm Props., L.P. v. Kan., Dep’t of Agric., Div. of Water Res.*, 216 P.3d 170, 173 (Kan. 2009); KAN. STAT. § 82a-718(b).

¹³⁷ *Frick Farm*, 216 P.3d at 177.

¹³⁸ *Id.* at 178.

¹³⁹ *Id.* at 179.

considered due and sufficient cause for nonuse that can negate a finding of forfeiture: (1) there has been “[a]dequate moisture from natural precipitation” to produce crops, “as determined by the moisture requirements of the specific crop;” (2) the source from which a water user is drawing water is “likely to be depleted during periods of drought;” (3) “[w]ater is not available from the source of water for the authorized use at the times needed;” (4) “[w]ater use is temporarily discontinued by the owner for a definite period of time to permit soil, moisture, and water conservation;” (5) “[m]anagement and conservation practices are being applied that require the use of less water than authorized;” (6) a point of diversion in standby status has previously been approved; (7) “[p]hysical problems exist with the point of diversion, distribution system, place of use, or the operator;” (8) conditions beyond the control of the water right holder prevent them from accessing the point of diversion, “as long as the owner is taking reasonable affirmative action to gain access;” (9) “[a]n alternative source of water supply was not needed and was not used because the primary source of supply was adequate to supply the needs of the water right owner;” (10) the DWR determines “manifest injustice would result if the water right were deemed abandoned under the circumstances of the case;” (11) “[t]he water right is located in an area of the state that is closed to new appropriations of water by regulation or order of the chief engineer but is not closed by a safe-yield analysis;” (12) “[t]he water right has been deposited in a water bank;” and (13) the water right “is suspended because the water right is enrolled in a multiyear flex account.”¹⁴⁰

A water right will not be deemed abandoned if the right is included in a conservation program¹⁴¹ or is pumped from an aquifer that that chief engineer closed off “to new appropriations by rule, regulation or order of the chief engineer.”¹⁴² Additionally, a use of water right can be suspended due to non-compliance with the Act if notice and a hearing are first provided.¹⁴³

Beneficial use is the key touchstones to maintain an appropriation of groundwater.¹⁴⁴

¹⁴⁰ KAN. ADMIN. REGS. §§ 5-7-1(a)(1)-(13) (West, Westlaw through Volume 40, No. 25 of 2021 Kan. Admin. Reg. dated June 24, 2021).

¹⁴¹ KAN. STAT. ANN. § 82a-718(d) (West, Westlaw through 2021 Sess.).

¹⁴² *Id.* at § 82a-718(e).

¹⁴³ *Id.* at § 82a-770(b).

¹⁴⁴ *See id.* at § 82a-718(a).

When a water user has not made a beneficial use of water for five successive years the water right is “deemed abandoned and shall terminate.”¹⁴⁵ Before the water right is officially terminated the DWR shall conduct a hearing, with notice of the hearing being given to the water right holder “at least 30 days before the date of the hearing.”¹⁴⁶

After five or more successive years of non-use, the water right is lost as a matter of law and notice does not have to be given at this point because “[e]ither water was used or not, and there was either due and sufficient case or not.”¹⁴⁷ After “the five-year period has expired, the controlling facts are set.”¹⁴⁸ This is true despite the statute’s use of the term “abandonment”, rather than “forfeiture.”¹⁴⁹

In an attempt to warn the water user about the possibility of abandonment, the DWR must notify a user when there has been three successive years of no beneficial water use.¹⁵⁰ The notification shall include the following information: there has been no beneficial use of water for three years, if there is no beneficial use for five years the right may be terminated, and “the right will not be terminated if the user shows that for one or more of the five consecutive years the beneficial use of the water was prevented or made unnecessary by circumstances that are due and sufficient cause for nonuse.”¹⁵¹

With regards to condemnation, even if a water user complies with all state water law rules, their water rights may be taken.¹⁵² The Eminent Domain Procedure Act provides procedures that are to be followed in all condemnation proceedings.¹⁵³ Private property must be taken only for public uses where just compensation is paid.¹⁵⁴

¹⁴⁵ *Id.*

¹⁴⁶ *Id.*

¹⁴⁷ *Hawley v. Kan. Dep’t of Agric.*, 132 P.3d 870, 876 (Kan. 2006) (thirty-one years of nonuse resulted in termination of a water right even though notice was not given).

¹⁴⁸ *Id.*

¹⁴⁹ *See id.*

¹⁵⁰ KAN. STAT. ANN. § 82a-718(b) (West, Westlaw through 2021 Sess.).

¹⁵¹ *Id.* at § 82a-718(b).

¹⁵² *Id.* at § 82a-707(b); *Durkee v. Bd. Of Comm’rs Bourbon Cnty.*, 51 P.2d 984 (Kan. 1935).

¹⁵³ KAN. STAT. § 26-501(a).

¹⁵⁴ *Id.*

Cities and counties may exercise eminent domain power.¹⁵⁵ A city may use eminent domain to establish a public well.¹⁵⁶ The well must be within five linear miles of the city limits or within twenty miles “where it is necessary [to establish a well] in order to obtain an adequate water supply.”¹⁵⁷ There is no statutory requirement that a city must apply for a change in use before condemning the property interest in a water right.¹⁵⁸ Instead, the city as the new owner, once the right has been condemned, can proceed with these appropriate changes after it has complied with Eminent Domain Procedure Act.¹⁵⁹ Entities, such as corporations and partnerships, which have been granted the power of eminent domain have the right to exercise the power.¹⁶⁰

In condemnation proceedings, the entity expressing the power of eminent domain must publish notice in a newspaper and mail notice to interested parties fourteen days before the court considers the entities petition for condemnation.¹⁶¹ Once appraisers are chosen and have viewed the property that is to be taken, a public hearing will be held where testimony from the affected parties is heard.¹⁶² Each interested party must be given fourteen days’ notice before the public hearing.¹⁶³ After the public hearing, if the entity chooses to continue with the condemnation, payment for the property shall be delivered to the district court, and the title to property will immediately vest in the condemning entity.¹⁶⁴ Property owners are allowed to appeal the award by appraisers within thirty days of the appraisers report.¹⁶⁵

¹⁵⁵ *Id.* at § 26-201; *see id.* at § 26-501 (describing a municipality as a city, county or unified government).

¹⁵⁶ *Sullivan v. City of Ulysses*, 932 P.2d. 456, 459 (Kan. Ct. App. 1997).

¹⁵⁷ KAN. STAT. § 12-694; *Sullivan*, 932 P.2d. at 459.

¹⁵⁸ *Sullivan*, 932 P.2d. at 459.

¹⁵⁹ *Id.*

¹⁶⁰ KAN. STAT. § 26-101.

¹⁶¹ *Id.* at § 26-503.

¹⁶² *Id.* at § 26-506(a).

¹⁶³ *Id.*

¹⁶⁴ *Id.* at § 26-507(a).

¹⁶⁵ *Id.* at § 26-508(a).

When a change requires a reduction of a right, the Act does not “allow water rights to be partially abandoned—under the statute’s plain language, only total nonuse of water under” the water right will result in the loss of a water right.¹⁶⁶ The DWR does have the ability limit the amount of water a water user can use when the water right is being changed from one water user to another.¹⁶⁷ When a change in the water right occurs or when a permit is first being perfected, the DWR has the ability to approve a lesser amount of water than requested.¹⁶⁸ The policy behind this decision is that different water “uses demand different quantities of water and return different amounts of water back into the ecosystem;” therefore, when a change occurs the new water user should not automatically be entitled to the same water right characteristics as the old water user.¹⁶⁹

The maximum authorized annual quantity of water may be reduced when the owner of a water right applies to the DWR to change the place of use, point of diversion, or use made of water and this new use either requires less water or the current holder has not been using their full amount of water.¹⁷⁰ Once the owner has applied for a change, the DWR evaluates the effect of the change and has the ability to limit the amount of water allowed if the change is approved.¹⁷¹ When approving the change of a water right, the DWR is allowed to consider the same factors as it would when approving a new permit and has the ability to grant a smaller amount of water for the changed water right.¹⁷²

¹⁶⁶ *Wheatland Elec. Coop., Inc. v. Polansky*, 265 P.3d 1194, 1198 (Kan. Ct. App. 2011).

¹⁶⁷ *Id.* at 1200-01.

¹⁶⁸ KAN. STAT. § 82a-708b; KAN. STAT. § 82a-711.

¹⁶⁹ *Wheatland*, 265 P.3d at 1201.

¹⁷⁰ *See id.* at 1200-01 (A change in ownership alone is not a change application that would be subject to reduction.).

¹⁷¹ KAN. STAT. § 82a-712.

¹⁷² *Wheatland*, 265 P.3d at 1201.

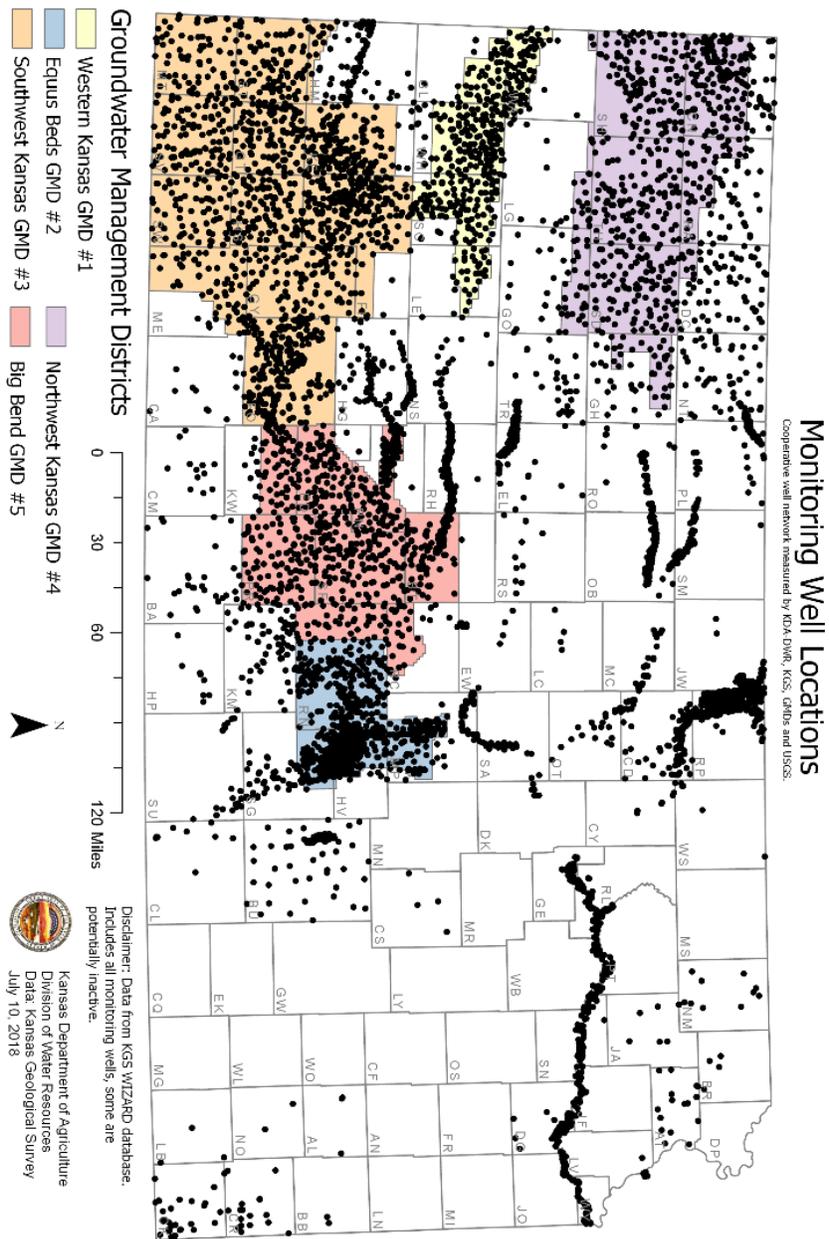


Fig. F.2. Groundwater Monitoring Wells in Kansas¹⁷³

¹⁷³ *Information about Kansas Water Resources*, KAN. DEP'T OF AGRIC., (last visited July 5, 2021), <https://www.agriculture.ks.gov/divisions-programs/dwr/managing-kansas-water-resources/information-about-kansas-water-resources>.

4. Well Drilling

The Kansas Department of Health and Environment¹⁷⁴ regulates well drilling through the Kansas Groundwater Exploration and Protection Act.¹⁷⁵

The purpose of the Kansas Groundwater Exploration and Protection Act is to protect Kansas groundwater from being wasted or polluted.¹⁷⁶ Under this law, a water well contractor¹⁷⁷ first obtain a license from the Secretary of the Department of Health and Environment (the Secretary)¹⁷⁸ before “[engaging] in the business of constructing, reconstructing or treating water wells.”¹⁷⁹ Each license is valid for one year and must be renewed annually.¹⁸⁰ Penalties are in place for water well contractors who proceed to work on wells without a license.¹⁸¹

After a well has been constructed, reconstructed or plugged, the licensed water well contractor must supply the Secretary with a log detailing the following: (1) name of the landowner and legal description of the location of the well, (2) any formations that were encountered, (3) the depth where water was encountered, (4) the static water level of the well, (5) a record of pumping tests if any were performed, and (6) if necessary specific information relating to the reconstruction or plugging of a well.¹⁸² The Secretary has the power to inspect wells as they are constructed, reconstructed, treated or plugged.¹⁸³

The Department of Health and Environment has provided the following requirements for casing:

¹⁷⁴ KAN. STAT. § 82a-1203(e).

¹⁷⁵ *Id.* at § 82a-1201.

¹⁷⁶ *Id.* at § 82a-1202.

¹⁷⁷ A water well contractor is defined as “any person who constructs, reconstructs or treats a water well.” *Id.* at § 82a-1203(g). The Kansas statutes use contractor as opposed to driller though the statutes. *See id.*

¹⁷⁸ *Id.* at § 82a-1202.

¹⁷⁹ *Id.* at § 82a-1206(a).

¹⁸⁰ *Id.* at § 82a-1209.

¹⁸¹ *Id.* at § 82a-1214.

¹⁸² *Id.* at §§ 82a-1212(a)-(g).

¹⁸³ *Id.* at § 82a-1205(c).

- (1) Each water well shall have durable watertight casing from at least one foot above the finished ground surface to the top of the producing zone of the aquifer. The watertight casing shall extend at least 20 feet below the ground level.
- (2) Each water well shall be an above-grade surface completion. . . Casing may be cut off below the ground surface to install a pitless well adapter or unit.
- (3) No opening shall be made through the casing, except for the installation of a pitless well adapter or unit designed and fabricated to prevent soil, subsurface, and surface water from entering the water well.
- (4) The casing shall meet the requirements of the department's document titled 'approved water well casing: water well casing for water wells other than public water-supply wells,' dated November 7, 2012.¹⁸⁴

5. Hydraulic Connection and Regulation

Although the Kansas courts have not heard any cases specifically litigating the groundwater/surface water interaction, the hydrological connection between the two has been recognized in statute. Groundwater and surface water are both governed jointly under a prior appropriation doctrine.¹⁸⁵ The drafters of the Act recognized that both surface and groundwater were connected and could not be separated; thus, they made the conscious decision to refrain from making a distinction between the two.¹⁸⁶

The Act designates the DWR as responsible for maintaining desired minimum streamflows in the watercourses of the state.¹⁸⁷ The Kansas legislature has provided these specific minimum streamflows for thirty-three watercourses in the state.¹⁸⁸ Additionally, when the DWR is evaluating whether to issue a new appropriation permit to use groundwater, they must consider whether the minimum instream flows will be

¹⁸⁴ KAN. ADMIN. REGS. § 28-30-5(f)(1)-(4) (West, Westlaw through Volume 40, No. 25 of 2021 Kan. Admin. Reg. dated June 24, 2021).

¹⁸⁵ KAN. STAT. § 82a-703.

¹⁸⁶ *Williams v. City of Wichita*, 374 P.2d 578, 590-91 (Kan. 1962).

¹⁸⁷ KAN. STAT. § 82a-703a.

¹⁸⁸ *Id.* at § 82a-703c.

maintained after the permit's water quantity has been withdrawn.¹⁸⁹ Groundwater Management Districts have also been granted various responsibilities related to their duty of protecting groundwater including, managing “drainage problems, storage, groundwater recharge, surface water management, and all other appropriate matters of concern to the district,” as well as proposing regulations subject to approval by the chief engineer of the DWR.¹⁹⁰ When the Kansas Water Office prepares the state water plan, “the interrelationship of groundwater and surface water supplies” is to be considered.¹⁹¹

The DWR regulations include a process for surface water users for when their water right has been impaired by a groundwater user.¹⁹² After an initial complaint is filed the chief engineer is responsible for conducting an investigation.¹⁹³ If the complaint was filed in a location within a GMD, the GMD will have an opportunity to assist with the investigation.¹⁹⁴ After the investigation, an initial report is published, affected parties and, if applicable, the respective GMD then have an opportunity to submit written comments.¹⁹⁵ During this comment process, the DWR retains the ability to properly regulate the junior user so that the senior user receives their water right.¹⁹⁶ After comments are received, the DWR is responsible for publishing a final report, which can include conservation plans.¹⁹⁷

The next step is for the complainant to submit a request to secure water with the DWR if the complainant wants the DWR “to regulate water rights that the final report has found to be impairing the complainant’s water right.”¹⁹⁸ The request to secure water must include “the minimum reasonable rate needed to satisfy the water right and”

¹⁸⁹ *Id.* at § 82a-711(b)(1).

¹⁹⁰ *Id.* at § 82a- 1028(m).

¹⁹¹ *Id.* at § 82a-907(g).

¹⁹² KAN. ADMIN. REGS. §§ 5-4-1(a), (c)(2) (West, Westlaw through Volume 40, No. 25 of 2021 Kan. Admin. Reg. dated June 24, 2021).

¹⁹³ *Id.* at §§ 5-4-1(b).

¹⁹⁴ *Id.* at §§ 5-4-1(b)(4).

¹⁹⁵ *Id.* at §§ 5-4-1(c)(2)(A)-(B).

¹⁹⁶ *Id.* at § 5-4-1(c)(2)(C).

¹⁹⁷ *Id.* at § 5-4-1(c)(4).

¹⁹⁸ *Id.* at § 5-4-1(d).

information supporting that need.¹⁹⁹ The DWR then must issue a notice of order instructing affected water users that their rights “must be curtailed to secure water to satisfy the complaint’s prior rights.”²⁰⁰ If the affected water rights are in a GMD and the impairment is the result of direct interference, the GMD will have the opportunity to make recommendations to the chief engineer as to how to regulate the impairing right to satisfy the impaired right before the notice of order is distributed to the water right holders.²⁰¹

There have been two situations in which the groundwater/surface water interaction was pertinent.²⁰² Kansas owns Cheyenne Bottoms, a wildlife area which serves as one of the most important refuges for migratory birds.²⁰³ Water from both the Walnut Creek and Arkansas Rivers is needed to provide additional water to the area during times when birds are migrating.²⁰⁴ In 1948, the Kansas Fish and Game Commission (now Kansas Department of Wildlife and Parks (KDWP)) obtained an appropriation permit for surface water to maintain the streamflow of the Walnut Creek water levels for the benefit of the Cheyenne Bottoms.²⁰⁵ Around the same time, Kansas water users received permits to withdraw water from “both alluvial groundwater and surface water in the Walnut Creek Basin.”²⁰⁶ However, the KDWP water permit was still senior to these additional permits.²⁰⁷ The consequences of these additional withdrawals from the junior water users made KDWP unable to maintain the Walnut Creek water levels for the migratory birds.²⁰⁸

When presented with the issue, the DWR had two options: maintain the prior

¹⁹⁹ *Id.*

²⁰⁰ *Id.* at § 5-4-1(e)(1).

²⁰¹ *Id.* at § 5-4-1(e)(2).

²⁰² See John C. Peck, *Property Rights in Groundwater—Some Lessons from the Kansas Experience*, 12 KAN. J. L. & PUB. POL’Y 493, 499 (2003).

²⁰³ *Id.*

²⁰⁴ *Id.*

²⁰⁵ *Id.*

²⁰⁶ *Id.* (large scale irrigation had not yet been developed at this time).

²⁰⁷ See *id.*

²⁰⁸ *Id.*

appropriation system with junior right holders being shut down; or designate an intensive groundwater use control area (IGUCA) in the area.²⁰⁹ The end result was the creation of an IGUCA and the KDWP was permitted to retain their original water right. All other groundwater users had to share proportionally the reduction in water withdrawals.²¹⁰ These water users were broken into two groups, seniors and juniors.²¹¹ Senior water users held “priority dates on or prior to October 1, 1965” and junior users were those after the date.²¹² Senior users were reduced twenty-two to thirty-three percent, while junior users were reduced sixty-four to seventy-one percent.²¹³

In 1993, water users in the Rattlesnake Creek Basin faced a similar problem, but they did not want an IGUCA imposed on their basin.²¹⁴ Instead, the interested entities, which included the United States Fish and Wildlife Service and the Big Bend GWD entered into a voluntary agreement to manage groundwater pumping that would establish a more consistent in-stream flow in Rattlesnake Creek.²¹⁵ Since 1993, these parties have continued working to achieve a mutual agreement.²¹⁶ On October 25, 2019 the U.S. Fish and Wildlife Service informed the DWR it would not be submitting a request to secure water and instead plans to pursue voluntary solutions.²¹⁷

While the Act requires groundwater and surface water to be managed jointly, it does not specifically provide guidance on which one is preferred. Instead, both groundwater and surface water users must jointly abide by the first in time, first in right doctrine.²¹⁸ Under

²⁰⁹ *Id.*

²¹⁰ *Id.*

²¹¹ *Id.*

²¹² *Id.*

²¹³ *Id.*

²¹⁴ *Id.*

²¹⁵ *Id.*

²¹⁶ *Quivira National Wildlife Refuge Impairment Complaint*, KAN. DEP’T OF AGRIC., <https://agriculture.ks.gov/divisions-programs/dwr/water-appropriation/impairment-complaints/quivira-national-wildlife-refuge> (last visited July 5, 2021); *see also Quivira NWR Resolution*, BIG BEND GROUNDWATER MGMT. DIST. 5, <https://gmd5.org/quivira-nwr> (last visited July 5, 2021).

²¹⁷ *Quivira National Wildlife Refuge Impairment Complaint*, *supra* note 241.

²¹⁸ *See* KAN. STAT. ANN. § 82a-703 (West, Westlaw through 2021 Sess.).

the Act, water users who fail to abide by their permit quantity, violate the Kansas Water Appropriation Act, or failure to comply with orders maintaining the minimum instream flows are subject to a civil penalty.²¹⁹

Additionally, a water right may be temporarily reduced during water shortages to protect the environmental flows of streams running through Kansas. The Kansas Legislature has enacted minimum environmental flows and empowered the DWR to withhold water to first establish and then maintain the desired streamflow of watercourses in the state.²²⁰ The effect of this law is that all groundwater permits issued after April 12, 1984 are subject to maintaining the streamflows and water users may have to cease pumping; however, all permits issued before that date were exempt from complying with the requirement.²²¹ The ability to protect minimum streamflows is only administered during times of shortages, at all other times the water users maintain the full water right.²²² Reductions based on streamflow may be taken into account at the initial permitting stage or if the DWR determines that a specific stream flow has fallen below the target level.²²³

6. Aquifer Recharge and Underground Storage

Artificial recharge is considered a beneficial use of water in Kansas.²²⁴ A water user may obtain a permit specifically to appropriate water for the beneficial use of artificial aquifer recharge through an aquifer storage and recovery system.²²⁵ Groundwater management districts may also participate in aquifer recharge by recommending rules and regulations.²²⁶ Additionally, a groundwater permit can be issued for water storage in a reservoir. Artificial recharge projects do not require a water storage permit.²²⁷

²¹⁹ *Id.* at § 82a-737(b)(3)(F); *see also id.* at § 82a-706b.

²²⁰ *Id.* at § 82a-703a.

²²¹ *Id.* at §§ 82a-703b(a)-(b).

²²² *See id.*

²²³ *See id.* at § 82a-703a.

²²⁴ KAN. ADMIN. REGS. § 5-1-1(West, Westlaw through Volume 40, No. 25 of 2021 Kan. Admin. Reg. dated June 24, 2021).

²²⁵ *Id.* at § 5-12-1(a).

²²⁶ *Id.* at § 5-12-4.

²²⁷ KAN. STAT. § 82a-709; *see also* KAN. ADMIN. REGS. § 5-6-1.

Water banks are also an available option to Kansas water users for them to place a water right in the bank with the option of it being leased out to another water user.²²⁸ A water bank is defined as “a private not-for-profit corporation that: (1) Leases water from water rights that have been deposited in the bank; and (2) provides safe deposit accounts.”²²⁹ “A water bank may be a groundwater bank or a surface water bank, or both.”²³⁰ Water banks allow permit holders to deposit water rights into the bank, and potential water users to lease the water from the bank.²³¹ One condition on leasing the water from the bank is that the water must be used in the same aquifer region from which it was deposited.²³² The bank itself does not own, buy or sell water rights, and a water user will not lose their water permit to non-use while the permit is in the bank.²³³ Despite the legal authority to create water banks since 2001, the Central Kansas Water Bank Association operating out of GMD#5 is the only water bank that has been implemented in Kansas.²³⁴

The Kansas Department of Agriculture, Division of Water Resources, and Groundwater Management Districts are responsible for oversight of aquifer recharge and underground storage.²³⁵ Additionally, the Kansas Department of Health and Environment has a role in regulating water quality.

7. Water Management Plan(s)

In 1981, the Kansas Legislature passed the State Water Resource Planning Act.²³⁶ This

²²⁸ See KAN. STAT. § 82a-763.

²²⁹ *Id.* at § 82a-762(l).

²³⁰ *Id.*

²³¹ *Id.* at § 82a-763.

²³² *Id.* at § 82a-763(b)(1).

²³³ *Id.* at § 82a-768.

²³⁴ Jacob Turner, *Softening the Fall: Expanding Water Banks to Extend Declining Kansas Aquifers*, 28 KAN. J. OF L. & PUB. POL’Y 252, 272-73 (2019).

²³⁵ KAN. ADMIN. REGS. § 5-12-4 (West, Westlaw through Volume 40, No. 25 of 2021 Kan. Admin. Reg. dated June 24, 2021).

²³⁶ KAN. STAT. § 82a-901a.

Act directs the Kansas Water Office to create plans every five years that are designed to provide “guidance for the management, conservation and development of the state’s water resources.”²³⁷ The following agencies are expected to participate in the formulation of the water plan: “division of water resources of the Kansas department of agriculture, state geological survey, the division of environment of the department of health and environment, department of wildlife, parks and tourism, Kansas department of agriculture division of conservation and all other interested state agencies.”²³⁸ The enabling statute gives the Kansas Water Office sixteen specific things to consider with most of them consisting of considering the current water sources, protecting the “public health, aquatic and animal life,” the current water users, and recommendations from the public and private sectors.²³⁹

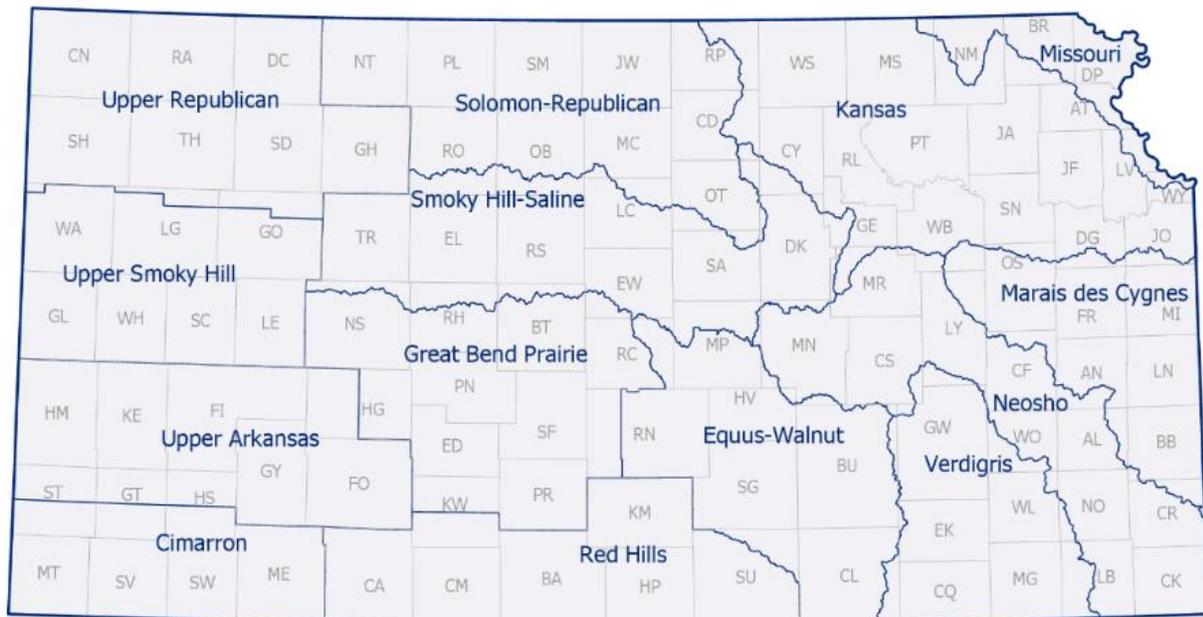


Fig. F.3. Regional Planning Areas Map²⁴⁰

²³⁷ *Id.* at § 82a-901a; *Id.* at § 82a-902(d); *Kansas Water Plan*, KAN. WATER OFF., <https://kwo.ks.gov/water-vision-water-plan/water-plan> (last visited July 5, 2021).

²³⁸ KAN. STAT. § 82a-903.

²³⁹ *Id.* at §§ 82a-907(a)-(p).

²⁴⁰ *Regional Planning Areas Map*, KAN. WATER OFF., (last visited July 5, 2021), <https://kwo.ks.gov/images/default-source/rac-images/regional-planning->

The plan is intended to meet the following long-range goals:

(a) The development, to meet the anticipated future needs of the people of the state, of sufficient supplies of water for beneficial purposes; (b) the reduction of damaging floods and of losses resulting from floods; (c) the protection and the improvement of the quality of the water supplies of the state; (d) the sound management, both public and private, of the atmospheric, surface, and groundwater supplies of the state; (e) the prevention of the waste of the water supplies of the state; (f) the prevention of the pollution of the water supplies of the state; (g) the efficient, economic distribution of the water supplies of the state; (h) the sound coordination of the development of the water resources of the state with the development of the other resources of the state; and (i) the protection of the public interest through the conservation of the water resources of the state in a technologically and economically feasible manner.²⁴¹

The state of Kansas is divided into fourteen regional planning areas, each of which has to develop a plan for their specific region.²⁴² The fourteen planning regions are the following: Cimarron, Equus-Walnut, Great Ben Prairie, Kansas, Marais des Cygnes, Missouri, Neosho, Red Hills, Smoky Hill-Saline, Solomon-Republican, Upper Arkansas, Upper Republican, Upper Smoky Hill, and Verdigris.

8. Regulatory Authorities

In Kansas the Department of Agriculture Division of Water Resources is the primary regulatory authority over groundwater.

Kansas Department of Agriculture Division of Water Resources
Website: <https://agriculture.ks.gov/divisions-programs/dwr>
1320 Research Park Drive
Manhattan, Kansas 66502
Phone Number: (785) 564-6700

areas_greyd603e31da40b6667970cff000032a16e.png?sfvrsn=94088514_0.

²⁴¹ *Id.* at §§ 82a-927(a)-(i).

²⁴² *Kansas Water Plan*, KAN. WATER OFF., <https://kwo.ks.gov/water-vision-water-plan/water-plan> (last visited July 5, 2021).

The Department of Health and Environment is responsible for regulating water quality.

Kansas Department of Health and Environment
Website: <https://www.kdheks.gov/>
1000 SW Jackson
Topeka, Kansas 66612
Phone Number: (785) 296-1500

9. Special Districts

In 1972, the Groundwater Management District Act was passed to assist groundwater users in their efforts to address the concerning decline of the Ogallala Aquifer and other groundwater sources. Apart from managing groundwater levels GMDs also have the power to do the following: (1) acquire land by gift, exchange or eminent domain; (2) construct, operate and maintain facilities “necessary for drainage, recharge, storage, distribution or importation of water;” (3) enter into agreements with people, firms, associations, partnerships, corporations, agencies, or the state and federal governments; (4) “extend or reduce the territories of the district;” (5) conduct research projects related to groundwater conservation; (6) install water meters to monitor water quantity used; (7) work with all other appropriate state agencies; (8) bring enforcement actions against water users; (9) enter onto private property for inspection; and (10) recommend conservation projects to the DWR.²⁴³

Overall, the Groundwater Management Districts advise the chief engineer of DWR.²⁴⁴ A district can overlay one or more aquifers and has the purpose of providing organized groundwater management.²⁴⁵ While the GMDs are tasked with implementing groundwater conservation, the basic water law doctrine of prior appropriation and the primary authority of the chief engineer of DWR is preserved.²⁴⁶

²⁴³ KAN. STAT. §§ 82a-1028(a)-(u).

²⁴⁴ *Id.* at § 82a-1020; *Id.* at § 82a-1022.

²⁴⁵ *Id.* at § 82a-1021(a)(4).

²⁴⁶ *Id.* at § 82a-1020; *see also id.* at § 82a-1039.

Groundwater Management Districts in Kansas

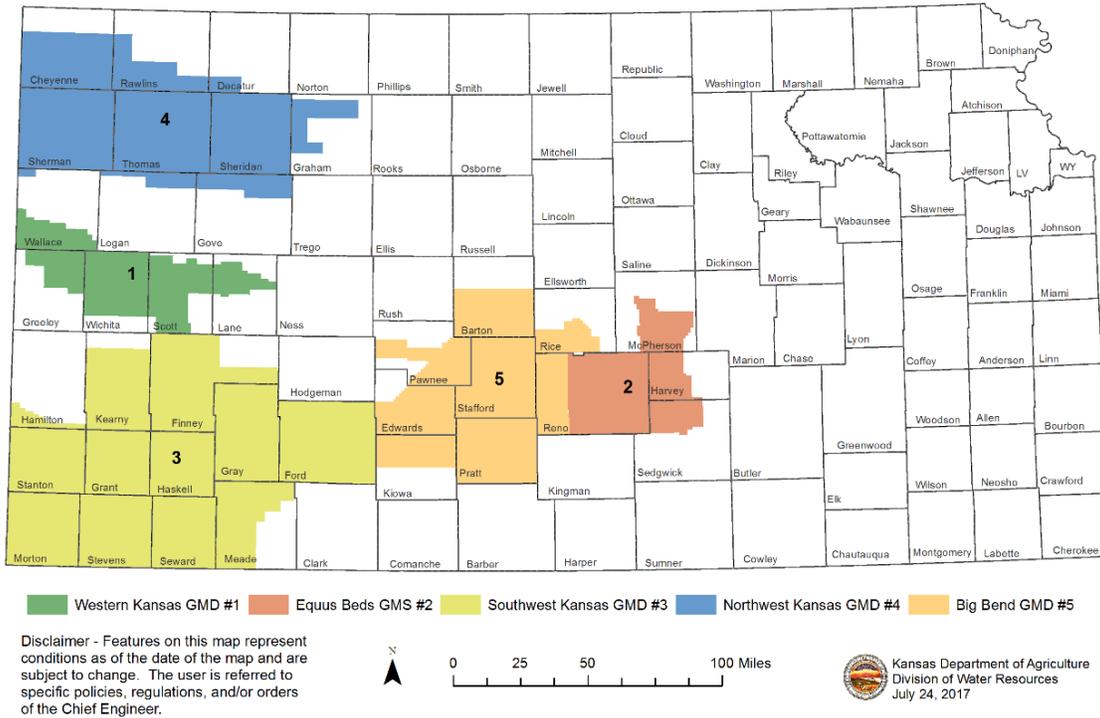


Fig. F.4. Groundwater Management Districts in Kansas²⁴⁷

“In order to finance the operations of the district, the board may assess an annual water user charge against every person who withdraws groundwater from within the boundaries of the district.”²⁴⁸

To date, Kansas has five GMDs.²⁴⁹

Western Kansas GMD #1²⁵⁰

²⁴⁷ *Groundwater Management Districts*, supra note 274.

²⁴⁸ *Id.* at § 82a-1030(a).

²⁴⁹ *Groundwater Management Districts*, KAN. DEP’T OF AGRIC., <https://agriculture.ks.gov/divisions-programs/dwr/managing-kansas-water-resources/groundwater-management-districts> (last visited July 5, 2021).

²⁵⁰ *Groundwater Management District No. 1*, GROUNDWATER MGMT. DIST. NO. 1,

Equus Beds GMD #2²⁵¹
Southwest Kansas GMD #3²⁵²
Northwest Kansas GMD #4²⁵³
Big Bend GMD #5²⁵⁴

After the creation of GMDs, the Kansas legislature created IGUCAs in 1978.²⁵⁵ There are currently eight IGUCAs.²⁵⁶ The goal of these designated areas is to preserve groundwater.²⁵⁷ GMDs may make a recommendation to the DWR that a specifically defined area within a district should be designated as an IGUCA.²⁵⁸ The chief engineer of the DWR may initiate a new IGUCA without recommendation from a GMD if the following conditions exist:

(a) Groundwater levels in the area in question are declining or have declined excessively; or (b) the rate of withdrawal of groundwater within the area in question equals or exceeds the rate of recharge in such area; or (c) preventable waste of water is occurring or may occur within the area in question; (d) unreasonable deterioration of the quality of water is occurring or may occur within the area in question; or (e) other conditions exist within the area in question which require regulation in the public interest.²⁵⁹

<https://www.gmd1.org/> (last visited July 5, 2021).

²⁵¹ *Groundwater Management District No. 2*, GROUNDWATER MGMT. DIST. NO. 2, <http://www.gmd2.org/> (last visited July 5, 2021).

²⁵² *Groundwater Management District No. 3*, GROUNDWATER MGMT. DIST. NO. 3, <http://www.gmd3.org/> (last visited July 5, 2021).

²⁵³ *Groundwater Management District No. 4*, GROUNDWATER MGMT. DIST. NO. 4, <http://www.gmd4.org/> (last visited July 5, 2021).

²⁵⁴ *Groundwater Management District No. 5*, GROUNDWATER MGMT. DIST. NO. 5, <http://www.gmd5.org/> (last visited July 5, 2021).

²⁵⁵ KAN. STAT. ANN. § 82a-1036 (West, Westlaw through 2021 Sess.).

²⁵⁶ *Intensive Groundwater Use Control Areas*, KAN. DEP'T OF AGRIC., <https://agriculture.ks.gov/divisions-programs/dwr/managing-kansas-water-resources/intensive-groundwater-use-control-areas> (last visited July 5, 2021).

²⁵⁷ *See id.*

²⁵⁸ *Id.*

²⁵⁹ KAN. STAT. § 82a-1036.

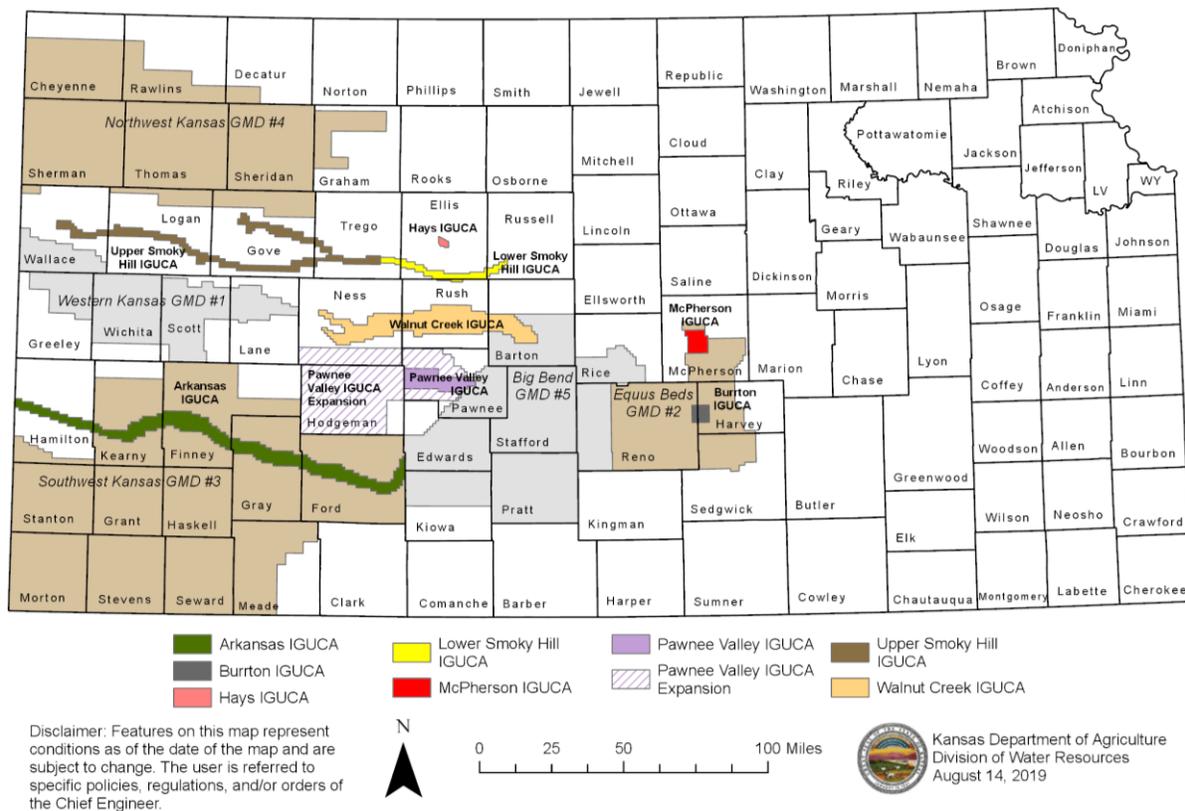


Fig. F.5. Intensive Groundwater Use Control Areas in Kansas²⁶⁰

If the chief engineer decides that an IGUCA is necessary, notice must be provided to all water users in the proposed area and a hearing will be held.²⁶¹ The chief engineer has the power to enact one or more of these control provision or others deemed necessary: (1) prevent any further groundwater appropriation permits; (2) determine a permissible total withdrawal amount and appropriate that amount among the groundwater users in the area; (3) reduce the number of appropriators or wells in the area; (4) create a system that rotates groundwater users on a schedule; or (5) any other provision to protect the public interest.²⁶²

²⁶⁰ *Id.*

²⁶¹ *Id.* at § 82a-1037.

²⁶² *Id.* at §§ 82a-1038(b)(1)-(4).

In another, more recent, attempt to conserve groundwater, the Kansas legislature created Local Enhanced Management Areas (LEMA) in 2012.²⁶³ LEMA's were set up to accomplish the same conservation goals as the IGUCA's.²⁶⁴ LEMAs are centered on a more voluntary approach to conservation.²⁶⁵ Enactment of the proposed area must come from the GMD and the area must be wholly within an already existing GMD.²⁶⁶ However, the chief engineer may only approve or reject the proposed LEMA; the chief engineer may not alter the terms.²⁶⁷ The process of approval provides notice and a hearing for all affected water users.²⁶⁸ Like the IGUCAs, LEMAs may enact the same correctional provisions.²⁶⁹ Currently GMD #1 has one LEMA, while GMD # 4 has two LEMA's.²⁷⁰

Water Conservation Areas (WCA) were created in 2015 with the goal of providing residents with another avenue to conserve and manage water resources.²⁷¹ WCAs are “a simple, streamlined and flexible tool that allows any water right owner or group of owners the opportunity to develop a management plan to reduce withdrawals in an effort to extend the useable life of the Ogallala-High Plains Aquifer.”²⁷² WCAs are more flexible with regards to what water users can do and allow for ground-up movements to conserve water.²⁷³ WCAs also do not have to be implemented under a GMD like

²⁶³ *Id.* at § 82a-1041(a).

²⁶⁴ *Id.*

²⁶⁵ *See id.*

²⁶⁶ *Id.* at § 82a-1041(a)(2).

²⁶⁷ *Id.* at § 82a-1041(d).

²⁶⁸ *Id.* at § 82a-1041(b).

²⁶⁹ *Id.* at §§ 82a-1041(f)(1)-(5).

²⁷⁰ *Local Enhanced Management Areas*, KAN. DEP'T OF AGRIC., <https://www.agriculture.ks.gov/divisions-programs/dwr/managing-kansas-water-resources/local-enhanced-management-areas> (last visited July 5, 2021).

²⁷¹ KAN. STAT. § 82a-745.

²⁷² *Water Conservation Areas*, KAN. DEP'T OF AGRIC., <https://www.agriculture.ks.gov/divisions-programs/dwr/managing-kansas-water-resources/wca> (last visited July 5, 2021).

²⁷³ *Id.*

LEMAs.²⁷⁴ Since 2015, there have been 53 WCA plans covering a total of 86,625 acres in Kansas.²⁷⁵

The basis of a WCA is formed by a consent agreement and order between “water right owners in a designated area” and the DWR.²⁷⁶ The consent agreement and order shall include the following: (1) “clear geographic boundaries;” (2) “written consent of all participating water right owners;” (3) “finding or findings that circumstances that one or more of the circumstances [that warrant the designation of a WCA]. . . exist, or include a finding or finds that the area within the [specified] geographic boundaries . . . has been closed to new appropriations by rule, regulation or order of the chief engineer;” (4) “the proposed duration of the water conservation area and any process by which water right owners may request to be added or removed from the [WMA];” (5) “goals and one or more of the corrective control provisions” planned; (6) “give due consideration to water users who have previously implemented reductions in water use resulting in voluntary conservation measures;” (7) “compliance monitoring and enforcement;” and (8) “be consistent with state law.”²⁷⁷

The consent agreement and order must also define corrective control provisions.²⁷⁸ The following provisions may be included to satisfy this condition: (1) “[c]losing the water conservation area to any further appropriation of groundwater;” (2) “determining the permissible total withdrawal of groundwater in the [WCA] each day, month or year, and apportioning such permissible total withdrawal among the valid groundwater right holders in such areas in accordance with the relative dates of priority of such rights;” 3) “reducing the permissible withdrawal of groundwater by any one or more appropriators thereof, or by wells in the [WCA];” 4) “requiring and specifying a system of rotation of groundwater use;” 5) “any other provision necessary to effectuate agreed-upon water conservation goals consistent with the public interest.”²⁷⁹ A WCA may not operate to

²⁷⁴ *Id.*

²⁷⁵ *Id.*

²⁷⁶ KAN. STAT. § 82a-745(a).

²⁷⁷ *Id.* at §§ 82a-745(a)(1)-(8).

²⁷⁸ *Id.* at § 82a-745(b).

²⁷⁹ *Id.* at §§ 82a-745(b)(1)-(5).

impair any water right.²⁸⁰ Additionally, the consent agreement and order “shall provide for periodic review” and a mandatory review is to “be conducted at least once every ten years.”²⁸¹ In order to amend a consent agreement and order, the chief engineer must have “the consent of all participating water right owners.”²⁸²

10. Transboundary Arrangements

In 1948 Kansas and Colorado entered into the Kansas-Colorado Arkansas River Compact.²⁸³ The Compact came after decades of failed attempts to reach any settlements or agreements between the two states.²⁸⁴ The two purposes of the Compact are: (1) “to settle existing disputes and remove causes of future controversy between Colorado and Kansas,” and (2) to “[E]quitably divide and apportion between the States of Colorado and Kansas the waters of the Arkansas River” as well as the benefits arising from John Martin Reservoir.²⁸⁵

In 1985 Kansas petitioned the Supreme Court to enforce the Compact.²⁸⁶ Kansas argued that after the Compact had been enacted, “Colorado allowed high capacity irrigation wells to be developed in the Arkansas River Valley.”²⁸⁷ These wells reduced the water available to Kansas via the Arkansas River because the irrigation wells were depleting the river flow.²⁸⁸ The Supreme Court agreed with Kansas in 1995 and ordered Colorado to pay Kansas \$34 million dollars in damages for Compact violations and \$1.1 million

²⁸⁰ *Id.* at § 82a-745(g).

²⁸¹ *Id.* at § 82a-745(j).

²⁸² *Id.* at § 82a-745(k)(1).

²⁸³ *Kansas-Colorado Arkansas River Compact, Kansas-Colorado Arkansas River Compact Background*, KAN. DEP’T OF AGRIC., <https://www.agriculture.ks.gov/divisions-programs/dwr/interstate-rivers-and-compacts/kansas-colorado-arkansas-river-compact> (last visited July 5, 2021).

²⁸⁴ *Id.*

²⁸⁵ *The Arkansas River Compact as Enacted by Congress*, 63 STAT. 145, art. I, § b (1949) https://www.co-ks-arkansasrivercompactadmin.org/wp-content/uploads/2019/08/Ark_River_Compact.pdf (last visited July 5, 2021).

²⁸⁶ *Kansas-Colorado Arkansas River Compact, Kansas-Colorado Arkansas River Compact Background*, *supra* note 315.

²⁸⁷ *Id.*

²⁸⁸ *Id.*

in litigation expenses.²⁸⁹ These damages were paid in April 2005 and June 2006 respectively.²⁹⁰ The Compact is to “remain in effect until modified or terminated by unanimous action of” Kansas and Colorado.²⁹¹

In 1942 the Republican River Compact was signed by Kansas, Colorado, and Nebraska.²⁹² The purposes of this compact “are to: (1) provide for equitable division of such waters; (2) remove all causes of controversy; (3) promote interstate comity; (4) promote joint action by the states and the United States in the efficient use of water and the control of destructive floods; and (5) provide for the most efficient use of waters in the Republican River basin.”²⁹³

In 1998, Kansas and Nebraska could not reach an agreement on Nebraska’s increased groundwater use and the effect it was having on Kansas’s stream flow.²⁹⁴ As a result, Kansas sued Nebraska in the U.S. Supreme Court to enforce the Compact.²⁹⁵ Kansas argued that Nebraska’s groundwater wells depleted surface water flow in Kansas and that Nebraska’s groundwater use counted against their allotment of water in the Compact.²⁹⁶ The appointed Special Master and Supreme Court agreed with Kansas.²⁹⁷ The states then entered into negotiations to determine how to measure and reflect Compact accounting and depletion due to groundwater pumping.²⁹⁸ “The Settlement

²⁸⁹ *State of Kansas v. State of Colorado*, 514 U.S. 673 (1995).

²⁹⁰ *Fact Sheet: Kansas-Colorado Arkansas River Compact*, KAN. DEP’T OF AGRIC., https://agriculture.ks.gov/docs/default-source/iwi---kansas-colorado-arkansas-river-compact/arkcompactfactsheet_2013-08-13.pdf?sfvrsn=4 (last visited July 5, 2021).

²⁹¹ *The Arkansas River Compact as Enacted by Congress*, 63 STAT. 145, art. IX, § b (1949) https://www.co-ks-arkansasrivercompactadmin.org/wp-content/uploads/2019/08/Ark_River_Compact.pdf (last visited July 5, 2021).

²⁹² *Republican River Compact*, KAN. DEP’T OF AGRIC., <https://www.agriculture.ks.gov/divisions-programs/dwr/interstate-rivers-and-compacts/republican-river-compact> (last visited July 5, 2021).

²⁹³ *Id.*

²⁹⁴ *Overview*, REPUBLICAN RIVER COMPACT ADMIN., <http://republicanriver.org/overview/> (last visited July 5, 2021).

²⁹⁵ *Id.*

²⁹⁶ *Kansas v. Nebraska*, 530 U.S. 1272 (2000).

²⁹⁷ *Id.*

²⁹⁸ *Kansas v. Nebraska*, 574 U.S. 445 (2015).

further provided, in line with this Court’s decision, that water pumping would count as part of a State’s consumption to the extent that it depleted the Basin’s stream flow.”²⁹⁹ The States both believed the other had not followed the settlement terms and again sought review in the Supreme Court, who referred to a Special Master, the Supreme Court then accepted the Special Master’s recommendations which were that Nebraska “knowingly failed” to comply with the compact by consuming 70,869 in excess of prescribed share and to remedy Kansas should be awarded \$3.7 million for losses, and another \$1.8 million in partial disgorgement but no injunctive relief against Nebraska was warranted.³⁰⁰ The agreements made within the Compact between the states can be terminated by any state if a two year’s notice is given.³⁰¹

11. Native American Rights

Kansas is home to the following four Indian Tribes: Iowa, Kickapoo, Potawatomi, and Sac & Fox.³⁰² Under the Winters Doctrine, Congress reserves water sufficient to fulfill the purposes of the reservations of the Tribes.³⁰³ Ultimately, under the Winters doctrine, “the priority and extent of Indian reserved water rights is affected by the purposes of the Indian reservation, the date when the Indian reservation was created, the quantification of water sufficient to accomplish those purposes, and the sources of water that may be used to fulfill the particular water rights.”³⁰⁴ Apart from the Winters doctrine, Kansas only has a separate water agreement with the Kickapoo Tribe.

In 2006, the Kickapoo Tribe initiated a civil suit against Kansas.³⁰⁵ This suit was filed

²⁹⁹ *Id.* at 451.

³⁰⁰ *Id.* at 452.

³⁰¹ *Republican River Compact*, *supra* note 324.

³⁰² *American Indians in Kansas*, KAN. HIST. SOC’Y, <https://www.kshs.org/kansapedia/american-indians-in-kansas/17881#:~:text=Today%2C%20Kansas%20is%20home%20to,language%2C%20religion%2C%20and%20customs> (last visited July 5, 2021).

³⁰³ Cynthia Brougher, *Indian Reserved Water Rights Under the Winters Doctrine: An Overview*, CONG. RSCH SERV. (2011), <https://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32198.pdf> (last visited July 5, 2021).

³⁰⁴ *Id.*

³⁰⁵ Complaint, *Kickapoo Tribe of Indians of the Kickapoo Reservation in Kansas v. Knight et al*, (D. Kan. June 14, 2006) (No. 2:06-CV-02248); *Kickapoo Indian Reservation Water Right Settlement Agreement*, KAN. DEP’T OF AGRIC., <https://www.agriculture.ks.gov/divisions-programs/dwr/interstate->

by the Tribe to recognize its senior water right under the *Winters* Doctrine and to condemn land for a water reservoir project.³⁰⁶ The dispute led to the parties suspending the litigation to instead negotiate a resolution.³⁰⁷ The result of this negotiation was the Kickapoo Tribe in Kansas Water Rights Settlement Agreement Act, which was signed by the Kickapoo Tribe and the State of Kansas in 2016.³⁰⁸ However, because the Act is considered an Indian Water Settlement agreement, Congressional approval is required before the agreement can take effect.³⁰⁹ In 2019, Kansas Representative, Steve Watkins introduced the bill during the 116th Congressional Session; but, the bill was never voted on and thus died at the end of session.³¹⁰

If Congress were to approve the agreement, the Kickapoo Tribe would be entitled to divert up to 4,705 acre-feet of water each year from the Delaware River Basin with a priority date of October 24, 1832.³¹¹

Groundwater users in the Delaware River Basin could be directly affected if the Settlement Agreement takes effect. During times of drought when there is a water shortage and the full amount of water cannot be satisfied, the DWR would be responsible for curtailing water rights from the Kickapoo Tribe outlet to ensure the Tribe is receiving the targeted amount of water.³¹² As of April 28, 2015, there were four groundwater users upstream from the Kickapoo outlet.³¹³ Additionally, groundwater users downstream from the Kickapoo outlet may see a decrease in water flowing due to

rivers-and-compacts/kickapoo-indian-reservation (last visited July 5, 2021).

³⁰⁶ *Id.*

³⁰⁷ *Kickapoo Indian Reservation Water Right Settlement Agreement*, *supra* note 337.

³⁰⁸ *Id.*

³⁰⁹ *Id.*

³¹⁰ *H.R. 3491- Kickapoo Tribe In Kansas Water Rights Settlement Act*, CONGRESS.GOV, <https://www.congress.gov/bill/116th-congress/house-bill/3491/text> (last visited July 5, 2021).

³¹¹ *Kickapoo Indian Reservation Water Right Settlement Agreement*, *supra* note 337.

³¹² *Id.*

³¹³ *Points of Diversion Above the Kickapoo Outlet*, KAN. DEP'T OF AGRIC., <https://agriculture.ks.gov/docs/default-source/dwr-water-appropriation-documents/2014pdsabove.pdf> (last visited July 5, 2021).

the Kickapoo Tribe using more water, resulting in less water available.³¹⁴ As of April 28, 2015, there were eleven groundwater users below the Kickapoo Outlet.³¹⁵

If the agreement receives congressional approval the following provisions will be enacted.³¹⁶ The Kickapoo Tribe water right would not be subject to forfeiture or abandonment and could not be lost through eminent domain or condemnation.³¹⁷ The Kickapoo Tribe has the authority to use the water in accordance with the Settlement Agreement and any other applicable laws.³¹⁸ The Kickapoo Tribe may allocate, distribute, and lease their water for off-reservation use in accordance with Settlement Agreement and approval of the Secretary of the Interior.³¹⁹ Within three years of enforceability a Tribal Water Code shall be established that is used to manage and regulate the water right.³²⁰ At that time the Kickapoo Tribe will establish conditions, permit requirements, and other requirements for the allocation, distribution, diversion, storage and use of the water.³²¹

³¹⁴ *Kickapoo Indian Reservation Water Right Settlement Agreement*, *supra* note 337.

³¹⁵ *Surface Water and Mainstream Alluvial Points of Diversion Below the Kickapoo Outlet*, KAN. DEP'T OF AGRIC., <https://agriculture.ks.gov/docs/default-source/dwr-water-appropriation-documents/2014pdsbelow.pdf> (last visited July 5, 2021).

³¹⁶ H.R. 3491, 116th Cong. (as introduced on June 25, 2019) <https://www.govinfo.gov/content/pkg/BILLS-116hr3491ih/pdf/BILLS-116hr3491ih.pdf> (last visited July 5, 2021).

³¹⁷ *Id.* at §§ 5(c)(2), 11(f).

³¹⁸ *Id.* at § 5(e)(1).

³¹⁹ *Id.* at § 5(e)(2).

³²⁰ *Id.* at § 5(f)(1)(A).

³²¹ *Id.* at § 5(f)(1)(B).

G. Kentucky

Kentucky follows the American rule of reasonable use.¹ If groundwater use exceeds 10,000 gallons per day for any use except domestic and agricultural, a permit to use that water is required.² There is no indication in the Kentucky statutes that groundwater use may only be used on overlying lands.³

1. Definition, Basis of Rights, Standards, and Interactions

The Kentucky General Assembly defines “ground water” or “subterranean water” as, “all water which fills the natural openings under the earth's surface including all underground watercourses, artesian basins, reservoirs, lakes, and other bodies water below the earth's surface.”⁴

A groundwater system is “a body of groundwater that is separated from other bodies of groundwater either by flow characteristics including by not limited to flow direction, flow speed, permeability, or storativity, or by water chemistry or layers of rock.”⁵

A groundwater resource is defined as “groundwater that is currently being used or is capable of being used.”⁶

For percolating groundwater, Kentucky originally adhered to the absolute ownership rule adopted in *Nourse v. Andrews*⁷, but Kentucky courts later shifted to the American rule of reasonable use in *Sycamore Coal Company v. Stanley*⁸. The rule adopted in *Sycamore Coal* “limited the landowner over subterranean percolating waters to a,

¹ Richard C. Ausness, *Water Use Permits in a Riparian State: Problems and Proposals*, 66 KY. L.J. 191, 218 -19 (1978).

² 401 KY. ADMIN. REGS. 4:010 § 1(1) (2021).

³ See generally, KY. REV. STAT. ANN. §§ 151.010-151.990 (West, Westlaw through 2021 Reg. Sess.).

⁴ *Id.* at § 151.100(5).

⁵ *Id.* at § 151.621(3).

⁶ *Id.* at § 151.621(2).

⁷ *Nourse v. Andrews*, 255 S.W. 84 (Ky. 1923).

⁸ *Sycamore Coal Co. v. Stanley*, 166 S.W.2d 293 (Ky. 1942).

‘reasonable and beneficial use of waters . . . and he [had] no right to waste them, whether through malice or indifference, if, by such waste he injures a neighboring landowner.’”⁹ The *Sycamore Coal* court held that because “the appellant was using its land in a legitimate manner, and it drilled the hole for a necessary and useful purpose,” the coal company was not liable for damages.¹⁰ This interpretation of the limitation on the use of groundwater for reasonable and beneficial purposes does not take into account any damage to the usability of the water itself, but rather focuses on only the purpose of the related land use.¹¹ In a later decision, in *Associated Contractors Stone Company v. Pewee Valley Sanitarium & Hospital*, the court further explained that it was doubtful that a cause of action would exist against a landowner who had used percolating groundwater for a reasonable purpose even if it caused existing groundwater resources to “bleed” away from adjoining users.¹²

Kentucky recognizes a legal distinction between underground streams and percolating groundwater, assigning riparian rights to underground streams and reasonable/beneficial use to percolating groundwater.¹³ In *Nourse v. Andrews*, the Kentucky Court of Appeals, the highest court in the state at the time, held that:

Subterranean streams, as distinguished from subterranean percolations, are governed by the same rules, and give rise to the same rights and obligations, as flowing surface streams. The owner of the land under which a stream flows can, therefore, maintain an action for the diversion of it, if such diversion took place under the same circumstances as would have enabled him to recover, if the stream had been wholly above ground.¹⁴

Therefore, the *Nourse* case stood for the proposition that a landowner may only assert riparian rights to underground water if the existence of an underground stream is

⁹ *Id.* at 294.

¹⁰ *Id.*

¹¹ Expert Commentary by FitzGerald and Edmonson.

¹² *Associated Contractors Stone Co. v. Pewee Valley Sanitarium & Hosp.*, 376 S.W.2d 316, 318 (Ky. 1963).

¹³ Richard C. Ausness, *Water Use Permits in a Riparian State: Problems and Proposals*, 66 KY. L.J. 191, 218 (1978).

¹⁴ *Nourse v. Andrews*, 255 S.W. 84, 86 (Ky. 1923), *internal citations omitted*.

proven.¹⁵ In *Kentucky v. Sebastian*, landowners proved the existence of an underground stream by providing evidence that, “the course of an underground stream running from a hill on their neighbor’s land across the highway right of way and to the springs was identifiable and marked by a line of green grass which grew on the surface even in dry weather.”¹⁶

Common law doctrines that govern the use of water from underground streams and percolating groundwater still exist in Kentucky, as the statutory water use rights are “superimposed upon the older system of common law rules.”¹⁷ The basis for a water right is a combination of overlying land ownership with a reasonable/beneficial use limitation, and a permit system for certain types of uses.¹⁸

Kentucky courts refer to both reasonable and beneficial use, using them almost interchangeably in cases dealing with groundwater rights, but the statutes use the term beneficial use in connection with permitting requirements.¹⁹

Kentucky regulations require permits for groundwater withdrawals that exceed 10,000 gallons per day.²⁰ However, the use of water for agricultural and domestic purposes is explicitly exempt from the permitting requirements.²¹ The statute states that, “nothing herein shall interfere with the use of water for agricultural and domestic purposes including irrigation,” clearly indicating that agricultural and domestic users are treated with preference in Kentucky.²² Further, the domestic use of groundwater has priority and is superior over all other uses, including agricultural uses.²³

¹⁵ Ausness, *supra* note 1, at 218.

¹⁶ *Kentucky v. Sebastian*, 345 S.W.2d 46, 47 (Ky. 1961).

¹⁷ Ausness, *supra* note 1, at 226.

¹⁸ *Id.* at 219.

¹⁹ *Compare Sycamore Coal Co. v. Stanley*, 166 S.W.2d 293, 294 (Ky. 1942) with KY. REV. STAT. ANN. § 151.110(1)(a) (West, Westlaw through 2021 Reg. Sess.).

²⁰ 401 KY. ADMIN. REGS. 4:010 § 1(1) (2021).

²¹ KY. STAT. § 151.140.

²² *See id.* at 151.140; *see also* Ausness, *supra* note 1, at 231.

²³ KY. STAT. § 151.210(1).

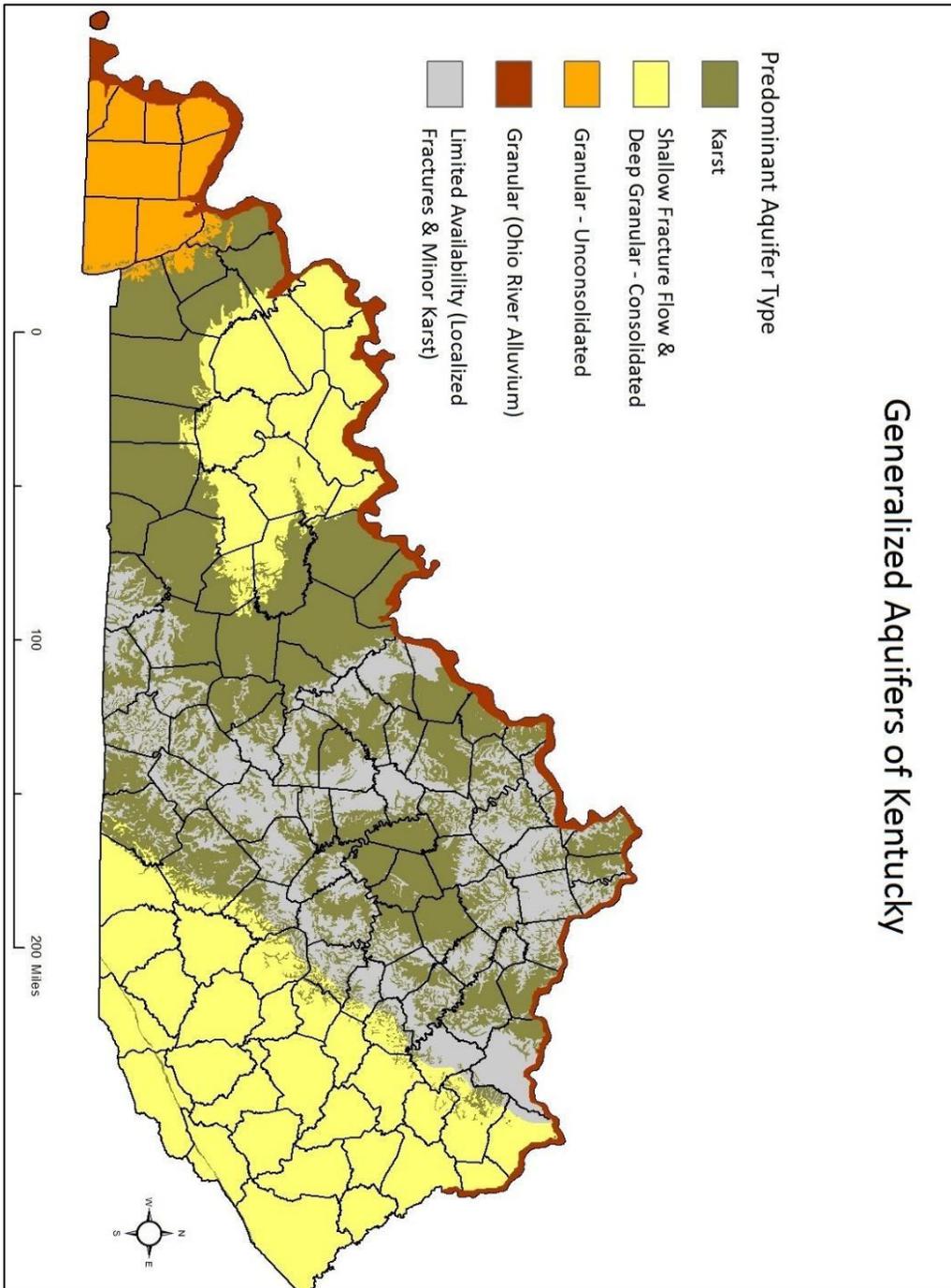


Fig. G.1. Predominant aquifer types in Kentucky²⁴

²⁴ *Basics of Groundwater and Kentucky Aquifers*, COMMONWEALTH OF KY., KY. ENERGY & ENV'T CABINET, <https://eec.ky.gov/Environmental-Protection/Water/GW/Pages/GWBasics.aspx> (last visited

2. Sources of Law

The leading Kentucky supreme court case on groundwater is *Sycamore Coal Company v. Stanley*.²⁵

In 1966, the Kentucky General Assembly repealed prior legislation and enacted Chapter 151 of Kentucky Revised Statutes, named Geology and Water Resources. This chapter contains the pertinent law regarding groundwater.

3. Scope of Right

a. Groundwater Ownership

All water in the state, including water applied to a useful and beneficial purpose, is held in trust by the State.²⁶ Permits issued represent a usufructuary right subject to regulation by the State of Kentucky.²⁷ However, domestic and agricultural users have a usufructuary right and are not required to obtain a permit before using water, but are limited by reasonable and beneficial use standards.²⁸ All other water users such as businesses, industry users, cities, counties, water districts and other political subdivisions are required to obtain a permit and are limited by a beneficial use standard.²⁹

b. Scope of Use

i. Permitted and Preferred Uses

July 29, 2021).

²⁵ *Sycamore Coal Co. v. Stanley*, 166 S.W.2d 293 (Ky. 1942).

²⁶ KY. STAT. § 151.120(1).

²⁷ *Id.* at § 151.170(1).

²⁸ *Id.* at § 151.140.

²⁹ *Id.*; see also *supra* notes 19-20 and accompanying text (discussing that Kentucky case law interchangeably uses reasonable and beneficial uses, but beneficial use is specifically used in the statutes governing permits).

Permit applicants must establish a useful purpose for which the water will be applied,³⁰ though, what is considered a “useful purpose” is not defined.³¹ Additionally, no permit will be issued upon a finding by the Kentucky Energy and Environment Cabinet, the state’s environmental agency, that the permit will cause detrimental effects on the public interests or the rights of other water users.³²

Domestic uses are ordinary “household purposes, [and] drinking water for poultry, livestock, and domestic animals.”³³ These domestic uses of groundwater do not require a permit and hold priority over all other uses.³⁴ Kentucky also exempts withdrawals for agricultural uses from permitting requirements; although, they remain subordinate to domestic purposes of use.³⁵ Agriculture use is defined as “the use of land for agricultural purposes such as farming, dairying, pasturage, apiaries, horticulture, floriculture, viticulture, and animal and poultry husbandry; and [d]oes not mean fruit, vegetable, and flower production for personal use.”³⁶

Moreover, permits are not required for “steam generating plants of companies whose retail rates are regulated by the Kentucky Public Service Commission.”³⁷

ii. Location of Use

Kentucky case law and statutes provide no indication that groundwater must only be used on overlying land.³⁸ However, potential withdrawers must provide the location where the water will be used, the location of the source of the water and the site from which it will be withdrawn in their permit application.³⁹

³⁰ KY. STAT. § 151.170(2).

³¹ *See generally id.* at § 151.100.

³² *Id.* at § 151.170(2).

³³ *Id.* at § 151.210(1).

³⁴ *Id.*

³⁵ *See id.* at § 151.140.

³⁶ 400 KY. ADMIN. REGS. 4:110 § 1 5(a)-(b) (2021).

³⁷ KY. STAT. § 151.140.

³⁸ *See generally id.* at §§ 151.010-151.990.

³⁹ *Water Withdrawal Application*, ENERGY & ENV’T CABINET DEP’T FOR ENV’T PROT.,

The transfer of water between watersheds in Kentucky is allowed with the appropriate permit.⁴⁰ The Energy and Environment Cabinet, with the approval of the Secretary of the Cabinet, “may issue a permit for the transfer or diversion of public water from one stream or watershed area to another, where such transfer is consistent with the wise use of the public water of the Commonwealth and is in the best interests of the public.”⁴¹

The applicant must publish notice soliciting comments on the proposed transfer in newspapers having the greatest circulation in the area that the withdrawal is taken.⁴² Additionally, the applicant must send written notice to water withdrawal permit holders who might be affected by the permit.⁴³ The applicant must allow thirty days for public comment regarding the proposed transfer permit.⁴⁴ This provision does not apply to domestic and agricultural uses.⁴⁵

c. Loss of Water Rights

A water permit in Kentucky can be temporarily reallocated or revoked or may be subject to a permanent physical taking as a result of governmental action.

In times of drought, emergency, or other similar circumstances, water users’ rights and permits may be temporarily restricted and reallocated to other users.⁴⁶ Temporary reallocation of the water supply can only be commenced by a declaration of a water emergency by the Governor and can only continue so long as condition persists to serve the best interest of the public.⁴⁷

<https://eec.ky.gov/Environmental-Protection/Forms%20Library/WaterWithdrawalApplication.pdf> (last visited July 17, 2021).

⁴⁰ KY. STAT. § 151.200(2).

⁴¹ *Id.*

⁴² *Id.*

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ *Id.* at § 151.140.

⁴⁶ *Id.* at § 151.200(1).

⁴⁷ *Id.*

A water permit can be revoked when the Division of Water has reason to believe that a violation of Chapter 151 or any regulation promulgated pursuant to Chapter 151 has occurred.⁴⁸ Notably, a failure to keep accurate records of withdrawals or transfers of public water or the failure to report the actual amounts withdrawn can result in the revocation of a permit.⁴⁹

Beyond revocation of a permit, anyone who violates Kentucky's groundwater permitting regulations will be subject to liability of a civil penalty of not more than \$1,000 per day until the violation is resolved.⁵⁰ If a complaint is filed against a permit holder, then the Energy and Environment Cabinet must serve upon the holder a written notice of the violation along with the facts alleged to constitute the violation.⁵¹ The alleged violator is required to appear before the Cabinet in the next thirty days unless the violator waives this thirty-day requirement.⁵² An aggrieved permit holder may appeal a final order from the Energy and Environment Cabinet in the Circuit Court of the county where the structure or activity that is subject to the order is located.⁵³ The procedure for further appeals is located in Kentucky Statute §151.186.⁵⁴

4. Well Drilling

Kentucky does not regulate the construction of water wells beyond requiring that construction be conducted by licensed water well drillers.

The Energy and Environment Cabinet has the power to regulate and certify who can construct water wells.⁵⁵ State statutes make it clear that it is unlawful for *any* person to

⁴⁸ *Id.* at § 151.182(1).

⁴⁹ *Id.* at §§ 151.160(1)-(2).

⁵⁰ *Id.* at § 151.990(1).

⁵¹ *Id.* at § 151.182(1).

⁵² *Id.*

⁵³ *Id.* at § 151.186.

⁵⁴ *Id.*

⁵⁵ *Id.* at § 223.410.

construct a well without first having obtained a license to do so.⁵⁶ Thus, it is unlawful “to construct, alter, or repair a water well without first having obtained a valid certificate as a water well driller or as a water well driller’s assistant.”⁵⁷

The Energy and Environment Cabinet promulgated specific requirements for water supply/monitoring well construction practices and for the certification of well-drillers.⁵⁸

5. Hydraulic Connection and Regulation

Surface and groundwater interactions are not specifically regulated in Kentucky. However, the Kentucky General Assembly has acknowledged that groundwater and surface water are inextricably linked to each other, stating that both are “a resource equally vital for agricultural, commercial, and industrial purposes and that useable groundwater is critical to the future development of these industries.”⁵⁹ This statement suggests that groundwater and surface water users are of equal importance to Kentucky.⁶⁰

Additionally, the holder of a water withdrawal permit may have increased reporting requirements placed on them if a water withdrawal “may adversely impact other water users, water quality, or aquatic habitat.”⁶¹ This requirement suggests that the Kentucky Division of Water may, under certain circumstances, be concerned with the impact water withdrawals have on other water users, regardless of whether they are surface or groundwater withdrawers.⁶²

Moreover, Kentucky’s regulations pertaining to surface coal mining require that operators of mine sites minimize disturbances to the quality and quantity of water in

⁵⁶ *Id.* at § 223.405.

⁵⁷ *Id.*

⁵⁸ *See generally* 401 KY. ADMIN. REGS. 6:001-6:350 (2021).

⁵⁹ KY. STAT. § 151.110(2).

⁶⁰ *See id.*

⁶¹ 401 KY. REGS. 4:010 § 3(3)(a); *see also* KY. STAT. § 151.170(2).

⁶² *See* 401 KY. REGS. 4:010 § 3(3)(a); *see also* KY. STAT. § 151.170(2).

surface and ground water systems at the site.⁶³ This mandate requires miners to restore the recharge capacity of the site to pre-mining conditions at the completion of the project.⁶⁴

6. Aquifer Recharge and Underground Storage

Kentucky does not regulate, encourage, or facilitate aquifer recharge or underground storage programs.

7. Water Management Plan(s)

The Energy and Environment Cabinet is mandated to “administer a program for the purpose of developing long range water supply plans for each county and its municipalities and public water systems.”⁶⁵ The plans must include the following:

an assessment of the existing public and private water resources, both surface and groundwater, of the study area, an examination of present water use in the area, projections of future water requirements, and a determination of possible alternative approaches that can be taken in order to meet future water supply needs.⁶⁶

In 2000, a law was passed directing that councils referred to as 2020 water management planning councils “shall be established for each county with the assistance of the appropriate area development district [(ADD)].”⁶⁷ These ADDs were charged with developing plans consistent with the county long-range water supply plan developed by the Energy and Environment Cabinet by July 1, 2001.⁶⁸ The plans had to include a water needs forecast for five, ten, fifteen, and twenty years after the year 2000.⁶⁹

⁶³ KY. STAT. § 350.420.

⁶⁴ *Id.* at § 350.420(5).

⁶⁵ *Id.* at § 151.114(1).

⁶⁶ *Id.*

⁶⁷ *Id.* at § 151.601(1).

⁶⁸ *Id.* at § 151.603(1).

⁶⁹ *Id.*

The 2015 Kentucky Water Management Plan provides summaries of the water needs of all of the ADDs and the counties that they encompass.⁷⁰ The 2020 Water Management Plan for the various ADDs can be found at the following website: <https://kia.ky.gov/WRIS/Pages/Management-Plans.aspx>.

8. Regulatory Authorities

The Kentucky Division of Water, a division of the Department for Environmental Protection, which is under the Kentucky Energy and Environment Cabinet, is the primary regulatory authority over groundwater. This Division is also responsible for well-drilling oversight.

Kentucky Division of Water

Website: <https://eec.ky.gov/Environmental-Protection/Water/Pages/default.aspx>

Mailing Address:

300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

Phone Number: 502-564-3410

The Division of Water accepts and facilitates the permit application process for all withdrawals of water greater than 10,000 gallons per day from any surface, spring, or groundwater source that is not exempt as an agricultural or domestic use.⁷¹ After a permit application is received, the Energy and Environment Cabinet then reviews the permits and either denies or grants the withdrawal permit.⁷²

⁷⁰ *Kentucky Water Management Plan*, Kentucky Infrastructure Authority, KY. INFRASTRUCTURE AUTH., OFF. OF THE GOVERNOR, <https://kia.ky.gov/WRIS/Management%20Plans1/2015%20Water%20Management%20Plan.pdf> (last visited July 18, 2021).

⁷¹ 401 KY. ADMIN. REGS. 4:010 § 1(1) (2021).

⁷² KY. STAT. § 151.170(2).

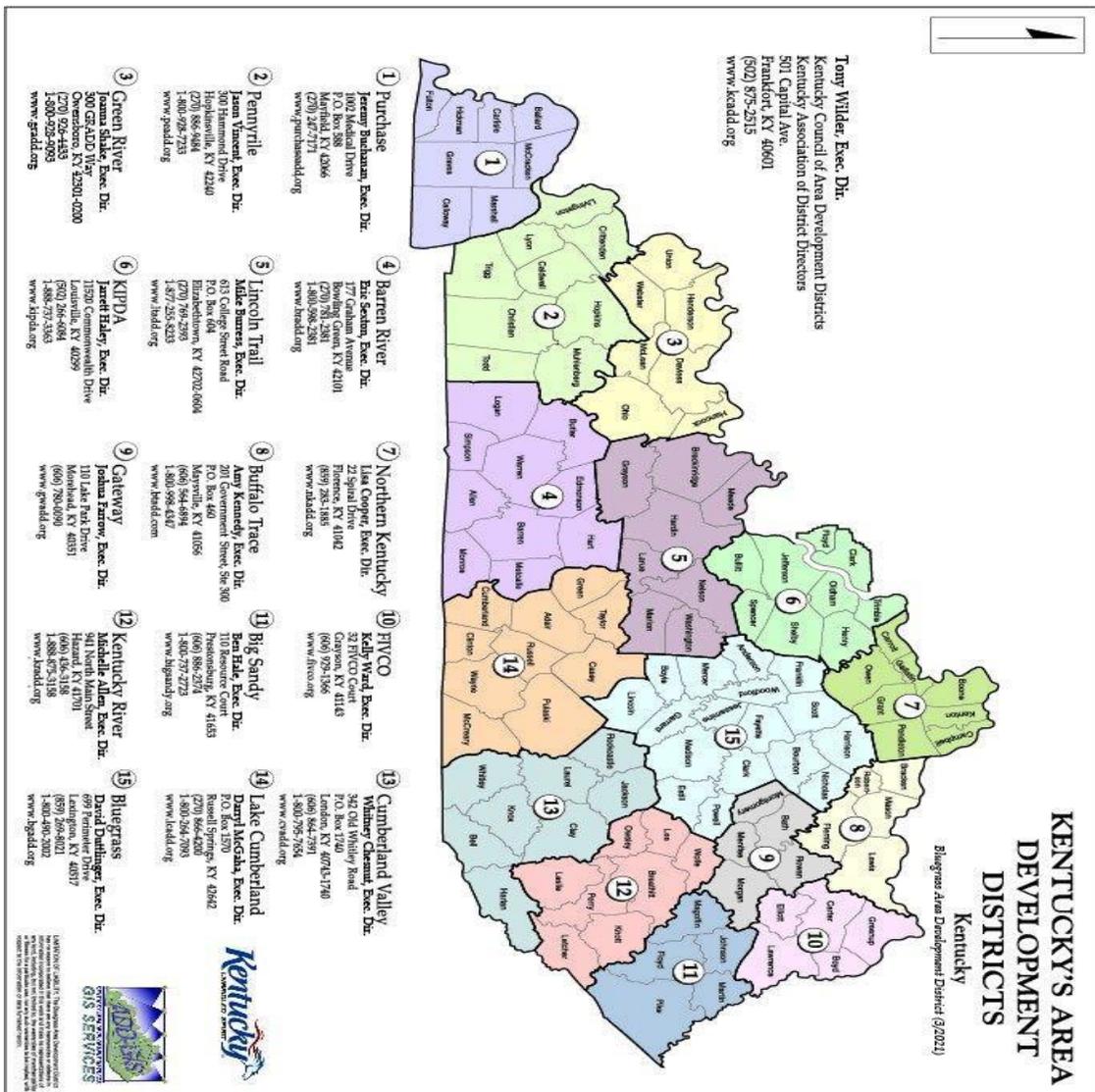


Fig. G.2. Kentucky Area Development Districts⁷³

⁷³ Kentucky's Area Development Districts, KY. COUNCIL OF AREA DEV. DISTS., <http://www.kcadd.org/contact-us/> (last visited July 18, 2021).

The Cabinet can amend a groundwater permit upon application to the Cabinet by the withdrawer or if “the withdrawer is using a substantially different amount than permitted.”⁷⁴ After a process providing notice and allowing permit holders to be heard, the Cabinet has the power to revoke permits it previously issued.⁷⁵ The Energy and Environment Cabinet also monitors the withdrawal, diversion, or transfer of public water by mandating that permit holders must record and report their withdrawals, diversions, and transfers of water to the cabinet.⁷⁶

9. Special Districts

There are fifteen Area Development Districts in Kentucky—each encompassing multiple counties—that are responsible for, in conjunction with the counties, developing long range water supply plans for each county.⁷⁷

10. Transboundary Arrangements

It does not appear that Kentucky is party to any transboundary arrangements or conflicts.

11. Native American Rights

It does not appear that the state grants exemptions, benefits, or concessions to Native American Tribes.

⁷⁴ *Id.* at § 151.170(4).

⁷⁵ *Id.* at § 151.182.

⁷⁶ *Id.* at § 151.160.

⁷⁷ *Id.* at § 151.114.

H. Massachusetts

Massachusetts common law follows the absolute ownership doctrine for groundwater rights, which affords each landowner the right to withdraw as much groundwater from beneath their land as they wish.¹ Massachusetts' absolute ownership system for groundwater rights is modified and clarified by case law,² the state permitting system,³ the state's well management regulations,⁴ and state water preservation plans.⁵

1. Definition, Basis of Rights, Standards, and Interactions

In Massachusetts, the terms “ground water,” “aquifer,” and “well” are defined by statute. “Ground water” is defined as “water below the land surface in a saturated zone, including perched ground water.”⁶ “Aquifer” is defined as “a geological formation, group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.”⁷ “Well” is defined as “a bored, drilled, or driven shaft, or a dug hole with a depth greater than its largest surface dimension.”⁸

Massachusetts also strictly defines areas relevant to its regulations on well management. The Code of Massachusetts Regulations designates and defines “the protective radius around a public water supply well or wellfield” as Zone I, and “the area of an aquifer that contributes water to a well under the most severe pumping and recharge conditions

¹ *Greenleaf v. Francis*, 35 Mass. 117, 123 (1836).

² *Prince v. Stockdell*, 397 Mass. 843, 845 (1986).

³ Fact Sheet: Water Management Act – Registration and Permitting, Mass.gov, <https://www.mass.gov/service-details/fact-sheet-water-management-act-registration-and-permitting>.

⁴ 310 CMR 22.21(1)(b)(1), accessed at <https://www.mass.gov/regulations/310-CMR-2200-drinking-water#downloads>.

⁵ Massachusetts Water Conservation Standards § 1.2 (2018), accessed at <https://www.mass.gov/doc/massachusetts-water-conservation-standards-2/download>.

⁶ Ground Water Discharge Program, 314 CMR 5.02(LexisNexis, Lexis+ through all regulations in effect as of 08/21/2020). The phrase “perched ground water” is not defined in the Code of Massachusetts Regulations.

⁷ Ground Water Discharge Program, 314 CMR 5.02(LexisNexis, Lexis+ through all regulations in effect as of 08/21/2020).

⁸ Ground Water Discharge Program, 314 CMR 5.02(LexisNexis, Lexis+ through all regulations in effect as of 08/21/2020).

that can realistically be anticipated” as Zone II.⁹ Both Zone I and Zone II are discussed in more detail below in Section 4 - State Regulations Concerning Well Drilling.

Massachusetts’ absolute ownership system of groundwater rights allows landowners to pump as much groundwater residing in or underneath their property as they would like, even if it causes injury to a neighboring landowner; however, pumping is with malice or the intention to harm the neighboring landowner is not permitted.¹⁰

Massachusetts common law established the legal basis for groundwater rights as overlying land ownership in *Greenleaf v. Francis*¹¹ and *Davis v. Spaulding*, where the Court in *Davis* held that “water percolating under ground, and not running in a definite stream or watercourse, is in law a part of the land itself . . . and is the absolute property of the owner of the land.”¹²

The absolute ownership system was re-affirmed in the 1986 case, *Prince v. Stockdell*.¹³ In that case, plaintiff petitioned the Court to replace the absolute ownership system with a system of reasonable use under the Second Restatement of Torts.¹⁴ The Court declined to abandon absolute ownership, but signaled a possible future review of the current system of groundwater waters, mentioning that “[i]n another case, [the Court] might be inclined to reexamine the doctrine” of absolute ownership.¹⁵

Massachusetts courts have attempted to curtail the absolute ownership doctrine by providing some basis for liability when one landowner’s groundwater withdrawals injure another landowner. The Court in *Greenleaf v. Francis* noted that landowners should not withdraw their water purely out of malice towards their neighboring landowners with the intent to cause them injury.¹⁶ However, the Court did not mention what the penalty would be or how the case outcome may change if a landowner who

⁹ Ground Water Discharge Program, 314 CMR 5.02(LexisNexis, Lexis+ through all regulations in effect as of 08/21/2020).

¹⁰ *Greenleaf v. Francis*, 35 Mass. 117, 123 (1836).

¹¹ *Greenleaf v. Francis*, 35 Mass. 117, 123 (1836).

¹² *Davis v. Spaulding*, 157 Mass. 431, 435, 32 N.E. 650, 651 (1892).

¹³ *Prince v. Stockdell*, 397 Mass. 843, 845 (1986).

¹⁴ *Prince v. Stockdell*, 397 Mass. 843, 845 (1986).

¹⁵ *Prince v. Stockdell*, 397 Mass. 843, 845 (1986).

¹⁶ *Greenleaf v. Francis*, 35 Mass. 117, 122-23 (1836).

extracts groundwater were found to be acting out of malice towards a neighboring landowner who experienced some sort of injury from the withdrawals.

In *Walker v. Cronin*,¹⁷ the Massachusetts Supreme Court attempted to explain what malicious and actionable behavior would look like in the context of exercising a landowner's rights, which would include groundwater rights. The Court explained that "malicious acts without the justification of any right . . . resulting in like loss or damage, might be actionable" and "that such loss of advantages previously enjoyed, although not of vested legal right, might be a ground of damages recoverable against one who caused the loss without superior right or justifiable cause."¹⁸ The Court further explained that a landowner "has no right to be protected against competition; but he has a right to be free from malicious and wanton interference" and "[i]f disturbance or loss. . . come from the merely wanton or malicious acts of others, without the justification of competition or the service of any interest or lawful purpose, it then stands upon a different footing."¹⁹

Massachusetts has amended the absolute ownership doctrine through statutes, such as the Water Management Act ("WMA").²⁰ The WMA went into effect in March 1986 and authorizes the Massachusetts Department of Environmental Protection ("MassDEP") to regulate the quantity of water withdrawn from surface and groundwater sources.²¹

¹⁷ 107 Mass. 555 (1871).

¹⁸ *Walker v. Cronin*, 107 Mass. 555, 564 (1871).

¹⁹ *Walker v. Cronin*, 107 Mass. 555, 564 (1871).

²⁰ Fact Sheet: Water Management Act – Registration and Permitting, Mass.gov, <https://www.mass.gov/service-details/fact-sheet-water-management-act-registration-and-permitting>.

²¹ Mass.gov, Overview of Massachusetts Water Management Act, <https://www.mass.gov/water-management-act-program>.

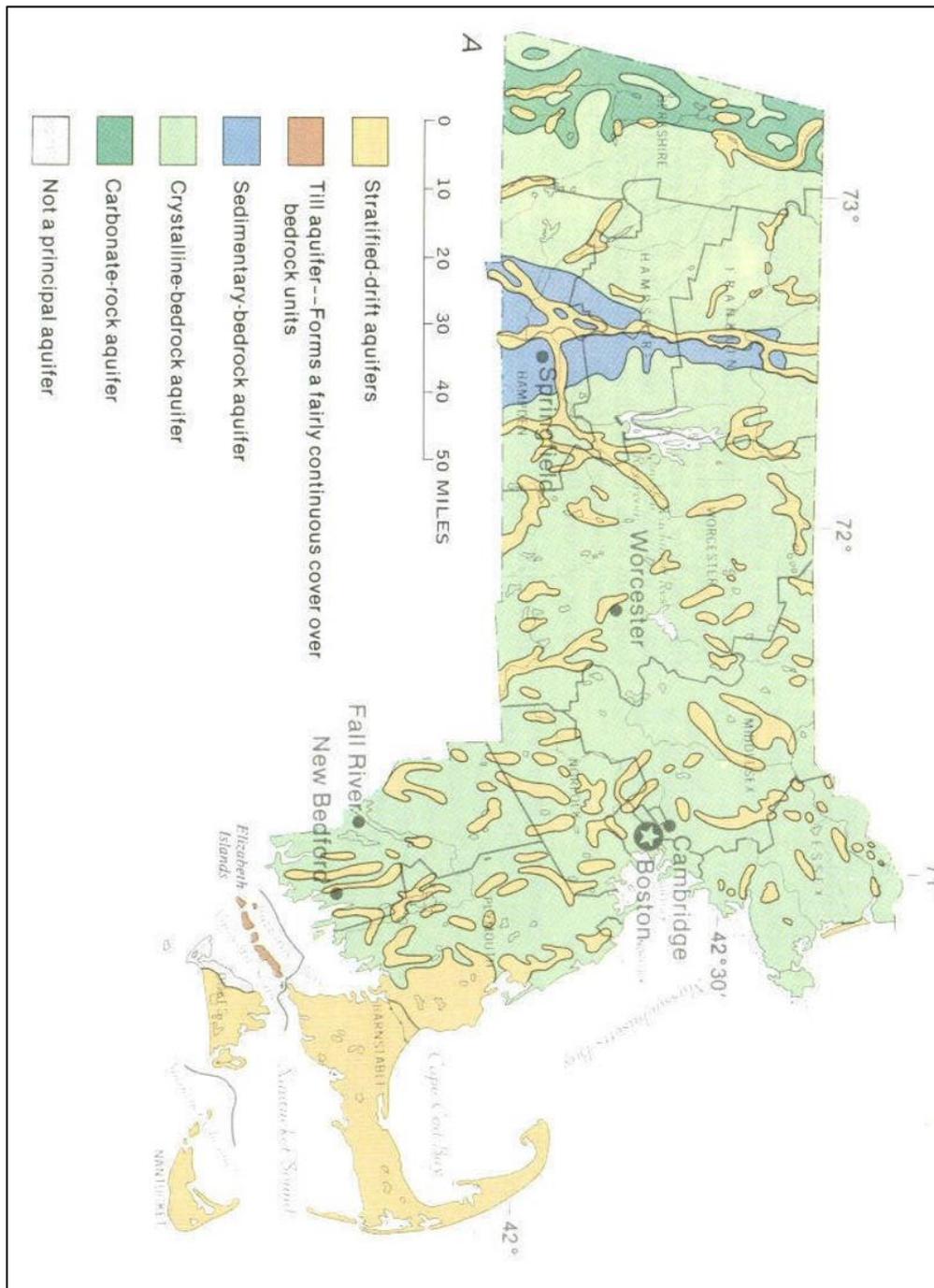


Fig. H.1. Principle aquifers in Massachusetts.²²

²² National Groundwater Association, Principle aquifers in Massachusetts, <https://www.ngwa.org/images/default-source/default-album/state/Massachusetts.jpg>.

Section 4 of the Massachusetts Water Management Act establishes the threshold of 100,000 gallons per day and requires a permit from MassDEP if that amount is exceeded. However, under the Act, MassDEP reserves the right to change the permit threshold amount depending on the need to protect public safety and welfare. MassDEP determines the threat to public safety and welfare based “upon findings that such water source is in need of special protection because of the nature or volume of demands made upon it.”²³ In addition, under the Water Management Act, anyone intending to withdraw more than 100,000 gallons per day or nine million gallons in any three-month period must acquire a Water Management Act permit.²⁴

Section 5 of the Massachusetts Water Management Act codifies the Water Registration Statements system that existed prior to the enactment of Water Management Permits.²⁵ Prior to January 1, 1988, each person with intent to withdraw an amount in excess of 100,000 gallons per day had to obtain a registration statement,²⁶ which was based on their withdrawal amounts from 1981-1985.²⁷ Withdrawers who registered prior to 1988 do not require a Water Management Act Permit as long as they do not exceed the amount for which they were registered or do not add any new withdrawal points to their system, but they must renew their registration every ten years.²⁸

Section 6 outlines the required components of a Water Registration Statement as follows:

- (1) The use for which the water is being withdrawn;
- (2) An identification of the water source from which the withdrawal is being made, in sufficient detail to describe the water source adequately;
- (3) The location of the withdrawal;
- (4) The existing withdrawal; provided, however, that persons whose volume of withdrawals varies seasonally according to a substantially established pattern shall describe that variation;

²³ Massachusetts Water Management Act, MGL c. 21G §4 (1986).

²⁴ Fact Sheet: Water Management Act – Registration and Permitting, Mass.gov, <https://www.mass.gov/service-details/fact-sheet-water-management-act-registration-and-permitting>.

²⁵ Massachusetts Water Management Act, MGL c. 21G §5 (1986).

²⁶ Fact Sheet: Water Management Act – Registration and Permitting, Mass.gov, <https://www.mass.gov/service-details/fact-sheet-water-management-act-registration-and-permitting>.

²⁷ Massachusetts Water Management Act, MGL c. 21G §5 (1986).

²⁸ Fact Sheet: Water Management Act – Registration and Permitting, Mass.gov, <https://www.mass.gov/service-details/fact-sheet-water-management-act-registration-and-permitting>.

- (5) Conservation measures instituted, or to be instituted, by the registrant;
and
- (6) The point or points at which the water is to be discharged after use.²⁹

Section 7 of the Massachusetts Water Management Act outlines the Water Management Permitting system that is currently in place for all users seeking to withdraw more than 100,000 gallons per day or nine million gallons in any three-month period.³⁰

To obtain Water Management Permits, Massachusetts requires an applicant submit forms to provide the following information:³¹

- (1) Ground or surface water withdrawal points
- (2) Computation of historic withdrawal volume
- (3) Projection of withdrawal volume
- (4) If use is for cranberry cultivation, separate withdrawal points and volume
- (5) Evaluation of potential effects of proposed withdrawal
- (6) Alternatives to proposed withdrawal
- (7) Groundwater hydraulic analysis
- (8) Requests for determination of non-consumptive use

Water Management Permits may not be issued for a period of more than twenty years and are issued in five-year increments based on an average daily withdrawal rate.³²

2. Sources of Law

The chief cases in Massachusetts relating to groundwater are *Greenleaf v. Francis*³³ and *Davis v. Spaulding*,³⁴ which established the absolute ownership system for groundwater rights in landowners. This was affirmed in a 1986 Massachusetts Supreme Court case, *Prince v. Stockdell*, which explicitly declined to abandon or question Massachusetts'

²⁹ Massachusetts Water Management Act, MGL c. 21G §6 (1986).

³⁰ Massachusetts Water Management Act, MGL c.21G §7 (1986).

³¹ WM03: Water Management Withdrawal Permits, Mass.gov, <https://www.mass.gov/how-to/wm03-water-management-withdrawal-permits>.

³² Fact Sheet: Water Management Act – Registration and Permitting, Mass.gov, <https://www.mass.gov/service-details/fact-sheet-water-management-act-registration-and-permitting>.

³³ *Greenleaf v. Francis*, 35 Mass. 117, 123 (1836).

³⁴ *Davis v. Spaulding*, 157 Mass. 431, 435, 32 N.E. 650, 651 (1892).

absolute ownership system for groundwater rights in favor of a reasonable use system under the Second Restatement of Torts.³⁵ Furthermore, *Wilson v. City of New Bedford* specified the rights of landowners and their abilities to capture groundwater found under their property or that percolated naturally into their soil.³⁶

The Massachusetts Water Management Act codified the allocation and withdrawal system requirements for both surface water and groundwater under Chapter 21G of the Massachusetts General Laws.³⁷

3. Scope of Right

a. Groundwater Ownership

In Massachusetts, the overlying landowner has absolute ownership of the groundwater that resides beneath their land, making ownership of the water tied to the private ownership of the land.³⁸ In *Wilson v. City of New Bedford*, the Court determined a landowner's right is limited to groundwater that resides "in underground waters which remain still, or naturally percolate through the soil without forming channels."³⁹ The Court explained:⁴⁰

The percolating water belongs to the owner of the land, as much as the land itself, or the rocks and stones in it. Therefore he may dig a well. . . [and] may thus take the water which would otherwise pass by natural percolation into his neighbor's land, and draw off the water which may come by natural percolation from his neighbor's land; and his neighbor may. . . retain the water which is upon his own land, and prevent the water from coming into his soil.

A landowner may withdraw any amount of groundwater that resides underneath their

³⁵ *Prince v. Stockdell*, 397 Mass. 843, 845 (1986).

³⁶ *Wilson v. City of New Bedford*, 108 Mass. 261, 265 (1871).

³⁷ Fact Sheet: Water Management Act – Registration and Permitting, Mass.gov, <https://www.mass.gov/service-details/fact-sheet-water-management-act-registration-and-permitting>.

³⁸ *Davis v. Spaulding*, 157 Mass. 431, 435, 32 N.E. 650, 651 (1892).

³⁹ *Wilson v. City of New Bedford*, 108 Mass. 261, 265 (1871).

⁴⁰ *Wilson v. City of New Bedford*, 108 Mass. 261, 265 (1871).

land up to the threshold amount, which requires acquisition of a permit.⁴¹ In *Rideout v. Knox*, the Massachusetts Supreme Court elaborated on the rights of landowners to use their property in any way they wish and even addressed the issue of malicious intent from *Greenleaf v. Francis*.⁴² The Court reasoned that “to a large extent the power to use one's property malevolently, in any way which would be lawful for other ends, is an incident of property which cannot be taken away even by legislation.”⁴³

b. Scope of Use

i. Permitted and Preferred Uses

Massachusetts' absolute ownership system of groundwater rights does not require a permit for the withdrawal of groundwater on a landowner's property if extraction remain below 100,000 gallons per day. Any user that withdraws more than 100,000 gallons per day of groundwater, or nine million gallons within any three-month period, must obtain a Water Management Act permit from the MassDEP.⁴⁴

Furthermore, Massachusetts does not have a hierarchy for purposes of use of a landowner's groundwater. While there is no preference for uses of groundwater by landowners, there is a set of criteria for determining whether to issue a permit to a user intending on withdrawing more than 100,000 gallons per day, such as “the ‘safe yield’ of the proposed water source, economic development issues, environmental impacts, and conservation measures.”⁴⁵ The MassDEP states that public water suppliers, golf courses, and agricultural and industrial users are typically the withdrawers that require a permit.⁴⁶

⁴¹ Fact Sheet: Water Management Act – Registration and Permitting, Mass.gov, <https://www.mass.gov/service-details/fact-sheet-water-management-act-registration-and-permitting>.

⁴² 148 Mass. 368 (1889).

⁴³ *Rideout v. Knox*, 148 Mass. 368, 372 (1889).

⁴⁴ Fact Sheet: Water Management Act – Registration and Permitting, Mass.gov, <https://www.mass.gov/service-details/fact-sheet-water-management-act-registration-and-permitting>.

⁴⁵ H. David Gold, *Water Disputes in Massachusetts*, 12 Water Resources Committee Newsl. No. 2, at 2 (January 2010) (A.B.A. Sec. of Env't., Energy, & Resources).

⁴⁶ Fact Sheet: Water Management Act – Registration and Permitting, Mass.gov, <https://www.mass.gov/service-details/fact-sheet-water-management-act-registration-and-permitting>.

ii. Location of Use

Massachusetts does provide a guide for interbasin transfers within the state.

“Interbasin transfer” is defined as “any transfer of the surface and groundwaters, including wastewater, of the commonwealth outside a river basin.”⁴⁷ However, where a city or town is partially situated within a river basin and provides water from that basin to a portion of the same city or town laying outside the basin, the transfer will not be deemed to be an interbasin transfer of water.⁴⁸

Massachusetts does not prohibit the interbasin transfer of water within the state, and actually provides a guide with criteria for approving interbasin transfers that are designed to protect the donor or basin of origin.⁴⁹ Interbasin transfers do not require permits, but are subject to review and approval from the Water Resources Commission (“WRC”).⁵⁰ The WRC is an independent commission that advises MassDEP on the administration and enforcement of water management throughout the state and is primarily tasked with oversight of interbasin transfers.⁵¹

An interbasin transfer of any amount that is not already exempted from review, as provided in the Interbasin Transfer Act, must undergo some level of review by the WRC.⁵² There are three levels of review: Determination of Applicability, which reviews the applicability of the Interbasin Transfer Act to the proposed transfer; Determination of Insignificance, which determines whether the proposed transfer is for a significant

⁴⁷ MASS. ANN. LAWS ch. 21, § 8 (LexisNexis, Lexis+ through Ch. 1-164 of the 2020 Leg. Sess. of the 191st Gen. Court).

⁴⁸ MASS. ANN. LAWS ch. 21, § 8 (LexisNexis, Lexis+ through Ch. 1-164 of the 2020 Leg. Sess. of the 191st Gen. Court).

⁴⁹ Office of Water Resources, *A Guide to the Interbasin Transfer Act and Regulations (2003 Update)* at 2, Massachusetts Water Resources Commission, <https://www.mass.gov/doc/interbasin-transfer-act-guide-book-0/download>.

⁵⁰ Office of Water Resources, *A Guide to the Interbasin Transfer Act and Regulations (2003 Update)* at 13, Massachusetts Water Resources Commission, <https://www.mass.gov/doc/interbasin-transfer-act-guide-book-0/download>.

⁵¹ Mass.gov, Water Resources Commission Overview, <https://www.mass.gov/service-details/water-resources-commission-overview>.

⁵² Office of Water Resources, *A Guide to the Interbasin Transfer Act and Regulations (2003 Update)* at 13, Massachusetts Water Resources Commission, <https://www.mass.gov/doc/interbasin-transfer-act-guide-book-0/download>.

amount and its potential environmental impacts;⁵³ and Application for Approval of An Action to Increase the Present Rate of Interbasin Transfer, which evaluates proposed transfers of over one million gallons per day under a full review by the WRC.⁵⁴

Any significant increase in the amount of groundwater transported in an interbasin transfer than originally approved must receive another approval from the WRC prior to execution.⁵⁵ This requirement does not apply to any insignificant increases in interbasin groundwater transfers and “[t]he criteria for determining any insignificance shall be established by the commission based upon the impact to the donor basin.⁵⁶ However, it is commonly construed that a significant increase is one million gallons per day.⁵⁷

c. Loss of Water Rights

Water rights are tied to land ownership and therefore can be lost with the loss of land ownership. Massachusetts also permits municipalities to acquire rights to water use through eminent domain and easements.⁵⁸ Statutes concerning eminent domain and easements for acquisition of water rights tend to focus on the condemnation or acquisition of entire pieces of land to obtain the associated water rights of that land, rather than just obtaining the water rights separately.⁵⁹

⁵³ Office of Water Resources, *A Guide to the Interbasin Transfer Act and Regulations (2003 Update)* at 13, Massachusetts Water Resources Commission, <https://www.mass.gov/doc/interbasin-transfer-act-guide-book-0/download>.

⁵⁴ Office of Water Resources, *A Guide to the Interbasin Transfer Act and Regulations (2003 Update)* at 14, Massachusetts Water Resources Commission, <https://www.mass.gov/doc/interbasin-transfer-act-guide-book-0/download>.

⁵⁵ MASS. ANN. LAWS ch. 21, § 8B (LexisNexis, Lexis+ current through Ch. 1-164 of the 2020 Leg. Sess. of the 191st Gen. Court).

⁵⁶ MASS. ANN. LAWS ch. 21, § 8B (LexisNexis, Lexis+ current through Ch. 1-164 of the 2020 Leg. Sess. of the 191st Gen. Court).

⁵⁷ H. David Gold, *Water Disputes in Massachusetts*, 12 Water Resources Committee Newsl. No. 2, at 2 (January 2010) (A.B.A. Sec. of Env’t., Energy, & Resources).

⁵⁸ MASS. ANN. LAWS ch. 40, § 39(B) (LexisNexis, Lexis+ through Ch. 1-156 of the 2020 Leg. Sess. of the 191st Gen. Court); MASS. ANN. LAWS ch. 111, § 160 (LexisNexis, Lexis Advance through Ch. 1-156 of the 2020 Leg. Sess. of the 191st Gen. Court).

⁵⁹ See MASS. ANN. LAWS ch. 40, § 39(B) (LexisNexis, Lexis+ through Ch. 1-156 of the 2020 Leg. Sess. of the 191st Gen. Court); MASS. ANN. LAWS ch. 111, § 160 (LexisNexis, Lexis Advance through Ch. 1-156 of the 2020 Leg. Sess. of the 191st Gen. Court).

Massachusetts also allows the WRC to purchase and acquire lands needed to establish regional water supplies.⁶⁰

Massachusetts established the Watershed Preservation Restrictions Program, which permits the Commissioner of the Department of Conservation and Recreation to use State funds to purchase and acquire lands deemed watershed lands that the Commissioner determines beneficial to the maintenance of the State's water supply.⁶¹

While *Greenleaf v. Francis* mentions the issue of malicious intent of landowners when using their groundwater,⁶² *Rideout v. Knox* seems to clarify the idea that landowners only remain liable for strictly illegal uses of their land, even if they have a malicious intent to harm their neighbors while making a legal use of their land.⁶³ However, there does not seem to be an instance of any landowner losing their groundwater rights due to a malicious act towards neighboring landowners.

Furthermore, tying water rights to landownership denotes an ability to lose water rights once the ownership of the overlying land terminates for any reason including through adverse possession or eminent domain. Massachusetts has established the possibility of losing surface water rights through adverse possession of the overlying land in *Westhampton Reservoir Recreation Corp. v. Hodder*, where a neighbor trespassed by building into a landowner's lake, and the Court held the neighbor liable because the neighbor had not acquired an easement.⁶⁴ While this case dealt with surface water rights, the Court focused entirely with the trespass to the underlying land, implying the ability to gain title to land and its accompanying water rights through easement or adverse possession.

Massachusetts does provide a legal procedure for loss of groundwater rights through municipal acquisition of land. Because Massachusetts derives groundwater rights from overlying land ownership, municipal governments must obtain land to own and use

⁶⁰ MASS. ANN. LAWS ch. 21, § 9A (LexisNexis, Lexis+ through Ch. 1-156 of the 2020 Leg. Sess. of the 191st Gen. Court).

⁶¹ MASS. ANN. LAWS ch. 21, § 59 (LexisNexis, Lexis+ current through Ch. 1-164 of the 2020 Leg. Sess. of the 191st Gen. Court).

⁶² *Greenleaf v. Francis*, 35 Mass. 117, 123 (1836).

⁶³ *Rideout v. Knox*, 148 Mass. 368, 372 (1889).

⁶⁴ *See Westhampton Reservoir Recreation Corp. v. Hodder*, 307 Mass. 288 (1940).

water for the establishment of their public water systems.⁶⁵ Massachusetts sets out the process for municipalities to acquire land for the construction of public water systems in Chapter 41 Section 39(B) of Massachusetts General Laws. The effect is to allow local governments to purchase land for the purpose of obtaining water rights.⁶⁶ Furthermore, local governments may receive state funding for the purpose of acquiring land or easements critical to its groundwater supplies through the Aquifer Land Acquisition Program.⁶⁷

4. Well Drilling

Massachusetts does regulate well-drilling, but only with respect to wells used for public water supply.

Massachusetts designates different areas surrounding a well through zoning. Zone I is defined as “the protective radius around a public water supply well or wellfield as defined in 310 CMR 22.02.”⁶⁸ Zone II is defined as “the area of an aquifer that contributes water to a well under the most severe pumping and recharge conditions that can realistically be anticipated ... as defined in 310 CMR 22.02.”⁶⁹ Zone III “means that land area beyond the area of Zone II from which Surface Water and groundwater drain into Zone II.”⁷⁰

All public water supply wells are subject to source approval by the MassDEP and must follow the applicable standards established in the *Guidelines and Policies for Public Water Systems*.⁷¹ In short, MassDEP oversees all regulations concerning wells used for

⁶⁵ MASS. ANN. LAWS ch. 40, § 39(A)-(C) (LexisNexis, Lexis+ through Ch. 1-156 of the 2020 Leg. Sess. of the 191st Gen. Court).

⁶⁶ MASS. ANN. LAWS ch. 40, § 39(B) (LexisNexis, Lexis+ through Ch. 1-156 of the 2020 Leg. Sess. of the 191st Gen. Court).

⁶⁷ MASS. ANN. LAWS ch. 111, § 160 (LexisNexis, Lexis+ through Ch. 1-156 of the 2020 Leg. Sess. of the 191st Gen. Court); Rutherford H. Platt & Peter B. Klejna, *Recent Developments in Massachusetts Groundwater Law*, 85 J. CONTEMPORARY WATER RES. & EDUC. 22, 23 (1991).

⁶⁸ Ground Water Discharge Program, 314 CMR 5.00, 5.02 (2016) <https://www.mass.gov/doc/314-cmr-500-groundwater-discharge-permits/download>.

⁶⁹ A realistically anticipated period of time is typically 180 days of pumping at approved yield, with no recharge from precipitation. Ground Water Discharge Program, 314 CMR 5.00, 5.02 (2016) <https://www.mass.gov/doc/314-cmr-500-groundwater-discharge-permits/download>.

⁷⁰ 310 CMR 22.02, “Definitions”, <https://www.mass.gov/doc/310-cmr-22-drinking-water/download>.

⁷¹ 310 CMR 22.21(1)(b)(1), accessed at <https://www.mass.gov/regulations/310-CMR-2200-drinking->

public drinking water. MassDEP requires Zone I to be completely controlled by the water supplier and may require the water supplier to acquire neighboring land around the well construction area, deemed Zones II and III, to prevent possible contamination.⁷² Zones II and III are also prohibited from being used for certain potentially harmful or hazardous activities to prevent contamination of water supplies.⁷³ Furthermore, MassDEP requires a groundwater well monitoring program for water suppliers intending on withdrawing 100,000 gallons per day or more in order to receive approval for construction.⁷⁴ Finally, the Department requires all persons intending to construct a well that will extract 100,000 gallons per day or more for a public water supply to acquire a permit for the withdrawal.⁷⁵

Massachusetts does not have any codified limitations on the ability of private landowners to drill and withdraw water from wells on their own property, such as state regulations, reporting requirements, or licenses.

The Massachusetts Department of Environmental Protection is the Massachusetts state authority for well-drilling oversight and regulations related to well-drilling.⁷⁶

5. Hydraulic Connection and Regulation

Massachusetts does not explicitly regulate the interaction between groundwater and surface water.

However, Massachusetts amended the Wetlands Protection Act in 1996 to provide additional authority for local conservation commissions to regulate water rights of riparian landowners within areas designated as significant to the public or private water

water#downloads.

⁷² 310 CMR 22.21(1)(b)(5), accessed at <https://www.mass.gov/regulations/310-CMR-2200-drinking-water#downloads>.

⁷³ 310 CMR 22.21(2), accessed at <https://www.mass.gov/regulations/310-CMR-2200-drinking-water#downloads>.

⁷⁴ 310 CMR 22.21(1)(c), accessed at <https://www.mass.gov/regulations/310-CMR-2200-drinking-water#downloads>.

⁷⁵ 310 CMR 22.21(1)(h), accessed at <https://www.mass.gov/regulations/310-CMR-2200-drinking-water#downloads>.

⁷⁶ Drinking Water Program, 310 CMR 22.21, accessed at <https://www.mass.gov/regulations/310-CMR-2200-drinking-water#downloads>.

supply, to the groundwater supply, or to other uses by the conservation commissions.⁷⁷ These commissions may take actions to protect the water supply and the groundwater supply of their respective areas, meaning that even a private landowner may be subject to regulations concerning their use of groundwater beneath their land. Typically, these areas are designated as land within 200 feet of a riverfront.⁷⁸

6. Aquifer Recharge and Underground Storage

Massachusetts has a statewide drinking water supply protection program that also protects groundwater resources. The Massachusetts Division of Conservation Services implemented the Drinking Water Supply Protection Grant Program, which is intended to provide financial assistance to municipalities and public water systems for the following purposes: “1) protection of existing DEP-approved public drinking water supplies; 2) protection of planned future public drinking water supplies; or 3) groundwater recharge. It is a reimbursement program.”⁷⁹

The Division of Conservation Services is responsible for protecting aquifer recharge by providing financial assistance to protect groundwater recharge or protect the health of aquifers.⁸⁰ The Massachusetts Department of Environmental Protection is responsible for maintaining or regulating aquifer/underground storage by implementing water conservation standards to protect the water supply quantity.⁸¹

7. Water Management Plan(s)

Massachusetts has a statewide water management plan established in the *Massachusetts*

⁷⁷ H. David Gold, *Water Disputes in Massachusetts*, 12 Water Resources Committee Newsl. No. 2, at 2 (January 2010) (A.B.A. Sec. of Env’t., Energy, & Resources); MASS. ANN. LAWS ch. 131, § 40 (LexisNexis, Lexis+ through Ch. 1-156 of the 2020 Leg. Sess. of the 191st Gen. Court).

⁷⁸ H. David Gold, *Water Disputes in Massachusetts*, 12 Water Resources Committee Newsl. No. 2, at 2 (January 2010) (A.B.A. Sec. of Env’t., Energy, & Resources); MASS. ANN. LAWS ch. 131, § 40 (LexisNexis, Lexis+ through Ch. 1-156 of the 2020 Leg. Sess. of the 191st Gen. Court).

⁷⁹ Drinking Water Supply Protection Grant Program, Mass. Division of Conservation Services, available at <https://www.mass.gov/service-details/drinking-water-supply-protection-grant-program>.

⁸⁰ Drinking Water Supply Protection Grant Program, Mass. Division of Conservation Services, available at <https://www.mass.gov/service-details/drinking-water-supply-protection-grant-program>.

⁸¹ Ground Water Discharge Program, 314 CMR 5.00 (2016), <https://www.mass.gov/doc/314-cmr-500-groundwater-discharge-permits/download>.

Water Conservation Standards.⁸² The plan is a set of standards that are formulated over the course of a year through cooperation among different work groups, which are assembled and overseen by the WRC and the Executive Office of Energy and Environmental Affairs.⁸³ The most recent edition mentions integrated planning suggestions aimed at preventing the loss of groundwater to wastewater systems by promoting infiltration and inflow plans.⁸⁴

Massachusetts releases a new edition of the *Massachusetts Water Conservation Standards* every five years, with the most recent edition published in 2018.⁸⁵

8. Regulatory Authorities

The Massachusetts Department of Environmental Protection and the Water Resources Commission are the two main state regulatory authorities on groundwater resources.

Massachusetts Department of Environmental Protection is the regulatory authority for permitting and registration for groundwater withdrawals.⁸⁶ The Massachusetts Department of Environmental Protection is located at One Winter Street, Boston, Massachusetts 02108. The agency's listed phone number is (617) 292-5500 and the agency's website is <https://www.mass.gov/massdep-contacts-service-center>.

The WRC is the regulatory authority in charge of statewide water policy planning and oversight. It also advises the Massachusetts Department of Environmental Protection regarding water management policies and protections.⁸⁷ The WRC is located at 100 Cambridge Street, Boston, Massachusetts 02114. While no phone number is listed, the agency's website is <https://www.mass.gov/water-resources-commission-meetings>.

⁸² Massachusetts Water Conservation Standards (2018), accessed at <https://www.mass.gov/doc/massachusetts-water-conservation-standards-2/download>.

⁸³ Massachusetts Water Conservation Standards (2018), accessed at <https://www.mass.gov/doc/massachusetts-water-conservation-standards-2/download>.

⁸⁴ Massachusetts Water Conservation Standards § 1.2 (2018), accessed at <https://www.mass.gov/doc/massachusetts-water-conservation-standards-2/download>.

⁸⁵ Massachusetts Water Conservation Standards (2018), accessed at <https://www.mass.gov/doc/massachusetts-water-conservation-standards-2/download>.

⁸⁶ Water Management Act webpage, offered by Massachusetts Department of Environmental Protection: <https://www.mass.gov/water-management-act-program>.

⁸⁷ Water Resources Commission Overview, Commission website: <https://www.mass.gov/service-details/water-resources-commission-overview>.

9. Special Districts

Massachusetts may create special districts—called water pollution abatement districts—for the preservation of the quality of groundwater and surface water sources under the Massachusetts Clean Waters Act.⁸⁸ The Upper Blackstone Water Pollution Abatement District encompasses “the City of Worcester and the Towns of Auburn, Holden, Millbury, Rutland, West Boylston, and the Cherry Valley Sewer District (CVSD), a portion of the Town of Leicester.”⁸⁹

Massachusetts has twenty-seven major drainage water basins, which provide the sources of the state’s water resources and serve as the basis for MassDEP and WRC’s water management planning.⁹⁰ The basins are as follows:⁹¹

Blackstone	Housatonic	Parker
Boston Harbor	Hudson	Quinebaug
Buzzards Bay	Ipswich	Shawsheen
Cape Cod	Islands	South Coastal
Charles	Merrimack	SuAsCo (Sudbury-
Chicopee	Millers	Assabet-Concord;
Connecticut	Nashua	formerly Concord)
Deerfield	Narragansett Bay &	Taunton
Farmington	Mt. Hope Bay Shore	Ten Mile
French	North Coastal	Westfield

Additionally, the WRC determined the ocean would be counted as the State’s 28th basin for both water supply and wastewater purposes, and designated it as the Massachusetts Coastal basin.⁹²

⁸⁸ Excerpt from Embayment Restoration and Guidance for Implementation Strategies, Massachusetts Dept. of Environm’l Protection (March 2003). Accessed at <https://www.mass.gov/files/documents/2016/08/wy/mgtdists.pdf>.

⁸⁹ Upper Blackstone Water Pollution Abatement District, <http://www.ubwpad.org/>.

⁹⁰ Simcox, Alison C., *Water Resources of Massachusetts*, U.S. Geological Survey Report (1992), accessed at <https://pubs.usgs.gov/wri/wri904144/pdfs/wrir904144.pdf>.

⁹¹ Major Drainage Basins, MassGIS, accessed at <https://docs.digital.mass.gov/dataset/massgis-data-major-drainage-basins>.

⁹² Office of Water Resources, *A Guide to the Interbasin Transfer Act and Regulations (2003 Update)* at 2, Massachusetts Water Resources Commission, <https://www.mass.gov/doc/interbasin-transfer-act>

The Massachusetts DEP designates critical groundwater management areas as “wellhead protection areas” designed to protect water quality retrieved from the surrounding areas of groundwater aquifers used for public water supply systems.⁹³

10. Transboundary Arrangements

It does not appear that Massachusetts is party to any transboundary arrangements or conflicts.

11. Native American Rights

It does not appear that the state grants exemptions, benefits, or concessions to any Native American Tribe.

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⁹³ Wellhead Protection Areas, MassGIS, accessed at <https://docs.digital.mass.gov/dataset/massgis-data-massdep-wellhead-protection-areas-zone-ii-zone-i-iwpa>.

I. Montana

The State of Montana adheres to the prior appropriation doctrine for groundwater resources, as codified by the Montana Water Use Act of 1973.¹ As explained by the Montana Supreme Court, “the precept underlying the [prior appropriation] doctrine is timing—wherein he who first acquires a right to water is entitled to his full appropriation. . . before subsequent right holders may maximize their rights.”² Montana statute provides that a party’s water rights are usufructuary, and the holder of such rights can “. . . [U]se water as documented by a claim to an existing right, a permit, a certificate of water right, a state water reservation, or a compact.”³ However, the DNRC can designate “controlled” groundwater areas to prevent new appropriations and limit certain types of appropriations due to the availability or quality of water for the purpose of protecting existing water rights.⁴

1. Definitions, Basis of Rights, Standards, and Interactions

Groundwater is any water beneath the ground’s surface.⁵ “Aquifer” refers to “any underground geological structure or formation that is capable of yielding water in usable quantities or is capable of recharge.”⁶ Further, the phrase “groundwater area” is understood to be an area that “may be designated so as to enclose a single and distinct body of water.”⁷ Additionally, when a spring is involved, Montana recognizes a water right in an undeveloped spring as a surface water appropriation and a developed spring as a groundwater appropriation.⁸ A spring is considered developed when something is done to alter its natural state or flow, such as “simple excavation, cement encasement, or rock cribbing.”⁹

¹ *Montana Trout Unlimited v. Mont. Dep’t of Nat. Res. & Conservation*, 133 P.3d 224, 226 (Mont. 2006).

² *Kelly v. Teton Prairie LLC*, 376 P.3d 143, 146 (Mont. 2016).

³ Mont. Code Ann. § 85-2-422 (West, Westlaw through chapters effective, Oct. 1, 2017 Sess.).

⁴ See Mont. Code Ann. § 85-2-506 (West, Westlaw through 2019 Sess.) (explaining the process for designating a permanent or temporary controlled groundwater area).

⁵ Mont. Code Ann. § 85-2-102 (West, Westlaw through 2019 Sess.).

⁶ *Id.* § 85-2-501(1).

⁷ *Id.* § 85-2-501(5).

⁸ Mont. Admin. R. 36.12.101(70) (West, Westlaw through Issue 14 of 2020 Mont. Admin. Reg. dated July 24, 2020).

⁹ *Id.*

Montana follows the prior appropriation doctrine for groundwater resources with senior and junior water right holders permitted to beneficially use the water by order of priority in times of shortage. Montana’s judiciary has recognized the prior appropriation doctrine since 1921.¹¹ In 1973, the Montana Legislature codified the doctrine in the Montana Water Use Act of 1973 (“the Act”). Since then, the Montana Supreme Court has consistently recognized the doctrine, which states “as between appropriators, the first in time is the first in right.”¹²

Prior to July 1, 1973, most water rights were referred to as either “filed rights” or “use rights.”¹³ At the time, Montana’s laws provided two ways to perfect a water right: (1) “[a] claimant could post a notice at the point of diversion and file a notice with the county clerk pursuant to statute”; and (2) a claimant could simply put the water to use.¹⁴ However, Montana’s constitutional conventions sought to remedy this antiquated appropriation system by implementing the Water Use Act in 1973, affecting both groundwater and surface water rights.¹⁵ The Act “. . . mandated that all holders of claims to existing water rights file their claims with” the Department of Natural Resources & Conservation (the “DNRC”), and charged the agency with the responsibility of determining priority dates for each claim filed.¹⁶ The DNRC was formed in 1971 and was the result of a large-scale government restructuring that consolidated all natural resource departments into one agency.¹⁷ Additionally, under the Act, new appropriators for surface and groundwater must now “show that water is legally and physically available, the proposed use of water is for a beneficial use, and the new appropriation will not adversely affect existing water rights of senior prior appropriators” in order to perfect their water rights.¹⁸

The Act also provides, “[a]s between appropriators, the first in time is the first in

¹¹ *Mettler v. Ames Realty Co.*, 201 P. 702, 706 (Mont. 1921) (recognizing “As between appropriators, the one first in time is first in right.”).

¹² *Kelly v. Teton Prairie LLC*, 376 P.3d 143, 146 (Mont. 2016).

¹³ Dep’t of Nat. Res. & Conservation, *Water Rts. in Mont.*, at 14 (April 2012), <https://leg.mt.gov/content/Publications/Environmental/2012-water-rights-handbook.pdf> (last visited Aug. 15, 2020).

¹⁴ *Montana Trout Unlimited*, 133 P.3d at 226.

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ Mont. Dep’t of Nat. Res. & Conservation, *Reorganization Plan* (1971), <https://archive.org/details/reorganizationpl33mont/mode/2up> (last visited Aug. 15, 2020).

¹⁸ *Clark Fork Coal. v. Tubbs*, 380 P.3d 771, 775 (Mont. 2016).

right.”¹⁹ Hence, “[h]e who first acquires a right to water is entitled to his full appropriation (limited by needs and facilities) before subsequent right holders may maximize their rights.”²⁰ Although the right to use water passes with the conveyance or transfer of the land unless specifically exempted, the transfer of interests in appropriation rights does not forfeit the priority date of the transferred right.²¹ However, Montana’s Supreme Court stated that “the ownership of land where water has its source does not necessarily give exclusive right to such waters so as to prevent others from acquiring rights therein.”²²

Furthermore, the Act established a permit system for new uses of both surface and groundwater.²³ The Act requires any person planning on expanding development or creating new development of water for a beneficial use after June 30, 1973 to either obtain a permit to appropriate the water or file a Notice of Completion of Ground Water Development to get a Certificate of Water Right (a “CWR”).²⁴ The DNRC issues permits for water use or appropriation and awards CWRs if the development has been properly completed, although not all water developments need to be permitted.²⁵ Montana’s water laws exempt certain groundwater wells from the permitting/certification process.²⁶ Exempt wells include wells that withdraw less than thirty-five (35) gallons per minute or ten acre-feet per year.²⁷ The priority date of an appropriation is established when “DNRC receives the original permit application.”²⁸ This “essentially hold[s] the applicant’s place in the water rights line.”²⁹

¹⁹ Mont. Code Ann. § 85-2-401(1) (West, Westlaw through 2019 Sess.).

²⁰ *Kelly*, 376 P.3d at 146.

²¹ Mont. Code Ann. § 85-2-403 (West, Westlaw through 2019 Sess.).

²² *Nelson v. Brooks*, 329 P.3d 558, 567 (Mont. 2014) (quoting *Woodward v. Perkins*, 147 P.2d 1016, 1019 (Mont. 1944)).

²³ *In re Adjudication of Existing Rts. to the Use of All Water*, 55 P.3d 396, 398 (Mont. 2002).

²⁴ Dep’t Nat. Res. & Conservation, *Water Rts. in Mont.* at 21–22 (April 2012), <http://leg.mt.gov/content/publications/environmental/2012-water-rights-handbook.pdf>.

²⁵ Dep’t Nat. Res. & Conservation, *Water Rts. in Mont.* at 33–34 (April 2012), <http://leg.mt.gov/content/publications/environmental/2012-water-rights-handbook.pdf>. (Certificates only are issued after the adjudication is complete. Until that time all permits are provisional.); See Mont. Code Ann. § 85-2-313 (West 2019).

²⁶ Michele Peterson-Cook, *Water’s for Fightin’, Whiskey’s for Drinkin’: How Water Law Affects Growth in Montana*, 28 J. Envtl. L & Litig. 79, 80 (2013).

²⁷ *Id.* at 80–81.

²⁸ *Id.* at 84.

²⁹ *Id.*

Lastly, the 1973 Act requires the DNRC to inspect conflicts concerning the priority of claims.³⁰ However, by 1979, field work to evaluate conflict claims had only been completed on one of Montana's eighty-five basins.³¹ Subsequently, Montana's legislature recognized the need for a more efficient adjudication process for groundwater and surface water rights, and passed amendments to the Act in 1979.³² The most notable of the amendments led to the creation of the Montana Water Court and the Reserved Water Rights Compact Commission (the "RWRCC").³³

2. Sources of Law

Montana's constitution grants the Montana State Legislature authority to administer and regulate water rights.³⁴ The law governing groundwater in Montana is statutory, with the courts confirming their legality.³⁵ *Montana Trout Unlimited v. Montana Dep't of Nat. Res. & Conservation* changed the way water rights were administered "by recognizing groundwater and surface water as connected and restricting the allocation of water right permits in closed basins."³⁶ A basin is "closed" when appropriation rights exceed water availability.³⁷ Subject to certain exceptions, if a basin is closed, the DNRC may not issue any more permits for appropriation.³⁸ Recently, the Montana Supreme Court concluded that "'combined appropriation' for purposes of small groundwater uses exempt from permitting refers to the total amount of maximum quantity of water that may be appropriated without a permit and not to the manner in which wells or developed springs may be physically connected."³⁹ The Act is an important piece of legislation

³⁰ Water Pol'y Interim Committee, *Water Rts. in Mont.* (2018), 6, <https://leg.mt.gov/content/Committees/Interim/2017-2018/Water-Policy/Committee-Topics/2018-water-rights-handbookFINAL.pdf> (last visited Aug. 15, 2020).

³¹ *Id.* at 7–8.

³² *Id.*

³³ *Id.* at 8.

³⁴ Mont. Const. art. IX, § 3.

³⁵ Water Pol'y Interim Committee, *Water Rts. in Mont.* (2018), 9, <https://leg.mt.gov/content/Committees/Interim/2017-2018/Water-Policy/Committee-Topics/2018-water-rights-handbookFINAL.pdf> (last visited Aug. 15, 2020).

³⁶ Michele Peterson-Cook, *Water's for Fightin', Whiskey's for Drinkin': How Water Law Affects Growth in Montana*, 28 J. Envtl. L. & Litig. 79, 92 (2013).

³⁷ *Clark Fork Coal.*, 380 P.3d at 775.

³⁸ *Id.*

³⁹ *Id.* at 779.

that determines how water is used and regulated by all parties with water rights in the state of Montana.⁴⁰

3. Scope of Right

a. Groundwater Ownership

According to Montana’s constitution, “[a]ll surface, underground, flood, and atmospheric waters within the boundaries of the state are the property of the state for the use of its people and are subject to appropriation for beneficial use as provided by law.”⁴¹ Interested parties holding a water right have “the right to use water as documented by a claim to an existing right, a permit, a certificate of water right, a state water reservation, or a compact.”⁴² Stated differently, a water right is not a physical ownership right; it is a usufructuary right, “a right to make use of the water.”⁴³

The Water Court has primary jurisdiction over the adjudication of all existing water rights in the state that have a priority date senior to July 1, 1973. The DNRC has full control of all “water of the state not under the exclusive control of the United States and not appropriated for private use.”⁴⁴ State district courts have jurisdiction over the administration and enforcement of all water rights in the state.⁴⁵ Essentially, pre-July 1, 1973, water rights are adjudicated by the Water Court, while post-July 1, 1973 water rights are appropriated and determined through the DNRC, and all water rights are administered and enforced by local district courts. The DNRC also assists the Water Court by conducting fieldwork and providing information and technical support throughout the adjudication process.⁴⁶ All Water Court personnel, including water judges, are monitored by the Montana Supreme Court.⁴⁷

⁴⁰ Montana Water Act of 1973, (codified as amended in scattered sections of Mont. Code Ann. § 85) (West 2019).

⁴¹ Mont. Code Ann. § 85-2-243(1) (West, Westlaw through 2019 Sess.).

⁴² Mont. Code Ann. § 85-2-422 (West, Westlaw through chapters effective, Oct. 1, 2017 Sess.).

⁴³ *Nelson v. Brooks*, 329 P.3d 558, 567 (Mont. 2014) (quoting *Montana Trout*).

⁴⁴ *Id.* § 85-2-102.

⁴⁵ *Id.* § 85-2-406.

⁴⁶ Dep’t of Nat. Res. & Conservation, *Water Rights in Mont.* (April 2012), 2, <https://leg.mt.gov/content/Publications/Environmental/2012-water-rights-handbook.pdf> (last visited Aug. 15, 2020).

⁴⁷ *Id.* at 6.

b. Scope of Use

Priority of an appropriation right does not include a right “to prevent changes by later appropriators in the condition of water occurrence, such as the increase or decrease of streamflow or the lowering of a water table, if the prior appropriator can reasonably exercise the water right under the changed conditions.”⁴⁸ Additionally, an applicant for a permit “must show how the proposed groundwater allocation will affect other allocations and possibly provide a mitigation plan to correct any adverse impacts the proposed water right may cause.”⁴⁹

i. Permitted and Preferred Uses

Beneficial use is any use of water “for the benefit of the appropriator, other persons, or the public”⁵⁰ The DNRC may “. . . sell, lease, and otherwise dispose of water . . . for the purpose of irrigation, development of power, watering of stock, or other purposes,” including use for “public, domestic, industrial, and other uses[,]” as well as fire protection.⁵¹ Any attempt to gain control of or to speculate on large quantities of Montana’s groundwater is not considered to be in the interest of the people and is therefore restricted.⁵²

A party holding a water right is only permitted to appropriate water for a beneficial use.⁵³ However, “beneficial use” is defined broadly by Montana statute and is relatively flexible in its application to water appropriation.⁵⁴ The DNRC “may not issue a permit

⁴⁸ Mont. Code Ann. § 85-2-401 (West, Westlaw through 2019 Sess.).

⁴⁹ Michele Peterson-Cook, *Water’s for Fightin’, Whiskey’s for Drinkin’: How Water Law Affects Growth in Montana*, 28 J. Envtl. L & Litig. 79, 84 (2013); see also Mont. Code Ann. § 85-2-402 (West, Westlaw through 2019 Sess.).

⁵⁰ Mont. Code Ann. § 85-2-102(5) (West, Westlaw through 2019 Sess.).

⁵¹ Mont. Code Ann. §§ 85-1-204, 210 (West, Westlaw through 2019 Sess.).

⁵² Mont. Code Ann. § 85-1-101 (West, Westlaw through 2019 Sess.).

⁵³ *Id.* § 85-2-301.

⁵⁴ *Id.* § 85-2-102.

“Beneficial use,” unless otherwise provided, means:

- (a) a use of water for the benefit of the appropriator, other persons, or the public, including but not limited to agricultural, stock water, domestic, fish and wildlife, industrial, irrigation, mining, municipal, power, and recreational uses;

for more water than is requested or than can be beneficially used without waste for the purpose stated in the [permit] application.”⁵⁵ Montana generally does not recognize preferences between beneficial uses of water.⁵⁶ A right’s priority date determines which right may be used before another during times of shortage. However, in the process of applying for a grant or loan for water-related projects, preference is given to water related projects used as part of a family farm, water-related projects that utilize or develop water reserved under Montana statute 85-2-316, and water related projects that cannot be accomplished without issuance of a grant or loan.⁵⁷

ii. Location of Use

Since July 1, 1973, Montana statute has mandated that, “ground water may be appropriated only by a person who has a possessory interest in the property where the water is to be put to beneficial use and exclusive property rights in the groundwater development works.”⁵⁸ When appropriated water is leased out (generally for instream flow purposes), the water cannot be used on the property on which the place of use is located while being leased.⁵⁹ Additionally, the place of use for the leased water must be stated in the lease application submitted to the DNRC.⁶⁰

-
- (b) a use of water appropriated by the department for the state water leasing program under 85-2-141 and of water leased under a valid lease issued by the department under 85-2-141;
 - (c) a use of water by the department of fish, wildlife, and parks through a change in an appropriation right for instream flow to protect, maintain, or enhance stream flows to benefit the fishery resource authorized under 85-2-436;
 - (d) a use of water through a temporary change in appropriation right or lease to enhance instream flow to benefit the fishery resource in accordance with 85-2-408;
 - (e) a use of water for aquifer recharge or mitigation; or
 - (f) a use of water for an aquifer storage and recovery project as provided in 85-2-368.

⁵⁵ *Id.* § 85-2-312.

⁵⁶ *Matter of Clark Fork River Drainage Area*, 908 P.2d 1353, 1357 (1995).

⁵⁷ Mont. Code Ann. § 85-1-610 (West, Westlaw through 2019 Sess.).

⁵⁸ Mont. Code Ann. § 85-2-306 (West, Westlaw through 2019 Sess.); Mont. Code Ann. § 85-2-306 (West, Westlaw through 2019 Sess.).

⁵⁹ Mont. Code Ann. § 85-2-427 (West, Westlaw through 2019 Sess.).

⁶⁰ *Id.*

c. Loss of Water Rights

Under Montana law, water rights may be lost if the rights holder abandons the right or ceases to use the right pursuant to its terms and conditions, with intent to not comply with those terms and conditions.⁶¹ For example, the “failure to file a claim of an existing right, as required by Section 85-2-221(1), establishes a conclusive presumption of abandonment of that right.”⁶² However, a right to appropriate water may only be obtained through methods prescribed by Montana statute.⁶³ A right to appropriate water cannot be acquired by adverse use, adverse possession, prescription, or estoppel.⁶⁴ Further, if an appropriator stops exercising their rights in part or abandons appropriation altogether, the right may be extinguished as a matter of law.⁶⁵ If work on an appropriation is not completed within the time frame outlined in the permit, or if the water is not being used beneficially as outlined in the permit, then a permit-holder will have to show proper cause as to why they failed to do so.⁶⁶ If the permit-holder is unable to prove proper cause, or the permit-holder abandons their appropriation, their permit may be revoked by the DNRC.⁶⁷ The Montana Supreme Court in *Axtell v. M.S. Consulting* held that there are two elements necessary to prove abandonment of a water right: (1) nonuse of water associated with the right, and (2) intent of the holder of the right to abandon the water right.⁶⁸

Evidence of a long period of continuous nonuse of a water right raises a rebuttable presumption of an intent to abandon that right and shifts the burden of proof to the nonuser to explain the reason for nonuse. To rebut the presumption of abandonment, there must be established some fact or condition excusing the long period of nonuse.⁶⁹

If an appropriator ceases its use of all or part of the appropriation right, or ceases to use

⁶¹ *Id.* § 85-2-404.

⁶² *Id.* § 85-2-226.

⁶³ *Id.* § 85-2-301.

⁶⁴ *Id.*

⁶⁵ *Id.* § 85-2-404.

⁶⁶ *Id.* § 85-2-314.

⁶⁷ *Id.*

⁶⁸ *Axtell v. M.S. Consulting*, 955 P.2d 1362, 1369 (Mont. 1998).

⁶⁹ *Id.*

the appropriation right pursuant to its terms and conditions, for a period of ten successive years during which “there was water available for use, there is a prima facie presumption that the appropriator has abandoned the right for the part not used.”⁷⁰ However, the “lease of an existing right...or a temporary change in appropriation right...does not constitute an abandonment or serve as evidence that could be used to establish an abandonment of any part of the right.”⁷¹

When the [D]epartment has reason to believe that an appropriator may have abandoned an appropriation right...or when another appropriator in the opinion of the [D]epartment files a valid claim that the appropriator has been or will be injured by the resumption of use of an appropriation right alleged to have been abandoned, the [D]epartment shall petition the district court that determined the existing rights in the source of the appropriation in question to hold a hearing to determine whether the appropriation right has been abandoned.⁷²

Proceedings stemming from the situations stated above are to be “conducted in accordance with the Montana Rules of Civil Procedure, and appeal[s]...in accordance with the Montana Rules of Appellate Procedure.”⁷³ Additionally, permit-exempt wells and CRWs granted to farms can have their privileges revoked if the users appropriate too much water.⁷⁴ Hence, in the absence of a beneficial use, the DNRC can revoke water appropriation permits and water rights.⁷⁵

4. Well Drilling

The Board of Water Well Contractors (“The Board”) is responsible for licensing water well drillers and contractors and enforcing water well construction standards.⁷⁶ The

⁷⁰ Mont. Code Ann. § 85-2-404 (West, Westlaw through 2019 Sess.).

⁷¹ *Id.*

⁷² *Id.* § 85-2-405.

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ Dep’t Nat. Res. & Conservation, *Water Rights in Mont.* (April 2012), 24, <http://leg.mt.gov/content/publications/environmental/2012-water-rights-handbook.pdf>. (last visited Aug. 15, 2020).

⁷⁶ See Water Operations, *Board of Water Well Contractors*, Mont. Dep’t Nat. Res. & Conservation, <http://dnrc.mt.gov/divisions/water/operations/board-of-water-well-contractors> (last visited Aug. 15,

Board was created by, and is granted authority from, Montana statute § 2-15-3307.⁷⁷ Within 60 days after any well is completed, the driller must file a well log report with the Montana State Bureau of Mines and Geology.⁷⁸ The responsibility of filing the well log report falls upon the person who constructs the well, not the owner.⁷⁹ Specific regulations relating to construction standards for water wells can be found in Title 36, Chapter 21, Sub-Chapter 6 of the Administrative Rules of Montana.⁸⁰ Additionally, the State Bureau of Mines and Geology or the Department of Environmental Quality may enter onto the property of any appropriator where a well is situated, at any reasonable hour of the day, for the purpose of investigating any matters in connection the construction and monitoring of water wells.⁸¹

If an existing well fails, or is unable to continue pumping water, then a replacement well can be constructed and utilize the priority date of the first well.⁸² The DNRC authorizes changes in water rights regarding replacement wells.⁸³ Authorities responsible for well-drilling oversight in Montana include the Board of Water Well Contractors, the Montana State Bureau of Mines and Geology, the Department of Natural Resources & Conservation, and the Department of Environmental Equality.

5. Hydraulic Connection and Regulation

The DNRC historically defined the phrase “immediate or direct connection to surface water” as “ground water which, when pumped at the flow rate requested in the application and during the proposed period of diversion, induces surface water infiltration.”⁸⁴ The Montana Supreme Court found that this definition was lacking in

2020).

⁷⁷ Mont. Code Ann. § 2-15-3307 (West, Westlaw through 2019 Sess.).

⁷⁸ Mont. Code Ann. § 85-2-516(1) (West, Westlaw through 2019 Sess.).

⁷⁹ *Id.* § 85-2-516(2).

⁸⁰ Mont. Admin. R. 36.21.601-680 (West, Westlaw through Issue 14 of 2020 Mont. Admin. Reg. dated July 24, 2020).

⁸¹ *See* Mont. Code Ann. § 85-2-514 (West, Westlaw through 2019 Sess.).

⁸² Dep’t of Nat. Res. & Conservation, *Water Rights in Mont.*, 24, <http://leg.mt.gov/content/publications/environmental/2012-water-rights-handbook.pdf>. (last visited Aug. 15, 2020)

⁸³ *Id.*

⁸⁴ *Id.*

Montana Trout, noting that the DNRC’s interpretation was deficient because it failed to encompass water diverted from streams through pre-stream capture of tributary groundwater.⁸⁵ The court also noted that pre-stream capture of tributary groundwater has an impact on surface flows that is more significant and longer lasting than the impact of induced infiltration.⁸⁶

Montana presently manages surface and groundwater together, meaning that priority dates are unified into one system rather than being bifurcated and managed solely among each source type. However, the state legislature has authorized controls on groundwater use in certain instances. Per Montana statute § 85-2-506, a groundwater area may be controlled, either permanently or temporarily, to prevent further appropriations or permitted work, for water testing, or to measure future appropriations.⁸⁷ When a permit is sought in a controlled groundwater area (CGA) or a closed basin, the priority goes to the senior users in that area of both ground and surface water.⁸⁸ If a new appropriation permit will affect the net level of water in the basin, then the permit shall not be issued to the junior user applicant.⁸⁹ However, there are no priority rights when outside the boundaries of a CGA.⁹⁰

The Basin Closure Law was created to “protect senior water rights holders and...[i]t makes no difference to [the] senior appropriators whether groundwater pumping reduces surface flows because of induced infiltration or from the pre-stream capture of tributary groundwater. However, the result is the same: less surface flow in direct contravention of the legislature’s intent.”⁹¹ Therefore, in preparation for an application for appropriation of water, the applicant “must show how the proposed groundwater allocation will affect other allocations and possibly provide a mitigation plan to correct any adverse impacts the proposed water right may cause.”⁹²

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ Mont. Code Ann. § 85-2-506(7) (West, Westlaw through 2019 Sess.).

⁸⁸ *See* Mont. Code Ann. § 85-2-360 (West, Westlaw through 2019 Sess.).

⁸⁹ *See* Mont. Code Ann. § 85-2-360 (West, Westlaw through 2019 Sess.).

⁹⁰ *See* Mont. Code Ann. § 85-2-360 (West, Westlaw through 2019 Sess.).

⁹¹ Water Pol’y Interim Committee, *Water Rts. in Mont.* (2018), 7–8, <http://leg.mt.gov/content/publications/environmental/2012-water-rights-handbook.pdf>. (last visited Aug. 15, 2020).

⁹² *Montana Trout Unlimited*, 133 P.3d at 227.

Further, the Montana legislature has enacted laws that ‘close’ certain basins to new appropriation permits, especially if the basins are deemed to be highly or exceedingly appropriated and are unable to recharge to meet the demand.⁹³ Some closed basins have had exemptions for groundwater. Originally, the language, “immediately or directly connected to surface water,” in the statute was at issue for purposes of determining whether these exemptions applied. Montana’s supreme court addressed this in *Montana Trout Unlimited v. Montana DNRC*.⁹⁴ Subsequently, the legislature clarified the issue by requiring a hydrogeological report with an application for groundwater appropriation in a closed basin region.⁹⁵ The requirements of the hydrogeological report are listed in Montana statute § 85-2-361.⁹⁶

Prior to the amendments requiring hydrogeological reports for new appropriation in closed basins, the DNRC had recognized the intricate relationship between groundwater and the Smith River, including its tributaries.⁹⁷ The Montana legislature enacted a set of laws in order to preserve this relationship, collectively called the Basin Closure Law.⁹⁸ According to the Basin Closure Law, the “DNRC must determine whether an application for groundwater includes groundwater that is ‘immediately or directly connected to surface water’ for the application to qualify under the groundwater exception” and be permitted in a closed basin.⁹⁹

Additionally, in *Clark Fork Coal. v. Tubbs*, the Montana Supreme Court recognized that senior users are afforded even more protection in highly appropriated basins.¹⁰⁰ While the DNRC may consider groundwater permits, the individual seeking to obtain a permit “must commission a hydrogeological report to determine if the proposed appropriation

⁹³ Mont. Code Ann. § 85-2-319 (West, Westlaw through 2019 Sess.).

⁹⁴ *Montana Trout Unlimited*, 133 P.3d at 226.

⁹⁵ See Mont. Code Ann. § 85-2-360 (West, Westlaw through 2019 Sess.).

⁹⁶ Mont. Code Ann. § 85-2-361 (West, Westlaw through 2019 Sess.).

⁹⁷ *Montana Trout Unlimited*, 133 P.3d at 226.

⁹⁸ Water Pol’y Interim Committee, *Water Rts. in Mont.* (2018), 7–8, <http://leg.mt.gov/content/publications/environmental/2012-water-rights-handbook.pdf>. (last visited Aug. 15, 2020).

⁹⁹ *Id.* at 227.

¹⁰⁰ *Clark Fork Coal.*, 380 P.3d at 775.

could result in a net depletion of surface water.”¹⁰¹ If the report finds a connection exists, the appropriator must show “there will be no net depletion of water.”¹⁰² This can be accomplished by mitigating the effect of the new appropriation by retiring existing surface water rights, subject to DNRC approval.¹⁰³

When outside the boundaries of a CGA, a permit is not required when the “maximum appropriation of 350 gallons a minute or less is used in non-consumptive geothermal heating or cooling exchange applications.”¹⁰⁴ Further, a permit is not required if “all of the water extracted is returned without delay to the same source aquifer.”¹⁰⁵ Also, no permit is required if “the distance between the extraction well and both the nearest existing well and the hydraulically connected surface waters is more than twice the distance between the extraction well and the injection well.”¹⁰⁶

If infringing upon another’s rights, a party can be enjoined from their appropriation by either the DNRC, a district court judge, or a water judge.¹⁰⁷ The Water Court has jurisdiction over the adjudication of all pre-1973 water rights (“existing water rights”), the DNRC responds to and investigates all post-1973 water right permitting concerns, and Montana district courts have jurisdiction over water distribution controversies.¹⁰⁸ If the dispute is over existing water rights, the complaining party can always bring a claim against the alleged infringer to the water judge with jurisdiction over one of the four water districts in Montana: the Western Slope Watershed, the Lower Missouri River Watershed, the Upper Missouri River Watershed, or the Yellowstone Watershed.¹⁰⁹ An injured party may request injunctive relief against the infringing parties (as in *Tubbs*), may seek a temporary restraining order (as in *Axtell*), be required to pay attorney fees once the issue has been settled (as in *Montana Trout*), or be subjected to alternative

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ *Id.*

¹⁰⁴ Mont. Code Ann. § 85-2-306(3)(a)(ii) (West, Westlaw through 2019 Sess.).

¹⁰⁵ *Id.*

¹⁰⁶ *Id.*

¹⁰⁷ U. of Mont. Sch. of L., *Water Rights in Mont.* at 12–13, http://courts.mt.gov/Portals/189/Water/UM_WaterRightsStudy.pdf (last accessed Aug. 15, 2020).

¹⁰⁸ *Id.* at 6–7.

¹⁰⁹ Mont. Judicial Branch, *Adjudication Guidebook*, at 5–6, <https://courts.mt.gov/Portals/189/Water/A-Legal%20Resources/Adjudication%20Guidebook.pdf> (last accessed Aug. 15, 2020).

dispute resolution with state-appointed water masters as the arbitrators. The Chief Water Judge appoints water masters to assist with recommendations for adjudication of individual claims based on their basin(s) of expertise.¹¹⁰

*Hidden Hollow Ranch v. Fields*¹¹¹ further determined that in actions involving disputes between appropriators as to the diversion of water, the burden of proof rests on the party asserting he or she is entitled to use the waters.¹¹² Aside from an injunction, it is unclear if the infringing party is liable for any other damages. In *Lyman Creek v. City of Bozeman*, the Montana Supreme Court determined that a private party does not have a right of enforcement against another private party other than through a dissatisfied water user complaint.¹¹³

6. Aquifer Recharge and Underground Storage

The Groundwater Protection Program (“GWPP”) is a state mechanism that monitors the health of the state’s aquifers and regularly test for harmful agricultural chemicals or pesticides in the water table.¹¹⁴ Montana’s Department of Agriculture looks at six enumerated districts to determine if harmful chemicals have reached the water table or not; for example, in 2017, the GWPP concluded that no harmful amounts of chemicals were detected in the six districts that may pose a threat to water potability or use in agriculture.¹¹⁵

The Montana Bureau of Mines and Geology oversees both the Groundwater Investigation Program (“GWIP”) and the Groundwater Assessment Program (“GWAP”) to investigate water-usage related claims in Montana that potentially expedite or benefit the state’s adjudication process. The GWIP was established by Montana statute § 85-2-525 in 2009, and is assigned tasks by the Montana Groundwater

¹¹⁰ U. of Mont. Sch. of L., *Water Rights in Mont.* at 6–7, http://courts.mt.gov/Portals/189/Water/UM_WaterRightsStudy.pdf (last accessed Aug. 15, 2020).

¹¹¹ *Hidden Hollow Ranch v. Fields*, 92 P.3d 1185 (Mont. 2004).

¹¹² *Hidden Hollow Ranch v. Fields*, 92 P.3d 1185, 1193–94 (Mont. 2004); *see also* Mont. Code Ann. § 85-2-406 (West, Westlaw through 2019 Sess.).

¹¹³ *Lyman Creek, LLC v. City of Bozeman*, 450 P.3d 872, 879 (Mont. 2019).

¹¹⁴ Mont. Dep’t of Ag., Groundwater Protection Program, <http://agr.mt.gov/groundwater> (last visited Aug. 15, 2020).

¹¹⁵ Christopher Kelley & Brett Heitshusen, Mont. Dep’t of Ag. Groundwater Protection Program 2017 Monitoring Locations, <https://agr.mt.gov/Portals/168/Documents/Groundwater/2017GWPPFactSheet-MonitorSummary.pdf> (last visited Aug. 15, 2020).

Steering Committee to investigate water usage issues that are considered urgent or of the utmost importance to the state's residents.¹¹⁶ As of 2017, current investigations include evaluating the public water supply in Madison County, and groundwater availability for community growth in eastern Montana and the Ennis area.¹¹⁷ The GWAP was established by Montana statute § 85-2-901 in 1991 to assess the quality of Montana's water resources and provide information to the general public.¹¹⁸ Current efforts include mapping the state's aquifers and monitoring water levels in 900 strategically-chosen wells in the state.¹¹⁹

The Montana Groundwater Assessment Steering Committee was established by Montana statute § 2-15-1523 and consists of several state and federal agents that work together to analyze and prioritize water issues in the state for the GWIP to investigate, and provides limited oversight to the GWAP.¹²⁰ Additionally, Montana statute § 85-2-362 granted the DNRC authority to oversee and permit all projects that could likely affect aquifer recharge rates.¹²¹ Among other things, the statute requires that the proposed plan show what efforts will be taken to recharge the affected aquifers.¹²²

¹¹⁶ Mont. Bureau of Mines & Geology, *Groundwater Investigation Program – GWIP*, <http://mbmg.mtech.edu/gwip/gwip.html> (last visited Aug. 15, 2020).

¹¹⁷ Mont. Bureau of Mines & Geology, *GWIP 2017 Fact Sheet*, http://mbmg.mtech.edu/gwip/gwip_pdf/2018/2017GWIPFactSheet.pdf (last accessed Aug. 15, 2020).

¹¹⁸ Mont. Bureau of Mines & Geology, Groundwater Assessment Program, <http://mbmg.mtech.edu/gwap/gw-assessment.html> (last visited Aug. 15, 2020).

¹¹⁹ Mont. Bureau of Mines & Geology, Groundwater Assessment Program, <http://mbmg.mtech.edu/research/gwap.asp> (last visited Aug. 15, 2020).

¹²⁰ See Mont. Bureau of Mines & Geology, An Overview: The Montana Groundwater Assessment Steering Committee, https://www.mbg.mtech.edu/gwip/gwip_pdf/GroundWaterSteeringCommitteeGuidelines_MCA2-15-1523.pdf (last visited Aug. 15, 2020).

¹²¹ Mont. Code Ann. § 85-2-362 (West, Westlaw through 2019 Sess.).

¹²² Mont. Code Ann. §§ 85-2-362(2)–(4) (West, Westlaw through 2019 Sess.).

Montana Major River Basins

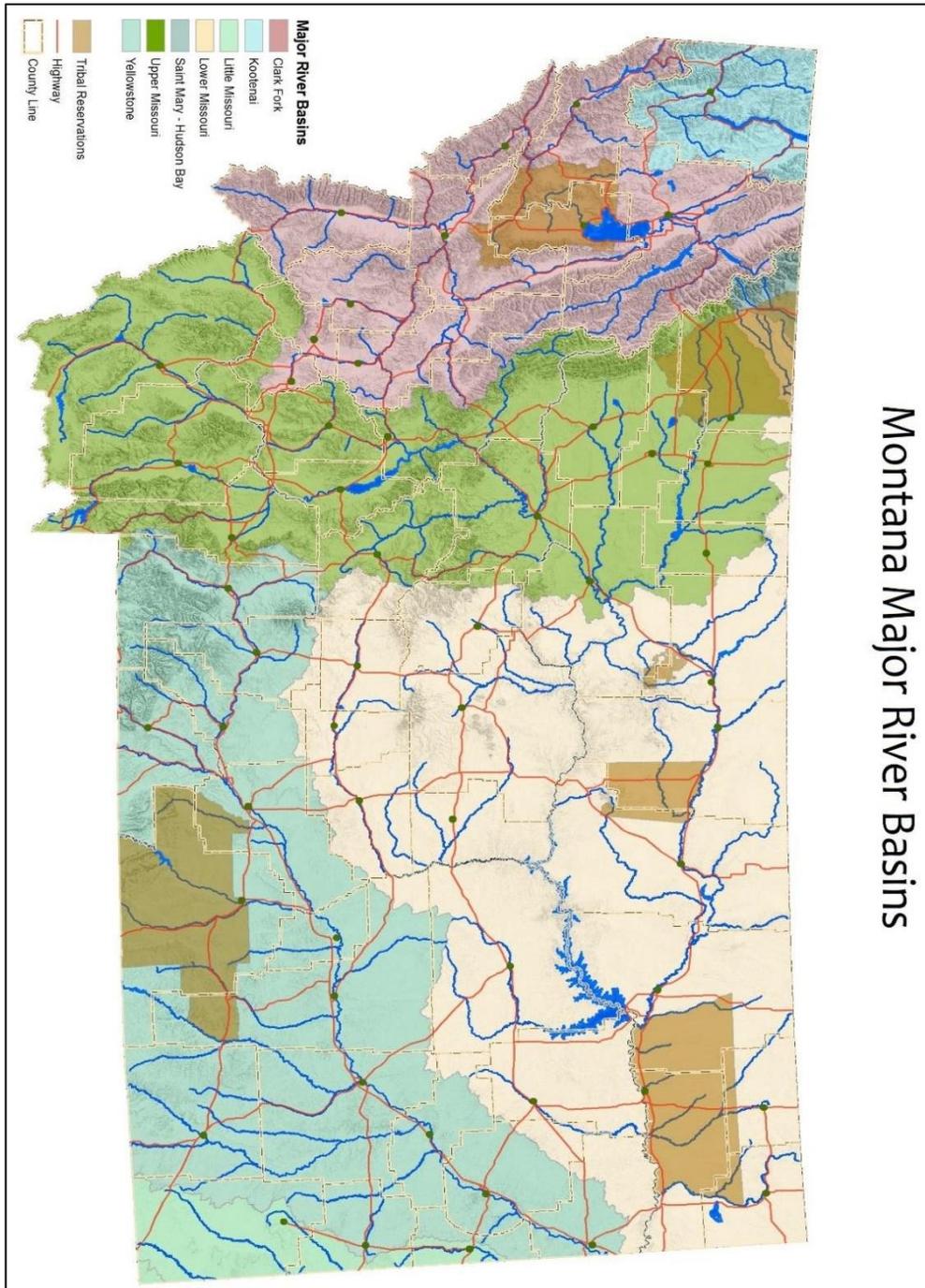


Fig. I.2 Montana Major River Basins¹²³

¹²³ The Montana Department of Natural Resources and Conservation, *Regional River Basin Information*, <http://www.dnrc.mt.gov/divisions/water/management/docs/state-water->

7. Water Management Plan

The DNRC published a statewide water plan in 2015 under the authority granted by Montana statute § 85-1-203.¹²⁴ Montana residents were given a formal role in creation of the plan through the Basin Advisory Councils, which were allowed to make recommendations to the DNRC.¹²⁵ This role is codified as Montana statute § 85-1-203(4).¹²⁶

The state water plan divides the state by its four major river basins (Yellowstone, Lower Missouri, Upper Missouri, and Clark Fork/Kootenai). Each of these basins has a 20-member DNRC appointed Basin Advisory Council (“BAC”).¹²⁷ After an extensive information gathering period, the DNRC and BACs released their state water plan.¹²⁸ The state water plan mainly covers surface water issues, but also investigates potential future uses of groundwater, analyzes the quality of hydraulically-linked surface and groundwater, and determines new ways to promote aquifer recharge rates.¹²⁹

8. Regulatory Authorities

Montana statute grants the DNRC power to coordinate and control water in Montana.¹³⁰

plan/basin_planning_area_map.pdf (last visited Aug. 15, 2020).

¹²⁴ See Mont. Code Ann. § 85-1-203 (West, Westlaw through 2019 Sess.).

¹²⁵ *Montana State Water Plan: A Watershed Approach to the 2015 Montana State Water Plan*, Mont. Dep’t Nat. Res. & Conservation, 1–2 (Dec. 5, 2014), http://dnrc.mt.gov/divisions/water/management/docs/state-water-plan/2015_mt_water_plan.pdf (last accessed Aug. 15, 2020).

¹²⁶ See Mont. Code Ann. § 85-1-203(4) (West, Westlaw through 2019 Sess.).

¹²⁷ *Montana State Water Plan: A Watershed Approach to the 2015 Montana State Water Plan*, Mont. Dep’t Nat. Res. & Conservation, 1–2 (Dec. 5, 2014), http://dnrc.mt.gov/divisions/water/management/docs/state-water-plan/2015_mt_water_plan.pdf (last accessed Aug. 15, 2020).

¹²⁸ *Montana State Water Plan: A Watershed Approach to the 2015 Montana State Water Plan*, Mont. Dep’t Nat. Res. & Conservation, 1–2 (Dec. 5, 2014), http://dnrc.mt.gov/divisions/water/management/docs/state-water-plan/2015_mt_water_plan.pdf (last accessed Aug. 15, 2020).

¹²⁹ *Montana State Water Plan: A Watershed Approach to the 2015 Montana State Water Plan*, Mont. Dep’t Nat. Res. & Conservation, 1–2 (Dec. 5, 2014), http://dnrc.mt.gov/divisions/water/management/docs/state-water-plan/2015_mt_water_plan.pdf (last accessed Aug. 15, 2020).

¹³⁰ Mont. Code Ann. § 85-1-101 (West, Westlaw through 2019 Sess.).

In addition to the DNRC, the district courts supervise the distribution of water among appropriators.¹³¹ While the DNRC is the department tasked with issuing permits, there are six other state entities that play a role in administering water rights in Montana: the Montana Water Court, district courts, the RWRCC, the state Attorney General, the Water Policy Interim Committee, and the Environmental Quality Council.¹³²

Unless prescribed by statute, a party cannot “appropriate water or commence construction of diversion, impoundment, withdrawal, or related distribution works unless the [party] applies for and receives a permit or an authorization for a change in appropriation right from the department.”¹³³ Consequently, “[t]he DNRC may institute in any court any actions, suits, and special proceedings necessary to enable it to acquire, own, and hold title to lands for...water rights,” and the department, in any court, may also “institute, maintain, and prosecute to final determination actions, suits, and special proceedings necessary to have the water rights adjudicated upon any...source of water supply from which is derived the water for...means of distribution.”¹³⁴

The DNRC may require an appropriator to provide modification of plans and specification for an appropriation, related diversion, or construction.¹³⁵ The DNRC may issue permits subject to “terms, conditions, restrictions, and limitations it considers necessary to satisfy the permit criteria” established by statute, and the DNRC may issue temporary or seasonal permits.¹³⁶ Further, the DNRC may acquire, either by exchange, purchase, or condemnation, any “land, rights, water rights, easements, franchises, and other property considered necessary for the construction, operation, and maintenance of works.”¹³⁷ The DNRC may also enter onto the property of an appropriator with a well situated on the property, “at any reasonable hour of the day, for the purpose of investigating any matters.”¹³⁸

¹³¹ *Id.* § 85-2-406.

¹³² Dep’t Nat. Res. & Conservation, *Water Rights in Montana* (April 2012), 3, <http://leg.mt.gov/content/publications/environmental/2012-water-rights-handbook.pdf>. (last accessed Aug. 15, 2020).

¹³³ Mont. Code Ann. § 85-2-302 (West, Westlaw through 2019 Sess.).

¹³⁴ *Id.* § 85-1-213.

¹³⁵ *Id.* § 85-2-312.

¹³⁶ *Id.*

¹³⁷ *Id.* § 85-1-209.

¹³⁸ *Id.* § 85-2-514.

The regulatory authorities may be contacted at the following addresses:

The Montana Department of Natural Resources and Conservation

<http://www.dnrc.mt.gov/divisions/water/>

1539 Eleventh Ave.

Helena, MT 59601

Reserved Water Rights Compact Commission (“RWRCC”)

<http://dnrc.mt.gov/divisions/reserved-water-rights-compact-commission>

1539 Eleventh Ave.

Helena, MT 5960

Tel: (406) 444-1270

Water Policy Interim Committee

<https://www.leg.mt.gov/committees/interim/2019wpic/>

Chair: Rep. Zach Brown

107 S 10th

Bozeman, MT 59715-5321

Tel: (406) 579-5697

The Montana Environmental Quality Council

<https://leg.mt.gov/committees/interim/2019eqc/>

Chair: Representative Jim Keane

2131 Wall St.

Butte, MT 59701

Tel: (406) 723-8378

Montana Office of the Attorney General

<https://dojmt.gov/>

215 N Sanders, Third Floor

PO Box 201401

Helena, MT 59620

Tel (406) 444-2026

Further, parties may reach their water resources regional office at the appropriate regional telephone number, which is listed on the DNRC's website at <http://dnrc.mt.gov/divisions/water/water-rights/water-resources-regional-offices>.¹³⁹

All of the information about water judges, the Water Court, and other water-rights-related judicial functions can be found at <http://courts.mt.gov/courts/water/>. There are several PDF documents that help Montana residents with the entire adjudication and permitting process.

Additional contact information:

The Montana Bureau of Mines & Geology
<http://mbmg.mtech.edu>
Natural Resources Building, 1505 West Park Street
Butte, Montana 59701
Tel: (406)-496-4167

9. Special Districts

The DNRC has the authority to designate a groundwater area as “controlled” to prevent new appropriations and limit certain types of appropriations due to the availability or quality of water to protect existing water rights.¹⁴⁰ These controlled areas (“CGAs”) prohibit the wasteful use of groundwater.¹⁴¹ A person may use groundwater in a CGA by applying for a permit and receiving the permit from the DNRC in accordance with Montana statutes, or by following the requirements of a rule promulgated by the DNRC.¹⁴² In regard to a highly appropriated basin or sub-basin, “the legislature may by law preclude permit applications or the department may by rule reject permit

¹³⁹ See *Water Rights Bureau*, Mont. Dep't Nat. Res. & Conservation, <http://dnrc.mt.gov/divisions/water/water-rights/water-resources-regional-offices> (last visited Aug. 15, 2020) (providing the telephone numbers as follows: Billings: (406) 247-4415; Bozeman: (406) 586-3136; Glasgow: (406) 220-2561; Havre: (406)-265-5516; Helena: (406) 444-6999; Kalispell: (406) 752-2288; Lewistown: (406) 538-7459; and Missoula: (406) 721-4284)).

¹⁴⁰ See Mont. Code Ann. § 85-2-506 (West, Westlaw through 2019 Sess.) (explaining the process for designating a permanent or temporary controlled groundwater area).

¹⁴¹ Michele Peterson-Cook, *Water's for Fightin', Whiskey's for Drinkin': How Water Law Affects Growth in Montana*, 28 J. Envtl. L & Litig. 79, 86 (2013).

¹⁴² Mont. Code Ann. § 85-2-508 (West, Westlaw through 2019 Sess.).

applications or modify or condition permits already issued.”¹⁴³ Also, “[a]n application for a ground water appropriation right in a basin closed (pursuant to many sections in Title 85) ...must be accompanied by a hydrogeologic report, an aquifer recharge or mitigation plan if required, and an application for a change in appropriation right or rights if necessary.”¹⁴⁴

The Powder River Basin is a CGA in Powder River County because of limited water availability.¹⁴⁵ The restrictions implemented only apply to wells designated and installed for the extraction of coalbed methane.¹⁴⁶

Warm Springs Pond is a CGA in Deer Lodge County and is closed to all appropriations of groundwater within forty feet of the surface due to the quality of the water.¹⁴⁷

South Pine is a CGA in Fallon, Prairie, and Wibaux Counties due to lack of water availability.¹⁴⁸ Restrictions require no new groundwater appropriations be made except by permit request, no presently inactive well may be used unless the Department approves the use, and no active well can increase its flow rate except with the Department’s approval.¹⁴⁹

Burlington Northern and Santa Fe Railway Company’s Somers Railyard in Flathead County is a CGA due to the quality of the water.¹⁵⁰ Groundwater appropriation within the alluvial aquifer is prohibited, but wells in the bedrock aquifer are allowed.¹⁵¹

¹⁴³ *Id.* § 85-2-319.

¹⁴⁴ *Id.* § 85-2-360.

¹⁴⁵ Mont. Dep’t Nat. Res. & Conservation, *Powder River Basin*, dnrc.mt.gov/divisions/water-rights/controlled-ground-water-areas/powder-river-basin (last visited Aug. 15, 2020).

¹⁴⁶ *Id.*

¹⁴⁷ Mont. Dep’t Nat. Res. & Conservation, *Warm Springs Ponds*, dnrc.mt.gov/divisions/water-rights/controlled-ground-water-areas/warm-springs-ponds (last visited Aug. 15, 2020).

¹⁴⁸ Mont. Dep’t Nat. Res. & Conservation, *South Pine*, dnrc.mt.gov/divisions/water-rights/controlled-ground-water-areas/south-pine (last visited Aug. 15, 2020).

¹⁴⁹ *Id.*

¹⁵⁰ Mont. Dep’t Nat. Res. & Conservation, *Burlington Northern and Santa Fe Railway Company’s Somers Railyard*, dnrc.mt.gov/divisions/water-rights/controlled-ground-water-areas/burlington-northern-and-santa-fe-railway-companys-somers-railyard (last visited Aug. 15, 2020).

¹⁵¹ *Id.*

Bozeman Solvent Site in Gallatin County is a CGA due to the water's quality and restricts groundwater appropriations by requiring a permit to appropriate the water.¹⁵² Idaho Pole Company Site in Gallatin County is a CGA due to the quality of the water.¹⁵³ Restrictions are in place to prohibit new groundwater appropriation.¹⁵⁴ However, replacement wells for existing appropriations are allowed as authorized by the DNRC.¹⁵⁵

East Valley in Lewis and Clark County is a CGA because of water quality.¹⁵⁶

Hayes Creek Basin in Missoula County is a CGA due to the availability of water.¹⁵⁷ Restrictions require groundwater to be appropriated by permit only.¹⁵⁸

Bitterroot Valley Sanitary Landfill in Ravalli County is a CGA due to water quality.¹⁵⁹ Restrictions allow for some non-potable groundwater withdrawals.¹⁶⁰

Larson Creek in Ravalli County is a CGA due to the availability of water.¹⁶¹ Restrictions require groundwater to be appropriated by permit only.¹⁶²

¹⁵² Mont. Dep't Nat. Res. & Conservation, *Bozeman Solvent Site*, dnrc.mt.gov/divisions/water-rights/controlled-ground-water-areas/bozeman-solvent-site (last visited Aug. 15, 2020).

¹⁵³ Mont. Dep't Nat. Res. & Conservation, *Idaho Pole Company Site*, dnrc.mt.gov/divisions/water-rights/controlled-ground-water-areas/idaho-pole-company-site (last visited Aug. 15, 2020).

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

¹⁵⁶ Mont. Dep't Nat. Res. & Conservation, *East Valley*, dnrc.mt.gov/divisions/water-rights/controlled-ground-water-areas/east-valley (last visited Aug. 15, 2020).

¹⁵⁷ Mont. Dep't Nat. Res. & Conservation, *Hayes Creek Basin*, dnrc.mt.gov/divisions/water-rights/controlled-ground-water-areas/hayes-creek-basin (last visited Aug. 15, 2020).

¹⁵⁸ *Id.*

¹⁵⁹ Mont. Dep't Nat. Res. & Conservation, *Bitterroot Valley Sanitary Landfill*, dnrc.mt.gov/divisions/water-rights/controlled-ground-water-areas/bitterroot-valley-sanitary-landfill (last visited Aug. 15, 2020).

¹⁶⁰ *Id.*

¹⁶¹ Mont. Dep't Nat. Res. & Conservation, *Larson Creek*, dnrc.mt.gov/divisions/water-rights/controlled-ground-water-areas/larson-creek (last visited Aug. 15, 2020).

¹⁶² *Id.*

Burlington Northern and Santa Fe Railway Company's Paradise Railyard in Sanders County is a CGA because of water quality.¹⁶⁴ Restrictions implemented prohibit groundwater appropriations within all aquifers.¹⁶⁵

Butte Alluvial and Bedrock Site in Silver Bow County is a CGA due to the quality of the water.¹⁶⁶ New groundwater appropriations require approval by the Butte-Silver Bow Board of Health acting as the Butte Silver Bow Water Quality District office.¹⁶⁷

Old Butte Landfill in Silver Bow County is a CGA because of water quality and requires groundwater appropriators to obtain a permit.¹⁶⁸

Rocker in Silver Bow County is a CGA due to the quality of the water.¹⁶⁹ Restrictions implemented close the CGA to all new groundwater appropriations.¹⁷⁰

Horse Creek in Stillwater County is a CGA due to the quantity of the water.¹⁷¹ Restrictions require groundwater appropriations by permit only.¹⁷²

USNPS Montana Compact Yellowstone in Park, Gallatin, Madison, and Sweet Grass Counties is a designated a CGA in order to protect the park's thermal features.¹⁷³ Restrictions require groundwater appropriations by permit only.¹⁷⁴

¹⁶⁴ Mont. Dep't Nat. Res. & Conservation, *Burlington Northern and Santa Fe Railway Company's Paradise Railyard*, dnrc.mt.gov/divisions/water-rights/controlled-ground-water-areas/burlington-northern-and-santa-fe-railway-companys-paradise-railyard (last visited Aug. 15, 2020).

¹⁶⁵ *Id.*

¹⁶⁶ Mont. Dep't Nat. Res. & Conservation, *Butte Alluvial and Bedrock Site*, dnrc.mt.gov/divisions/water-rights/controlled-ground-water-areas/butte-alluvial-and-bedrock-site (last visited Aug. 15, 2020).

¹⁶⁷ *Id.*

¹⁶⁸ Mont. Dep't Nat. Res. & Conservation, *Old Butte Landfill*, dnrc.mt.gov/divisions/water-rights/controlled-ground-water-areas/old-buttee-landfill (last visited Aug. 15, 2020).

¹⁶⁹ Mont. Dep't Nat. Res. & Conservation, *Rocker*, dnrc.mt.gov/divisions/water-rights/controlled-ground-water-areas/rocker (last visited Aug. 15, 2020).

¹⁷⁰ *Id.*

¹⁷¹ Mont. Dep't Nat. Res. & Conservation, *Horse Creek*, dnrc.mt.gov/divisions/water-rights/controlled-ground-water-areas/horse-creek (last visited Aug. 15, 2020).

¹⁷² *Id.*

¹⁷³ Mont. Dep't Nat. Res. & Conservation, *USNPS Montana Compact Yellowstone*, dnrc.mt.gov/divisions/water-rights/controlled-ground-water-areas/usnps-montana-compact-yellowstone (last visited Aug. 15, 2020).

¹⁷⁴ *Id.*

Truman Creek Basin Administrative Closure in Flathead County requires applicants for groundwater appropriations within the closure area to prove the groundwater is not substantially or directly connected to the surface water.¹⁷⁵

Sharrott Creek Basin Administrative Closure in Ravalli County requires applicants for groundwater appropriations within the closure area to prove the groundwater is not substantially or directly connected to the surface water.¹⁷⁶

Houle Creek Basin Administrative Closure in Missoula County requires applicants for groundwater appropriations within the closure area to prove the groundwater is not substantially or directly connected to the surface water.¹⁷⁷

10. Transboundary Arrangements

The Yellowstone River Compact (“the Compact”) was enacted in 1951 by Montana, Wyoming, and North Dakota to apportion water usage of four of the Yellowstone River’s tributaries.¹⁷⁸ Two of the tributaries, the Powder and Tongue Rivers, are located in Montana.¹⁷⁹ The river itself flows north, then east, with its headwaters in Wyoming.¹⁸⁰ In 2007, Montana’s then-Attorney General Mike McGrath filed a complaint with the United States Supreme Court against Wyoming and North Dakota for violating portions of the Compact, including: (1) allowing excess pumping of groundwater for new acreage, (2) pumping groundwater to be used in coalbed methane production, and (3) increasing the irrigation methods used to pump groundwater in excess of the annual acre-feet allotted.¹⁸¹ The Court appointed Barton Thompson as

¹⁷⁵ Mont. Dep’t Nat. Res. & Conservation, *Montana’s Basin Closures and Controlled Groundwater Areas* (June 2016), 26–27, dnrc.mt.gov/divisions/water/water-rights/docs/new-appropriations/montana-basin-closures-and-controlled-groundwater-areas-2016.pdf (last accessed Aug. 15, 2020).

¹⁷⁶ *Id.* at 29–30.

¹⁷⁷ Water Resource Division, *Montana’s Basin Closures and Controlled Groundwater Areas* (June 2016), Mont. Dep’t Nat. Res. & Conservation, 31–32, dnrc.mt.gov/divisions/water/water-rights/docs/new-appropriations/montana-basin-closures-and-controlled-groundwater-areas-2016.pdf (last accessed Aug. 15, 2020).

¹⁷⁸ See Mont. Dep’t Nat. Res. & Conservation, *Yellowstone River Compact Report*, http://dnrc.mt.gov/divisions/water/management/docs/transboundary-water/Yellowstone_river_compact.pdf (last accessed Aug. 15, 2020).

¹⁷⁹ Lyle Denniston, *Montana water case – explained*, SCOTUSblog (Oct. 13, 2010, 5:26 pm), <http://scotusblog.com/2010/10/montana-water-case-explained> (last visited Aug. 15, 2020).

¹⁸⁰ *Id.*

¹⁸¹ Complaint at 7–15, *Mont. v. Wyo.*, 138 S. Ct. 758 (2018) (No. 220137); see also *Montana v.*

Special Master to conduct research related to Montana’s allegations and possible violations of the Compact in 2008.¹⁸² The Court found for Montana in 2016, pending Thompson’s report.¹⁸³ In 2018, Thompson submitted his final report to the Court, which found that, under the Compact, Montana had the right to maintain its Tongue River Reservoir at pre-1950s levels.¹⁸⁴ In its final decree, the Court supplemented the Compact with a requirement between the states that, if requested, proper information and documentation about groundwater use (such as how much is pumped and from where) be provided.¹⁸⁵ Each state is now responsible for detailing groundwater pumped and used exclusively for domestic or stock use.¹⁸⁶ Additionally, the Court required Wyoming to ensure that its groundwater pumping as allowable by the Compact does not infringe upon Montana’s pre-Compact surface water rights.¹⁸⁷ Montana is not currently involved in any transboundary groundwater disputes.

11. Native American Rights

Because Montana recognizes that the water and water rights within each water division are interrelated, the legislature mandated that compacts regarding water rights be created with the Native American tribes of Montana so that unified proceedings for the adjudication of existing water rights could be conducted.¹⁸⁸ The RWRCC, to the maximum extent possible, makes the negotiation of water rights claimed by such tribes and the federal government its highest priority.¹⁸⁹

The purpose of the RWRCC is to work with the Native American tribes and the federal government to determine how much water is needed for these federally reserved lands

Wyoming and North Dakota, SCOTUSblog, <https://www.scotusblog.com/case-files/cases/montana-v-wyoming-north-dakota/> (last visited Aug. 15, 2020) (for an outline of procedural history).

¹⁸² *Montana v. Wyoming*, 563 U.S. 368, 373 (2018).

¹⁸³ *Montana v. Wyoming*, 136 S. Ct. 1034 (2016).

¹⁸⁴ *Montana v. Wyoming*, 138 S. Ct. 758, 760 (2018).

¹⁸⁵ *Id.* at 760–61.

¹⁸⁶ Mont. Code Ann. § 85-20-103 (West, Westlaw through 2019 Sess.) (defining “domestic use” as “the use of water by an individual or by a family unit or household for drinking, cooking, laundering, sanitation, and other personal comforts and necessities and for the irrigation of a family garden or orchard not exceeding one-half acre in area, and “stock” as the use of water for livestock and poultry”).

¹⁸⁷ *Montana v. Wyoming*, 138 S. Ct. at 759.

¹⁸⁸ Mont. Code Ann. § 85-2-701(1) (West, Westlaw through 2019 Sess.).

¹⁸⁹ *Id.* § 85-2-701(2).

so that rights existing before July 1, 1973, can be adjudicated by the state of Montana.¹⁹⁰ The compacts must be negotiated by both parties, then must be approved by the Montana legislature and in some cases United States Congress. Finally, it must be approved by the Montana Water Court and incorporated in a final decree.¹⁹¹

Montana currently has compacts negotiated by the RWRCC with the:

- 1) National Parks Service,¹⁹²
- 2) U.S. Fish & Wildlife Service,¹⁹³
- 3) Bureau of Land Management,¹⁹⁴
- 4) U.S. Agricultural Research Service,¹⁹⁵
- 5) U.S. Forest Service,¹⁹⁶
- 6) Assiniboine & Sioux Tribes of the Fort Peck Reservation¹⁹⁷,
- 7) Northern Cheyenne Tribe¹⁹⁸,
- 8) Crow Tribe¹⁹⁹,
- 9) Gros Ventre & Assiniboine of the Fort Belknap Reservation (not yet approved by Congress)²⁰⁰,
- 10) Chippewa Cree of the Rocky Boy Reservation²⁰¹,
- 11) Blackfeet Tribe,²⁰² and
- 12) Confederated Salish and Kootenai Tribes (not yet approved by Congress)²⁰³

¹⁹⁰ See Reserved Water Right Compact Commission and Compact Implementation, *History*, Mont. Dep't Nat. Res. & Conservation, <http://dnrc.mt.gov/divisions/reserved-water-rights-compact-commission/history> (last visited Aug. 15, 2020).

¹⁹¹ See Reserved Water Right Compact Commission and Compact Implementation, *History*, Mont. Dep't Nat. Res. & Conservation, <http://dnrc.mt.gov/divisions/reserved-water-rights-compact-commission> (last visited Aug. 15, 2020).

¹⁹² Mont. Code Ann. § 85-20-401 (West, Westlaw through 2019 Sess.).

¹⁹³ Mont. Code Ann. §§ 85-20-701, 801, 1301, 1601, 1701 (West, Westlaw through 2019 Sess.).

¹⁹⁴ Mont. Code Ann. §§ 85-20-501, 1801 (West, Westlaw through 2019 Sess.).

¹⁹⁵ Mont. Code Ann. §§ 85-20-1101, 1201 (West, Westlaw through 2019 Sess.).

¹⁹⁶ Mont. Code Ann. § 85-20-1401 (West, Westlaw through 2019 Sess.).

¹⁹⁷ *Id.* § 85-20-201.

¹⁹⁸ *Id.* § 85-20-301.

¹⁹⁹ *Id.* § 85-20-901.

²⁰⁰ *Id.* § 85-20-1001.

²⁰¹ *Id.* § 85-20-601.

²⁰² *Id.* § 85-20-1501.

²⁰³ *Id.* § 85-20-1901.

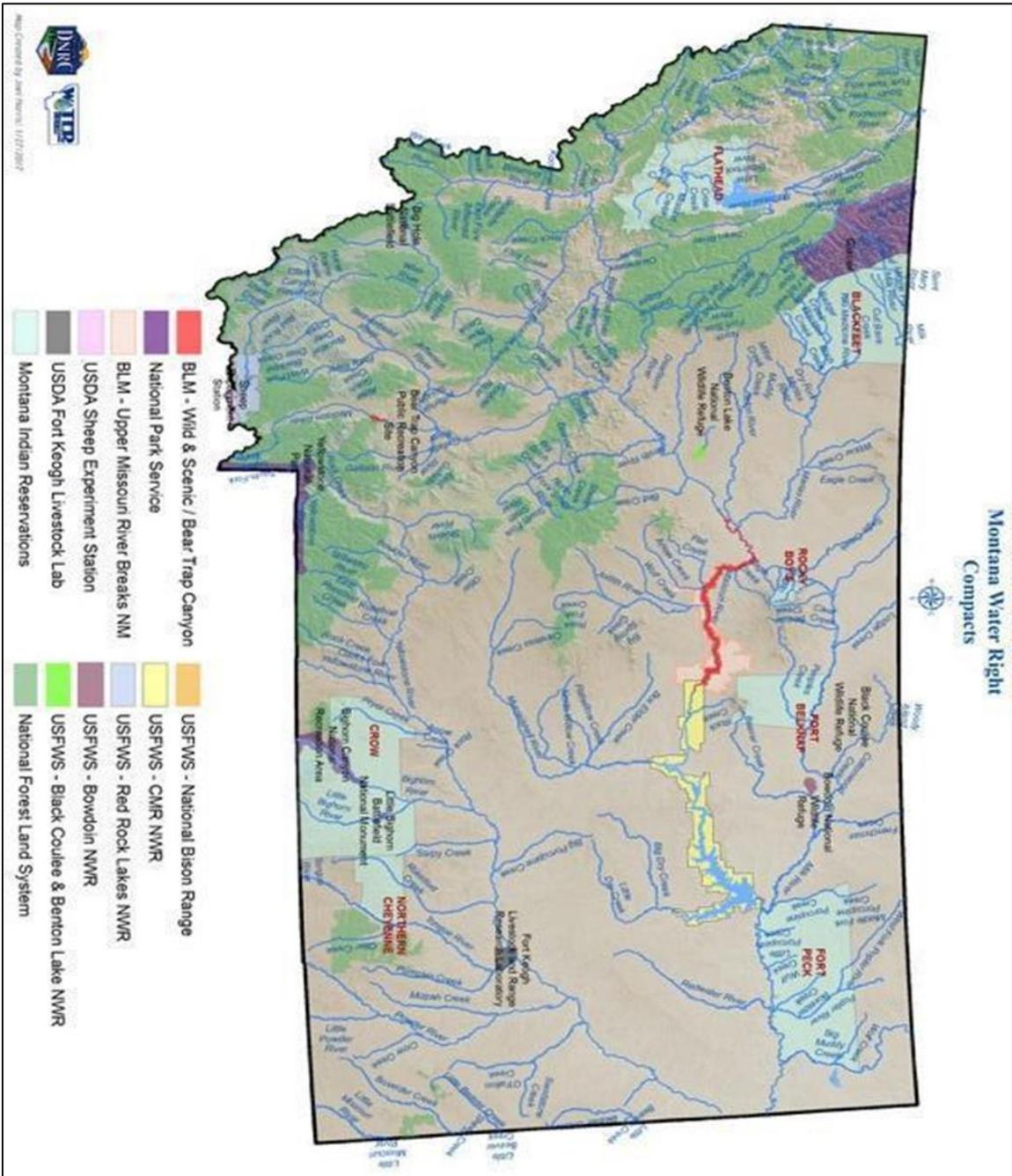


Fig. I.4 Montana Water Right Compacts²⁰⁴

²⁰⁴ Mont. Dep't Nat. Res. & Conservation, *Approved Compacts*, <http://dnrc.mt.gov/divisions/reserved-water-rights-compact-commission/approved-compacts> (last visited Aug. 23, 2020).

J. New Mexico

New Mexico groundwater is governed by prior appropriation.¹ Anyone who wants to use groundwater must apply for a permit with The Office of the State Engineer (state engineer) and put that water to a beneficial use.² Water rights can be conveyed independently from a surface estate because the right is a distinct property right separate from land.³

1. Definition, Basis of Rights, Standards, and Interactions

New Mexico defines groundwaters as “[t]he water of underground streams, channels, artesian basins, reservoirs or lakes, having reasonably ascertainable boundaries.”⁴ Determination of groundwater’s ‘reasonably ascertainable boundaries’ is done by scientific investigations or by identifying surface indicators.⁵ Underground streams are categorized as general groundwater and are governed by New Mexico’s groundwater laws.⁶ Groundwater is referred to as “underground waters” throughout the New Mexico Water Law Statutes.⁷

In 1881, the Supreme Court of the Territory of New Mexico held that prior appropriation was the law governing groundwater in New Mexico.⁸ Since then, prior appropriation has been consistently confirmed as the groundwater system in New Mexico court cases.⁹ Appropriation in New Mexico is contingent upon the beneficial use of water.¹⁰ Despite seniority of the appropriation, permit holders may not engage in excessive diversion through waste because waste violates the principles of beneficial use.¹¹ Beneficial use in New Mexico is also limited to the amount of water necessary for the use listed in the

¹ N.M. STAT. ANN. § 72-12-1 (West 2021).

² *Id.* at § 72-12-1.

³ *Walker v. United States*, 162 P.3d 882, 888 (N.M. 2007).

⁴ N.M. STAT. § 72-12-1.

⁵ *Yeo v. Tweedy*, 286 P. 970, 974 (N.M. 1929).

⁶ N.M. STAT. § 72-12-1.

⁷ *Id.* at §§ 72-12-1.1, 72-12-1.2, 72-12-1.3.

⁸ *Trambley v. Luterman*, 27 P. 312, 315 (N.M. 1891).

⁹ *State ex rel. Bliss v. Dority*, 225 P.2d 1007 (N.M. 1950); *Yeo v. Tweedy*, 286 P. 970 (N.M. 1929).

¹⁰ N.M. STAT. § 72-12-2.

¹¹ *State of N.M. ex rel. Erickson v. McLean*, 308 P.2d 983, 987 (N.M. 1957).

permit.¹² Subsequent uses of appropriated water must be reasonable so as not to injure or infringe on the rights of others.¹³

The court in *State of New Mexico ex rel. Erickson v. McLean* stated that “[a]ll water within the state, whether above or beneath the surface of the ground belongs to the state, which authorizes its use, and there is no ownership in the corpus of the water but the use thereof may be acquired and the basis of such acquisition is beneficial use.”¹⁴ Any person, firm or corporation wishing to use the public groundwater for a beneficial use must file an application with the state engineer.¹⁵ The permitting processes vary depending upon the intended quantity to be taken and the use stated in the application.¹⁶

The state engineer only has jurisdiction over declared basins which are established through administrative fact finding of reasonably ascertainable boundaries.¹⁷ Today, there are no undeclared basins remaining in the state, but some rights still exist where they were established prior to a basin declaration.¹⁸ New Mexico recognizes rights that were declared before the applicable basin was declared.¹⁹ The seminal case on this point is *State of N.M. ex rel. Reynolds v. Mendenhall* in which, a developer commenced his well prior to the establishment of a basin under the control of the state engineer and completed it after such declaration.²⁰ The developer in this case established what is now known as the Mendenhall right. This right “requires the developer to: (1) legally commence drilling their well prior to declaration of the basin; (2) proceed diligently to develop the water pursuant to a plan; and (3) apply the water to beneficial use.”²¹

¹² *Id.*

¹³ *Yeo*, 286 P. at 973, *see also McLean*, 308 P.2d at 987.

¹⁴ *McLean*, 308 P.2d at 987.

¹⁵ N.M. STAT. § 72-12-1.

¹⁶ *Id.* at §§ 72-12-1 – 1.3.

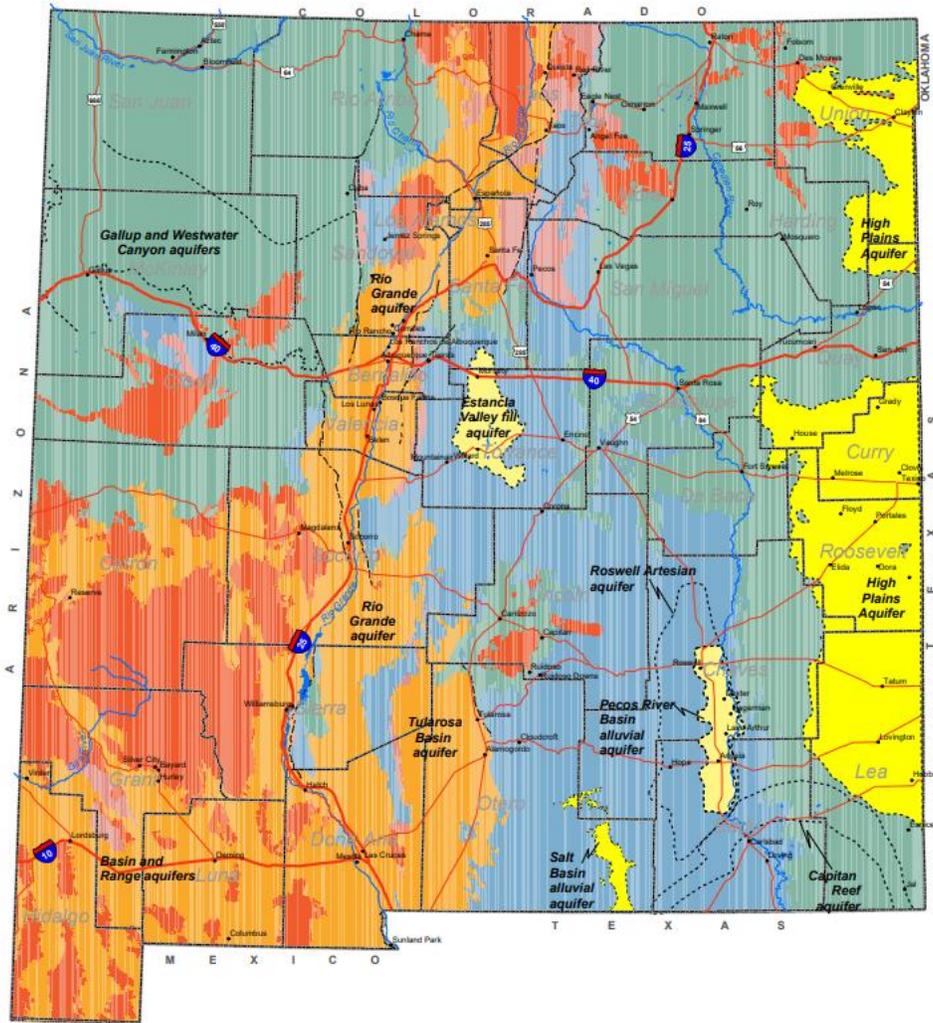
¹⁷ *See id.* at § 72-12-4.

¹⁸ Timothy J. De Young, *Part XI River Basins and State Surveys New Mexico*, 4 Waters and Water Rights II (2020).

¹⁹ N.M. STAT. § 72-12-4.

²⁰ *State of N.M. ex rel. Reynolds v. Mendenhall*, 362 P.2d. 998, 1001 (N.M. 1961).

²¹ *State of N.M. ex rel. Reynolds v. Rio Rancho Estates, Inc.*, 624 P.2d 502, 505 (N.M. 1981).



**NEW MEXICO
WATER RESOURCES ASSESSMENT 2001**

Plate 5
Geology and Major Aquifers

This very generalized geologic map shows the kinds of rocks exposed at the land surface, or lying beneath a thin cover of alluvium or wind-deposited sand. Some major faults are also shown.

See REFERENCES for sources of information.

- Explanation:**
- Thin alluvial-fan and river-laid deposits (important aquifers)
 - Basin fill in deep down-faulted basins (important aquifers)
 - Volcanic rocks (not major aquifers)
 - Sandstone and shale aquifers (locally significant aquifers)
 - Limestone, sandstone, and shale aquifers (local aquifers)
 - Granite and other similar crystalline rocks (not major aquifers)
 - Major faults



Fig. J.1. Major Aquifers in New Mexico²²

²² *New Mexico Water Resources Assessment 2001, Geology and Major Aquifers*, N.M. OFF. OF THE

A Mendenhall right relates back to the initiation of the well before the declaration of a basin and does not carry the requirement of water being put to beneficial use to be considered a valid water right.²³ *Mendenhall* was affirmed by the Supreme Court of New Mexico in *State of New Mexico ex rel. Reynolds v. Rio Rancho Estates, Inc.*²⁴ *Rio Rancho* addressed the ability of a Mendenhall water rights owner to change the location of his well during the normal course of drilling and rights development without the imposition of conditions limiting the size of the well absent findings by the state engineer that existing rights would be impaired as a result of the change.²⁵

In general, New Mexico requires a permit for the appropriation of groundwater.²⁶ There are three different appropriation application processes that water users must follow if they intend to use water for irrigation, livestock watering on state or federal land or temporary uses.²⁷ The application for these three uses are distinct from the standard application process for all other water uses.²⁸

Any person, firm or corporation desiring to use New Mexico groundwater for irrigation that is “not to exceed one acre of noncommercial trees, lawn or garden or for household or other domestic use” must send in an application for a domestic use appropriation to the state engineer.²⁹ Therefore, in New Mexico domestic uses include household applications and the watering of noncommercial trees, lawns, and gardens.³⁰ Domestic permits are typically limited to a volume of one acre foot annually; however, multi-household residences can apply for a domestic permit totaling three acre feet.³¹ Single household domestic well applicants may apply for up to three acre feet if they can satisfy the impairment analysis by demonstrating “that the combined diversion from domestic

STATE ENG’R & THE INTERSTATE STREAM COMM’N,
<https://www.ose.state.nm.us/Planning/SWP/2003/nmwateratlas.pdf> (last visited Sept. 7, 2021).

²³ *Id.*

²⁴ *Id.* at 506.

²⁵ *Id.*

²⁶ N.M. STAT. ANN. § 72-12-3 (West 2021).

²⁷ *Id.* at §§ 72-12-1.1-1.3.

²⁸ *Id.*

²⁹ *Id.* at § 72-12-1.1.

³⁰ *Id.* at § 72-12-1.1.

³¹ N.M. CODE R. § 19.27.5.9(D)(1)(2) (West 2021).

wells will not impair existing water rights.”³² Once the application is filed, the state engineer will issue a permit to the applicant for use on the condition that the applicant comply with all applicable municipal ordinances.³³ Domestic permits, not seeking more than an acre foot of water, are exempted from the notice and publication requirement as well as the impairment analysis required for other appropriation permits.³⁴ Subsequent to approval of a domestic permit, the state engineer has the power to curtail the water right to protect senior appropriators.³⁵

If the intended beneficial use of groundwater is for livestock watering on state or federal land, in addition to their application, the applicant must submit proof that they are “legally entitled to place livestock on the state or federal land where the water is to be used,” and they have “been granted access to the drilling site and [have] permission to occupy the portion of the state or federal land as is necessary to drill and operate the well.”³⁶

A person or entity may also seek a groundwater appropriation for temporary use.³⁷ These applications must not exceed three-acre feet within one year for the purposes of “prospecting, mining or construction of public works, highways and roads or drilling operations designed to discover or develop the natural mineral resources of the state.”³⁸ If these criteria are met, the state engineer will grant the permit so long as no existing appropriations will be permanently impaired.³⁹

³² *Id.* at § 19.27.5.9(D)(1).

³³ N.M. STAT. § 72-12-1.1.

³⁴ N.M. CODE R. § 19.27.1.22.

³⁵ *Bounds v. State of N.M. ex rel. D'Antonio*, 306 P.3d 457, 465 (N.M. 2013).

³⁶ N.M. STAT. §§ 72-12-1.2 (A)-(B).

³⁷ *Id.* at § 72-12-1.3.

³⁸ *Id.*

³⁹ *Id.*

**New Mexico Office of the State Engineer
Underground Water Basins in New Mexico**

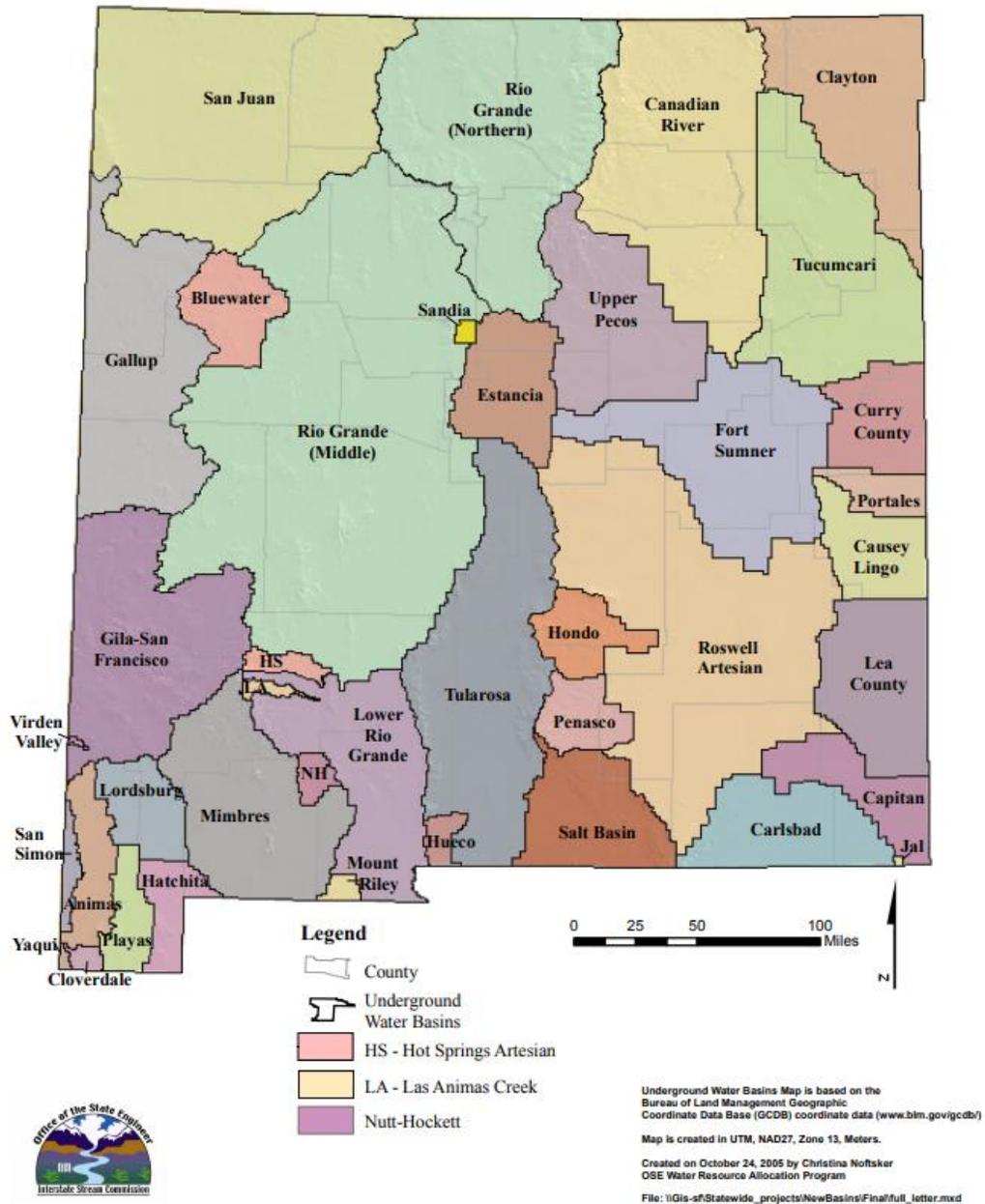


Fig. J.2. Underground Water Basins in New Mexico⁴⁰

⁴⁰ *New Mexico Office of the State Engineer Underground Water Basins in New Mexico*, N.M. OFF. OF THE STATE ENG'R & THE INTERSTATE STREAM COMM'N,

All other applications for groundwater appropriation must contain the following information:

(1) the particular underground stream, channel, artesian basin, reservoir or lake from which water will be appropriated; (2) the beneficial use to which the water will be applied; (3) the location of the proposed well; (4) the name of the owner of the land on which the well will be located; (5) the amount of water applied for; (6) the place of the use for which the water is desired; and (7) if the use is for irrigation, the description of the land to be irrigated and the name of the owner of the land.⁴¹

Following receipt of the application, the state engineer must publish notice of the proposed appropriation unless it is for domestic or livestock use, which are exempted from the publication and notice requirements.⁴² The notice requirements include the publication on the state engineer's website, as well as in the local paper of record for where the appropriation is to occur.⁴³ The notice must be accompanied by all of the location details of the appropriation and must be published in the newspaper once per week for three weeks to allow potential objections time to be filed with the state engineer.⁴⁴ Any person who could be impaired by the appropriation has standing to file an objection.⁴⁵ Objections may also be raised by anyone who would be substantially and specifically affected by the appropriation because it would be contrary to conservation or the public welfare.⁴⁶

If no objections are filed, the state engineer shall grant the application so long as he finds that there are adequate unappropriated waters to fulfill the request, it will not impair existing rights from the source, it is not contrary to the conservation of water within the state, and it is not detrimental to the public welfare.⁴⁷ The state engineer has published specific guidelines for determining the potential for existing rights to become

https://www.ose.state.nm.us/Maps/PDF/underground_water.pdf (last visited Sept. 7, 2021).

⁴¹ *Id.* at § 72-12-3 (A)(1)-(7).

⁴² *Id.* at § 72-12-3 (D), *see also* N.M. CODE R. § 19.27.1.22 (West 2021).

⁴³ N.M. STAT. § 72-2-20(A).

⁴⁴ *Id.* at § 72-2-20(B).

⁴⁵ *Id.* at § 72-12-3 (D).

⁴⁶ *Id.*

⁴⁷ *Id.* at § 72-12-3 (E).

impaired as a result of a new appropriation.⁴⁸ If objections have been filed or if the engineer finds that the appropriation would be detrimental in anyway described above, the state engineer may deny the application with or without a hearing.⁴⁹ In most cases, the state engineer will approve the application and impose conditions on the permit to address concerns and objections.

There is currently a stay on granting permits for unappropriated groundwater hydraulically linked to the Rio Grande at or below the Elephant Butte dam,⁵⁰ the Jal Underground Water Basin⁵¹ and the High Plains Aquifer⁵² because these sources do not have enough water to sustain current water rights into the future.

Beneficial use in New Mexico is not defined by statute, but it has been extensively litigated in court. Courts in New Mexico have found most uses to be beneficial outside of excessive diversion causing waste.⁵³ New Mexico case law has specifically established that irrigation, domestic use, and stock watering are beneficial uses.⁵⁴ Beneficial uses must be reasonable, and wasting water is prohibited.⁵⁵ Beneficial use has also been described as “the use of such water as may be necessary for some useful and beneficial purpose in connection with the land from which it is taken.”⁵⁶

⁴⁸ *Guidelines for the Assessment of Drawdown Estimates for Water Right Application Processing*, STATE OF N.M. OFF. OF THE STATE ENG’R, (May 10, 2017), <https://www.ose.state.nm.us/Hydrology/HydrologyReports/DRAWDOWN%20ASSESSMENT%20GUIDELINES%202017.pdf>.

⁴⁹ N.M. STAT. § 72-12-3 (F).

⁵⁰ *Id.* at § 72-12-3.1(B).

⁵¹ *In the Matter of the Closure of the Jal Underground Water Basin to New Appropriations Under Section 72-12-3 NMSA 1978*, STATE OF N.M. OFF. OF THE STATE ENG’R, (2013), <https://www.ose.state.nm.us/Orders/SO/Jal%20Basin%20Closure%20-%20201-25-2013.pdf>.

⁵² *In the Matter of the Closure of the High Plains Aquifer within the Curry County and Portales Underground Water Basins to New Appropriations Under Section 72-12-3 NMSA 1978*, STATE OF N.M. OFF. OF THE STATE ENG’R, (2009), <https://www.ose.state.nm.us/Orders/SO/CurryCountyPortalesBasinClosure-2000-11-13.pdf>.

⁵³ Timothy J. De Young, *Part XI River Basins and State Surveys New Mexico*, 4 Waters and Water Rights II (2020).

⁵⁴ *First State Bank of Alamogordo v. McNew*, 269 P. 56 (N.M. 1928), *abrogated recognized by Walker v. United States*, 162 P.3d 882 (N.M. 2007).

⁵⁵ *State of N.M. ex rel. Erickson v. McLean*, 308 P.2d 983, 988 (N.M. 1957).

⁵⁶ *Hanson v. Turney*, 94 P.3d 1, 4 (N.M. Ct. App. 2004) (*citing State of N.M. ex rel. Martinez v. McDermott*, 901 P.2d 745, 748 (N.M. Ct. App. 1995)).

2. Sources of Law

The New Mexico constitution establishes the doctrine of prior appropriation for surface water.⁵⁷ However, a state statute mandates that groundwater is “subject to appropriation for beneficial use.”⁵⁸ The law governing groundwater includes New Mexico statutes,⁵⁹ the duties and responsibilities of the state engineer,⁶⁰ water districts and water masters,⁶¹ and the Groundwater Storage and Recovery Act.⁶²

New Mexico courts have the sole authority to adjudicate water rights.⁶³ Water law has been litigated extensively in New Mexico due to the state’s reliance on groundwater, resulting in a rich body of case law.

3. Scope of Right

a. Groundwater Ownership

Groundwater is publicly owned water, and the state holds the water in trust. Individuals cannot use the water without applying for a permit from the state engineer, and the right to use groundwater pursuant to that permit is an usufruct.⁶⁴

b. Scope of Use

i. Permitted and Preferred Uses

Any person holding a permit for beneficial use is entitled to use groundwater in a manner consistent with the permit. As previously discussed, there are three circumstances in which the permit process is varied and arguably less stringent. These

⁵⁷ N.M. CONST. art. XVI, § 2.

⁵⁸ N.M. STAT. ANN. § 72-12-1 (West 2021).

⁵⁹ *Id.* at § 72-12-1 et seq.

⁶⁰ *Id.* at § 72-2-1 et seq.

⁶¹ *Id.* at § 72-3-1 et seq.

⁶² *Id.* at § 72-5a-1 et seq.

⁶³ *Id.* at §72-4-17.

⁶⁴ *Id.* at § 72-12-1.

include domestic use, stock watering, and temporary use applications.⁶⁵ Applications for these three uses seem to be preferred by the state legislator, evidenced by the relaxed statutory appropriation processes.⁶⁶ After the permitting process has occurred, there is no hierarchy of preferred beneficial uses.

New Mexico allows groundwater to be used for any beneficial purpose for which one has acquired a permit from the state engineer. There is no statute limiting what constitutes a beneficial use.⁶⁷ Case law in New Mexico has been lenient by accepting most uses as beneficial with the exception of excessive diversions of water creating waste.⁶⁸

ii. Location of Use

Ownership of land and groundwater rights are distinct property rights separate from surface land ownership.⁶⁹ A water right is not automatically included in the bundle of rights received when a landowner purchases land, even if the landowner purchases the land in fee simple absolute.⁷⁰ Thus, water rights can be traded or conveyed, and the purpose or place of use can be changed.

The only exception to this rule is irrigation. Irrigation water rights run appurtenant to the land.⁷¹ Thus, if land is conveyed and the irrigation rights are not expressly reserved, then the water right that is used for irrigation conveys with the land.⁷²

New Mexico allows interstate⁷³ and intra-basin⁷⁴ transfers of water. Groundwater can

⁶⁵ *Id.* at §§ 72-12-1.1-.3.

⁶⁶ *Bounds v. State of N.M. ex rel. D'Antonio*, 306 P.3d 457, 464-65, 68 (N.M. 2013).

⁶⁷ Charles T. DuMars, *New Mexico Water Law: An Overview and Discussion of Current Issues*, 22 NAT. RES. J. 1045, 1047 (1982), <https://digitalrepository.unm.edu/nrj/vol22/iss4/25>.

⁶⁸ Timothy J. De Young, *Part XI River Basins and State Surveys New Mexico*, 4 Waters and Water Rights II (2020) (citing *Jicarilla Apache Tribe v. United States*, 657 F.2d 1126, 1134 (10th Cir. 1981)).

⁶⁹ *Walker v. United States*, 162 P.3d 882, 888 (N.M. 2007).

⁷⁰ *Id.*

⁷¹ *Id.* at 889.

⁷² *Id.*

⁷³ N.M. STAT. ANN. § 72-12B-1(A) (West 2021).

⁷⁴ *Id.* at § 72-12-7.

be moved from one location to another and from one use to another, with the exception of waters used for irrigation, which are conveyed with the land unless expressly reserved.⁷⁵

Any entity wishing to transport groundwater outside of the state must apply to the state engineer for approval of both the withdrawal and transport of groundwater.⁷⁶ The state engineer must follow the same procedures regarding notice as they would with any permit application. “[T]he state engineer must find that the applicant’s withdrawal and transportation of water for use outside the state would not impair existing water rights, is not contrary to the conservation of water within the state and is not otherwise detrimental to the public welfare of the citizens of New Mexico.”⁷⁷ Before final approval of a transportation application, the state engineer must also consider the following:

- (1) the supply of water available to the state of New Mexico;
- (2) water demands of the state of New Mexico;
- (3) whether there are water shortages within the state of New Mexico;
- (4) whether the water that is the subject of the application could feasibly be transported to alleviate water shortages in the state of New Mexico;
- (5) the supply and sources of water available to the applicant in the state where the applicant intends to use the water; and
- (6) the demands placed on the applicant’s supply in the state where the applicant intends to use the water.⁷⁸

Upon approval of an application to withdraw and transport waters for use outside of the state of New Mexico, “[t]he state engineer is empowered to condition the permit to insure that the use of water in another state is subject to the same regulations and restrictions that may be imposed upon water use in the state of New Mexico.”⁷⁹

Intra-basin transfers in New Mexico are also permissible with the approval of the state engineer.⁸⁰ The state engineer will evaluate the potential for a water right transfer to

⁷⁵ *State Eng’r of N.M. v. Diamond K Bar Ranch, LLC*, 385 P.3d 626, 631 (N.M. 2016).

⁷⁶ N.M. STAT. § 72-12B-1(B).

⁷⁷ *Id.* at § 72-12B-1(C).

⁷⁸ *Id.* at §§ 72-12B-1(D)(1)-(6).

⁷⁹ *Id.* at § 72-12B-1(F).

⁸⁰ N.M. CODE R. § 19.27.1.25 (West 2021).

impair existing appropriations before he approves the application for transfer.⁸¹ Each administrative district has its own guidelines for permissible water transfers within its boundaries.⁸²

Transfer of water rights between basins is not permitted. Allowing the transfer of water rights outside of its basin of diversion would impair the existing appropriations within the originating basin.⁸³

c. Loss of Water Rights

Water rights can be lost in New Mexico through nonuse by abandonment or forfeiture. Water rights can be lost through common law abandonment if: (1) the water is not put to beneficial use; (2) nonuse occurs for an unreasonable period of time; and (3) an intent to abandon is found.⁸⁴ Forfeiture occurs under the current statute when the permit holder is found to have violated any of the applicable groundwater regulations or when the permit holder has failed to put the water to beneficial use for a period of at least four years plus an additional year after notice is given.⁸⁵

Water rights may be lost in New Mexico through the statutory process of forfeiture.⁸⁶ After a period of four years of nonuse, the state engineer must provide the permit holder with a notice of nonuse.⁸⁷ Thereafter, the permit holder has one year to put the water right to use, ask for an extension, or establish an excuse.⁸⁸

A party that has not used their appropriated water after four years can apply to the state

⁸¹ *Id.*

⁸² See *Water Rights Statutes, Rules, Regulations & Guidelines*, N.M. OFF. OF THE STATE ENG'R & THE INTERSTATE STREAM COMM'N, <https://www.ose.state.nm.us/WR/WRrules.php> (last visited Sept. 7, 2021).

⁸³ N.M. STAT. § 72-12B-1(C), see also Sarah Bisong, *Handling the Application, Lease, Transfer, and Sale of Water Rights*, MODRALL SPERLING (June 30, 2014), <https://www.modrall.com/2014/06/30/handling-the-application-lease-transfer-and-sale-of-water-rights/>.

⁸⁴ *State of N.M. ex rel. Reynolds v. S. Springs Co.*, 452 P.2d 478, 480 (N.M. 1969).

⁸⁵ N.M. STAT. § 72-12-8(A).

⁸⁶ *Id.* at § 72-12-8.

⁸⁷ *Id.* at § 72-12-8(A).

⁸⁸ *Id.*; see also *State of N.M. ex rel. Erickson v. McLean*, 308 P.2d 983, 987 (N.M. 1957); see generally *State of N.M. ex rel. Off. of the State Eng'r v. Elephant Butte Irrigation Dist.*, 287 P.3d 324 (N.M. Ct. App. 2012).

engineer for an extension if: (1) they have a reasonable cause for delay; (2) they have a reasonable cause for nonuse; or (3) the state engineer finds it is in the public interest. The extension time cannot exceed three years per extension.⁸⁹

Exceptional circumstances that do not count towards the four-year forfeiture period include if the period of nonuse stems from compliance with the federal Food Security Act of 1985,⁹⁰ or if the party's water rights were acquired and placed in a state engineer approved water conservation program.⁹¹ The following water rights holders can participate in an approved conservation program: (1) individuals, (2) entities, (3) artesian conservancy districts, (4) conservancy districts, (5) soil and water conservation districts, (6) irrigation districts, and (7) the interstate stream commission.⁹²

Events that toll the running of the four-year forfeiture period include: (1) when the requirements for beneficial use are lawfully exempted by a time extension or a statutory exemption;⁹³ (2) when nonuse results within an incorporated municipality or county for implementation of their water development plans, or for preservation of their municipal or county water supplies;⁹⁴ (3) when the non-user of the acquired water rights is on duty as a member of the armed forces of the United States;⁹⁵ or (4) when the water is deposited in the lower Pecos river basin below Sumner lake water bank or an acequia or a community ditch water bank.⁹⁶

Additionally, the loss of water rights through abandonment is recognized under common law in New Mexico.⁹⁷ To lose water rights through abandonment, there must be a finding of intent to abandon in addition to lack of beneficial use.⁹⁸ Intent to abandon can be inferred from an "unreasonable time" of nonuse.⁹⁹

⁸⁹ N.M. STAT. § 72-12-8(B).

⁹⁰ *Id.* at § 72-12-8(C).

⁹¹ *Id.* at § 72-12-8(D).

⁹² *Id.*

⁹³ *Id.* at § 72-12-8(E).

⁹⁴ *Id.* at § 72-12-8(F).

⁹⁵ *Id.* at § 72-12-8(G).

⁹⁶ *Id.* at § 72-12-8(I).

⁹⁷ *State of N.M. ex rel. Reynolds v. S. Springs Co.*, 452 P.2d 478, 480 (N.M. 1969).

⁹⁸ *Id.* at 480-81.

⁹⁹ *Id.* at 480.

Any person found appropriating water without a permit, changing the location of their well, using water without a permit, or appropriating water for their own use without a permit will be found in violation of New Mexico water rights laws.¹⁰⁰ A water rights holder is however allowed to change the location of their well by applying for a change to the state engineer showing that the change will not impair existing rights, be contrary to the state's conservation of water and will not be detrimental to the public welfare.¹⁰¹ These violations are misdemeanors and are punishable by a maximum amount of \$250.¹⁰² The state engineer holds broad power to enforce regulations, codes, and special orders adopted by the state engineer.¹⁰³ The state engineer may issue compliance orders to repay up to double any over appropriated or illegally appropriated groundwater.¹⁰⁴ Final compliance orders may also carry a civil penalty of up to \$100 per day for violation of the order.¹⁰⁵

4. Well Drilling

The state engineer regulates the construction, licensing, repair, and plugging of wells.¹⁰⁶ Any person wishing to drill a well that requires a drill rig and has an outside casing diameter of two and three-eighths inches must have a well driller's license issued by the state.¹⁰⁷ If drilling the well does not require a drill rig and the outside casing diameter is two and three-eighths or less a well driller's license is not required.¹⁰⁸ The construction of any well within a declared basin must be permitted by the state engineer. Different kinds of wells must meet different requirements detailed in the New Mexico Administrative Code.¹⁰⁹

¹⁰⁰ N.M. STAT. § 72-12-11.

¹⁰¹ *Id.* at § 72-12-7(a).

¹⁰² *Id.* at § 72-12-11.

¹⁰³ *Id.* at § 72-2-18(A).

¹⁰⁴ *Id.* at § 72-2-18(E).

¹⁰⁵ *Id.* at § 72-2-18(G).

¹⁰⁶ N.M. CODE R. § 19.27.4 (West 2021).

¹⁰⁷ *Id.* at § 19.27.4.8.

¹⁰⁸ *Id.*

¹⁰⁹ *Id.* at §§ 19.27.4.29-.31, .33, .36.

The state engineer also has regulations for domestic well permitting.¹¹⁰ There is an application process, fees, and procedures for what should happen if the well is located within a Domestic Well Management Area. A Domestic Well Management Area is any declared area in which hydraulic connections are identified between groundwater and surface water resources.¹¹¹ These areas are subject to more stringent withdrawal guidelines to protect existing surface water rights.¹¹² In 2006, the New Mexico Court of Appeals found that the scope of the state engineers authority to grant applications for domestic wells did not preempt local ordinances from denying the drilling of new domestic wells in their jurisdictions under the home rule.¹¹³ It appears that Santa Fe is the only municipality currently exercising this right.¹¹⁴

5. Hydraulic Connection and Regulation

New Mexico recognizes that groundwater and surface water are connected. The New Mexico Supreme Court has upheld the state engineer's authority to manage geologically connected surface water and groundwater systems.¹¹⁵ Both surface water and groundwater follow the doctrine of prior appropriation, and they are managed conjunctively.¹¹⁶ Groundwater appropriation permits, with the exception of domestic wells, are analyzed for hydraulic interference before approval.¹¹⁷ The state engineer can apply assumptions about rates of aquifer drawdown in allocating water appropriations in a non-recharging basin.¹¹⁸

In *Templeton v. Pecos Valley Artesian Conservancy District*, the court established the *Templeton* requirements, which are an equitable remedy to allow senior surface water appropriators that have been impacted by junior wells to drill an additional well to supplement the senior surface water appropriators' existing surface water supply, so

¹¹⁰ *Id.* at § 19.27.5.9.

¹¹¹ *Id.* at § 19.27.5.14.

¹¹² *Id.*

¹¹³ *Smith v. City of Santa Fe*, 133 P.3d 866 (N.M. Ct. App. 2006), *aff'd* 171 P.3d 300 (N.M. 2007).

¹¹⁴ Expert Commentary by Reed Benson, Professor of Law at The University of New Mexico School of Law (2017).

¹¹⁵ *City of Albuquerque v. Reynolds*, 379 P.2d 73 (N.M. 1962); *Yeo v. Tweedy*, 286 P. 970 (N.M. 1929).

¹¹⁶ N.M. STAT. ANN. § 72-12-3(A) (West 2021).

¹¹⁷ *Id.* at § 72-12-3.

¹¹⁸ *Mathers v. Texaco, Inc.*, 421 P.2d 771 (N.M. 1966).

long as the well draws on groundwater that originally fed the surface water supply.¹¹⁹ The *Templeton* requirements were further explained by the Supreme court of New Mexico in *Herrington v. State of New Mexico*.¹²⁰ This court explained that the supplemental *Templeton* well can be up stream or downstream from the original point of diversion, a key factor previously excluded in *Brantley v. Carlsbad Irrigation District*.¹²¹ *Herrington* also loosened the restrictions on *Templeton* same source transfers.¹²²

The New Mexico legislature established the Groundwater Storage and Recovery Act after finding that “conjunctive use and administration of both surface and ground waters are essential to the effective and efficient use of the state's limited water supplies.”¹²³ This act provides the state engineer with the authority to permit storage and recovery projects in groundwater basins.¹²⁴

There does not seem to be an apparent priority use for linked ground and surface waters nor is there a scheme that authorizes liability for surface and groundwater interferences.

6. Aquifer Recharge and Underground Storage

Aquifer storage and recovery is allowed in New Mexico with the proper permits under the Ground Water Storage and Recovery Act.¹²⁵ Permits are obtained by filing an application with the state engineer. Only government entities are authorized to apply for a permit.¹²⁶ All applications must prove that the applicant has an existing valid water right permit and that the project would not impair other permit holds, among other requirements.¹²⁷ Water that is stored for subsequent diversion and application to beneficial use is not public water and it is not subject to forfeiture.¹²⁸ However,

¹¹⁹ *Templeton v. Pecos Valley Artesian Conservancy Dist.*, 332 P.2d 465 (N.M. 1958).

¹²⁰ *Herrington v. New Mexico*, 133 P.3d 258 (N.M. 2006).

¹²¹ *Id.*; *Brantley v. Carlsbad Irrigation Dist.*, 587 P.2d 427 (N.M. 1978).

¹²² *Herrington*, 133 P.3d at 258.

¹²³ N.M. STAT. ANN. § 72-5A-2(A) (West 2021).

¹²⁴ *Id.* at § 72-5A-4.

¹²⁵ *Id.*

¹²⁶ N.M. CODE R. § 19.25.8.10 (West 2021).

¹²⁷ N.M. STAT. § 72-5A-6.

¹²⁸ *Id.* at § 72-5A-8(A).

artificially stored and recovered waters may only be used in the beneficial manner prescribed in the permit under which the waters were injected.¹²⁹ Violations of the Ground Water Storage and Recovery Act, as well as permits issued or rules adopted pursuant to the Act, may be subject to a civil fine not exceeding \$100 per day for non-direct violations and \$10,000 per day for direct violations, and may be assessed against the governmental entity or an individual deemed responsible for the violation.¹³⁰

Bear Canyon Aquifer Recharge was the first project to receive an Underground Storage and Recovery permit from the state.¹³¹ Subsequently, the City of Rio Rando successfully began operation of a direct injection aquifer storage and recovery project in 2017.¹³² Rio Rando's second project at Mariposa has struggled to reach design capacity and was last granted an extension to successfully demonstrate the project in 2018.¹³³ Albuquerque Bernalillo County Water Utility Authority was approved for a groundwater injection permit in 2016, and after resolving a protest, started demonstration of their project in Albuquerque in 2018.¹³⁴

7. Water Management Plans

New Mexico is required by statute to have a state water management plan.¹³⁵ This plan is required to be reviewed at least every five years.¹³⁶ The latest state water management plan was released in 2018.¹³⁷ The state water management plan integrates parts of the

¹²⁹ *Id.* at § 72-5A-8(B).

¹³⁰ *Id.* at § 72-5A-12(A).

¹³¹ *New Mexico Underground Storage and Recovery (USR) Projects*, N.M. OFF. OF THE STATE ENG'R & THE INTERSTATE STREAM COMM'N, <https://ose.maps.arcgis.com/apps/MapJournal/index.html?appid=ef568582b09b4fef88bc2f389246a885&webmap=551a687c517744848f75ec736173d052> (last visited Sept. 7, 2021).

¹³² *Id.*

¹³³ *Id.*

¹³⁴ *Id.*

¹³⁵ N.M. STAT. § 72-14-3.1(A).

¹³⁶ *Id.* at § 72-14-3.1(H).

¹³⁷ *New Mexico State Water Plan Part I: Policies*, N.M. OFF. OF THE STATE ENG'R & THE INTERSTATE STREAM COMM'N, (December 6, 2018), https://www.ose.state.nm.us/Planning/SWP/2018/2-2018_SWP_Part_I_Policies_plusAppendixes.pdf; *New Mexico State Water Plan Part II: Technical Report*, N.M. OFF. OF THE STATE ENG'R & THE INTERSTATE STREAM COMM'N, (December 6, 2018), https://www.ose.state.nm.us/Planning/SWP/2018/3-2018_SWP_Part_II_Technical_Report_plusAppendixes.pdf; *New Mexico State Water Plan Part III: Legal Landmarks*, N.M. OFF. OF THE STATE ENG'R & THE INTERSTATE STREAM COMM'N, (December 6,

sixteen regional water plans which are published and reviewed separately.¹³⁸ The state plan directly and indirectly addresses groundwater management in all three parts.

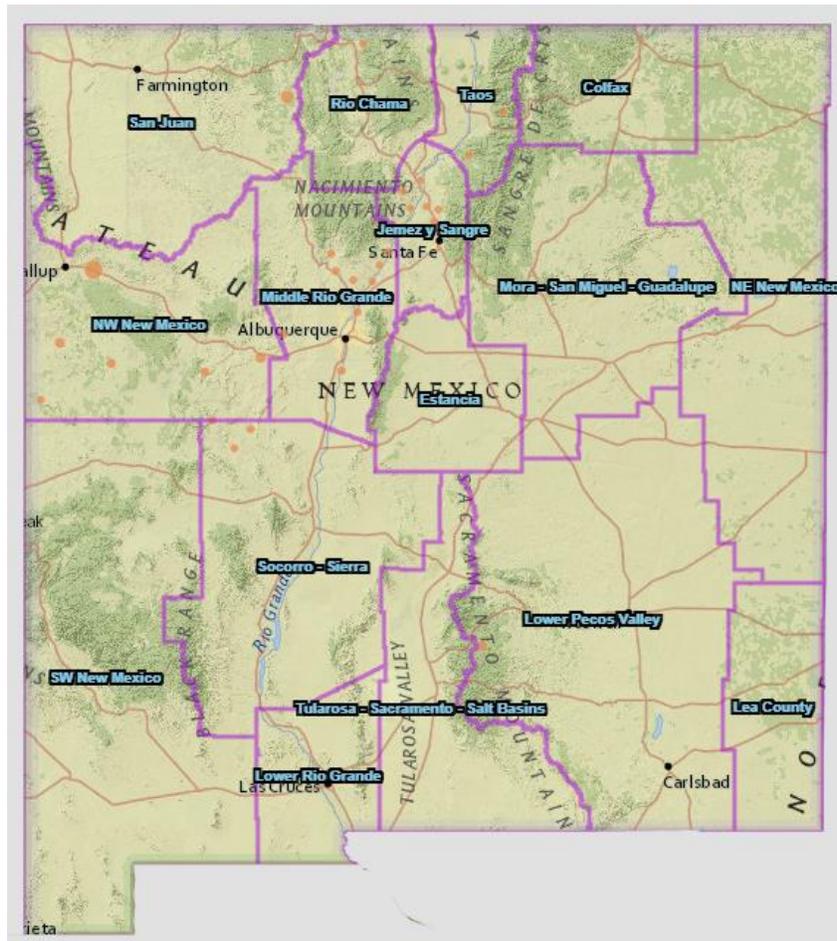


Fig. J.3. Regional Water Planning Areas¹³⁹

2018), https://www.ose.state.nm.us/Planning/SWP/2018/4-2018_SWP_Part_III_Legal%20Landmarks.pdf.

¹³⁸ *Regional Water Planning*, N.M. OFF. OF THE STATE ENG'R & THE INTERSTATE STREAM COMM'N, <https://www.ose.state.nm.us/Planning/rwp.php> (last visited Sept. 7, 2021).

¹³⁹ *Regional Water Planning Areas*, NATIONAL GEOGRAPHIC, ESRI, <https://ose.maps.arcgis.com/apps/Viewer/index.html?appid=c33bf2219a22418fb259e9f225daba8c> (last visited Sept. 7, 2021).

8. Regulatory Authorities

The New Mexico Office of the State Engineer is tasked with the “general supervision of waters of the state and the measurement, apportion, distribution thereof and other such duties required.”¹⁴⁰

Office of the State Engineer
Website: <https://www.ose.state.nm.us/>
Address:
Concha Ortiz y Pino Building
130 South Capitol Street
P.O. Box 25102
Santa Fe, NM 87504-5102
Phone Number: (505) 827-6091

The New Mexico Interstate Stream Commission is administratively connected with the state engineer, but they have their own jurisdiction and duties, including compact compliance and the state water plan.¹⁴¹

New Mexico Interstate Stream Commission
Website: <https://www.ose.state.nm.us/ISC/>
Address:
Bataan Memorial Building
407 Galisteo Street
Suite #101
Santa Fe, NM 87501
Phone Number: Varies depending on office

The state engineer has the authority to issue permits for declared underground water basins in the state of New Mexico. The state engineer must supervise the apportionment of waters, provide water rights holders with notifications of nonuse,¹⁴² approve water development plans submitted by municipalities and other specified public entities.¹⁴³

¹⁴⁰ N.M. STAT. § 72-2-1; *State of N.M. ex rel Erickson v. McLean*, 308 P.2d 983 (N.M. 1957).

¹⁴¹ N.M. STAT. §§ 72-14-1, 72-14-3.

¹⁴² *Id.* at §§ 72-5-28, 72-12-8.

¹⁴³ *Id.* at §72-1-9.

9. Special Districts

There are seven administrative water districts in New Mexico:¹⁴⁴

Water Rights District I – Albuquerque

Water Rights District II – Roswell

Water Rights District III – Deming

Water Rights District IV – Las Cruces

Water Rights District V – Aztec

Water Rights District VI – Santa Fe

Water Rights District VII – Cimarron

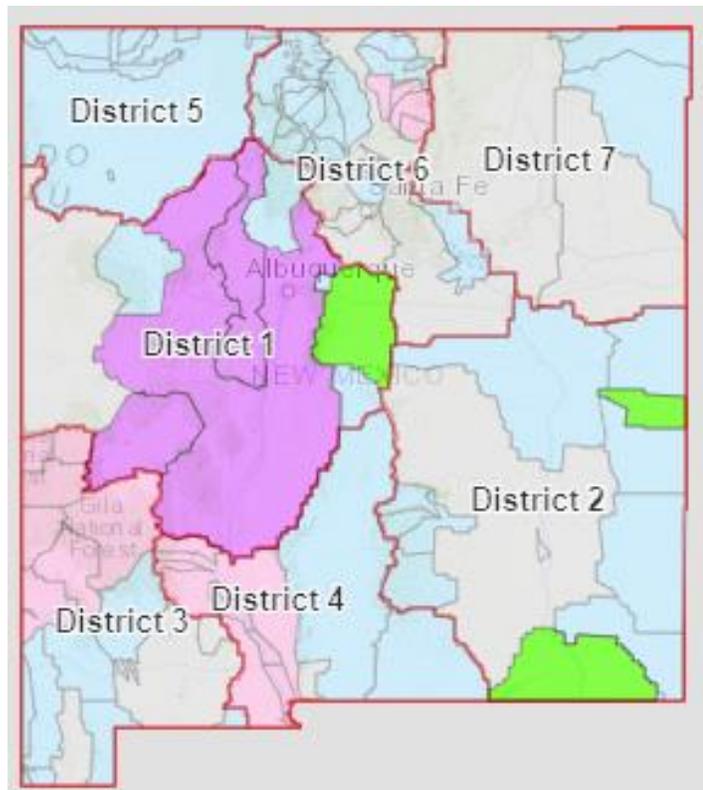


Fig. J.4 Water Rights Districts in New Mexico¹⁴⁵

¹⁴⁴ *Water Rights District Offices*, N.M. OFF. OF THE STATE ENG'R & THE INTERSTATE STREAM COMM'N, <http://www.ose.state.nm.us/DO/index.php> (last visited Sept. 7, 2021).

¹⁴⁵ *Waters Map-Areas Abstracted in NMWRRS*, N.M. OFF. OF THE STATE ENG'R & THE INTERSTATE STREAM COMM'N, <https://www.ose.state.nm.us/WRAB/abstractMap.php> (last visited Sept. 7, 2021).

Each Water District has a Water Master. Water Masters are hired by the state engineer, and “actively administer the distribution of water from stream systems on a daily basis.”¹⁴⁶

There are sixteen regional water planning regions that are charged with creating collaborative water resource plans.¹⁴⁷

Declared groundwater basins now cover almost all of the state. These are under the jurisdiction of the state engineer who regulates groundwater appropriations and well permitting.

The state engineer also administers the Active Water Resource Management (AWRM) program.¹⁴⁸ This program was launched in 2004 in response to extreme drought conditions in the state. Each of the areas in this program are allocated a higher percent of the Offices’ resources and the state engineer must adopt rules for priority administration related to them.¹⁴⁹ Specifically, groundwater is relevant in these areas where they are hydraulically connected to stream within this programs scope.¹⁵⁰ Currently, the Lower Pecos, the San Juan river basins, the Lower Rio Grande, Upper Mimbres, Rio Gallinas, Nambe-Pojoaque-Tesuque, and the Rio Chama basins are in the AWRM program.¹⁵¹

Critical groundwater management areas have guidelines for the process and approval of water rights applications. There are specific guidelines for determining critical groundwater management areas in the Estancia Basin of the Valley fill Aquifer.¹⁵²

¹⁴⁶ *Masters*, N.M. OFF. OF THE STATE ENG’R & THE INTERSTATE STREAM COMM’N, <http://www.ose.state.nm.us/WM/watermasters.php> (last visited Sept. 7, 2021).

¹⁴⁷ *Water Planning in New Mexico*, N.M. OFF. OF THE STATE ENG’R & THE INTERSTATE STREAM COMM’N, <https://www.ose.state.nm.us/Planning/> (last visited Sept. 7, 2021).

¹⁴⁸ N.M. CODE R. § 19.25.13.1 (West 2021).

¹⁴⁹ *Id.* at § 19.25.13.6.

¹⁵⁰ *Id.* at § 19.25.13.2.

¹⁵¹ *Active Water Resource Management (AWRM)*, N.M. OFF. OF THE STATE ENG’R & THE INTERSTATE STREAM COMM’N, <https://www.ose.state.nm.us/AWRM/index.php> (last visited Sept. 7, 2021).

¹⁵² *Guidelines For the Review Of Water Rights Applications Estancia Underground Water Basin (EUWB)*, N.M. OFF. OF THE STATE ENG’R & THE INTERSTATE STREAM COMM’N, http://www.ose.state.nm.us/RulesRegs/admin_Estancia.php (last visited Sept. 7, 2021).

10. Transboundary Arrangements

In 1984 a two year stay was placed on the granting of new groundwater withdrawal for groundwater hydrologically related to the Rio Grande at or below the Elephant Butte dam.¹⁵³ The stay was initiated because “the amount sought to be appropriated in pending applications far [exceeded] available supplies and the allocation of surface water between the states of New Mexico and Texas [needed] further clarification.”¹⁵⁴ Thus, the State legislature acknowledged the deficiency of hydraulic information and the potential over appropriation issues giving rise to sparse surface water flowing between New Mexico and Texas in this order.¹⁵⁵ Exceptions to the stay included: (1) appropriating groundwater for public health emergencies; (2) appropriating unappropriated groundwater for domestic, stock water; and (3) replacing or changing the location of existing wells.¹⁵⁶

In 2013, Texas sued New Mexico and Colorado for violating the Rio Grande Compact. Colorado was named a defendant because the state signed the Rio Grande Compact.¹⁵⁷ Texas’ main complaint against New Mexico is that New Mexican groundwater users are pumping an excess amount of groundwater from wells hydrologically connected the Rio Grande; thus, reducing the surface water available to Texans.¹⁵⁸ Currently, a special master has been appointed and both sides are preparing their witnesses and arguments to present to the Supreme Court.¹⁵⁹

11. Native American Rights

There are twenty-three Indian tribes in New Mexico, nineteen Pueblos, three Apache

¹⁵³ N.M. STAT. ANN. § 72-12-3.1(B) (West 2021).

¹⁵⁴ *Id.* at § 72-12-3.1(A).

¹⁵⁵ *Id.* at § 72-12-3.1(A).

¹⁵⁶ *Id.* at § 72-12-3.1.

¹⁵⁷ Motion for Leave to File Complaint, Complaint, and Brief in Support of Motion for Leave to File Complaint, *Texas v. New Mexico* (No. 220141); https://www.nmag.gov/uploads/FileLinks/9c8bd73471a749f68ee48c1502381d62/2013.01.08___Motion_complaint_brief.pdf (last visited Sept. 28, 2021).

¹⁵⁸ *Id.*; See Danielle Prokop, *Catch up on the big Supreme Court water case involving Texas and New Mexico*, EL PASO MATTERS (Aug. 27, 2021), <https://elpasomatters.org/2021/08/27/catch-up-on-the-big-supreme-court-water-case-involving-texas-and-new-mexico/> (last visited Sept. 28, 2021).

¹⁵⁹ Prokop, *supra* note 157.

tribes and the Navajo Nation.¹⁶⁰ Pueblos have aboriginal rights, called Mechem rights, to water in New Mexico.¹⁶¹ These rights are not based on the Winters doctrine, but on historic Spanish and Mexican rights,¹⁶² and are strictly limited to lands historically used by the Pueblos.¹⁶³ Litigation addressing the nature and measure of Pueblo Indian water rights appurtenant to the Pueblos’ “Spanish grant” lands is currently ongoing.¹⁶⁴

So-called “Pueblo Water Rights” differ from the water rights of recognized Pueblos and native tribes that used to exist under the Pueblo Rights Doctrine. These were rights that were granted to non-Indian communities formed under Spanish law.¹⁶⁵ The New Mexico city of Las Vegas claimed to hold water rights under the Pueblo Doctrine until it was overruled by the New Mexico Supreme Court in 2004.¹⁶⁶ Courts in New Mexico have exclusive jurisdiction to adjudicate water rights within the state. However, when adjudicating Native American water rights, prior appropriation does not strictly apply.¹⁶⁷ Water entitlements have not been qualified for most of the Indian Pueblos, Tribes, or Navajo Nations.¹⁶⁸ The State of New Mexico has authority to adjudicate these rights under the McCarren amendment, but the recent Chama River adjudication¹⁶⁹ and the Nambe-Pojoaque-Tesuque adjudication¹⁷⁰ were both conducted in federal court.

¹⁶⁰ *Pueblos, Tribes, & Nations*, N.M. TRUE, <https://www.newmexico.org/places-to-visit/native-culture/pueblos-tribes-nations/> (last visited Sept. 7, 2021).

¹⁶¹ Timothy J. De Young, *Part XI River Basins and State Surveys New Mexico*, 4 Waters and Water Rights II (2020); *see also* *New Mexico v. Aamodt*, 537 F.2d 1102 (10th Cir. 1976).

¹⁶² *State of N.M. ex rel. Martinez v. Kerr-McGee Corp.*, 898 P.2d 1256 (N.M. Ct. App. 1995), *cert. denied*, 898 P.2d 120 (1995).

¹⁶³ Timothy J. De Young, *Part XI River Basins and State Surveys New Mexico*, 4 Waters and Water Rights II (2020).

¹⁶⁴ Richard W. Hughes, *Pueblo Indian Water Rights: Charting the Unknown*, 57 NAT. RES. J. 219 (2017).

¹⁶⁵ Timothy J. De Young, *Part XI River Basins and State Surveys New Mexico*, 4 Waters and Water Rights II (2020).

¹⁶⁶ *State of N.M. ex rel. Martinez v. City of Las Vegas*, 89 P.3d 47, 60 (N.M. 2004).

¹⁶⁷ Timothy J. De Young, *Part XI River Basins and State Surveys New Mexico*, 4 Waters and Water Rights II (2020).

¹⁶⁸ *Native American Water Liaison*, N.M. OFF. OF THE STATE ENG’R & THE INTERSTATE STREAM COMM’N, <https://www.ose.state.nm.us/ProgramSupport/liaison.php> (last visited Sept. 7, 2021).

¹⁶⁹ *Chama Water Rights Adjudication Process*, N.M. OFF. OF THE STATE ENG’R & THE INTERSTATE STREAM COMM’N, https://www.ose.state.nm.us/Legal/ActiveCases/Chama/adj_Chama.php (last visited Sept. 7, 2021).

¹⁷⁰ *Nambe-Pojoaque-Tesuque*, N.M. OFF. OF THE STATE ENG’R & THE INTERSTATE STREAM COMM’N, <https://www.ose.state.nm.us/Basins/NambePojoaqueTesuque/index.php> (last visited Sept. 7, 2021).

K. New York

The rule of reasonable use applies to percolating groundwater in New York.¹ A landowner has the right to the use and enjoyment of the land and to the waters beneath it as long as the right is exercised in a reasonable manner.²

1. Definition, Basis of Rights, Standards, and Interactions

New York defines water as springs, wells, and “all other bodies of surface or underground water, natural or artificial, inland or coastal, fresh or salt, public or private, which are wholly or partially within or bordering the state or within its jurisdiction.”³ New York State law makes numerous references to “waters of the state” which includes both surface water and groundwater.⁴

New York common law defines percolating waters as “waters which pass through the ground beneath the surface of the earth, without a definite channel, and not shown to be supplied by a definite flowing stream.”⁵ There is a presumption that underground waters are percolating waters, and the proponent must clearly show otherwise.⁶ The rule of reasonable use applies to percolating groundwater.⁷ Subterranean streams are streams that flow within “a distinct, permanent, and well-defined channel.”⁸ Subterranean streams are governed by the same riparian laws that apply to surface watercourses.⁹

¹ *Friedland v. State*, 314 N.Y.S.2d 935, 935 (N.Y. App. Div. 1970); *People v. N.Y. Carbonic Acid Gas Co.*, 90 N.E. 441, 448 (N.Y. 1909); *Forbell v. City of New York*, 58 N.E. 644, 646 (N.Y. 1900) [hereinafter *Forbell 2*].

² *Phelps v. Nowlen*, 72 N.Y. 39, 48 (N.Y. 1878).

³ N.Y. ENV'T. CONSERV. LAW § 15-0107 (McKinney 2021).

⁴ *See, e.g., id.* at §§ 15-0105(2), (4), (7).

⁵ *Flanigan v. State*, 183 N.Y.S. 934, 935 (N.Y. Ct. Cl. 1920).

⁶ *Id.* at 936.

⁷ *Friedland v. State*, 314 N.Y.S.2d 935, 935 (N.Y. App. Div. 1970); *People v. N.Y. Carbonic Acid Gas Co.*, 90 N.E. 441, 448 (N.Y. 1909); *Forbell v. City of New York*, 58 N.E. 644, 646 (N.Y. 1900).

⁸ *Flanigan*, 183 N.Y.S. at 936; *see also Knaust v. City of Kingston*, 193 F. Supp. 2d 536, 542 (N.D.N.Y. 2002).

⁹ *Flanigan*, 183 N.Y.S. at 936.

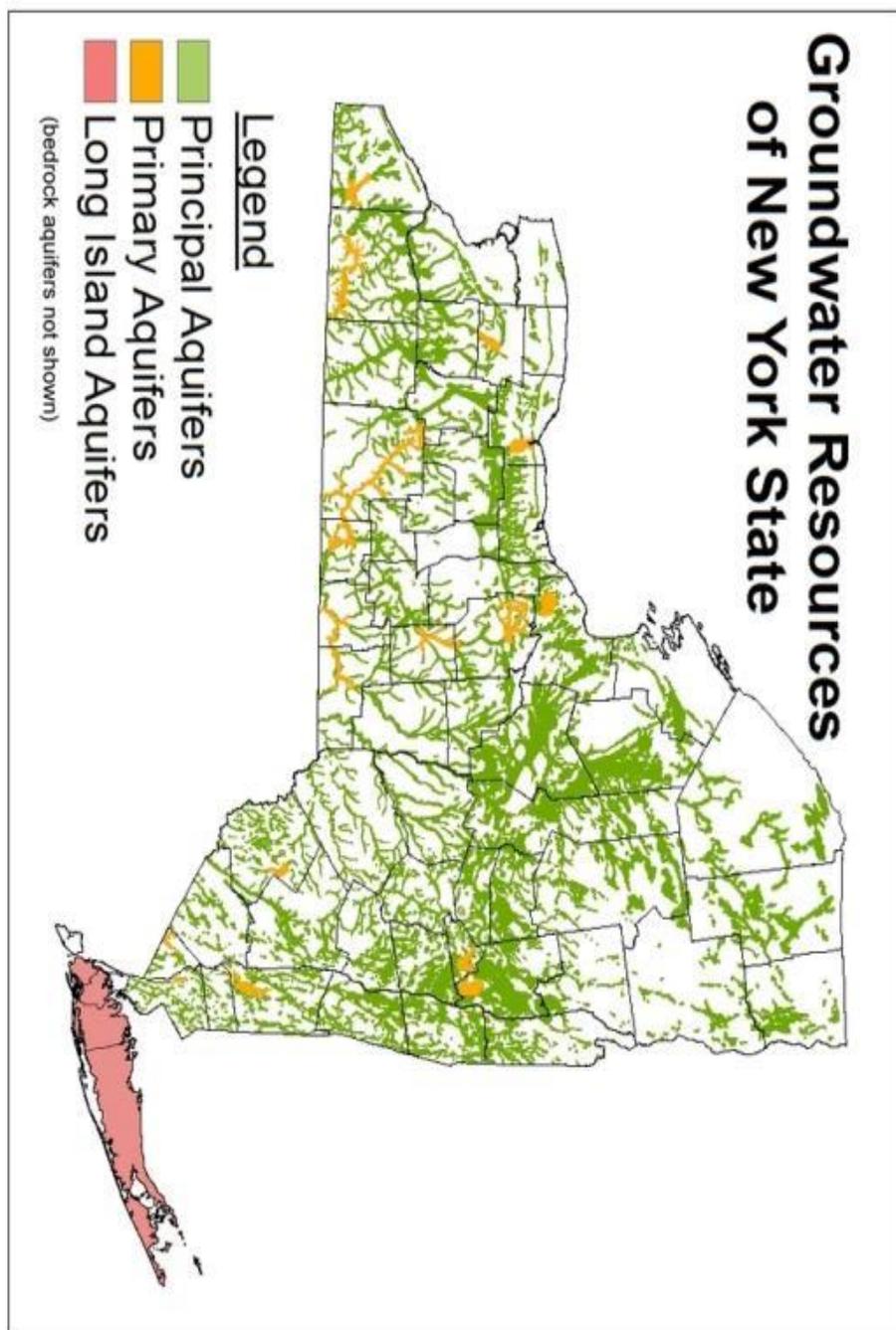


Fig. K.1 Groundwater Resources of the State of New York¹⁰

¹⁰ *Groundwater Resources of the State of New York*, DEP'T OF ENV'T CONSERVATION, <https://www.dec.ny.gov/lands/36119.html> (last visited Sept. 2, 2021).

In *Smith v. City of Brooklyn*, the right to use and enjoy groundwater was identified “as high a character as the right to the land itself,” however, this right was limited when such use resulted in injury to the equal right of any adjoining landowner.¹¹ The *Forbell v. City of New York* court later followed this precedent and further used the rule of reasonableness to limit the previously existing rule of capture common law for groundwater when the state’s highest court decided that it was improper to injure an adjoining land owner for the purpose of using water to improve lands entirely disconnected from the overlying surface.¹²

Following the precedent set by these early cases, New York courts embraced a reasonable use assessment for groundwater disputes.¹³ Twenty years after *Forbell*, in *Flanigan v. State*, the Court of Claims held that the State was not liable for damaging or reducing another landowner’s access to groundwater when it drilled a canal through its property.¹⁴ Additionally, the court provided examples of other situations that would not violate the principle of reasonable use, such as a landowner building a basement or carrying on mining operations.¹⁵

The State of New York has also recognized the existence of subterranean lakes at common law and applied surface water rights of ownership to them. In *Knaust v. City of Kingston*, plaintiffs alleged that a defendant’s storm water system threatened contamination of plaintiff’s adjacently located subterranean lake.¹⁶ The subterranean lake was described by the court as “the remnants on an underground limestone mine”.¹⁷ The State Court acknowledged the existence of the subterranean lake and explained that “the underground lakes at the mines are not percolating waters, but rather are distinctly defined and permanent and, as such, maintain the character of surface water.”¹⁸ The State Court reasoned that the rights to ownership of the subterranean lake must adhere

¹¹ *Smith v. Brooklyn*, 46 N.Y.S. 141, 145 (N.Y. App. Div. 1897).

¹² *Forbell* 2, 58 N.E. at 644; see *Hathorn v. Nat. Carbonic Gas Co.*, 87 N.E. 504 (N.Y. 1909); see also Joseph W. Dellapenna, *A Primer on Groundwater Law*, 49 IDAHO L. REV. 265 (2013).

¹³ *Forbell v. City of New York*, 61 N.Y.S. 1005, 1008-09 (N.Y. App. Div. 1900) [hereinafter *Forbell I*], but see 1 Waters and Water Rights § 9.01 (2021) (many researchers have argued that New York State is better classified as a regulated riparian system).

¹⁴ *Flanigan*, 183 N.Y.S. at 939.

¹⁵ *Id.*

¹⁶ *Knaust v. City of Kingston*, 193 F. Supp. 2d 536, 538-39 (N.D.N.Y. 2002).

¹⁷ *Id.* at 538.

¹⁸ *Id.* at 542.

to surface water law.¹⁹ Based on those legal conclusions, neither the plaintiffs nor the defendants could claim ownership of the subterranean lake, and that under the state’s surface water law, each were “entitled to the continuation of the natural flow and the reasonable use of the waters in the flooded portions of the mine . . . so long as the use is not inconsistent with a like reasonable use by the other riparian owners.”²⁰ It remains to be seen whether New York will continue to apply surface water laws to these types of groundwater sources.

Despite a New York property owner’s right to the reasonable use and enjoyment of groundwater, a New York appellate court asserted in *Ivory v. International Business Machines Corporation* that claims of trespass to groundwater cannot be upheld because groundwater is held in trust by the state, which negates the property ownership requirement for trespass.²¹ However claims for trespass on soil can be brought if contaminated groundwater causes soil contamination because soil is owned by the overlying landowner.²² *Ivory* is further explained by *Baker v. Saint-Gobain Performance Plastics Corporation*, which stated that trespass claims can also be brought for wells damaged by contaminated groundwater following the reasoning laid out in *Ivory* for trespass to soil.²³ Further, *Baker* discusses the need for negligence claims to be based on property damage explaining that negligence claims for groundwater contamination alone would not be allowed.²⁴ These cases create uncertainty in how the rulings interact with the rule of capture and reasonable use common law assertion that landowners have a right to the enjoyment of the waters under their land.

The legal basis for rights in groundwater in New York is based on ownership of land overlying the groundwater.²⁵ However, the permitting statute for water withdrawals states that the Department shall issue a permit “to any person not exempt from the permitting requirements.”²⁶ This statute does not require proof of land ownership to

¹⁹ *Id.* (quoting *Flanigan*, 183 N.Y.S. at 934).

²⁰ *Id.*

²¹ *Ivory v. Int’l Bus. Machs. Corp.*, 983 N.Y.S.2d 110, 117 (N.Y. App. Div. 2014).

²² *Id.*

²³ *Baker v. Saint-Gobain Performance Plastics Corp.*, 232 F. Supp. 3d 233, 247 (N.D.N.Y. 2017).

²⁴ *Id.* at 244; see generally *Ivory*, 983 N.Y.S.2d 110.

²⁵ *Phelps v. Nowlen*, 72 N.Y. 39, 48 (N.Y. 1878).

²⁶ N.Y. ENV’T. CONSERV. LAW § 15-1501(9) (McKinney 2021).

obtain a permit.²⁷ Despite the language of the statute, issued permits specifically state that the permit does not give the holder the right to trespass upon the land of others to exercise their rights.²⁸

For all counties except the Long Island counties of Kings, Queens, Nassau and Suffolk,²⁹ and the Lloyd Sands formation in northeastern Suffolk County,³⁰ the permit application for wells that have the capacity to withdraw 100,000 gallons of water per day must include the following:

- a. proof of adequate authorization for the proposed project with respect to a public water supply system;
- b. such exhibits as may be necessary clearly to indicate the scope of the proposed project;
- c. a map of any lands to be acquired;
- d. project plans;
- e. a statement of the need for and the reasons why the proposed source or sources of supply were selected among the alternative sources which are or may become available and the adequacy of the supply selected; and
- f. a description of the applicant's proposed near term and long-range water conservation program that incorporates environmentally sound and economically feasible water conservation measures, including implementation and enforcement procedures, effectiveness to date and any planned modifications for the future. For a public water supply system, the water conservation program may include but need not be limited to:
 - (i) the identification of and cost effectiveness of distribution system rehabilitation to correct sources of lost water;
 - (ii) measures which encourage proper maintenance and water conservation;
 - (iii) a public information program to promote water conservation, including industrial and commercial recycling and reuse;
 - (iv) household conservation measures; and

²⁷ *See id.*

²⁸ *See, e.g., Permit Under the Environmental Conservation Law (ECL)*, N.Y. STATE DEP'T OF ENV'T CONSERVATION, https://treichlerlawoffice.com/water/greenidge/WaterPermit_Final_2017-09-11_.pdf (last visited Aug. 20, 2021).

²⁹ ENV'T. CONSERV. §§ 15-1527(1), (4).

³⁰ *Id.* at § 15-1528(2).

(v) contingency measures for limiting water use during seasonal or drought shortages.³¹

Permits for withdrawal are valid for ten years from the date of issuance.³² The DEC registers well contractors annually.³³ DEC has issued a moratorium for all well drilling in the Lloyd Sands.³⁴ The DEC also has specific permitting regulations for the four Long Island counties of Kings, Queens, Nassau, and Suffolk,³⁵ and is developing a system for categorizing groundwater quantities as “unstressed, transitional, or over-stressed.”³⁶ To date, this provision has not been implemented by the DEC.

DEC specifically regulates new and existing wells in the four Long Island counties that pump groundwater in excess of forty-five gallons per minute.³⁷ Applications for new wells, well permit renewals, and reopened well permits in these counties require the following information:

- (a) Specific yield of the aquifer segment in which the well is or will be screened;
- (b) Requested rated capacity of well and anticipated or actual amount of withdrawal from such well, both seasonally and annually;
- (c) Whether the well site or proposed well site is in an over-stressed, transitional, or unstressed area;
- (d) The proposed use of the water; whether the water will be or is recharged or discharged to waste; and the likely quality of the water if it is or will be recharged;
- (e) The amount of withdrawal requested and its relationship to volume of recharge occurring locally as well as the relationship of the requested withdrawal to the regional level of withdrawal and recharge;
- (f). The degree of consistency between the requested rate of withdrawal and any regional water management plans; and

³¹ *Id.* at. §§ 15-1503(1)(a)-(f).

³² *Id.* at § 15-1503(6).

³³ *Water Well Contractor and Completion Report Record Search*, N.Y. STATE DEP’T OF ENV’T CONSERVATION, <https://www.dec.ny.gov/lands/33317.html> (last visited August 20, 2021) (a list of the contractors can be found at the this website using the “search wizard”).

³⁴ ENV’T. CONSERV. § 15-1528.

³⁵ *Id.* at § 15-1527(4).

³⁶ *Id.* at § 15-1527(5).

³⁷ *Id.* at § 15-1527(1).

(g) If the well is to be used by a water purveyor, either public or private, or a water authority, whether such purveyor or authority has an active and on-going water conservation program, leak detection program, and metering program.³⁸

All withdrawals for agriculture purposes in New York must be reported to the DEC annually.³⁹ Anyone who withdraws water for agriculture purposes in excess of 100,000 gallons of water per day in a consecutive thirty day period shall annually report to the department the following information: (1) the source of the water; (2) the amount of water withdrawn in the reporting period; (3) a description of the use of the water withdrawn; and (4) estimates amounts and locations of water to be returned.⁴⁰

All persons engaged in the business of water well drilling in the State of New York must obtain a certificate of registration from the DEC.⁴¹ Once a water withdrawal system is completed, the system must remain under the supervision of a person or firm licensed to practice professional engineering in the State of New York.⁴²

2. Sources of Law

Article XIV of New York's Constitution provides general provisions for the conservation of water and other natural resources.⁴³ The Constitution does not differentiate groundwater from surface water, nor does it establish what rights New York residents have in water.⁴⁴ Article fifteen of New York's Consolidated Statutes on Environmental Law covers all water rights and uses in the state.⁴⁵ The Water Resources Law, enacted in 1972, outlines the general provisions covering groundwater and surface water.⁴⁶ The Water Resources Law vests exclusive control over the state's waters in the state.⁴⁷ Additionally, the State Department of Environmental Conservation ("DEC")

³⁸ *Id.* at §§ 15-1527(4)(a)-(g).

³⁹ *Id.* at § 15-1504(1)(b).

⁴⁰ *Id.* at §§ 15-1504(3)(a)-(b).

⁴¹ *Id.* at § 15-1525(1).

⁴² *Id.* at § 15-1529.

⁴³ N.Y. CONST. art. XIV.

⁴⁴ *Id.*

⁴⁵ N.Y. ENV'T. CONSERV. LAW § 15, et seq. (McKinney 2021).

⁴⁶ *Id.* at § 15-0101.

⁴⁷ *Id.* at § 15-0103(1).

carries out oversight and permitting actions for groundwater in New York.⁴⁸

The statutory law and DEC's regulations are the primary sources of law that affects water rights in the state, this scheme preempts any local laws.⁴⁹ Moreover, New York has a long history of groundwater litigation resulting in a large body of case law. Most of the issues surrounding groundwater in New York are linked to Long Island where the population is solely dependent on the water provided by the Upper Glacial, the Magothy, and the Lloyd Sands aquifers.⁵⁰

The chief groundwater cases are *Smith v. City of Brooklyn*⁵¹, *Forbell v. City of New York*⁵², *Flanigan v. State*⁵³, and *Knaust v. City of Kingston*⁵⁴. Other relevant New York groundwater law-related cases include: *Friedland v. State*⁵⁵, *People v. N.Y. Carbonic Acid Gas Company*⁵⁶, *Woodbury Heights Estates Water Company v. Village of Woodbury*⁵⁷, *Williams v. City of Schenectady*⁵⁸, *Sweet v. City of Syracuse*⁵⁹, and *Village of Delhi v. Youmans*⁶⁰.

3. Scope of Right

a. Groundwater Ownership

The State of New York acts as the trustee of groundwater for the people of New York.

⁴⁸ *Id.* at § 15-0103(20).

⁴⁹ *Woodbury Heights Ests. Water Co. v. Vill. of Woodbury*, 975 N.Y.S.2d 101, 105 (N.Y. App. Div. 2013); ENV'T. CONSERV. §§ 15-0107, 0109, 1503-05, 1525-29; N.Y. COMP. CODES R. & REGS. tit. 10, § 5-2.1 (2021).

⁵⁰ Expert Commentary by Sarah Meyland, Associate Professor and Water Specialist in the Department of Environmental Technology and Sustainability at New York Institute of Technology (Jan. 31, 2020).

⁵¹ *Smith v. Brooklyn*, 46 N.Y.S. 141 (N.Y. App. Div. 1897).

⁵² *Forbell v. City of New York*, 58 N.E. 644 (N.Y. 1900).

⁵³ *Flanigan v. State*, 183 N.Y.S. 934 (N.Y. Ct. Cl. 1920).

⁵⁴ *Knaust v. City of Kingston*, 193 F. Supp. 2d 536 (N.D.N.Y. 2002).

⁵⁵ *Friedland v. State*, 314 N.Y.S.2d 935 (N.Y. App. Div. 1970).

⁵⁶ *People v. N.Y. Carbonic Acid Gas Co.*, 90 N.E. 441 (N.Y. 1909).

⁵⁷ *Woodbury Heights Ests. Water Co. v. Vill. of Woodbury*, 975 N.Y.S.2d 101 (N.Y. App. Div. 2013).

⁵⁸ *Williams v. City of Schenectady*, 495 N.Y.S.2d 288 (N.Y. App. Div. 1985).

⁵⁹ *Sweet v. City of Syracuse*, 27 N.E. 1081 (N.Y. 1891).

⁶⁰ *Vill. of Delhi v. Youmans*, 45 N.Y. 362 (N.Y. 1871).

⁶¹ New Yorkers do not own the water but instead have a usufructuary right to use groundwater regardless of land ownership.⁶² New York’s Environmental Conservation Law (“ECL”) states that the “sovereign power to regulate and control the water resources of this state ever since its establishment has been and *now is vested exclusively in the state of New York*, except to the extent of any delegation of power to the United States.”⁶³ The purpose of the law is to give the state exclusive control over water resources.⁶⁴

Property owners have a usufructuary right to use groundwater located under their property.⁶⁵ Similarly, property owners of land overlying subterranean lakes may not acquire ownership in the water but have a right to reasonable use of the water contained in the “lake” as prescribed by the state’s surface water legal regime.⁶⁶

b. Scope of Use

i. Permitted and Preferred Uses

At common law, a landowner may devote the purpose of the water to any use as the landowner saw fit.⁶⁷ However, in the New York Environmental Conservation statute, section 15-1505(4) states that “due consideration shall be given to the relative importance of different uses,” while section 15-1505(5) states that the “acquisition, storage, diversion, and use of water for domestic and municipal purposes shall have priority over other purposes.”⁶⁸

At common law, the landowner must devote the purpose of the water reasonably, and

⁶¹ N.Y. ENV’T. CONSERV. LAW §1-0101(2) (McKinney 2021).

⁶² *In re Methyl Tertiary Butyl Ether (MTBE) Prods. Liab. Litig.*, 725 F.3d 65, 109, fn 31 (2d Cir. 2013) (citing *Sweet v. City of Syracuse*, 27 N.E. 1081, 1084 (N.Y. 1891)), on reh’g sub nom. *Comstock v. City of Syracuse*, 29 N.E. 289 (N.Y. 1891).

⁶³ *Woodbury Heights Ests. Water Co. v. Vill. of Woodbury*, 975 N.Y.S.2d 101, 105 (N.Y. App. Div. 2013) (citing ENV’T. CONSERV. § 15-0103(1)); *see also Williams v. City of Schenectady*, 495 N.Y.S.2d 288, 288 (N.Y. App. Div. 1985).

⁶⁴ ENV’T. CONSERV. § 15-0103.

⁶⁵ *In re Methyl Tertiary Butyl Ether*, 725 F.3d at 109, fn 31.

⁶⁶ *Knaust v. City of Kingston*, 193 F. Supp. 2d 536, 542 (N.D.N.Y. 2002).

⁶⁷ *People v. N.Y. Carbonic Acid Gas Co.*, 90 N.E. 441, 448 (N.Y. 1909).

⁶⁸ ENV’T. CONSERV. §§ 15-1505(4)–(5).

“with as little injury to his neighbor’s rights” as possible.⁶⁹ Reasonableness of use, however, is not determined based on what groundwater uses are unreasonable, but rather based on the specifics of each case.⁷⁰ In *Friedland v. State* the court explained:

[a]s to the use of percolating [subsurface] waters, a land owner has the right upon its own lands to make use of them as he reasonably can, even though he drain the spring upon his neighbor's premises. What is a reasonable use depends, of course, upon the particular facts of each case.⁷¹

When a landowner’s groundwater right is affected the reasonableness of the use is a question between the landowners affected, not between the landowners and the public and is measured by the “rights and necessities of others.”⁷² However, if a stream or watercourse is affected, rather than another landowner’s groundwater rights, the question is then between the landowners and the public.⁷³ Lastly, the landowner may not use their land “as an instrument of injury or malice” or with the intent of injuring their neighbor.⁷⁴

New York has specifically addressed the rights of reasonable use as between surface and groundwater users. In *Town of Oyster Bay v. Commander Oil Corporation*, the state appellate court reaffirmed the continued relevance of riparian rights when determining reasonableness of use between surface and groundwater users.⁷⁵ The court explained that “neither the riparian owner nor the underwater landowner has an unfettered veto over reasonable land uses necessary to the other's acknowledged rights, and where the rights conflict the courts must strike the correct balance.”⁷⁶ The holding in this case is reflected in many of New York’s water laws.⁷⁷ New York’s Environmental

⁶⁹ *Phelps v. Nowlen*, 72 N.Y. 39, 48 (N.Y. 1878).

⁷⁰ *Flanigan v. State*, 183 N.Y.S. 934, 938 (N.Y. Ct. Cl. 1920) (quoting *Merrick Water Co. v. City of Brooklyn*, 53 N.Y.S. 10, 11 (N.Y. App. Div. 1898) “no fixed rule could be laid down, but that each case must rest upon its particular facts as applied to the doctrine of reasonable use and relative rights.”).

⁷¹ *Friedland v. State*, 314 N.Y.S.2d 935, 935 (N.Y. App. Div. 1970) (internal citations omitted).

⁷² *People v. N.Y. Carbonic Acid Gas Co.*, 90 N.E. 441, 443 (N.Y. 1909).

⁷³ *Id.* at 448 (Cullen, J., concurring).

⁷⁴ *Phelps v. Nowlen*, 72 N.Y. 39, 48 (N.Y. 1878).

⁷⁵ *Town of Oyster Bay v. Commander Oil Corp.*, 759 N.E.2d 1233, 1236 (N.Y. 2001).

⁷⁶ *Id.* at 1236-37.

⁷⁷ See generally N.Y. ENV’T. CONSERV. LAW §15-0701 (McKinney 2021); N.Y. COMP. CODES R. & REGS. tit. 6, § 601.12(o) (2021).

Conservation Law specifically addresses the prescriptive rights of groundwater users stating:

[t]he issuance of a water withdrawal permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations; nor does it obviate the necessity of obtaining the assent of any other jurisdiction as required by law for the water withdrawal authorized.⁷⁸

Additionally, every water withdrawal permit issued by the DEC contains the following statement:

No Right to Trespass or Interfere with Riparian Rights. This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.⁷⁹

ii. Location of Use

The 1878 Court of Appeals case *Phelps v. Nowlen* was the first case to hold that landowners could use groundwater that is reachable through the overlying land they own.⁸⁰ Additionally, a landowner “is also entitled to the enjoyment and use of all springs hidden beneath the surface of the soil, and flowing therein by means of subterranean and unknown channels, for all legitimate and proper purposes.”⁸¹

The state, through the DEC, regulates the transfer of water resources.⁸² The DEC prohibits any transfer of groundwater out of state without a permit.⁸³ The transfer of

⁷⁸ COMP. CODES R. & REGS. tit. 6, § 601.12(o).

⁷⁹ See, e.g., *Permit Under the Environmental Conservation Law (ECL)*, N. Y. DEP’T OF ENV’T CONSERVATION, https://treichlerlawoffice.com/water/greenidge/WaterPermit_Final_2017-09-11_.pdf (last visited Aug. 23, 2021).

⁸⁰ *Phelps v. Nowlen*, 72 N.Y. 39, 43 (N.Y. 1878).

⁸¹ *Id.* at 43–44.

⁸² *Woodbury Heights Ests. Water Co. v. Vill. of Woodbury*, 975 N.Y.S.2d 101, 104 (N.Y. App. Div. 2013).

⁸³ N.Y. ENV’T. CONSERV. LAW § 15-1505 (1) (McKinney 2021).

groundwater between basins within the state exceeding one million gallons a day must be registered with the DEC.⁸⁴ The registration must be renewed annually.⁸⁵

Diversions from the Great Lakes-St. Lawrence basin, which also applies to groundwater located within the basin, are prohibited under the Great Lakes-St. Lawrence River Basin Water Resources Compact.⁸⁶

c. Loss of Water Rights

Water rights can be lost through eminent domain.⁸⁷ A New York ECL statute states that the DEC may, in situations outlined in various provisions of Title 15, acquire real property and the groundwater rights connected to the overlying land using eminent domain.⁸⁸

4. Well Drilling

The DEC is responsible for permitting and overseeing the drilling of wells.⁸⁹ Any person engaged in the business of drilling wells must first obtain a certificate of registration from the DEC.⁹⁰ Subsequently, the DEC has promulgated strict regulations for the process of planning, permitting, completing, and sealing wells.⁹¹

Upon receiving a certificate of registration, a licensed⁹² water well driller must file preliminary notice with the department before drilling commences.⁹³ Water well construction standards vary depending on the intended use of the water.⁹⁴ Once drilling

⁸⁴ *Id.* at § 15-1505(2).

⁸⁵ *Id.* at § 15-1505(4).

⁸⁶ *Id.*

⁸⁷ *Id.* at § 15-0311.

⁸⁸ *Id.*

⁸⁹ *Id.* at § 15-1503.

⁹⁰ *Id.* at § 15-1525(1).

⁹¹ *Id.*

⁹² *Id.* at § 15-1525(5)(a)-(b).

⁹³ *Id.* at § 15-1525(3).

⁹⁴ See generally *Part 5, Subpart 5-1 Standards for Water Wells - Appendix 5B*, N.Y. STATE DEP'T OF HEALTH, https://www.health.ny.gov/regulations/nycrr/title_10/part_5/appendix_5b.htm (last visited

has concluded, the water well driller must file a completion report that includes the following:

the log of the well, the size and depth thereof, the capacity of the pump or pumps attached or to be attached thereto, and such other information pertaining to the withdrawal of water and operation of such water well or water wells as the department by its rules and regulations may require.⁹⁵

Certificates of registration may be revoked for any violation of the Department's rules.⁹⁶ Wells drilled in Long Island are regulated separately.⁹⁷

The New York Department of Health ("DH") regulates wells used for drinking water, culinary use, and food processing purposes by promulgating minimum standards for well construction.⁹⁸ These standards are geared towards preserving purity and quality for drinking water.⁹⁹

5. Hydraulic Connection and Regulation

It does not appear that New York partakes in any hydraulic connection or regulation.¹⁰⁰ However, state case law does provide both lawmakers and the public with information on the limits of ground/surface water interactions.¹⁰¹

6. Aquifer Recharge and Underground Storage

New York does not regulate, encourage, or facilitate aquifer recharge or underground storage programs. In 2008, the permitting moratorium on the Lloyd Sands was modified

Aug. 23, 2021).

⁹⁵ ENV'T. CONSERV. § 15-1525(3).

⁹⁶ *Id.* at § 15-1525(4), *see also id.* at § 71-1115.

⁹⁷ N.Y. COMP. CODES R. & REGS. tit. 6, § 602 et seq. (2021).

⁹⁸ *Id.* at tit. 10, § 5-2.1.

⁹⁹ *Id.*

¹⁰⁰ *One Water NYC: 2018 Water Demand Management Plan*, N.Y.C. DEP'T OF ENV'T PROT., <https://www1.nyc.gov/assets/dep/downloads/pdf/water/drinking-water/2018-water-demand-management-plan.pdf> (last visited August 23, 2021).

¹⁰¹ *See supra* notes 71-78 and accompanying text.

after New York expressed an interest in using the Lloyd Sands as a site for an artificial storage and retrieval project.¹⁰² The amendment specifically prohibited storage or pumping water into the Lloyd Sands.¹⁰³

7. Water Management Plan(s)

By state law, a state-wide water management plan was to be prepared and completed in 1987.¹⁰⁴ To complete the plan the state water resources planning council was established.¹⁰⁵ The state was divided into regions to develop locally driven regional plans, that were then submitted to the planning council for approval and inclusion into the statewide plan.¹⁰⁶ After the first statewide plan was completed, the law authorized the plans to be updated every two years.¹⁰⁷ After the first planning effort was completed under the law, the council was never reconvened and no new statewide water resources plan has been undertaken since.¹⁰⁸

Water management plans are now handled at the regional level. The ECL sets out a legislative process for any authorized county, city, town, or village to request a survey and study of the locality's water resources for the purpose of water resources management.¹⁰⁹ Subsequent to the approval of the request, the DEC will appoint a regional board.¹¹⁰ The board is first responsible for conducting investigations and studies, then the board "shall prepare a comprehensive plan or plans for the protection, conservation, development and utilization of the water resources of the region of the proposal, and shall submit the plan or plans to the department for its approval."¹¹¹ The

¹⁰² Expert Commentary by Sarah Meyland, Associate Professor and Water Specialist in the Department of Environmental Technology and Sustainability at New York Institute of Technology (Jan. 31, 2020).

¹⁰³ N.Y. ENV'T. CONSERV. LAW § 15-1528 (2) (McKinney 2021).

¹⁰⁴ *Id.* at § 15-2907.

¹⁰⁵ *Id.*

¹⁰⁶ Expert Commentary by Sarah Meyland, Associate Professor and Water Specialist in the Department of Environmental Technology and Sustainability at New York Institute of Technology (Jan. 31, 2020).

¹⁰⁷ *Id.*

¹⁰⁸ *Id.*

¹⁰⁹ ENV'T. CONSERV. § 15-1103(1).

¹¹⁰ *Id.*

¹¹¹ *Id.* at § 15-1105(16).

DEC has the power to reject, accept, or modify the plan after review.¹¹² Upon the finalization of an approved plan, the DEC will “recommend legislation to accomplish and further the planning and development program of the water resources of the state.”¹¹³ The Long Island Groundwater Management Plan of 1986 was the last plan to be undertaken by the DEC after it was largely ignored by legislators.¹¹⁴ Regional plans do not appear to have a legislative mandate on frequency. It appears to be on an “as requested” basis.

Nassau and Suffolk counties are specifically excluded from New York administrative request for a hydrologic study.¹¹⁵ However, Long Island’s Suffolk and Nassau counties created a bi-county entity, the Long Island Commission for Aquifer Protection (LICAP), to address groundwater quantity issues facing Long Island’s aquifer system and to promote conservation.¹¹⁶ LICAP is governed by representatives of the Long Island water supply community and serves only as an advisory organization with no regulatory oversight or enforcement authority. LICAP publishes an annual “State of the Aquifer” report detailing the risks to their water supply.¹¹⁷ Additionally, in 2019, LICAP published their “Groundwater Resources Management Plan” outlining recommendations for the preservation of aquifer quantity and quality.¹¹⁸

8. Regulatory Authorities

The New York State Department of Environmental Conservation Bureau of Water Resource Management is the primary regulatory authority over groundwater.

New York State Department of Environmental Conservation Bureau of Water Resource Management

¹¹² *Id.* at § 15-1107(6).

¹¹³ *Id.* at § 15-1109(6).

¹¹⁴ Expert Commentary by Sarah Meyland, Associate Professor and Water Specialist in the Department of Environmental Technology and Sustainability at New York Institute of Technology (Jan. 31, 2020).

¹¹⁵ ENV’T. CONSERV. § 15-1103(8).

¹¹⁶ *About Us*, LONG ISLAND COMM’N FOR AQUIFER PROT., <https://licaponline.com/about/> (last visited Aug. 23, 2021).

¹¹⁷ *Id.*

¹¹⁸ *Groundwater Resources Management Plan December 11, 2019*, LONG ISLAND COMM’N FOR AQUIFER PROT., <https://licaponline.com/wp-content/uploads/2020/10/SCWA-GRMP-2019.pdf> (last visited Aug. 23, 2021).

625 Broadway
Albany NY 12233-3500
Phone Number: 518-402-8086
Website: <https://www.dec.ny.gov/lands/36064.html>

The Bureau of Water Resource Management:

works to protect, manage, and conserve New York State's groundwater and surface water supply sources, develop management strategies to enhance and protect these waters, and protect both the groundwater and surface water quality in the New York City Watershed and other major watersheds. The Bureau's work includes programs for water withdrawal permitting, which includes analysis and approval of aquifer (pumping) tests and reservoir capacity; drought management; Great Lakes water withdrawal registration; statewide annual water withdrawal reporting; groundwater; interstate water supply partnerships; reservoir releases; water conservation; and water well drillers registration.¹¹⁹

Additionally, for groundwater permitting within the jurisdictions governed by the three river basin compacts, individual commissions are charged with administering their own permitting programs in accordance with the compact's objectives and regulations.

Delaware River Basin Commission
Website: <https://www.state.nj.us/drbc/about/>
Mailing Address: 25 Cosey Road / P.O. Box 7360, West Trenton, NJ
08628-0360
Telephone: 609-883-9500

Susquehanna River Basin Commission
Website: <https://www.srbc.net/>
Mailing Address: 4423 North Front Street, Harrisburg, PA 17110
Telephone: 717-238-0423

¹¹⁹ *Water*, DEP'T OF ENV'T CONSERVATION, <https://www.dec.ny.gov/chemical/290.html#:~:text=The%20Bureau%20of%20Water%20Resource,City%20Watershed%20and%20other%20major> (last visited Aug. 23, 2021).

Great Lakes – St. Lawrence River Basin Council
Website: <https://www.glsregionalbody.org/about>
Location: Chicago, Illinois
Email Address: gsgp@gsgp.org
Telephone: 312-407-0177

9. Special Districts

New York does not have special districts, but does separate aquifers into primary water supply aquifers and principal aquifers. Primary aquifers are “[h]ighly productive aquifers presently being utilized as sources of water supply by major municipal water supply systems.”¹²⁰ Principal aquifers are aquifers known to be highly productive or whose geology suggests abundant potential water supply, but which are not intensively used as sources of water supply by major municipal systems at the present time.¹²¹

The ECL provides for the nomination and declaration of Special Groundwater Protection Areas. These areas are identified as being located over a sole source aquifer and within counties having a population of one million or more.¹²² Designation under this article entitles local governments to set out management strategies and create local land use regulations to ensure the protection of the identified aquifer.¹²³ Nine areas have been identified as special groundwater protection areas and those identified with Long Island have been combined to create a regional planning board for further management.¹²⁴ Within Long Island, there is currently a moratorium on the drilling of new wells in the Lloyd Sands.¹²⁵ This moratorium effects parts of Kings, Queens, Nassau, and Suffolk counties and it shall continue until a directive from the DEC is issued.¹²⁶ This mandate is intended to protect the coastal communities of Long Island

¹²⁰ Memorandum from the New York State Department of Environmental Conservation regarding the Division of Water Technical and Operational Guidance Series 2.1.3 Primary and Principal Aquifer Determinations (Oct. 23, 1990).

¹²¹ *Id.*

¹²² N.Y. ENV'T. CONSERV. LAW § 55-0105(1) (McKinney 2021).

¹²³ *Id.* at § 55-0119; *see, e.g., Land Use Law Center for Sustainable Development Watershed Protection*, PACE L., <https://appsrv.pace.edu/GainingGround/?do=TopicSearch&Topic=103#bottom> (last visited Aug. 23, 2021).

¹²⁴ ENV'T. CONSERV. § 55-0113(1)-(2).

¹²⁵ *Id.* at § 15-1528(2).

¹²⁶ *Id.* at § 15-1528(1)-(2).

relying on water resources from the Lloyd Sands which are threatened by fluctuating pressure caused by marine tides and by over pumping of the nearby Magothy Aquifer resulting in a decreasing recharge rate.¹²⁷

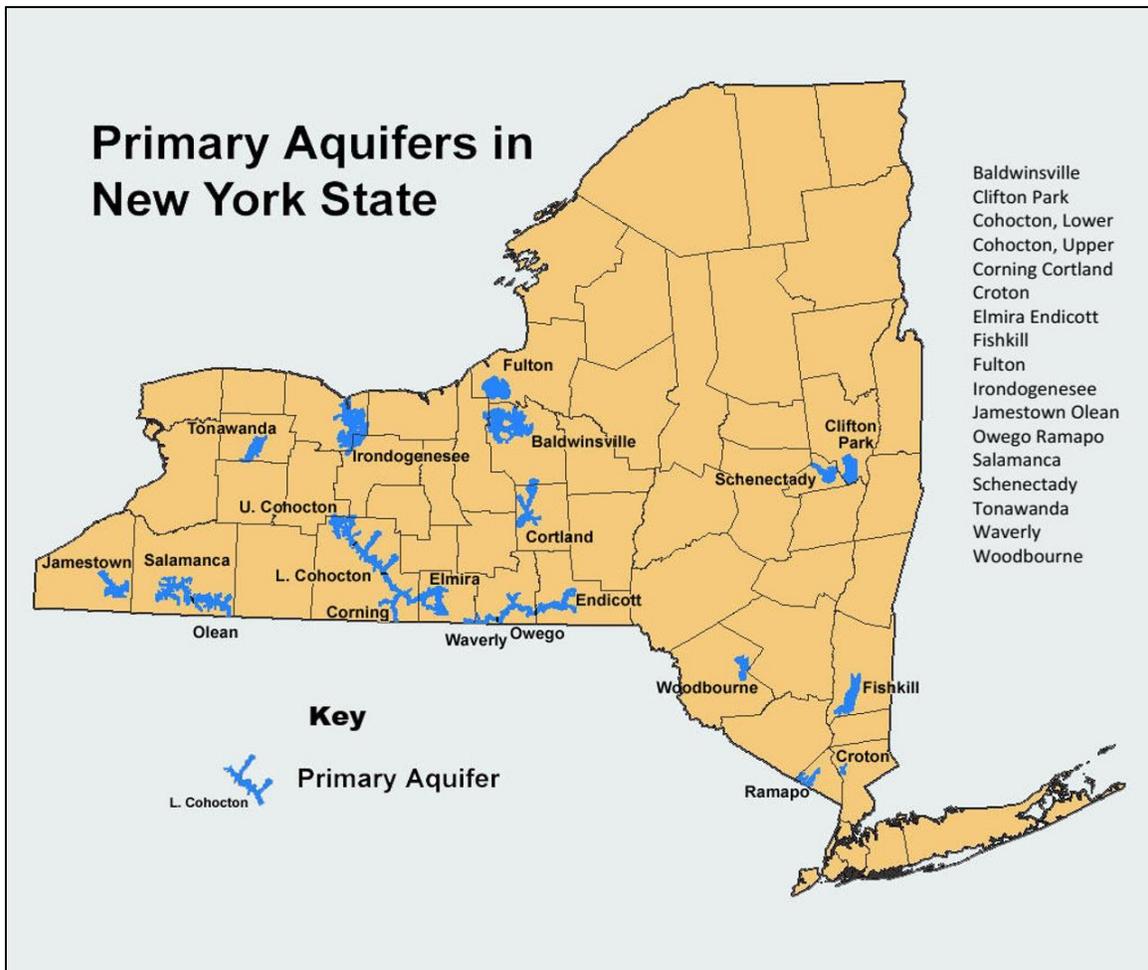


Fig. K.2 Primary Aquifers in New York¹²⁸

¹²⁷ See generally Sarah J. Meyland, Understanding the Lloyd Moratorium & the Science that Supports It, 33 PACE ENV'T L. REV. 476 (2016).

¹²⁸ Primary Aquifers in New York State, DEP'T OF ENV'T CONSERVATION, https://www.dec.ny.gov/docs/water_pdf/primary.pdf (last visited Aug. 20, 2021).

10. Transboundary Arrangements

The 1961 Delaware River Basin Compact includes Delaware, New Jersey, Pennsylvania, and New York.¹²⁹ As it pertains to groundwater, this compact aims to promote conservation and development of groundwater resources.¹³⁰ A permit is required to withdrawal more than 100,000 gallons a day for any thirty-day period within any protected areas under this compact.¹³¹ The Delaware River Basin Compact is updated and revised periodically by the Delaware River Basin Commission.¹³²

The Susquehanna River Basin Compact, entered into in 1970, includes New York, Pennsylvania, and Maryland.¹³³ This compact aims to promote conservation and development of groundwater resources.¹³⁴ The Susquehanna River Basin Compact regulates “[w]ater withdrawals of 100,000 gallons per day (gpd) or more over a 30-day average from any source or combination of sources with the Basin.”¹³⁵ Groundwater withdrawals that are consumptive uses and not returned to the basin of 20,000 gallons per day or more over a thirty-day period are also regulated.¹³⁶ The Susquehanna River Compact is a 100-year agreement.¹³⁷ An updated comprehensive plan will take effect in 2021 and will be in effect until 2041.¹³⁸

The 2008 Great Lakes-St. Lawrence River Basin Resource Compact is a binding

¹²⁹ *Delaware River Basin Compact*, DEL. RIVER BASIN COMM’N, <https://www.state.nj.us/drbc/library/documents/compact.pdf> (last visited Aug. 23, 2021).

¹³⁰ *Id.* at § 1.3(e).

¹³¹ *DRBC Project Review Thresholds*, DEL. RIVER BASIN COMM’N, <https://www.state.nj.us/drbc/programs/project/docket-app-info.html#1> (last visited Aug. 23, 2021); see generally *Delaware River Basin Compact*, *supra* note 126 at § 10.2.

¹³² *Delaware River Basin Compact*, *supra* note 126 at §§ 1.6, 13.1.

¹³³ *About Us*, SUSQUEHANNA RIVER BASIN COMM’N, <https://www.srbc.net/about/about-us/> (last visited Aug. 23, 2021).

¹³⁴ *Susquehanna River Basin Compact*, SUSQUEHANNA RIVER BASIN COMM’N, § 1.3(5), <https://www.srbc.net/about/about-us/docs/srbc-compact.pdf> (last visited Aug. 23, 2021).

¹³⁵ *Regulations*, SUSQUEHANNA RIVER BASIN COMM’N, <https://www.srbc.net/regulatory/regulations/> (last visited Aug. 23, 2021).

¹³⁶ *Id.*

¹³⁷ *SRBC Marks 50th Anniversary, Highlights Accomplishments*, SUSQUEHANNA RIVER BASIN COMM’N, <https://www.srbc.net/about/news/news-release.html?id=1245> (last visited Aug. 23, 2021).

¹³⁸ *Id.*

agreement among the eight Great Lakes states Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin, which bans new or increased diversions within the Great Lakes water system with limited and strictly regulated exceptions.¹³⁹ This limit on new or increased diversions applies to groundwater as well.¹⁴⁰ Comparable domestic legislation is binding on the Canadian provinces of Ontario and Quebec.¹⁴¹

The Basin is defined as “the watershed of the Great Lakes and the St. Lawrence River upstream from Trois-Rivières, Québec within the jurisdiction of the Parties.”¹⁴² Through the compact, the eight states created a council comprised of the governors of each state.¹⁴³ Collectively the states must hold the natural resources in the basin in trust.¹⁴⁴ The general purpose is for the states to work together to improve and effectively manage the waters and water-dependent resources of the basin, share information among the states, prevent significant adverse impacts of withdrawals and losses, and promote adaptive management approaches to conservation.¹⁴⁵ Waters, as it pertains to this compact, includes both surface and groundwater.¹⁴⁶ If a dispute arises between the states, it is to be settled by alternative dispute resolution.¹⁴⁷

Each state is responsible for setting the threshold level for the regulation of withdrawals from surface and groundwater.¹⁴⁸ No state can unilaterally approve a diversion or withdrawal that is inconsistent with the standards set out in the compact, but states are free to impose stricter standards.¹⁴⁹ The states must ensure that, overall, uses are reasonable and will not result in significant impacts to the water or water-dependent

¹³⁹ N.Y. ENV'T. CONSERV. LAW § 21-1001, art. 4 § 4.8 (McKinney 2021); *see also* Paula Lombardi, *Great Lakes Compact—Friend or Foe*, SISKINDS THE L. FIRM, (May, 14 2018), <https://www.siskinds.com/envirolaw/great-lakes-compact-friend-foe/>.

¹⁴⁰ ENV'T. CONSERV. § 21-1001, art. 1 §1.2.

¹⁴¹ Lombardi, *supra* note 136.

¹⁴² ENV'T. CONSERV. § 21-1001, art. 1 §1.2.

¹⁴³ *Id.* at § 21-1001, art. 2 § 2.2.

¹⁴⁴ *Id.* at § 21-1001, art. 1 § 1.3.

¹⁴⁵ *Id.*

¹⁴⁶ *Id.* at § 21-1001, art. 1 § 1.2.

¹⁴⁷ *Id.* at § 21-1001, art. 7 § 7.2.

¹⁴⁸ *Id.* at § 21-1001, art. 4 § 4.10.

¹⁴⁹ *Id.*

natural resources.¹⁵⁰ Uses are determined on the basis of significant impacts to the physical, chemical, and biological integrity of source watersheds.¹⁵¹ Additionally, all new or increased diversions from the basin are prohibited.¹⁵² There are three exceptions: intrabasin transfers, the transfer of water to a straddling community, and transfers to straddling counties.¹⁵³ To qualify for the exception, diversion project proposals must demonstrate that all water withdrawn from the basins will be returned to the source watershed unless an allowance for consumptive use is allowed.¹⁵⁴ Groundwater cannot be used to satisfy any of the return criteria unless it is part of a water supply or wastewater treatment system that combines water from inside and outside of the basin and is treated to meet applicable water quality discharge standards.¹⁵⁵

All federally recognized tribes are to be given reasonable notice to attend any meetings or hearings, and to comment in writing to the Council or regional body on proposals for withdrawals, diversions, and/or consumptive use of water.¹⁵⁶

The Great Lakes Commission issues annual reports regarding its revenues and expenses¹⁵⁷ and has adopted a Strategic Plan that “articulate[s] the *outcomes* it seeks to advance over the five-year timeframe of its strategic plan.”¹⁵⁸ The most recent strategic plan for the Great Lakes Commission applies to 2017-2022.¹⁵⁹

11. Native American Rights

It does not appear that New York grants groundwater-related exemptions, benefits, or concessions to Native American Tribes.

¹⁵⁰ *Id.* at § 21-1001, art. 4 § 4.10.

¹⁵¹ *Id.*

¹⁵² *Id.* at § 21-1001, art. 4 § 4.8.

¹⁵³ *Id.* at § 21-1001, art. 4 § 4.9.

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

¹⁵⁶ *Id.* at § 21-1001, art. 5 § 5.1.

¹⁵⁷ *Annual Reports*, GREAT LAKES COMM’N, <https://www.glc.org/about/annual-report/> (last visited Aug. 23, 2021).

¹⁵⁸ *Strategic Plan for the Great Lakes Commission 2017-2022*, GREAT LAKES COMM’N, http://www.glc.org/wp-content/uploads/2013/07/GLC-strategic-plan_Final_Adopted-Jan-13-2017.pdf (last visited Aug. 23, 2021).

¹⁵⁹ *Id.*

L. Ohio

Ohio follows the Second Restatement of Torts, Section 858, in recognizing that a landowner has a property interest in the reasonable use of groundwater underlying the property.¹ A groundwater property rights owner has the right to “the reasonable use of the ground water underlying the property owner’s land.”² The Ohio Court of Claims has held that “an Ohio landowner only has a property right in groundwater “to the extent he actually uses that water.”³

1. Definitions, Basis of Rights, Standards, and Interactions

In Ohio, the terms aquifer, well, groundwater, consumptive use, and diversion are defined by statute.⁴ Groundwater is defined in Ohio as all water occurring in an aquifer.⁵ An aquifer is “a consolidated or unconsolidated geologic formation or series of formations that are hydraulically interconnected and that have the ability to receive, store, or transmit water.”⁶ A well is “any excavation, regardless of design or method of construction,” created for groundwater-related purposes.⁷ Consumptive use is defined as “a use of water resources, other than a diversion, that results in a loss of that water to the basin from which it is withdrawn and includes, but is not limited to, evaporation, evapotranspiration, and incorporation of water into a product or agricultural crop.”⁸ Diversion is “a withdrawal of water resources from either the Lake Erie or Ohio river drainage basin and transfer to another basin without return. . . [and] does not include evaporative loss within the basin of withdrawal.”⁹ Ohio also defines groundwater stress areas by statute as “a definable geographic area in which ground water quantity is being

¹ Restatement (Second) of Torts § 858(1).

² *Edwards v. Ohio Dep’t of Transp.*, 2016-Ohio-1277 ¶ 60 (Ohio Ct. Cl. 2016).

³ *Id.*

⁴ Ohio Rev. Code § 1521.01; *see also Citizens to Protect Env’t., Inc. v. Universal Disposal, Inc.*, 564 N.E.2d 722, 728, 56 Ohio App.3d 45, 50 (1988) (the Tenth District Court of Appeals holds that groundwater is any water below the surface of the earth, interpreting Ohio’s administrative code).

⁵ ORC Ann. 1521.01 (H).

⁶ *Id.* at (G).

⁷ *Id.* at (F).

⁸ *Id.* at (A).

⁹ *Id.* at (B).

affected by human activity or natural forces to the extent that continuous availability of supply is jeopardized by withdrawals.”¹⁰

The groundwater property right in Ohio is based on overlying land ownership.¹¹ This comes from *McNamara v. City of Rittman*, a case decided by the Supreme Court of Ohio concerning the groundwater rights of citizens negatively affected by governmental use of water from an aquifer beneath their land.¹² The Court, interpreting and applying *Cline v. Am. Aggregates Corp.*,¹³ determined landowners in Ohio had a property interest in groundwater underlying their land.¹⁴

Section 1521.22 of the Ohio Revised Code requires a permit for withdrawals from the Ohio River watershed greater than 100,000 gallons a day. It prohibits withdrawals that would endanger the public health, safety, or welfare in addition to withdrawals that are inconsistent with regional or state water resources plans. An applicant must demonstrate that the proposed withdrawals will be put to reasonable use necessary to serve the applicant’s present and future needs and that the applicant has made reasonable efforts to develop and conserve water resources within the importing basin.¹⁵ The applicant must also show that further development of the basin resources will not have overriding, adverse economic, social, or environmental impacts.¹⁶

Section 1521.23 regulates all withdrawals “that would result in a new or increased consumptive use of more than an average of two million gallons of water per day in any thirty-day period,” and requires a permit for such withdrawals.¹⁷ The section does not apply to major utility facilities or public water systems that predate 1988, which are regulated by different sections of the code.¹⁸

¹⁰ *Id.* at (I).

¹¹ *McNamara v. City of Rittman*, 107 Ohio St. 3d 243, 246, 838 N.E.2d 640, 644 (Ohio 2005).

¹² *Id.* at 245.

¹³ *Cline v. Am. Aggregates Corp.*, 15 Ohio St. 3d 384, 474 N.E.2d 324 (Ohio 1984).

¹⁴ *McNamara*, 107 Ohio St. 3d at 245.

¹⁵ Ohio Rev. Code Ann. § 1521.22(B) (Page, Lexis Advance through file 30).

¹⁶ *Id.*

¹⁷ Ohio Rev. Code Ann. § 1521.23(A) (Page, Lexis Advance through file 30).

¹⁸ *Id.* at (D)-(E).

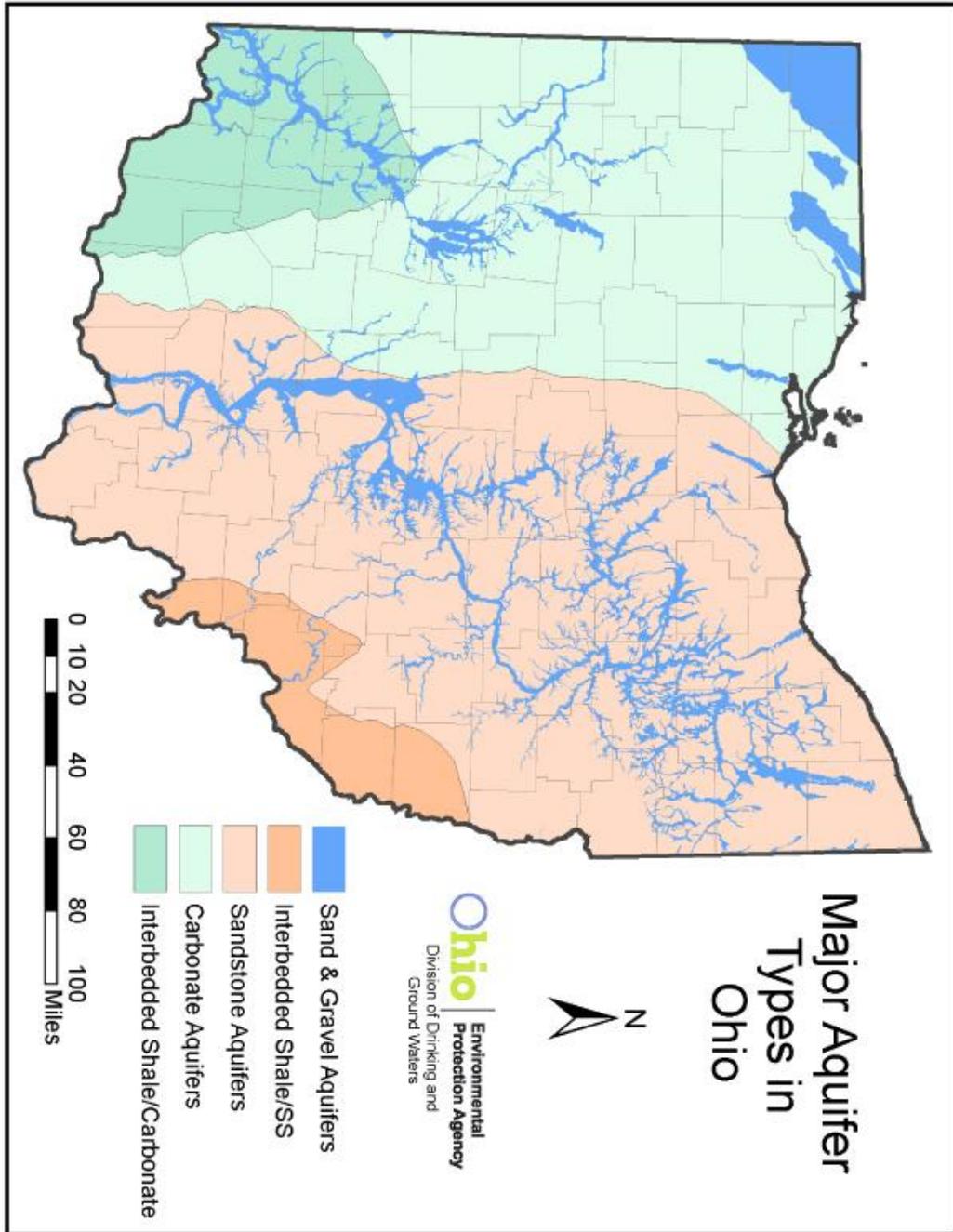


Fig. L.1. Aquifer Map of Ohio¹⁹

¹⁹ Ohio Environmental Protection Agency, *Ground Water Quality Characterization Program*, <https://epa.ohio.gov/ddagw/gwqcp#115412886-ohios-aquifers> (last visited Sept. 11, 2020).

Section 1521.231 focuses on the Great Lakes Compact and the Lake Erie drainage basin. If a proposed application for major increase of withdrawal of groundwater effects the Lake Erie drainage basin and results “in a new or increased consumptive use totaling more than five million gallons per day” then the Chief of the Division of Water Resources must notify all relevant parties to the Great Lakes Compact to solicit comments on the application.²⁰

The Director of Natural Resources will deny a permit if: (1) public water rights in navigable waters will be affected; (2) the applying facility’s current consumptive use does not incorporate maximum feasible conservation practices; (3) the proposed plans do not incorporate maximum feasible conservation practices; (4) the proposed plans do not reasonably promote the protection of public health, safety, or welfare; (5) the proposed withdrawal has a significant detrimental effect on the state’s quantity or quality of water; (6) the proposed quantity is inconsistent with regional or state water resources plans; (7) insufficient water is available for the withdrawal and other existing legal uses are not adequately protected.²¹

2. Sources of Law

In *Cline v. Am. Aggregates Corp.*,²² the Supreme Court of Ohio adopted Section 858 of the Second Restatement of Torts. Ohio codified the Second Restatement’s groundwater law in 1988.²³ The court in *Cline* overturned the common law theory of absolute ownership of percolating water previously established in *Frazier v. Brown*.²⁴

²⁰ Ohio Rev. Code Ann. § 1521.231 (Page, Lexis Advance through File 40 of the 133rd (2019-2020) General Assembly).

²¹ Ohio Rev. Code Ann. § 1521.29(A) (Page, Lexis Advance through file 30).

²² *Cline v. Am. Aggregates Corp.*, 15 Ohio St. 3d 384, 474 N.E.2d 324 (Ohio 1984).

²³ Ohio Rev. Code Ann. § 1521.17(B) (Page, Lexis Advance through File 40 of the 133rd (2019-2020) General Assembly).

²⁴ *Cline v. Am. Aggregates Corp.*, 15 Ohio St. 3d 384, 387, 474 N.E.2d 324, 327 (1984), see also *Frazier v. Brown*, 12 Ohio St. 294, 311 (1861).



Fig. L.2. Lake Erie and Ohio River watersheds in Ohio²⁵

In 2008, the legislature approved SJR 8, which proposed an amendment to Ohio’s constitution solidifying the reasonable-use property rights recognized in *Cline*; this amendment was approved through referendum and became Ohio Constitution Art. I, Section 19b.²⁶ In part, this amendment established the property interest of the owner of an overlying land tract to the reasonable use of underlying groundwater. It also provided that water underlying privately owned lands are not held in trust by the state, but are subject to regulation and the public trust doctrine.²⁷

²⁵ Ohio Department of Natural Resources, *Lake Erie - Ohio River Divide*, <https://ohiodnr.gov/wps/portal/gov/odnr/buy-and-apply/regulatory-permits/water-use-management/water-diversion-permit-lake-erie-basin> (last visited Sept. 24, 2020).

²⁶ Oh. Const. Art. I § 19b.

²⁷ *Id.*

3. Scope of Right

a. Groundwater Ownership

The right to reasonable use of groundwater in Ohio is included in the title to the overlying property.²⁸ “Separate title to the actual groundwater is not required to protect a landowner’s use of that water.”²⁹ The Ninth District Court of Appeals has observed that the Ohio Supreme Court’s decisions on water use were rules of use, not rules of title. “No landowner in Ohio, therefore, has ever held title to ground water.”³⁰ The Eleventh District Court of Appeals has held that “[w]ater in a river or in the ground is not a chattel subject to ownership.”³¹ Therefore, neither the landowner nor the State obtain ownership of the groundwater in itself, but obtain the right to reasonable use of the groundwater contained below the overlying land.

b. Scope of Use

i. Permitted and Preferred Uses

The Ohio Court of Claims held that “an Ohio landowner only has a property right in groundwater ‘to the extent he actually uses that water.’”³² When determining whether a use is reasonable, the Director of Natural Resource must consider

- (1) The purpose of the use;
- (2) The suitability of the use to the watercourse, lake, or aquifer;
- (3) The economic value of the use;
- (4) The social value of the use;
- (5) The extent and amount of the harm it causes;
- (6) The practicality of avoiding the harm by adjusting the use or method of use of one person or the other;
- (7) The practicality of adjusting the quantity of water used by each person;

²⁸ *McNamara v. Rittman*, 107 Ohio St.3d 243, 2005-Ohio-6433 ¶ 22.

²⁹ *Id.* at ¶ 28.

³⁰ *Smith v. Summit County*, 131 Ohio App.3d 35, 40 (1998).

³¹ *Portage Cty. Bd. Of Commrs. v. Akron*, 156 Ohio App.3d 657, 691, 808 N.E. 2d 444 (2004).

³² *Baker v. Chevron U.S.A., Inc.*, 533 Fed. Appx. 509, 521 (6th Cir. 2013).

- (8) The protection of existing values of water uses, land, investments, and enterprises;
- (9) The justice of requiring the user causing harm to bear the loss.³³

In addition to the statutory and common law reasonable use limitations on the use-right, Ohio's statutes also regulate groundwater withdrawals exceeding 100,000 gallons of water withdrawn per day. Ohio requires registration of facilities capable of exceeding 100,000 gallons of water per day and requires permits for uses and withdrawals that intend to exceed this threshold.³⁴

ii. Location of Use

A landowner may use water taken from the landowner's property at any location, subject only to the reasonable use limitation.³⁵

Section 1521.22 requires a permit for any transfer of more than 100,000 gallons of water a day from the Ohio River watershed to another basin.³⁶ This section only pertains to withdrawals from the Ohio River watershed. The Director of Natural Resources issues the permit. The applicant must show the proposed diversion is lawful and that reasonable efforts have been made to develop the importing basin's water resources.³⁷ The Director may not issue the permit if the water is needed within the Ohio River watershed, if the proposed diversion is inconsistent with regional or state water resources plans, or will have a significant and adverse impact on other in-stream uses, either by itself or in combination with other diversions.³⁸ The Director may hold public hearings before issuing the permit.³⁹ The Director may also suspend a permit if the diversion endangers public health, safety, or welfare.⁴⁰ Water-transfer permits may be transferred to other holders so long as the diversion amount specified by the permit is

³³ Ohio Rev. Code § 1521.17 (B)(1)-(9).

³⁴ Ohio Rev. Code Ann. § 1521.16(A) (Page, Lexis Advance through file 30).

³⁵ *McNamara v. Rittman*, 107 Ohio St.3d 243, 2005-Ohio-6433 ¶ 22.

³⁶ Ohio Rev. Code Ann. § 1521.22(A).

³⁷ *Id.* at (B).

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ *Id.* at (E).

not increased and the purpose of the diversion is not changed.⁴¹ A petition requesting the Director to investigate suspected permit violations requires six Ohio residents and requires the Director to make an initial determination of whether there are grounds to revoke the permit within sixty days of the Director's receipt of the petition.⁴² Each permittee must submit an annual report with any information the Director requires by rule.⁴³

c. Loss of Water Rights

There are two circumstances in which the right to reasonable use of one's groundwater can be lost. First, *Baker v. Chevron* determined landowners only have property interest in groundwater to the extent that they make use of it; thus, a landowner that does not make reasonable use of her land's water will not have any reasonable use-rights to enforce.⁴⁴ Second, the Ohio Court of Appeals has held that no taking occurs when a municipality interferes with a landowner's water use rights.⁴⁵ This decision was issued prior to the Ohio Supreme Court's decision in *McNamara*,⁴⁶ where the court ruled property owners had a property interest in the groundwater underneath their land,⁴⁷ and its outcome has not been reconciled with the decision in *McNamara*. Ohio's courts have not yet cleared up the confusion between this decision and the one in *Baker v. Chevron*, but the effect is that water use-rights are inherent in title to real property but are inchoate until the water is actually put to use. Water rights vest in a landowner and can be protected legally only after the water is put to use.

Abandonment of one's water rights is not directly addressed by the courts or through statute. It would follow from *Baker v. Chevron* that once a landowner puts their groundwater to use, they obtain a property interest in it. Therefore, to abandon the property interest in one's groundwater would seem to require the same intent to abandon other property that one has a right to.

⁴¹ *Id.* at (C).

⁴² *Id.* at (F).

⁴³ *Id.* at (G).

⁴⁴ *Smith v. Summit County*, 131 Ohio App.3d 35, 40 (1998); *Baker v. Chevron*, 533 F. App'x 509 (6th Cir. 2013).

⁴⁵ *Smith v. Summit County*, 131 Ohio App.3d 35, 40(1998).

⁴⁶ *McNamara v. Rittman*, 107 Ohio St.3d 243, 2005-Ohio-6433.

⁴⁷ *Id.*

For water rights acquired through permit, the Chief of the Division of Water Resources maintains the authority to revoke or suspend a permit if the permit's terms are violated.⁴⁸ Furthermore, the Chief may suspend the permit if its use would endanger the public health or safety, but must make a reasonable attempt to notify the permittee of the intent to suspend the permit.⁴⁹

The legal procedure for loss of the right to use groundwater follows a similar procedure for governmental appropriation of property provided by statute. In a straight condemnation case, the condemner would file a petition for appropriation with the County Court of Common Pleas (Ohio's general trial court), and the petition is heard through a jury trial.⁵⁰ If the government simply makes use of the water or otherwise interferes with its use without filing a formal condemnation petition, the landowner must file a petition for a writ of mandamus with the appropriate court to compel the government to initiate a condemnation action.⁵¹

4. Well Drilling

Domestic well drilling is regulated by the Ohio Department of Health;⁵² municipal well drilling is regulated by the Ohio Environmental Protection Agency. Well logs, records, and water-use data are managed through the Ohio Department of Natural Resources.⁵³

Domestic wells are regulated as private water systems by the Ohio Department of Health (ODH).⁵⁴ The ODH classifies a private water system as one that provides potable water

⁴⁸ Ohio Rev. Code Ann. § 1522.20 (E).

⁴⁹ *Id.*

⁵⁰ Ohio Rev. Code § 163.01, 163.05, 163.10.

⁵¹ See, e.g., *Gilbert v. Cincinnati*, 174 Ohio App. 3d 89, 880 N.E.2d 971 (Ohio Ct. App. 2007) (reviewing the mandamus process for an Ohio inverse condemnation claim).

⁵² Ohio Department of Health, *Private Water Systems*, <https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/private-water-systems-program/private-water-systems-program> (last visited Sept. 11, 2020).

⁵³ Ohio Department of Natural Resources, *Water Inventory and Planning Program*, <https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/water-resources/water-resources-collection/about-water-inventory-planning> (last visited Sept. 11, 2020).

⁵⁴ Ohio Rev. Code § 3701.344-347; See also Ohio Department of Health, *Private Water Systems*, <https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/private-water-systems-program/private-water-systems-program> (last visited Sept. 11, 2020).

for human consumption to fewer than 25 people per day and has fewer than 15 service connections.⁵⁵ The ODH shares administration with the local Health Districts. A domestic well requires a permit.⁵⁶ The regulations focus on engineering, construction, and contamination standards.⁵⁷ Anyone who wishes to construct, alter, or seal a private water system must obtain a contractor registration through the Ohio Department of Health.⁵⁸

Municipal wells are regulated as public water systems by the Ohio Environmental Protection Agency (OEPA), Division of Drinking and Ground Water.⁵⁹ Public water systems also include any water system that “provides water for human consumption to at least 15 service connections or serves an average of at least 25 people for at least 60 days each year.”⁶⁰ A public water system requires a license issued by the OEPA.⁶¹ The regulations focus on water quality and public safety, not withdrawals.⁶² A public water system must have an operator of record who has been certified by the OEPA.⁶³

5. Hydraulic Connection and Regulation

Ohio follows the Second Restatement of Torts, which provides guidance for when groundwater withdrawal affects surface water.⁶⁴ There is no priority among users of hydraulically linked surface and ground waters. Section 858 contains an exception that denotes when “the withdrawal of ground water has a direct and substantial effect upon a watercourse or lake and unreasonably causes harm to a person entitled to the use of its

⁵⁵ Ohio Department of Health, *Private Water Systems*, <https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/private-water-systems-program/private-water-systems-program> (last visited Sept. 11, 2020).

⁵⁶ Ohio Admin. Code § 3701-28-03.

⁵⁷ Ohio Admin. Code § 3701-28-08, 3701-28-09, 3701-28-10.

⁵⁸ Ohio Department of Health, *Information for Contractors*, <https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/private-water-systems-program/info-for-contractors/info-for-contractors> (last visited Sept. 11, 2020).

⁵⁹ See ORC Ann. Title 61, Ch. 6109.

⁶⁰ Ohio Environmental Protection Agency, *Public Water Systems (PWS)*, <http://epa.ohio.gov/ddagw/pws.aspx> (last visited Sept. 11, 2020).

⁶¹ Ohio Admin. Code § 3745-84-02.

⁶² Ohio Admin. Code § 3745-84-06.

⁶³ Ohio Admin. Code § 3745-7-02.

⁶⁴ Restatement (Second) of Torts § 858.

water”, then liability for the harm caused attaches even if the use was used for the benefit of the person withdrawing the groundwater.⁶⁵

6. Aquifer Recharge and Underground Storage

Ohio does not regulate, encourage, or facilitate aquifer recharge or underground storage programs.

7. Water Management Plan(s)

The Ohio Department of Natural Resources maintains a Water Inventory and Planning Program that assists communities with water supply plans, “providing analysis of water system capacity, current and projected needs, and potential alternatives.”⁶⁶ The Ohio EPA runs a Source Water Assessment and Protection Program requiring local utilities and facilities using groundwater sources to have wellhead protection plans.⁶⁷ It does not appear that these plans are required to be updated by statute.

8. Regulatory Authorities

The Ohio Department of Health is the permitting authority for private water wells.

BEHRP/Private Water Systems Program
246 N. High St.
Columbus, OH 43215
(614) 644-7558
<https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/private-water-systems-program/Private-Water-Systems-Program>

⁶⁵ *Id.* at (1)(c).

⁶⁶ Ohio Department of Natural Resources, *Water Inventory and Planning Program*, <https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/water-resources/water-inventory-planning/> (last visited Sept. 11, 2020).

⁶⁷ Ohio Environmental Protection Agency, *Source Water Assessment and Protection Plan*, <https://www.epa.ohio.gov/ddagw/swap> (last visited Sept. 11, 2020).

The Ohio Department of Natural Resources is the permitting agency for high-volume water usage.

2045 Morse Rd.
Columbus, OH 43229
(614) 265-6565
<http://water.ohiodnr.gov>

The Ohio Environmental Protection Agency is the permitting authority for public water systems.

Lazarus Government Center
50 W. Town St. Ste. 700
P.O. Box 1049
Columbus, OH 43216
(614) 644-2752
www.epa.ohio.gov/ddagw/drinkingandgroundwaters.aspx

The Ohio Department of Health shares administration with the local Health Districts. A domestic well requires a permit.⁶⁸ The regulations focus on engineering, construction, and contamination standards.⁶⁹ Anyone who wishes to construct, alter, or seal a private water system must obtain a contractor registration through the Ohio Department of Health. Local zoning authorities may also take conservation of preservation of groundwater resources into account for zoning decisions and determinations.⁷⁰

The Ohio Department of Natural Resources (ODNR) regulates and issues permits for withdrawals or transfers of more than 100,000 gallons a day from the Ohio River watershed.⁷¹

The Ohio Environmental Protection Agency (OEPA) regulates municipal wells as public water systems.⁷² Public water systems also include any water system that

⁶⁸ Ohio Admin. Code § 3701-28-03.

⁶⁹ Ohio Admin. Code §§ 3701-28-08, 3701-28-09, 3701-28-10.

⁷⁰ *Ketchel v. Brainbridge Twp.*, 52 Ohio St. 3d 239, 241 (1990).

⁷¹ Ohio Rev. Code Ann. § 1521.22(A).

⁷² ORC Ann. Title 61, Ch. 6109.

“provides water for human consumption to at least 15 service connections or serves an average of at least 25 people for at least 60 days each year.”⁷³ A public water system requires a license issued by the OEPA.⁷⁴

9. Special Districts

The Chief of the Division of Water Resources may designate an area of groundwater as a ‘groundwater stress area’ and establish a threshold withdrawal capacity for facilities registered to withdraw groundwater in that specified area.⁷⁵ Furthermore, the ODNR oversees the Groundwater Resources Group, which helps display groundwater availability throughout the state. If the Group finds an area with withdrawals exceeding natural recharge, they may designate Groundwater Stress Areas with special reporting for groundwater users.⁷⁶

10. Transboundary Arrangements

Ohio is a member of the Great Lakes-St. Lawrence River Basin Resource Compact (Compact) along with Illinois, Indiana, Michigan, Minnesota, New York, Wisconsin and the Commonwealth of Pennsylvania .The Basin is defined as “the watershed of the Great Lakes and the St. Lawrence River upstream from Trois-Rivières, Québec within the jurisdiction of the Parties.”⁷⁷ Through the compact, the eight states created a council comprised of the governors of each state.⁷⁸ Collectively the states are to hold the natural resources in the basin in trust.⁷⁹ The general purpose is for the states to work together

⁷³ Ohio Environmental Protection Agency, *Public Water Systems*, <http://epa.ohio.gov/ddagw/pws.aspx> (last visited Sept. 11, 2020).

⁷⁴ Ohio Admin. Code § 3745-84-02.

⁷⁵ Ohio Rev. Code Ann. § 1521.16(B).

⁷⁶ Ohio Department of Natural Resources, *Groundwater Resources*, <https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/geologic-survey/groundwater-resources/groundwater-resources> (last visited Sept. 11, 2020).

⁷⁷ Ohio Rev. Code Ann. § 1522.01 (West, West through File 115 end of 113rd Gen. Assemb. 2019-20); Great Lakes--St. Lawrence River Basin Water Resources Compact, Pub. L. No. 110-342, 122 Stat. 3739 (2008).

⁷⁸ Ohio Rev. Code Ann. § 1522.05 (West, West through File 115 end of 113rd Gen. Assemb. 2019-20); Great Lakes--St. Lawrence River Basin Water Resources Compact, Pub. L. No. 110-342, 122 Stat. 3739 (2008).

⁷⁹ Ohio Rev. Code Ann. § 1522.01 (West, West through File 115 end of 113rd Gen. Assemb. 2019-20); Great Lakes--St. Lawrence River Basin Water Resources Compact, Pub. L. No. 110-342, 122 Stat. 3739 (2008).

to improve and effectively manage the waters and water-dependent resources of the basin, share information among the states, prevent significant adverse impacts of withdrawals and losses, and promote adaptive management approaches to conservation.⁸⁰ Waters as it pertains to this compact includes both surface and groundwater.⁸¹ If a dispute arises between the states, it is to be settled by alternative dispute resolution.⁸²

Each state is responsible for setting the threshold level for the regulation of withdrawals from surface and groundwater.⁸³ No state can unilaterally approve a diversion or withdrawal that is inconsistent with the standards set out in the compact,⁸⁴ but states are free to impose stricter standards.⁸⁵ They must ensure that the uses are overall reasonable and will not result in significant impacts to the water or water-dependent natural resources.⁸⁶ Uses are determined on the basis of significant impacts to the physical, chemical, and biological integrity of source watersheds.⁸⁷ Additionally, all new or increased diversions from the basin are prohibited.⁸⁸ There are three exceptions to this

⁸⁰ Ohio Rev. Code Ann. § 1522.01 (West, West through File 115 end of 113rd Gen. Assemb. 2019-20); *See generally*, Great Lakes--St. Lawrence River Basin Water Resources Compact, Pub. L. No. 110-342, 122 Stat. 3739 (2008).

⁸¹ Ohio Rev. Code Ann. § 1522.01 (West, West through File 115 end of 113rd Gen. Assemb. 2019-20); Great Lakes--St. Lawrence River Basin Water Resources Compact, Pub. L. No. 110-342, 122 Stat. 3739 (2008).

⁸² Ohio Rev. Code Ann. § 1522.01 (West, West through File 115 end of 113rd Gen. Assemb. 2019-20); Great Lakes--St. Lawrence River Basin Water Resources Compact, Pub. L. No. 110-342, 122 Stat. 3739 (2008).

⁸³ Ohio Rev. Code Ann. § 1522.05 (West, West through File 115 end of 113rd Gen. Assemb. 2019-20); Great Lakes--St. Lawrence River Basin Water Resources Compact, Pub. L. No. 110-342, 122 Stat. 3739 (2008).

⁸⁴ Ohio Rev. Code Ann. § 1522.05 (West, West through File 115 end of 113rd Gen. Assemb. 2019-20); Great Lakes--St. Lawrence River Basin Water Resources Compact, Pub. L. No. 110-342, 122 Stat. 3739 (2008).

⁸⁵ Ohio Rev. Code Ann. § 1522.05 (West, West through File 115 end of 113rd Gen. Assemb. 2019-20); Great Lakes--St. Lawrence River Basin Water Resources Compact, Pub. L. No. 110-342, 122 Stat. 3739 (2008).

⁸⁶ Ohio Rev. Code Ann. § 1522.05 (West, West through File 115 end of 113rd Gen. Assemb. 2019-20); Great Lakes--St. Lawrence River Basin Water Resources Compact, Pub. L. No. 110-342, 122 Stat. 3739 (2008).

⁸⁷ Ohio Rev. Code Ann. § 1522.05 (West, West through File 115 end of 113rd Gen. Assemb. 2019-20); Great Lakes--St. Lawrence River Basin Water Resources Compact, Pub. L. No. 110-342, 122 Stat. 3739 (2008).

⁸⁸ Ohio Rev. Code Ann. § 1522.05 (West, West through File 115 end of 113rd Gen. Assemb. 2019-20); Great Lakes--St. Lawrence River Basin Water Resources Compact, Pub. L. No. 110-342, 122 Stat. 3739

prohibition: intrabasin transfers, the transfer of water to a straddling community, and transfers to straddling counties.⁸⁹ To qualify for the exception, diversion project proposals must demonstrate that all water withdrawn from the basins will be returned to the source watershed less an allowance for consumptive use.⁹⁰ Groundwater cannot be used to satisfy any of the return criteria unless it is part of a water supply or wastewater treatment system that combines water from inside and outside of the basin and is treated to meet applicable water quality discharge standards.⁹¹

11. Native American Rights

It does not appear that the state grants exemptions, benefits, or concessions to Native American Tribes.

(2008).

⁸⁹ Ohio Rev. Code Ann. § 1522.05 (West, West through File 115 end of 113rd Gen. Assemb. 2019-20); Great Lakes--St. Lawrence River Basin Water Resources Compact, Pub. L. No. 110-342, 122 Stat. 3739 (2008).

⁹⁰ Ohio Rev. Code Ann. § 1522.05 (West, West through File 115 end of 113rd Gen. Assemb. 2019-20); Great Lakes--St. Lawrence River Basin Water Resources Compact, Pub. L. No. 110-342, 122 Stat. 3739 (2008).

⁹¹ Ohio Rev. Code Ann. § 1522.05 (West, West through File 115 end of 113rd Gen. Assemb. 2019-20); Great Lakes--St. Lawrence River Basin Water Resources Compact, Pub. L. No. 110-342, 122 Stat. 3739 (2008).

M. South Carolina

South Carolina groundwater follows a reasonable use regime.¹ Not all groundwater users are required to obtain a permit to pump groundwater. Groundwater users in a capacity use area must apply for a permit before utilizing water.² Groundwater users within the Coastal Plain of South Carolina are only required to give notice to the South Carolina Department of Health and Environmental Control of the intent to pump groundwater.³ A permit is not required for: anyone who pumps less than three million gallons of water in a month; emergency withdrawals of groundwater; withdrawing groundwater for a nonconsumptive use; withdrawing groundwater for wildlife habitat management; withdrawing groundwater for a single family or “household for noncommercial use”.⁴

1. Definition, Basis of Rights, Standards, and Interactions

The South Carolina Groundwater Use and Reporting Act defines groundwater as “water in the void spaces of geological materials within the zone of saturation.”⁵ Aquifer “means a geologic formation, group of these formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of groundwater to wells and springs.”⁶ A groundwater withdrawer is “a person withdrawing groundwater in excess of three million gallons during any one month from a single well or from multiple wells under common ownership within a one-mile radius from any one existing or proposed well.”⁷ Thus, anyone who does not withdraw more than three million gallons of water during a month is not considered a groundwater withdrawer for the purposes of the South Carolina Groundwater Use and Reporting Act.⁸ A new groundwater withdrawer is “a person who becomes a groundwater withdrawer after December 31, 1999, except for a proposed groundwater withdrawer

¹ S.C. REGS. 61-113 (F)(2) (2021).

² S.C. CODE ANN. §§ 49-5-60(C) (2021).

³ *Id.* at § 49-5-50(B).

⁴ *Id.* at §§ 49-5-30(12); 49-5-70(A)(1)-(4).

⁵ *Id.* at § 49-5-30(10).

⁶ S.C. REGS. 61-113 (B)(3).

⁷ S.C. CODE § 49-5-30(12).

⁸ *See id.*

with its wells under construction before January 1, 2000.”⁹ A well is defined as “an excavation that is cored, bored, drilled, jetted, dug, or otherwise constructed for the purpose of locating, testing, or withdrawing groundwater or for evaluating, testing, developing, draining, or recharging a groundwater reservoir or aquifer or that may control, divert, or otherwise cause the movement of groundwater from or into an aquifer.”¹⁰

South Carolina imposed reasonable use restrictions on groundwater through the Ground Water Use Act of 1969.¹¹ The South Carolina regime is similar to the common law reasonable use regime. Elements of reasonable use have since been incorporated in South Carolina’s Department of Health and Environmental Control (Department) regulations.¹² The regulations were passed due to fears of water-level declines and saltwater intrusion in the Coastal Plain area.¹³ The Ground Water Use Act of 1969 was updated and replaced in 2000 by the Groundwater Use and Reporting Act.¹⁴

There are no reported cases prior to 1969 that set out common-law rules regarding the ownership of groundwater in South Carolina.¹⁵ Many states surrounding South Carolina explicitly adopted the Absolute Ownership rule and later modified their system into one of Reasonable Use.¹⁶ However, South Carolina courts never explicitly adopted either governance system as their groundwater ownership rule.¹⁷ Instead, the courts approached groundwater claims “through common law tort actions and the State Constitution.”¹⁸

⁹ *Id.* at. § 49-5-30(13).

¹⁰ *Id.* at § 49-5-30(22).

¹¹ *Id.* at § 49-5-20.

¹² S.C. REGS. 61-113 (F)(2).

¹³ *South Carolina State Water Assessment*, S.C. DEP’T OF NAT. RES., 2009 at 59, http://hydrology.dnr.sc.gov/pdfs/assessment/SC_Water_Assessment_2.pdf (last visited Oct. 12, 2021).

¹⁴ *Id.*

¹⁵ *South Carolina State Water Assessment*, S.C. DEP’T OF NAT. RES., 2009 at 58, http://hydrology.dnr.sc.gov/pdfs/assessment/SC_Water_Assessment_2.pdf (last visited Oct. 12, 2021).

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ *Id.*

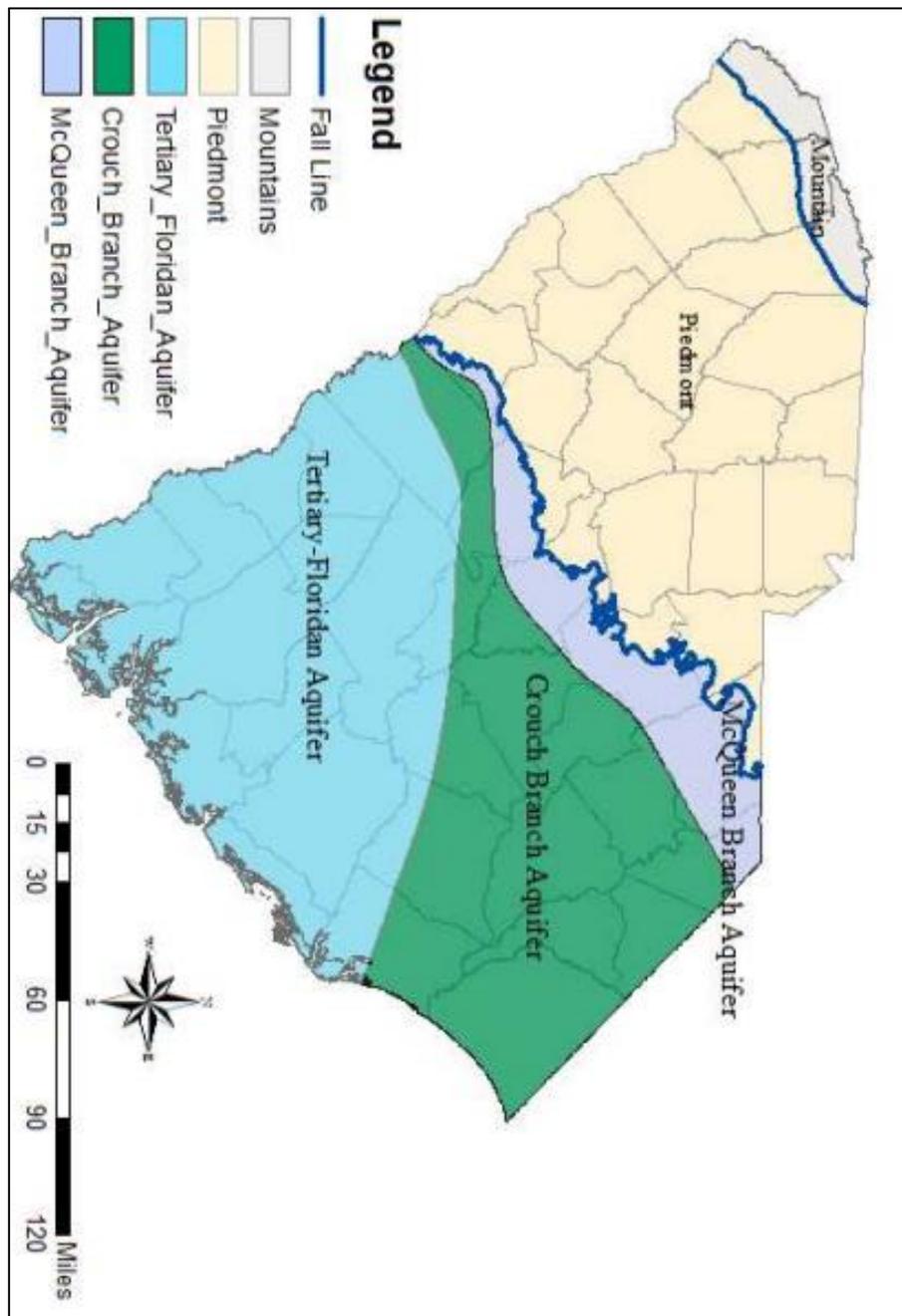


Fig. M.1 Aquifers in South Carolina¹⁹

¹⁹ *Trident Capacity Use area Groundwater Evaluation for Permitting Year 2018*, S.C. DEP'T OF HEALTH AND ENV'T CONTROL, https://scdhec.gov/sites/default/files/media/document/08212018_Trident%20Groundwater%20Review%20Technical%20Document.pdf (last visited Oct. 12, 2021).

Those using enough groundwater to be considered “groundwater withdrawers” under the Groundwater Use and Reporting Act are subject to different administrative requirements depending on whether they are in a capacity use area and whether they are in the Coastal Plain of South Carolina. A capacity use area is designated “where excessive groundwater withdrawal presents potential adverse effects to the natural resources or poses a threat to public health, safety, or economic welfare or where conditions pose a significant threat to the long-term integrity of a groundwater source, including salt water intrusion.”²⁰ Only those groundwater users inside of a designated capacity use area must apply for a groundwater withdrawal permit.²¹ Currently, almost the entire southeastern part of South Carolina is designated as a capacity use area.²²

Groundwater users outside of a designated capacity use area, but inside the South Carolina Coastal Plain, do not need a permit for withdrawal. However, they must “notify the [D]epartment [of Health and Environmental Control] of its intent to construct a new well, or increase the rated capacity of an existing well, at least thirty days before initiating the action.”²³

All groundwater users in the state, including those outside of both a designated capacity use area and the Coastal Plain, “shall register their groundwater sources with, and report their groundwater use to, the [D]epartment [of Health and Environmental Control];” however, only groundwater users located in a capacity use area are first required to obtain a permit.²⁴

Users withdrawing less than the minimum amount, “three million gallons during any one month from a single well or from multiple wells under common ownership within a one-mile radius from any one existing or proposed well,” for designation as a groundwater withdrawer under the Groundwater Use and Reporting Act are not subject to application, notice, or reporting requirements.²⁵

²⁰ S.C. CODE ANN. § 49-5-60(A) (2021).

²¹ *Id.* at § 49-5-60(C).

²² *South Carolina’s Water Resources*, CLEMSON COOP. EXTENSION, HOME & GARDEN INFO. CTR., <https://171dxwjpaqv2danpq11ixf2j-wpengine.netdna-ssl.com/wp-content/uploads/2020/10/figure-7-there-are-six-capacity-use-areas-in-sc.png> (last visited Oct. 12, 2021).

²³ S.C. CODE § 49-5-50(B).

²⁴ *Id.* at § 49-5-40.

²⁵ *Id.* at § 49-5-30(12).

Nothing in the statutes or state case law defines what reasonable use means in South Carolina, but the state’s adherence to the regime is inferred from the Groundwater Use and Reporting Act’s exemptions and Department of Health and Environmental Control regulations.²⁶ However, reasonable use is defined by the Initial Groundwater Management Plan for the Western Capacity Use Area as “the use of a specific amount of water without waste that is appropriate under efficient practices to accomplish the purpose for which the appropriation is lawfully made.”²⁷

2. Sources of Law

The chief statute governing groundwater law in South Carolina is the Groundwater Use and Reporting Act that was passed in 2000 and codified under Title 49, Chapter 5.²⁸ There is no relevant South Carolina case law concerning groundwater use issues.²⁹

3. Scope of Right

a. Groundwater Ownership

South Carolina considers groundwater to be “waters of the state,” which “means waters within the territorial limits of the State but not private lakes or ponds.”³⁰ Landowners have the right to reasonably use groundwater in South Carolina.

b. Scope of Use

i. Permitted and Preferred Uses

It appears that any use that is not wasteful or unreasonable is permissible, although individuals and entities required to obtain a permit will have their use evaluated by the

²⁶ See generally S.C. REGS. 61-113 (F).

²⁷ *Initial Groundwater Management Plan for the Western Capacity Use Area*, DHEC (Nov. 2019), https://scdhec.gov/sites/default/files/media/document/Final_BoardApproved_WCUAGMP.pdf (last visited Oct. 12, 2021).

²⁸ S.C. CODE § 49-5-10 et seq.

²⁹ Margaret Myszewski, Don R. Christy & James E. Kundell, *A Comparison of Groundwater Laws and Regulations from Southeastern States*, CARL VINSON INST. OF GOV’T UNIV. OF GA., Mar. 2005, at 28.

³⁰ S.C. CODE § 50-21-10 (27).

Department for reasonableness and other factors.³¹ The Groundwater Use and Reporting Act also specifically provides for exemptions to the registration requirement and the permit requirement for withdrawal in capacity use areas for domestic uses, wildlife habitat management, non-consumptive uses, and emergency withdrawals.³² A single family residence or “a household for a noncommercial use” are both considered domestic uses.³³

There is no explicit hierarchy of use in the Groundwater Use and Reporting Act; however, when the Department evaluates a permit application, they are required to assess “[t]he relative importance and necessity of uses claimed by permit holders and permit applicants, or of the water use of the area, and the extent of injury or detriment caused or reasonably expected to be caused to other water uses, including public use.”³⁴

South Carolina law does not explicitly outline their standard for preference, but the Initial Groundwater Management Plan for the Western Capacity Use Area provides some guidance. The plan creates water use types and lays out general reasonable use guidelines to impose limits on certain uses.³⁵

ii. Location of Use

There are no limitations on location of use for groundwater in South Carolina. Moreover, the Groundwater Use and Reporting Act does not address interbasin transfers.

The Groundwater Use and Reporting Act, however, does require the Department to evaluate the potential for harm resulting from “[d]iversion from or reduction of flows in surface water or other aquifers” when granting new permits.³⁶ Thus, the use of water outside of the basin of origin could impair an applicant’s ability to get a withdrawal permit.

³¹ S.C. REGS. 61-113 (E)-(F).

³² S.C. CODE § 49-5-70(A)(1)-(4).

³³ *Id.* at § 49-5-70(A)(4).

³⁴ S.C. REGS. 61-113(F)(1)(g).

³⁵ DHEC, *Initial Groundwater Management Plan for the Western Capacity Use Area* (Nov. 2019), https://scdhec.gov/sites/default/files/media/document/Final_BoardApproved_WCUAGMP.pdf.

³⁶ S.C. REGS. 61-113(F)(1)(h).

c. Loss of Water Rights

Water permits can be lost through eminent domain, revocation, and abandonment. In *South Carolina Department of Highways & Public Transportation v. Balcome*, the South Carolina Court of Appeals held that a government agency's diversion of groundwater was a taking that required just compensation.³⁷

Under the Groundwater Use and Reporting Act, the Department may revoke a construction or groundwater withdrawal permit if it determines information in the permit application is false or the permittee fails to comply with the conditions of the permit.³⁸ The Department may also “revoke a temporary groundwater withdrawal permit if the permittee fails to adhere to the conditions of the temporary permit or provide timely response to requests for actions for information made pursuant to the application review.”³⁹

There are no specific rules governing abandonment of water rights in the state's statutes.

4. Well Drilling

South Carolina regulates the construction, maintenance, and operation of the following types of wells: “individual residential, irrigation, monitoring (including non-standard installations), and boreholes.”⁴⁰ These standards were promulgated pursuant to the State Safe Drinking Water Act and the Pollution Control Act. The purpose of these standards is to “ensure that underground sources of drinking water are not contaminated and public health is protected.”⁴¹

Wells in South Carolina must be drilled, constructed, and abandoned by a certified well driller registered with the Environmental Certification Board under the Department of Labor, Licensing, and Regulation.⁴² Well-drilling licenses are issued in one of three well

³⁷ *S.C. Dep't of Highways & Pub. Transp. v. Balcome*, 345 S.E.2d 762 (S.C. Ct. App. 1986).

³⁸ S.C. CODE. § 49-5-100(D).

³⁹ *Id.* at § 49-5-100(E).

⁴⁰ S.C. REGS. 61-71(A).

⁴¹ *Id.*

⁴² *Id.* at 61-71(D)(1).

drilling categories (environmental, coastal, or rock) and in one of four classes (Class A, Class B, Class C, or Class D).⁴³ “No person may engage, or offer to engage, in the drilling of wells for which he does not possess a license of the proper well drilling category and class.”⁴⁴ “However, a Class ‘A’ licensee is authorized to practice in all three well drilling categories.”⁴⁵ All levels of license require passage of a written examination.⁴⁶

“Before a groundwater withdrawer or proposed groundwater withdrawer in a designated capacity use area can construct a new well or increase the rated capacity of an existing well, an application for a permit to construct shall be made to, and a permit to construct obtained from, the Department unless exempt. . . .”⁴⁷

“Before a groundwater withdrawer or proposed groundwater withdrawer outside a designated capacity use area [but still] in the Coastal Plain can construct a new well or increase the rated capacity of an existing well, a Notice of Intent shall be made to the Department at least thirty days prior to initiating the action, unless exempt. . . .”⁴⁸

“A groundwater withdrawer outside a designated capacity use area [and the Coastal Plain] shall register all new wells with the Department within thirty days after initiating use of the wells.”⁴⁹

As used in the context of regulations passed pursuant to the Groundwater Use and Reporting Act, an abandoned well is defined as “a well where the pump has been disconnected for reasons other than repair or replacement and whose use has been discontinued for a period of one year, or has been pronounced as abandoned by the owner or operator.”⁵⁰ If the Department finds that a well has been abandoned and deems it to have unreasonably adverse or potentially unreasonably adverse effects on other

⁴³ S.C. CODE § 40-23-320(A).

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ *Id.* at §§ 40-23-320(B)-(E).

⁴⁷ S.C. REGS. 61-113(D)(1).

⁴⁸ *Id.* at 61-113(D)(3).

⁴⁹ *Id.* at 61-113(D)(5).

⁵⁰ *Id.* at 61-113(B)(1).

water users or uses, the Department will require “the well owner to fill, plug, and seal the well in a manner acceptable to and approved by the Department.”⁵¹

South Carolina regulations have what can be described as a forced abandonment of a well. Regulations specify that, “[a]ny well removed from service for longer than thirty-six months shall be permanently abandoned unless a variance from the Department is requested.”⁵² The regulations go on to define abandonment as the “forced injection of grout or pouring through a tremie pipe starting at the bottom of the well or fill material and proceeding to the surface in one continuous operation.”⁵³

The South Carolina Department of Health and Environmental Control, Bureau of Water, Environmental Quality Control Office is responsible for overseeing the standards. The South Carolina Environmental Certification Board under the South Carolina Department of Labor, Licensing and Regulation is responsible for the licensing of well drillers.⁵⁴

5. Hydraulic Connection and Regulation

South Carolina does not specifically regulate the interaction between groundwater and surface water. However, the Groundwater Use and Reporting Act requires the Department to consider the potential impact of “[d]iversion from or reduction of flows in surface water” when granting a withdrawal permit.⁵⁵

6. Aquifer Recharge and Underground Storage

The Groundwater Use and Reporting Act contains an exemption to the permitting requirements for aquifer storage and recovery wells.⁵⁶ Aquifer storage and recovery wells are exempt from the requirements of the Act if they have a permit in accordance

⁵¹ *Id.* at 61-113(N)(1).

⁵² *Id.* at 61-71(F)(14)(b); *see also id.* at 61-113(N).

⁵³ *Id.* at 61-71(F)(14)(d).

⁵⁴ S.C. CODE ANN. § 40-23-320 (2021).

⁵⁵ S.C. REGS. 61-113(F)(1)(h).

⁵⁶ S.C. CODE § 49-5-70(C).

with the Underground Injection Control Regulations⁵⁷ and the amount of water withdrawn does not exceed the amount of water injected.⁵⁸ There is no specific program for facilitating aquifer recharge, but the exemption seems to be designed as an incentive for people to do so.

Aquifer storage and recovery wells are permitted under both the state’s drinking water regulations and the Department of Health and Environmental Control’s underground injection control regulations. The South Carolina Department of Health and Environmental Control, United States Geological Survey, and the South Carolina Department of Natural Resources are tasked with maintaining groundwater monitoring networks.

7. Water Management Plan(s)

Pursuant to the Water Resources Planning and Coordination Act, the South Carolina Water Resources Commission was established in 1967.⁵⁹ The Commission was responsible, among other things, for “formulating and establishing a comprehensive water resources policy for the State, such as a State Water Plan . . .”⁶⁰ The Commission published the first edition of the South Carolina State Water Assessment in 1983.⁶¹ In 1994, the Commission was disbanded and its duties delegated to and divided between the Department of Health and Environmental Control and the Hydrology Section of the Land, Water and Conservation Division of the South Carolina Department of Natural Resources.⁶² In 1998, the Hydrology Section published the first edition of the South Carolina Water Plan. This plan was subsequently updated in 2004 in response to a state-wide drought between 1998 and 2002.⁶³ The 2004 update highlighted the need for regional water planning efforts, which ultimately began in 2014.⁶⁴ The second edition

⁵⁷ S.C. REGS. 61-87.

⁵⁸ S.C. CODE. § 49-5-70(C)(1)-(2).

⁵⁹ *Hydrology Section, About Us*, S.C. DEP’T OF NAT. RES., <http://hydrology.dnr.sc.gov/about.html> (last visited Oct. 12, 2021).

⁶⁰ S.C. CODE § 49-3-40(a)(1).

⁶¹ *Hydrology Section, About Us*, S.C. DEP’T OF NAT. RES., <http://hydrology.dnr.sc.gov/about.html> (last visited Oct. 12, 2021).

⁶² *Id.*

⁶³ *Id.*

⁶⁴ *South Carolina Water Plan*, S.C. DEP’T OF NAT. RES., <http://hydrology.dnr.sc.gov/pdfs/water->

of the South Carolina State Water Assessment was published in 2009.⁶⁵ The South Carolina Department of Natural Resources is currently in the process of developing new models and updating the 2009 State Water Assessment.⁶⁶ The updated state water plan will be the first to incorporate regional water plan recommendations.⁶⁷

The Groundwater Use and Reporting Act requires the Department of Health and Environmental Control to coordinate with governing bodies and groundwater users in designated capacity use areas to develop local Groundwater Management Plans.⁶⁸ Groundwater Management Plans are updated as needed as a result of area evaluations completed every five years.⁶⁹

8. Regulatory Authorities

The South Carolina Department of Health and Environmental Control is responsible for registering groundwater users, their withdrawals, and any new wells that may begin pumping.⁷⁰

South Carolina Department of Health and Environmental Control
Website: <https://scdhec.gov/>
2600 Bull Street
Columbia, SC 29201
Phone: (803-898-3432)

A groundwater withdrawer is defined as “as person withdrawing groundwater in excess of three million gallons during any one month from a single well or from multiple wells

plan/SCWaterPlan2.pdf (last visited Oct. 12, 2021); *Water Planning*, S.C. DEP’T OF NAT. RES. <http://hydrology.dnr.sc.gov/water-planning.html> (last visited Oct. 12, 2021).

⁶⁵ *Hydrology Section, About Us*, S.C. DEP’T OF NAT. RES., <http://hydrology.dnr.sc.gov/about.html> (last visited Oct. 12, 2021).

⁶⁶ *Water Planning*, S.C. DEP’T OF NAT. RES. <http://hydrology.dnr.sc.gov/water-planning.html> (last visited Oct. 12, 2021).

⁶⁷ *Groundwater Management Planning*, DHEC, <https://scdhec.gov/BOW/groundwater-use-reporting/groundwater-management-planning> (last visited Oct. 12, 2021).

⁶⁸ *Id.*

⁶⁹ *Id.*

⁷⁰ S.C. CODE ANN. § 49-5-50(B) (2021).

under common ownership within a one-mile radius from any one existing well.”⁷¹ Only groundwater users located in a designated capacity use are required to obtain a permit from the Department.⁷² The Department is responsible for designating those areas of the state “where excessive groundwater withdrawal presents potential adverse effects to the natural resources. . .” as designated capacity use areas.⁷³ The Department monitors groundwater withdrawals pursuant to the Groundwater Use and Reporting Act.⁷⁴

9. Special Districts

Under the Groundwater Use and Reporting Act, the Department of Health and Environmental Control has the authority to designate certain areas as capacity use areas.⁷⁵

“Five areas within the state have been designated as Capacity Use Areas. These include the Low Country (Beaufort, Colleton, Hampton and Jasper counties), the Pee Dee (Darlington, Dillon, Florence, Marion, Marlboro and Williamsburg counties), the Trident (Berkeley, Charleston and Dorchester counties), the Waccamaw (Georgetown and Horry counties), and the Western (Aiken, Allendale, Bamberg, Barnwell, Calhoun, Lexington, and Orangeburg counties).”⁷⁶ An additional sixth capacity use area referred to as Santee-Lynches (Richland, Sumter, Clarendon, Lee, Kershaw, and Chesterfield counties) is currently being proposed.⁷⁷

⁷¹ *Id.* at § 49-5-30(12).

⁷² S.C. REGS. 61-113(D)(1) (2021).

⁷³ S.C. CODE § 49-5-60(A).

⁷⁴ *Id.* at § 49-5-50(A).

⁷⁵ *Id.* at § 49-5-60(A).

⁷⁶ *Groundwater Withdrawal Permitting & Capacity Use Areas*, DHEC, <https://www.scdhec.gov/environment/water-quality/groundwater-use-reporting/groundwater-management-planning/groundwater-0> (last visited Oct. 12, 2021).

⁷⁷ *South Carolina’s Water Resources*, CLEMSON COOP. EXTENSION, HOME & GARDEN INFO. CTR., <https://171dxwjpaqv2danpql1ixf2j-wpengine.netdna-ssl.com/wp-content/uploads/2020/10/figure-7-there-are-six-capacity-use-areas-in-sc.png> (last visited Oct. 12, 2021).

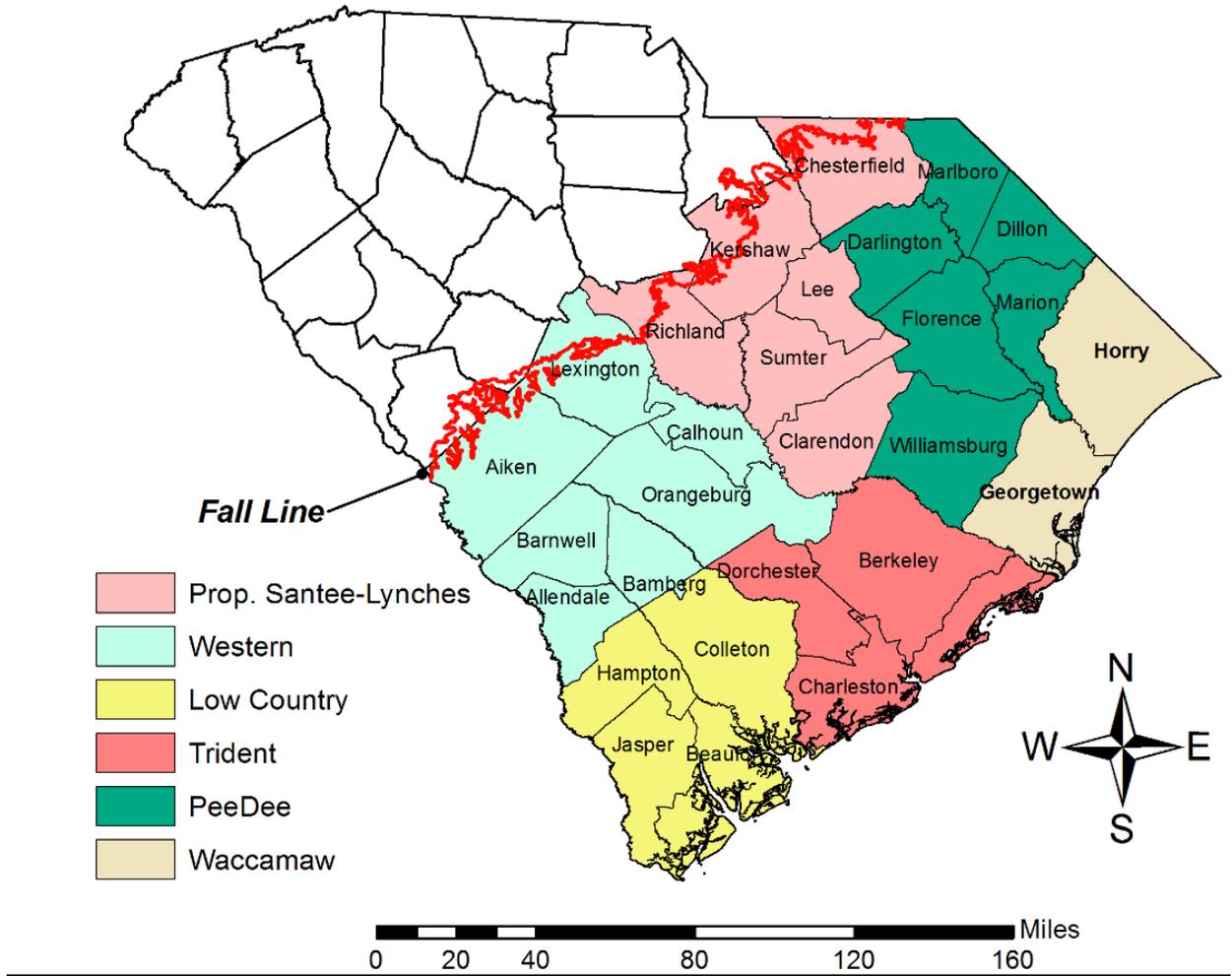


Fig. M.2 The six capacity use areas in South Carolina, including the Proposed Santee-Lynches⁷⁸

10. Transboundary Arrangements

In 1995, South Carolina and Georgia entered into an agreement to work together to mitigate the effects of saltwater intrusion in the Upper Floridan Aquifer,⁷⁹ the primary

⁷⁸ *Id.*

⁷⁹ Letter from Harold Reheis, Director, Ga. Env'tl. Prot. Div., to Lewis Shaw, Deputy Comm'r, S.C. Dep't Health & Env't. Control (June 29, 1995).

source of drinking water for the southern coastal area of South Carolina and the entire coastal area of Georgia.⁸⁰ That agreement became part of the mission of the Savannah River Basin Partnership that was established in 2005 through executive orders of Governors Perdue of Georgia⁸¹ and Sanford of South Carolina.⁸²

Pursuant to this agreement, “an \$18M scientific study, called the Coastal Sound Science Initiative (CSSI), was funded to execute an array of scientific and engineering investigations intended to generate information to guide the development of a more detailed plan for managing salt water intrusion.”⁸³ Findings from the CSSI indicated that groundwater extraction from the Savannah, Georgia area had the greatest effect on overall saltwater intrusion in the affected area of the Upper Floridan Aquifer, as compared to the extraction at the Hilton Head Island, South Carolina area.⁸⁴ The study also found that eliminating further saltwater intrusion would require more than a 90% reduction in groundwater pumping in both the Savannah and Hilton Head Island areas.⁸⁵

Georgia’s Environmental Protection Division has reduced pumping in the Savannah area over the years and also limited the issuance of new groundwater extraction permits. These actions, however, have not been enough to halt the flow of saltwater into the Upper Floridan Aquifer.⁸⁶ The Savannah River Basin partnership has been unable to reach an agreement on how much and how quickly Georgia must reduce its dependence on the Floridan, and tensions over the issue seemed to reach a peak in 2013 when South

⁸⁰ *Costal Salt Water Intrusion*, SAVANNAH RIVER BASIN P’ SHIP, <http://savannahriverbasin.org/Documents/saltwater.html> (last visited Oct. 12, 2021).

⁸¹ Georgia Exec. Order No. 06.21.05.01, (June 21, 2005) https://sonnyperdue.georgia.gov/gov/exorders/2005/jun/06_21_05_01.pdf (last visited Oct. 12, 2021).

⁸² South Carolina Exec. Order No. 2005-14, (June 21, 2005) https://dc.statelibrary.sc.gov/bitstream/handle/10827/1635/Executive_Order_2005-14.pdf?sequence=1&isAllowed=y (last visited Oct. 12, 2021).

⁸³ *Costal Salt Water Intrusion*, SAVANNAH RIVER BASIN P’ SHIP, <http://savannahriverbasin.org/Documents/saltwater.html> (last visited Oct. 12, 2021).

⁸⁴ *Coastal Sound Science Initiative Modeling of Salt Water Intrusion*, GA. ENV’T PROT. DIV., S.C. DEP’T OF ENV’T CONTROL, http://savannahriverbasin.org/Documents/PDF/PositionPaper_Coastal_Salt_Water_Model_May2010.pdf (last visited Oct. 12, 2021).

⁸⁵ *Id.*

⁸⁶ *Red Zone Water Supply Management Plan*, CHATHAM CNTY. - SAVANNAH METRO. PLAN. COMM’N (Jan. 2018), <https://www.thempc.org/docs/lit/compplan/2018/redzone.pdf> (last visited Oct. 12, 2021).

Carolina threatened to sue Georgia over the shared resource.⁸⁷

The two states worked closely with each other until about 2015 when Georgia and South Carolina personnel retired or left their state jobs.⁸⁸ Since then, there has been no cooperation between the two states to resolve the saltwater intrusion issue.⁸⁹

11. Native American Rights

It does not appear that the state grants exemptions, benefits, or concessions to Native American Tribes.

The Catawba Indian Tribe of South Carolina is a recognized Indian tribe that is located in following South Carolina counties: York, Lancaster and Chester.⁹⁰ In 1993, the General Assembly of South Carolina passed the Catawba Indian Claims Settlement Act.⁹¹ This Act requires the Catawba Indian Tribe to act in compliance with “[a]ll state and local environmental laws and regulations”, therefore, no specific exemptions are granted to the Catawba tribe with regards to groundwater.⁹²

⁸⁷ Brian Heffernan, *SC threatens suit if water deal with Ga. isn't reached*, THE BEAUFORT GAZETTE, Jan. 18, 2013, <https://www.islandpacket.com/news/local/community/beaufort-news/article33495849.html> (last visited Oct. 12, 2021).

⁸⁸ E-mail from Jim Kennedy, Ph.D., P.G., State Geologist, Georgia Environmental Protection Division, to Wesley Remschel. (Feb. 10, 2020, 1:23pm CST) (on file with author).

⁸⁹ *Id.*

⁹⁰ S.C. CODE ANN. §§ 27-16-30(1)-(2) (2021).

⁹¹ *Id.* at 27-16-20.

⁹² *Id.* at 27-16-120(B).

N. Virginia

The Commonwealth of Virginia has two primary statutes for the regulation of groundwater use and quality. The Ground Water Management Act of 1992 grants the State Water Control Board power to regulate groundwater withdrawals in designated groundwater management areas.¹ The State Water Control Law authorizes the establishment of quality standards for groundwater by the State Water Control Board, which applies to all groundwater at and below “the uppermost seasonal limits of the water table” unless otherwise specified.² However, neither the Virginia Legislature nor the Supreme Court of Virginia has spoken on the issue of conflicting rights to percolating groundwater, hence, the characterization of law for percolating groundwater in Virginia remains generally undecided.

1. Definitions, Basis of Rights, Standards, and Interactions

In Virginia, groundwater is defined by statute as “any water, except capillary moisture, beneath the land surface in the zone of saturation or beneath the bed of any stream, lake, reservoir or other body of surface water wholly or partially within the boundaries of this Commonwealth, whatever the subsurface geologic structure in which such water stands, flows, percolates or otherwise occurs.”³

One must first ascertain the type of water being used in order to determine the applicable type of law. If the water is determined to flow in an underground channel, then the laws of surface water apply.⁴ However, if the water is determined to be percolating groundwater, then the laws of groundwater apply.⁵ Virginia adheres to a presumption that the water is percolating groundwater and not an underground channel.⁶ Because waters flowing in an underground channel are subject to the laws of surface water, an underground stream with a well-defined channel is treated as if it is surface water.⁷ The

¹ Va. Code Ann. §§ 62.1-254 to 62.1-270 (West, Westlaw through 2020 Reg. Sess.) (replacing the Groundwater Act of 1973).

² 9 Va. Admin. Code 25-280-20 (West, Westlaw through 2020 Reg. Sess.).

³ Va. Code Ann. § 62.1-255 (West, Westlaw through 2020 Reg. Sess.).

⁴ *Clinchfield Coal Corp. v. Compton*, 139 S.E. 308, 308 (Va. 1927).

⁵ *C & W Coal Corp. v. Salyer*, 104 S.E.2d 50, 53 (Va. 1958).

⁶ *Id.*

⁷ *Id.* at 308.

underground stream must show its existence and flow in some way from the surface of the earth, and “the appearance must be such only as would be reasonably discoverable by men of ordinary powers and attainments.”⁸

The existence of an underground stream may be indicated by: (1) surface depressions; (2) vegetation found nowhere except over watercourses; (3) or the appearance of an underground stream from the surface.⁹

Upon determination that the water is in fact percolating groundwater, the user will be subject to the applicable groundwater laws.¹⁰ The Supreme Court of Virginia has defined percolating waters as those which

ooze, seep, or filter through the soil beneath the surface, without a defined channel, or in a course that is unknown and not discoverable from surface indications without excavation for that purpose. The fact that they may, in their underground course, at places come together so as to form veins or rivulets does not destroy their character as percolating waters.¹¹

Given that Virginia has no statutes addressing conflicting groundwater rights, Virginia adheres to the use of common law “insofar as it is not repugnant to the Principles of the Bill of Rights and the Constitution of this Commonwealth.”¹² Hence, the characterization of law governing percolating waters in Virginia remains generally undecided. According to the English rule, “the owner of the land may make any use he pleases of underlying percolating waters, and may even cut them off maliciously without liability to his neighbor.”¹³ However the American rule permits percolating water to be used for all purposes that are connected to the “use, enjoyment and development of the land itself,” but forbids cutting off or unnecessarily wasting the percolating water, or withdrawing the percolating water to sell or distribute for a purpose “not connected with the beneficial enjoyment or ownership of the land.”¹⁴

⁸ *Id.* at 312.

⁹ *Id.* at 308.

¹⁰ *C & W Coal Corp. v. Salyer*, 104 S.E.2d 50 at 53.

¹¹ *Clinchfield Coal Corp. v. Compton*, 139 S.E. at 311.

¹² Va. Code Ann. § 1-200 (West).

¹³ *Clinchfield Coal Corp. v. Compton*, 139 S.E. at 313.

¹⁴ *Id.*

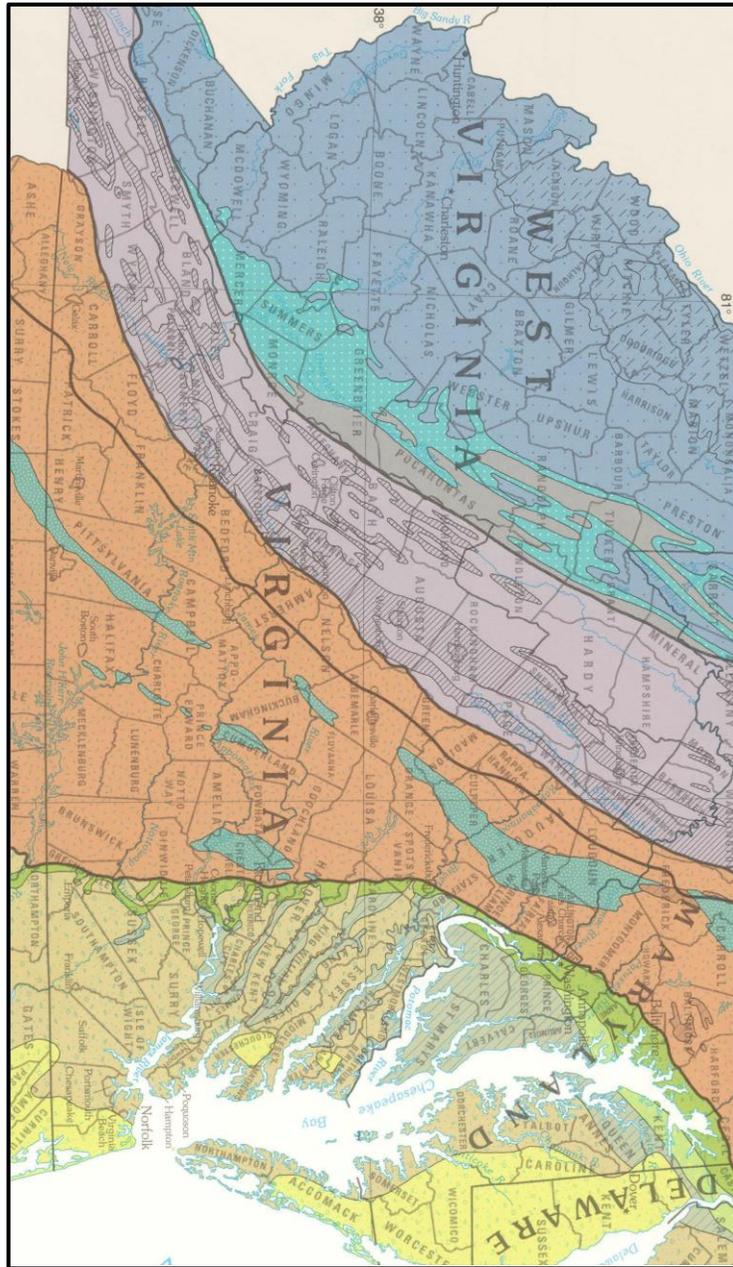


Figure N.1. Virginia’s aquifers grouped according to physiographic province.¹⁵

¹⁵ Henry Trapp Jr. and Marilee A. Horn, Ground Water Atlas of the United States: Segment 11, Delaware, Maryland, New Jersey, North Carolina, Pennsylvania, Virginia, West Virginia, Hydrologic Atlas 730-L, U.S. Geological Survey (1997), <https://doi.org/10.3133/ha730L> (last visited 1/3/2022).

In 1927, the Supreme Court of Appeals for Virginia held that when it is called upon to decide between the American (reasonable use) rule and the English (common law) rule, it will make the decision *de novo*.¹⁶ The court has not addressed the question prior to 1927. Consequently, circuit courts are left without guidance as to which rule should be applied. In 1999, a Circuit Court Judge stated they would require “a substantial showing that the English rule is consistent with the peculiar needs and requirements of Virginia.”¹⁷ In anticipation, secondary sources have spanned dozens of pages attempting to predict a potential decision by the Virginia Supreme Court of Appeals to this pivotal question.

When considering the English rule, the Supreme Court of Appeals for Virginia recognized that the common law considers the “fee simple owner of the land as the owner of everything above and below the surface from sky to the center of the earth.”¹⁸ Hence, the owner of the land may use percolating waters as they please and even “cut them off maliciously without liability to [their] neighbor.”¹⁹ The court further explained that the standard for applying the American rule for groundwater rights is reasonable use, with the exception that the holder of a water right must not diminish the current by “more than is reasonable, having regard for the like right to enjoy the common property of other riparian owners.”²⁰ Under the riparian doctrine, “the use of one [owner] must, therefore, be consistent with the rights of other [owners].”²¹ Additionally, water flowing in an underground channel is subject to the riparian doctrine that governs surface water.²² Conversely, water that is classified as percolating groundwater remains subject to the laws governing groundwater.²³ But as of 2019, Virginia has not decided whether the American rule or the English rule applies to percolating groundwaters within the state.

¹⁶ *Id.*

¹⁷ *Costello v. Frederick Cty. Sanitization Auth.*, No. 97-59, 1999 WL 231720, at *8 (Va. Cir. Apr. 9, 1999).

¹⁸ *Clinchfield Coal Corp. v. Compton*, 139 S.E. at 308.

¹⁹ *Id.*

²⁰ *Va. Hot Springs Co. v. Hoover*, 130 S.E. 408, 410 (Va. 1925); see also *Town of Purcellville v. Potts*, 19 S.E.2d 700, 702–03 (Va. 1942); *Mattaponi Indian Tribe v. Virginia*, No. 3001–RW/RC, 2007 WL 6002103, at *5 (Va. Cir. 2007).

²¹ *Arminius Chem. Co. v. Landrum*, 73 S.E. 459, 464 (Va. 1912).

²² *Clinchfield Coal Corp. v. Compton*, 139 S.E. at 311. See also *Miller v. Black Rock Springs Co.*, 40 S.E. 27, 30 (Va. 1901).

²³ *C & W Coal Corp. v. Salyer*, 104 S.E.2d at 53.

2. Sources of Law

The Groundwater Management Act of 1992, codified under Va. Code Ann. §§ 62.1-254 – 268 primarily governs groundwater regulation in Virginia. There are several precedential cases that are important for understanding Virginia groundwater law, including: *Clinchfield Coal Corp. v. Compton*, 139 S.E. 308 (Va.1927); *C & W Coal Corp. v. Salyer*, 104 S.E.2d 50 (Va. 1958); and *Va. Hot Springs Co. v. Hoover*, 130 S.E. 408 (Va. 1925).

3. Scope of Right

a. Groundwater Ownership

Under the Groundwater Act of 1973, the Virginia General Assembly recognized:

The right to reasonable control of all ground water resources within this Commonwealth belongs to the public and that in order to conserve, protect and beneficially utilize the ground water of this Commonwealth and to ensure the public welfare, safety and health, provision for management and control of ground water resources is essential.²⁴

b. Scope of Use

i. Permitted and Preferred Uses

The Board issues groundwater withdrawal permits in accordance with regulations adopted by the Board.²⁵ Permits are allowed in new GMAs for agricultural purposes, livestock watering purposes, or historic usage. Similarly, permits are allowed in existing groundwater management areas for agricultural purposes, livestock watering, and historical purposes.²⁶ Political subdivisions holding permits for groundwater rights filed before December 31, 1992, had the opportunity to file an application for a

²⁴ Va. Code Ann. § 62.1-254 (West, Westlaw through 2017 Reg. Sess.).

²⁵ Va. Code Ann. § 62.1-256 (West, Westlaw through 2017 Reg. Sess.).

²⁶ Va. Code Ann. § 62.1-260 (West, Westlaw current through 2017 Reg. Sess.).

drought relief well permit prior to December 31, 1992.²⁷ In the event there are conflicting proposed uses of groundwater, or demand for groundwater exceeds the available water quantity, preference is given to uses relating to human consumption.²⁸

Permits are not necessary to withdraw groundwater outside of groundwater management areas (GMAs). For a person to use groundwater in a designated GMA, they must obtain a permit from the Board. However, there are certain exceptions where a permit is deemed unnecessary, including:

- (1) withdrawals of less than 300,000 gallons a month;
- (2) temporary construction dewatering;
- (3) temporary withdrawals associated with a state-approved ground water remediation;
- (4) the withdrawal of ground water for use by a ground water heat pump where the discharge is reinjected into the aquifer from which it is withdrawn;
- (5) the withdrawal from a pond recharged by ground water without mechanical assistance;
- (6) the withdrawal of water for geophysical investigations, including pump tests;
- (7) the withdrawal of ground water coincident with exploration for and extraction of coal or activities associated with coal mining regulated by the Department of Mines, Minerals and Energy;
- (8) the withdrawal of ground water coincident with the exploration for or production of oil, gas or other minerals other than coal, unless such withdrawal adversely impacts aquifer quantity or quality or other ground water users within a ground water management area;
- (9) the withdrawal of ground water in any area not declared a ground water management area; or
- (10) the withdrawal of ground water pursuant to a special exception issued by the Board.²⁹

If a GMA is declared after July 1, 1992, persons withdrawing groundwater within the newly created management area must file an application within 6 months to obtain a permit for groundwater withdrawals from the Board.³⁰ The same procedure is used for people withdrawing groundwater for agricultural or livestock watering within the newly created management area.³¹ Persons may request to withdraw more groundwater than

²⁷ Va. Code Ann. § 62.1-265 (West, Westlaw current through 2017 Reg. Sess.).

²⁸ Va. Code Ann. § 62.1-263 (West, Westlaw current through 2017 Reg. Sess.).

²⁹ Va. Code Ann. § 62.1-259 (West, Westlaw through 2017 Reg. Sess.).

³⁰ Va. Code Ann. § 62.1-261(A) (West, Westlaw current through 2017 Reg. Sess.).

³¹ *Id.* at § 62.1-261(B).

they might typically be permitted in accordance with their historic use.³² The Board has the discretion to grant more groundwater withdrawal after considering the following factors:

the proposed beneficial use, the proposed use of alternate or innovative approaches such as aquifer storage and recovery systems and surface and ground water conjunctive uses, climatic cycles, unique requirements for nuclear power stations, economic cycles, population projections, the status of land use and other necessary approvals, and the adoption and implementation of the applicant's water conservation and management plan.³³

Preference shall be given to human consumption if there are conflicting proposed uses for groundwater or if there is not enough water available for all who desire to use it.³⁴ For permit applications in the Eastern Virginia or Eastern Shore Groundwater Management Area, the Board shall use “the average of the actual historical ground water usage from the inception of the ground water withdrawals of a political subdivision or authority operating a ground water and surface water conjunctive use system and shall not use the total permit capacity of such system in determining such availability.”³⁵

A person holding a certificate of groundwater rights prior to July 1, 1992, regardless of the location of the permit, had to apply for a groundwater permit under the new program no later than December 31, 1995.³⁶ If the person failed to file an application prior to the expiration of the application period (this date varied based on location, the absolute latest being December 31, 1995), then the Board assumes that the person has abandoned their claim to groundwater withdrawal, regardless of their previous groundwater withdrawal history.

ii. Location of Use

The Virginia Legislature has recognized the division of the state into the four following

³² *Id.* at § 62.1-261(D).

³³ Va. Code Ann. § 62.1-263 (West, Westlaw current through 2017 Reg. Sess.).

³⁴ *Id.*

³⁵ *Id.*

³⁶ Va. Code Ann. § 62.1-260 (West, Westlaw current through 2017 Reg. Sess.).

physiographic provinces: The Coastal Plain, Piedmont and Blue Ridge, Valley and Ridge, and Cumberland Plateau.³⁷ However, in terms of proper use, one is subject to applicable common law rules for use of the water if it is determined that the water is in fact percolating groundwater.³⁸ Conversely, if the water flows in an underground channel then one using that water is subject to the laws of surface water.³⁹

c. Loss of Water Rights

Pursuant to the Groundwater Management Act of 1992, the groundwater right can be lost through abandonment.⁴⁰ If a water right holder fails to renew a permit after the applicable period stated in the permit, then the water right holder is considered to have abandoned their water right.⁴¹

If a new groundwater management district is created, and a person has historically withdrawing water for livestock watering, historic, or agricultural usage, then the person must apply for a permit from the Board.⁴² If the person fails to apply for a permit within 6 months following the declaration of the groundwater management area, then they create a presumption that any claim to withdraw groundwater based on history of usage has been abandoned.⁴³

Additionally, one can lose a water right through issuance of a special order from the Board. The Board must hold a hearing and issue the special order within 30-days' notice.⁴⁴ If the Board finds the person has grossly affected or presented a substantial danger to (1) a public water supply; (2) the public welfare, safety or health; or (3) commercial, industrial, agricultural, or other beneficial uses, it may issue an emergency special order directing the person to stop withdrawal immediately and schedule a hearing.⁴⁵

³⁷ 9 Va. Admin. Code § 25-280-20 (West, Westlaw current through 2020 Reg. Sess.).

³⁸ *C & W Coal Corp. v. Salyer*, 104 S.E.2d at 53.

³⁹ *Clinchfield Coal Corp. v. Compton*, 139 S.E. at 308.

⁴⁰ Va. Code Ann. § 62.1-260(H) (West, Westlaw current through 2017 Reg. Sess.).

⁴¹ *Id.*

⁴² Va. Code Ann. § 62.1-261(E) (West, Westlaw current through 2017 Reg. Sess.).

⁴³ *Id.*

⁴⁴ Va. Code Ann. § 62.1-268(B) (West, Westlaw through 2017 Reg. Sess.).

⁴⁵ *Id.*

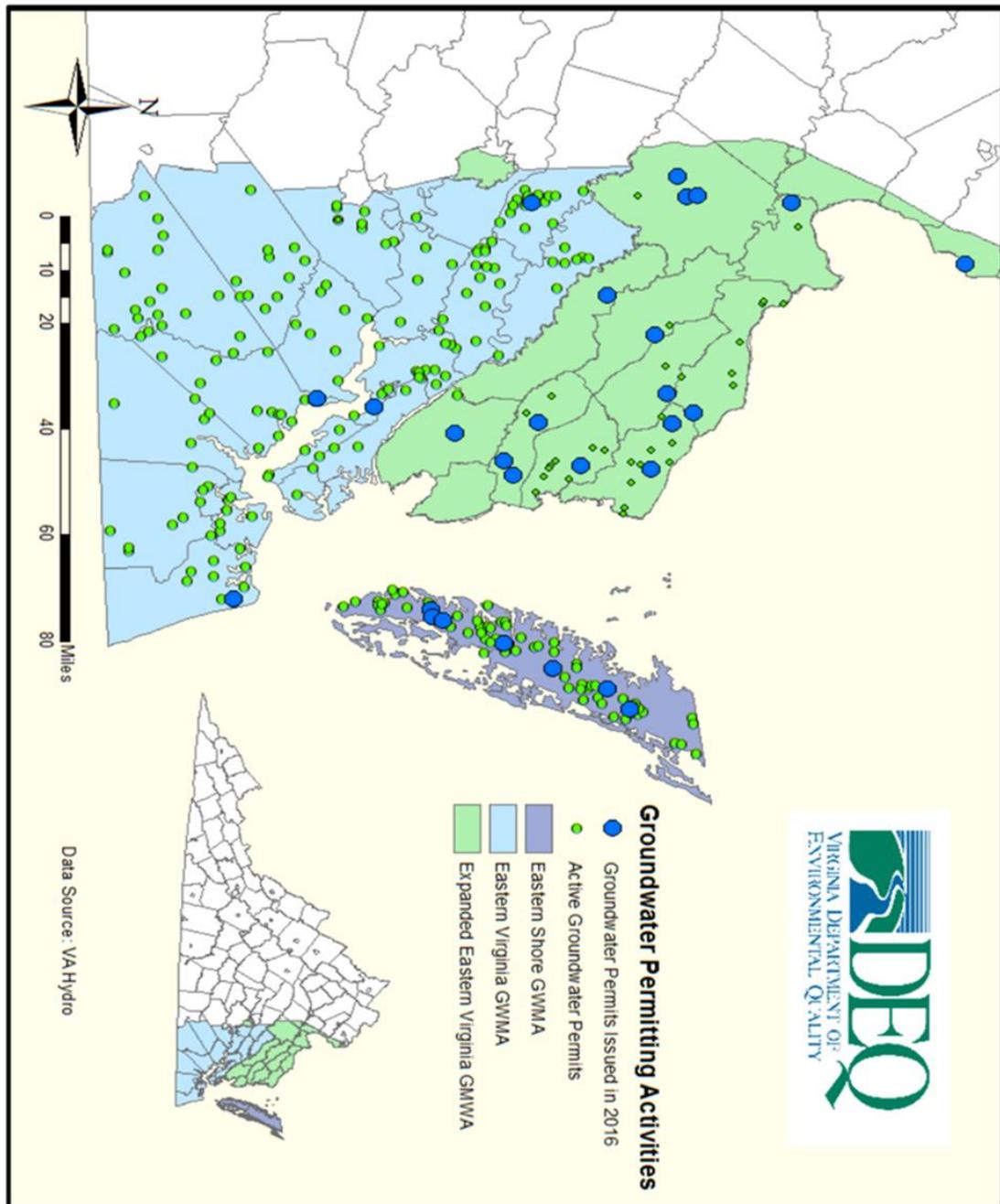


Fig. N.2 Virginia Groundwater Permitting Activities in Virginia’s Two Groundwater Management Areas⁴⁶

⁴⁶ Virginia DEQ, *Status of Virginia Water Resources: A Report of Virginia’s Water Resources Management Activities, October 2020*, <https://www.deq.virginia.gov/home/showpublisheddocument/2119/637432838113030000>. (Last visited

4. Well drilling

The Virginia Department of Environmental Quality (Va. DEQ) is responsible for well-drilling oversight. Well drillers are also required to be licensed and certified by the Virginia Department of Professional and Occupational Regulation.⁴⁷ For private parties who construct wells within Groundwater Management Areas, DEQ maintains an online well completion form for parties to report within 30 days of construction.⁴⁸ Once completed, Virginia DEQ maintains the Uniform Water Well Completion report on their website.⁴⁹

5. Hydraulic Connection and Regulation

Virginia regulates ground and surface water interaction by defining what is groundwater and what is surface water, as discussed in Section (1) of this survey. Further, the Supreme Court of Appeals of Virginia has held that surface owners are not permitted to divert underground streams.⁵⁰

Courts do not consider priority among users of hydraulically linked surface and ground waters to be a factor under Virginia common law. Section (1) of this survey explains the difference between the classification of underground streams and percolating waters. If the claimant can prove the surface waters are also underground, then the law of surface water applies to the underground channel:

The waters may flow in a well-defined channel and be such as if on the surface would answer the description of a watercourse, but in order to be subject to the law of surface water, the existence, location and flow of the water must be known to the owner of the land through which it flows, or it must be discoverable from the surface of the earth. This knowledge of the existence of the stream must arise by reasonable inference, from existing

January 3, 2022).

⁴⁷ Va. Code Ann. § 54.1-1129 (West, Westlaw through 2017 Reg. Sess.).

⁴⁸ Va. Code Ann. § 62.1-258 (West, Westlaw through 2017 Reg. Sess.).

⁴⁹ Virginia Department of Environmental Quality, Groundwater Characterization – Reports and Publications, <http://www.deq.virginia.gov/Programs/Water/WaterSupplyWaterQuantity/GroundwaterCharacterization/ReportsPublications.aspx> (last visited Feb. 21, 2018).

⁵⁰ *Clinchfield Coal Corp. v. Compton*, 139 S.E. at 311.

and observed facts in the condition of the surface of the ground and cannot be derived from a discovery in part by excavation exposing the channel.⁵¹

The liability for interference in Virginia is currently unknown. According to a law review article, there are no Virginia cases in which a litigant has sufficiently proven that a surface water channel is also an underground water channel.⁵² Hence, the court's discussion within principal cases does not address such interference but applies the common law of rights in percolating groundwater.⁵³

6. Aquifer Recharge and Underground Storage

Virginia does not regulate, encourage, or facilitate aquifer recharge or underground storage programs.

7. Water Management Plan

The Virginia General Assembly charged the Eastern Virginia Groundwater Management Advisory Committee with assisting the State Water Commission and the VA Department of Environmental Quality in developing, revising, and implementing a groundwater plan for the Eastern Virginia Groundwater Management area.⁵⁴ The report and related recommendations were due to the Director of DEQ and State Water Commission no later than August 1, 2017. This legislation expired in January 2018, and the final plan is currently pending.

8. Regulatory Authorities

VA Department of Environmental Protection: <http://www.deq.virginia.gov>

VA State Water Commission: <http://dls.virginia.gov/commissions/swc.htm>

State Water Control Board:

<http://www.deq.virginia.gov/LawsRegulations/CitizenBoards.aspx>

⁵¹ *Id.*

⁵² George A. Somerville, *Common Law Groundwater Rights under Virginia Law*, 34 Va. Envtl. L.J. 204 (2016).

⁵³ *Id.*

⁵⁴ Virginia Department of Environmental Quality, Eastern Virginia Groundwater Management Advisory Committee, <http://www.deq.virginia.gov/Programs/Water/WaterSupplyWaterQuantity/EasternVirginiaGroundwaterManagementAdvisoryCommittee.aspx>. (Last visited July 3, 2020).

The State Water Control Board (“Board”) is charged with issuing groundwater withdrawal permits.⁵⁵ Virginia DEQ is responsible for certifying and licensing wells and tracking the construction of wells in groundwater management areas.⁵⁶ The Virginia State Water Commission was created to examine allocation problems and various aspects of water supply, and to coordinate with other state entities responsible for water supply and allocation issues to issue recommendations to Virginia’s legislature.⁵⁷

9. Special Districts

The Board may declare a groundwater management area study proceeding whenever:

(1) it has reason to believe that groundwater levels in the area are declining or expected to decline excessively; (2) when two or more groundwater users’ wells are interfering with one another; (3) when the available water supply has been or will become overdrawn; (4) or when the groundwater in the area has been or will become polluted.⁵⁸

The Commonwealth has two groundwater management areas in the state. The Ground Water Management Act of 1992 created the Eastern Virginia Groundwater Management Advisory Committee “to assist the State Water Commission and the Department of Environmental Quality in developing, revising, and implementing a management strategy for ground water in the Eastern Virginia Groundwater Management Area”.⁵⁹ (This provision expired on January 1, 2018.) Further, any well located within a critical groundwater management area must be registered by the certified water well systems provider of the Board within 30 days once construction is completed.⁶⁰ It is unlawful for any person to withdraw or attempt to withdraw groundwater that is not in accordance with their ground water permit.⁶¹

⁵⁵ Va. Code Ann. § 62.1-256 (West, Westlaw through 2017 Reg. Sess.).

⁵⁶ Virginia Department of Environmental Quality, *Water Well Registration Overview*, <https://www.deq.virginia.gov/Programs/Water/WaterSupplyWaterQuantity/WaterWellRegistration.aspx>. (Last visited July 3, 2020).

⁵⁷ Commonwealth of Virginia Division of Legislative Services, State Water Commission, <http://dls.virginia.gov/commissions/swc.htm> (Last visited July 3, 2020).

⁵⁸ Va. Code Ann. § 62.1-257 (Lexis Advance through 2017 Reg. Sess.).

⁵⁹ Va. Code Ann. § 62.1-256.1 (Lexis Advance through 2017 Reg. Sess.).

⁶⁰ Va. Code Ann. § 62.1-258 (Lexis Advance through 2017 Reg. Sess.).

⁶¹ *Id.*

10. Transboundary Arrangements

It does not appear that Virginia is a party to any transboundary arrangements or conflicts.

11. Native American Rights

It does not appear that Virginia grants exemptions, benefits, or concessions to Native American Tribes.

O. West Virginia

Groundwater use and regulation in West Virginia is primarily governed by the Groundwater Protection Act. For issues of non-appropriable groundwater, the State of West Virginia adheres to the “American Rule” of Reasonable Use. According to the rule, a landowner in West Virginia has “the right to use the water, with the limitations of reasonable and beneficial use of the water,”¹

1. Definitions, Basis of Rights, Standards, and Interactions

Case law defines groundwater as “percolating water.”² “Percolating water” is waters “which do not exist in a known and well-defined channel.”³ According to Article 12 of the Groundwater Protection Act, “Groundwater” is “the water occurring in the zone of saturation beneath the seasonal high water table, or any perched water zones.”⁴

Under West Virginia statute, water means “any and all water on or beneath the surface of the ground, whether percolating, standing, diffused or flowing, wholly or partially within this state, or bordering th[e] state and within its jurisdiction.”⁵ It includes “natural or artificial lakes, rivers, streams, creeks, branches, brooks, ponds, impounding reservoirs, springs, wells, watercourses and wetlands: *Provided*, that farm ponds, industrial settling basins and ponds, and waste treatment facilities are excluded from the waters of the state.”⁶

A “water table” is “the surface of unconfined groundwater where the water pressure is equal to atmospheric pressure.”⁷ A “well” is “any borehole or other excavation or opening in the ground, deeper than it is wide, constructed for the purpose of obtaining or monitoring the surrounding media, including groundwater.

¹ *Pence v. Carney*, 52 S.E. 702, 705 (W. Va. 1905).

² *Id.* at 704.

³ *Id.*

⁴ W. Va. Code Ann. § 22-12-3(f) (West, Westlaw through legis. of 2020 Reg. Sess.); W. Va. Code R. § 47-58-2 (West, Westlaw through reg. dated April 17, 2020); W. Va. Code R. § 47-60-3.28 (West, Westlaw through reg. dated April 17, 2020).

⁵ W. Va. Code Ann. § 22-12-3(k) (West, Westlaw through legis. of 2020 Reg. Sess.).

⁶ W. Va. Code Ann. § 22-12-3(k) (West, Westlaw through legis. of 2020 Reg. Sess.); W. Va. Code Ann. § 22-26-2 (West, Westlaw through legis. of 2020 Reg. Sess.).

⁷ W. Va. Code R. § 47-60-3.61 (West, Westlaw through reg. dated April 17, 2020).

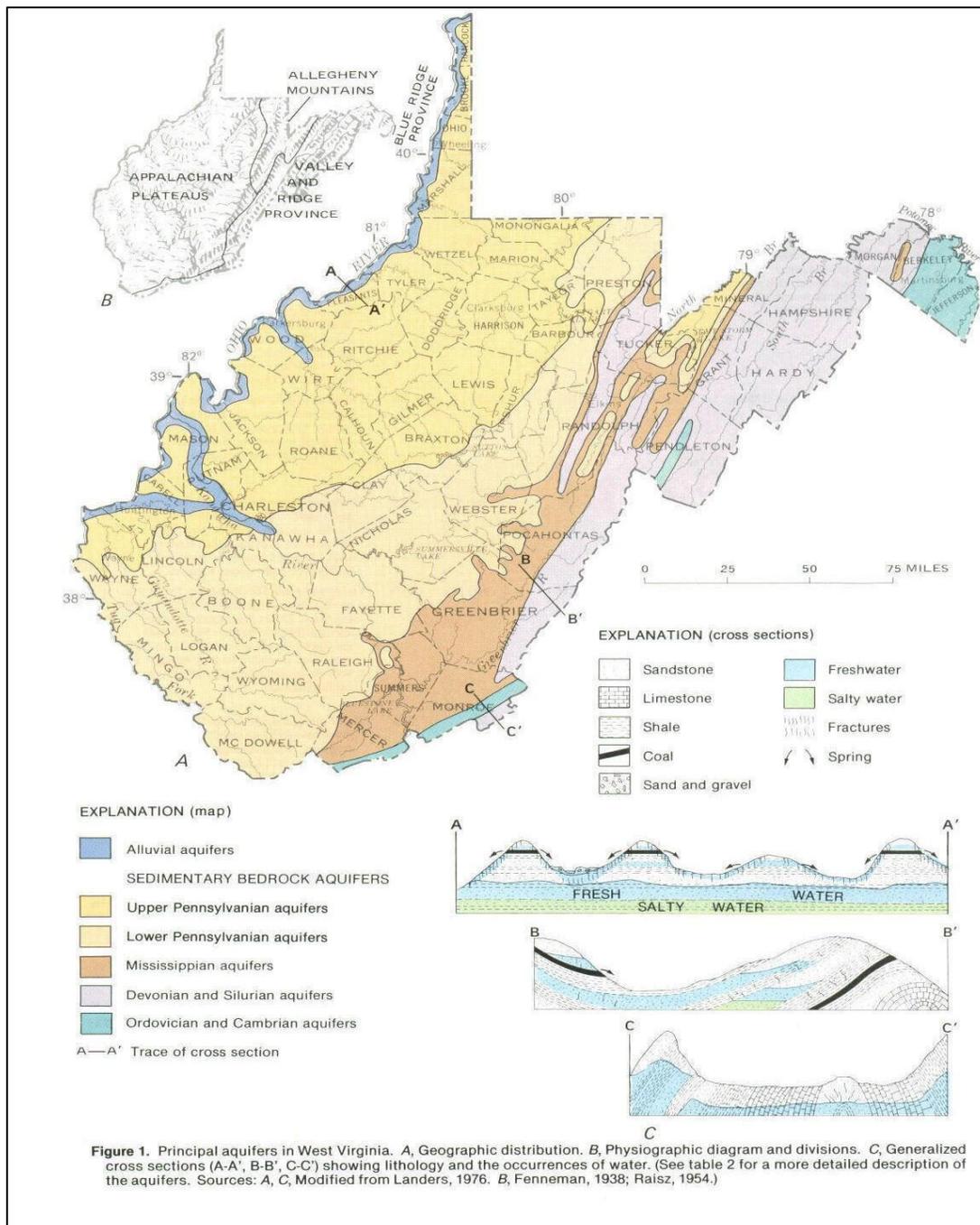


Fig O.1 Principal Aquifers in West Virginia⁸

⁸ National Groundwater Association, *Principal Aquifers in West Virginia*, <https://www.ngwa.org/images/default-source/default-album/state/WestVirginia.jpg> (Last visited Aug. 9,

The definition of well (as provided above) excludes “water wells whose sole purpose is to provide: a supply of water, for exploration of water, for dewatering, or for functioning as heat pump wells.”⁹ “Groundwater Regulatory Agency” is “the Department of Environmental Protection, the Bureau for Public Health, the Department of Agriculture, or any other political subdivision that has received approval from the Secretary to regulate facilities or activities for groundwater protection.”¹⁰ “Appropriate groundwater regulatory agency” is “the groundwater regulatory agency that has primary regulatory oversight of a particular facility or activity. Where primary regulatory oversight is unassigned or shared, the Secretary [of the Department of Environmental Protection] shall determine which groundwater regulatory agency is to be the appropriate groundwater regulatory agency.”¹¹

The State of West Virginia recognizes the “American Rule” of Reasonable Use for determining rights in groundwater.¹² Accordingly, groundwater rights are given to “the owner of land” who “produces subterranean water within the boundaries of [their] land,”¹³ and, per the American Rule, the landowner/groundwater rights holder must limit production of percolating water to a “reasonable and beneficial use”.¹⁴ Furthermore, West Virginia distinguishes between percolating waters and waters that exist in defined channels.¹⁵ If subsurface waters are found to exist in a well-defined channel, the law applicable to rivers and lakes will apply.¹⁶ Hence, it is upon the owner to prove the existence of a well-defined channel if they want a court to apply surface water law.¹⁷ Subsurface waters that do not exist in defined channels are deemed percolating waters.¹⁸ Hence, the groundwater right holder may divert percolating waters for their use, so long as it is reasonable and beneficial to the land. The groundwater

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⁹ W. Va. Code R. § 47-60-3.63 (West, Westlaw through reg. dated April 17, 2020).

¹⁰ W. Va. Code R. § 47-60-3.30 (West, Westlaw through reg. dated April 17, 2020).

¹¹ *Id.* § 47-60-3.5.

¹² *Pence*, 52 S.E. 702 at 704.; *See also Drummond v. White Oak Fuel Co.*, 140 S.E. 57, 59 (W.Va. 1927).

¹³ *Pence*, 52 S.E. at 702.

¹⁴ *Id.*

¹⁵ *Drummond v. White Oak Fuel Co.*, 140 S.E. 57, 59 (W.Va. 1927).

¹⁶ *Pence*, 52 S.E. at 704.

¹⁷ *Id.*

¹⁸ *Id.*

rights holder may use the water for purposes such as “agricultural, mining, domestic use, or improvements, either public or private.”¹⁹ However, the landowner cannot divert groundwater “for the sole purpose of wasting” it.²⁰

2. Sources of Law

West Virginia groundwater law is comprised of case law, statutes, and regulations. In *Warren v. Syme*, 7 W.Va. 474, 498 (1874), the Supreme Court of Appeals of West Virginia established that a landowner may assign the right to extract and use groundwater from underneath their property to another. In this case, the court found that the parties may execute a decree allowing an individual other than the landowner to sink a well on the landowner’s lot and to use that water in perpetuity unless indicated otherwise in the agreement. Groundwater law was then expanded through *Pence v. Carney*, 52 S.E. 702 (W. Va. 1905), which defined West Virginia’s groundwater allocation law as the American Rule. Subsequently, *Drummond v. White Oak Fuel Co.*, 140 S.E. 57 (W. Va. 1927) and *Cookman Realty Group, Inc. v. Taylor*, 566 S.E.2d 294 (2002) further clarified the standard of use under the American Rule. Following, the *Warren* case, West Virginia enacted several statutes and regulations further defining and clarifying the scope of use and groundwater rights. Below are several key statutes and regulations.

Statutes:

W. Va. Code Ann. § 22-12-3 (West).

W. Va. Code Ann. § 22-26-2 (West).

W. Va. Code Ann. §§ 22-12-8 – 10 (West).

W. Va. Code Ann. § 22-26-3 (West).

W. Va. Code Ann. § 22-15-5 (West).

W. Va. Code Ann § 22-12-10 (West).

State Regulations:

W. Va. Code St. R. § 47-58 (West).

W. Va. Code St. R. § 47-60 (West).

3. Scope of Right

a. Groundwater Ownership

¹⁹ *Pence*, 52 S.E. at 705.

²⁰ *Id.*

West Virginia’s Groundwater Protection Act provides that waters within the state are “claimed as valuable public resources held by the state for the use and benefit of its citizens.”²¹ Additionally, the State of West Virginia is charged with managing and protecting West Virginia’s waters.²² Hence, the Act was put in place to maintain and protect the state’s groundwater resources and the present and future beneficial uses of groundwater.²³ Per the American Rule, landowners have the right to use the water, with the limitations of reasonable and beneficial use of the water.²⁴ Landowners in West Virginia also maintain the right to assign water access to other parties.²⁵

b. Scope of Use

i. Permitted and Preferred Uses

The use of groundwater may be for “any purposes for which owner of the land upon which underground, percolating waters are found might legitimately use and enjoy his land.”²⁶ However, standards for groundwater use and protection established by designated authorities do not apply to coal extraction and earth disturbing activities directly involved in coal extraction.²⁷ In order for landowners to recover for percolating waters harmed by subsurface mining, the landowner must show that there is subsidence in order to recover.²⁸

ii. Location of use

West Virginia does not regulate or restrict the transport of groundwater away from its source.

²¹ W. Va. Code Ann. § 22-26-3 (West, Westlaw through legis. of 2020 Reg. Sess.).

²² *Id.*

²³ *Id.* § 22-12-2.

²⁴ *Pence*, 52 S.E. at 705.

²⁵ *Warren v. Syme*, 7 W.Va. 474, 496 (1874).

²⁶ *Pence*, 52 S.E. at 706.

²⁷ W. Va. Code Ann. § 22-15-5(h) (West, Westlaw through legis. of 2020 Reg. Sess.).

²⁸ *Drummond*, 140 S.E. at 60.

c. Loss of Water Rights

A water rights holder may have their access to groundwater terminated or suspended for violating the Groundwater Protection Act and related orders and rules.²⁹ The right can be statutorily lost, if, upon inspection, investigation or through observation or by other means, an official discovers or learns of violations of the Groundwater Protection Act, or violations of any permit, order or rules issued in accordance with the Groundwater Protection Act.³⁰ The violator may have his/her permits suspended, revoked, or modified, or be ordered to cease and desist the use or contamination of groundwater.³¹

Any official, given such power to pursue orders against violators, “may seek an injunction, or may institute a civil action against any person in violation of any provision of the Groundwater Protection Act or permits, agency approvals, rules or orders issued” pursuant thereto.³² The official does not need to “post bond nor [to] allege or prove at any point in the proceeding that irreparable damage will occur if the injunction is not issued or that any other remedy at law is inadequate.”³³ Administrative remedies, including but not limited to the suspension, revocation or modification of permits, and orders to cease and desist all groundwater related activity, outside of injunctive relief or civil penalties are available pursuant to the Act and need not be exhausted for injunctive relief or civil penalties to be sought.³⁴

4. Well Drilling

The West Virginia Department of Health regulates well drilling through a permitting process. Specifically, the Division of Water and Waste Management’s Groundwater/UIC Program coordinates groundwater protection efforts under the authority of the 1991 Groundwater Protection Act.³⁵ The Division of Water and Waste

²⁹ W. Va. Code Ann § 22-12-10(f) (West, Westlaw through legis. of 2020 Reg. Sess.); *See also Cookman Realty Group, Inc. v. Taylor*, 566 S.E.2d 294, n.2 (W. Va. 2002).

³⁰ W. Va. Code Ann. § 22-12-10 (e)-(f) (West, Westlaw through legis. of 2020 Reg. Sess.).

³¹ *Id.*

³² *Id.* § 22-12-10 (e).

³³ *Id.* § 22-12-10 (f).

³⁴ *Id.*

³⁵ West Virginia Department of Environmental Protection (2018), *Groundwater/UIC Program*, <https://dep.wv.gov/WWE/Programs/gw/Pages/gwhome.aspx> (last visited Aug. 2, 2020).

Management has a specific set of rules governing wells, their designs and standards.³⁶

If a person drills a private-owned drinking water well, the person must obtain a permit from their county health department.³⁷ There is no requirement in the West Virginia Code for the well driller to report the latitude, longitude, and depth to well surface.³⁸ The permit requires the driller to include the following information: (1) the name of the landowner; (2) the county where the well is located; (3) the driller's log; (4) casing and grouting information; (5) the well driller's name; (6) the well driller's registration number; and (7) the amount of water the well produces.³⁹

The West Virginia Department of Health and Human Resources oversees the permitting process for any public drinking water supply wells.⁴⁰ The West Virginia Division of Water and Waste Management regulates agriculture drainage wells, improved sinkholes, industrial disposal wells, stormwater wells, and septic systems serving twenty or more people.⁴¹

5. Hydraulic Connection and Regulation

State law regulates groundwater and surface water interaction more in the context of water quality than water quantity. The West Virginia DEP, Division of Water and Waste Management has promulgated the Groundwater Protection Rule, which requires any industry or operation that produces wastes, sewage, crude oil, petroleum products, natural gas, salt water or any chemical mixture that may flow *onto* or under the land surface to implement a Ground Water Protection Plan.⁴²

³⁶ W. Va. Code R. § 47-60 (West, Westlaw through reg. dated April 17, 2020).

³⁷ West Virginia Department of Environmental Protection, *West Virginia Water Resources Management Plan*, 38 (Nov. 22, 2013), retrieved from: <https://dep.wv.gov/WWE/wateruse/WVWaterPlan/Pages/default.aspx> (last visited Aug. 2, 2020).

³⁸ West Virginia Department of Environmental Protection, *West Virginia Water Resources Management Plan*, 82 (Nov. 22, 2013), <https://dep.wv.gov/WWE/wateruse/WVWaterPlan/Pages/default.aspx> (last visited Aug. 2, 2020).

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ West Virginia Department of Environmental Protection, *Groundwater/UIC Program*, <https://dep.wv.gov/WWE/Programs/gw/Pages/gwhome.aspx> (last visited Aug. 2, 2020).

⁴² W. Va. Code R. § 47-58-7 (West, Westlaw through reg. dated April 17, 2020).

Additionally, West Virginia DEP generated the Stormwater Management Structure Guidance Document, for the purpose of assisting developers, engineers and planners with the construction and maintenance of stormwater management structures in order to protect groundwater (and surface water) from contaminated stormwater runoff.⁴³ However, it does not appear that West Virginia recognizes a priority among users of hydraulically linked surface and groundwaters.

6. Aquifer Recharge and Underground Storage

West Virginia DEP has developed a stormwater management guidance document that promotes structures such as wet and dry detention basins, wetlands, swales and dry wells, which are intended to capture and treat portions of stormwater runoff by allowing it to infiltrate the soil, recharging the aquifers.⁴⁴

The Underground Injection Control (UIC) Program, under the direction of the Division of Water and Waste Management, is designed to ensure that fluids injected underground will not endanger drinking water sources.⁴⁵

Underground Storage Tanks (UST) require only a certification and registration at \$5.00 per tank.⁴⁶ USTs, however, must be installed by someone certified to do so, and must undergo continuing education, both of which are provided and monitored by West Virginia's Bureau for Public Health's Office of Environmental Health Services.⁴⁷

⁴³ West Virginia Department of Environmental Protection, *Stormwater Management Structure Guidance Document*, i (Sept. 2006), https://dep.wv.gov/WWE/Programs/gw/Documents/14469_gw_Stormwater_Management_Structure_Guidance_Combined.pdf (last visited Aug. 2, 2020).

⁴⁴ *Id.* at iv.

⁴⁵ West Virginia Department of Environmental Protection (2018), *Groundwater/UIC Program*, <https://dep.wv.gov/WWE/Programs/gw/Pages/gwhome.aspx> (last visited Aug. 2, 2020).

⁴⁶ W. Va. Code R. § 47-55-3.5(d) (West, Westlaw through reg. dated April 17, 2020).

⁴⁷ "Groundwater/UIC Program", West Virginia Department of Environmental Protection (2018), retrieved from: <https://dep.wv.gov/WWE/Programs/gw/Pages/gwhome.aspx>.

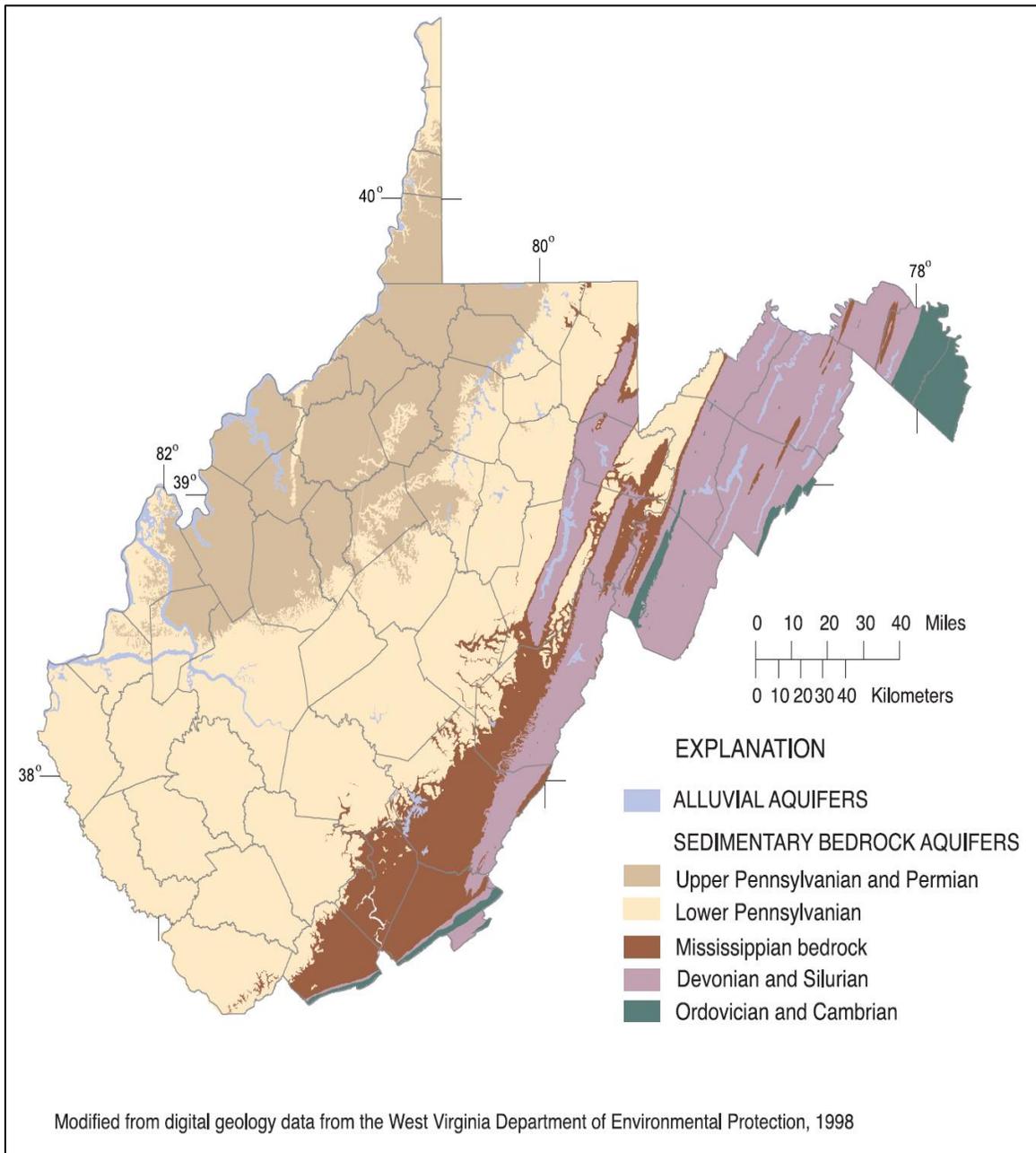


Fig O.2 Major Hydrogeologic Units in West Virginia⁴⁸

⁴⁸ USGS, *Aquifer Characteristics Data for West Virginia: Water Resources Investigations Report 01-4036*, Figure 2. Major hydrogeologic units in West Virginia, https://pubs.usgs.gov/wri/wri01-4036/pdf/aquifer_report.pdf (last visited Aug. 9, 2020).

7. Water Management Plans

West Virginia has implemented and promulgated several plans and guidance documents to assist with regulation of the state's water resources. In 1997, West Virginia signed the statewide Watershed Management Framework Document.⁴⁹ The Water Resources and Protection Management Act, enacted in 2004, created the foundation for development of a comprehensive water management program in West Virginia, requiring all large quantity users to register with the DEP.⁵⁰ In September 2006, West Virginia promulgated the Stormwater Management Structure Guidance Document.⁵¹ Most recently, in March 2014, West Virginia adopted a statewide Water Resources and Management Plan.⁵²

8. Regulatory Authorities

The West Virginia Department of Health and Human Resources provides certifications for water well drillers.⁵³ The West Virginia Bureau for Public Health's Office of Environmental Health Services provides training for monitoring well drillers, as required by West Virginia state regulations.⁵⁴ Additionally, the Director of the West Virginia DEP is aided and advised by a groundwater coordinating committee.⁵⁵ The West Virginia Department of Agriculture has created a five-year groundwater

⁴⁹West Virginia Department of Environmental Protection, Charleston, *Groundwater Programs and Activities Biennial Report to the Legislature*, 2 (2018), <https://dep.wv.gov/WWE/Programs/gw/Documents/Groundwater%20Report.pdf> (last visited Aug. 2, 2020).

⁵⁰ West Virginia Department of Environmental Protection, *West Virginia Water Resources Management Plan*, 82 (Nov. 22, 2013), <https://dep.wv.gov/WWE/wateruse/WVWaterPlan/Pages/default.aspx> (last visited Aug. 2, 2020).

⁵¹ West Virginia Department of Environmental Protection *Stormwater Management Structure Guidance Document*, Groundwater/UIC Program, (Sep. 2006), https://dep.wv.gov/WWE/Programs/gw/Documents/14469_gw_Stormwater_Management_Structure_Guidance_Combined.pdf (last visited Aug. 2, 2020).

⁵² West Virginia Department of Environmental Protection, *West Virginia Water Resources Management Plan*, 82 (Nov. 22, 2013), <https://dep.wv.gov/WWE/wateruse/WVWaterPlan/Pages/default.aspx> (last visited Aug. 2, 2020).

⁵³ West Virginia Department of Health and Human Resources, *Licenses, Fees, and Certifications*, <https://dhhr.wv.gov/Documents/BPHLicensesFeesCertifications.pdf> (last visited Aug. 2, 2020).

⁵⁴ West Virginia Department of Environmental Protection, "Monitoring Well Drillers Program", *Groundwater/UIC Program*, DEP (2018), <https://dep.wv.gov/WWE/Programs/gw/Pages/gwhome.aspx> (last visited Aug. 2, 2020).

⁵⁵ W. Va. Code Ann. 22-12-7 (West, Westlaw through legis. of 2020 Reg. Sess.).

monitoring program for the purpose of monitoring groundwater for pesticides and responding as necessary to manage concentrations that exceed certain standards.⁵⁶

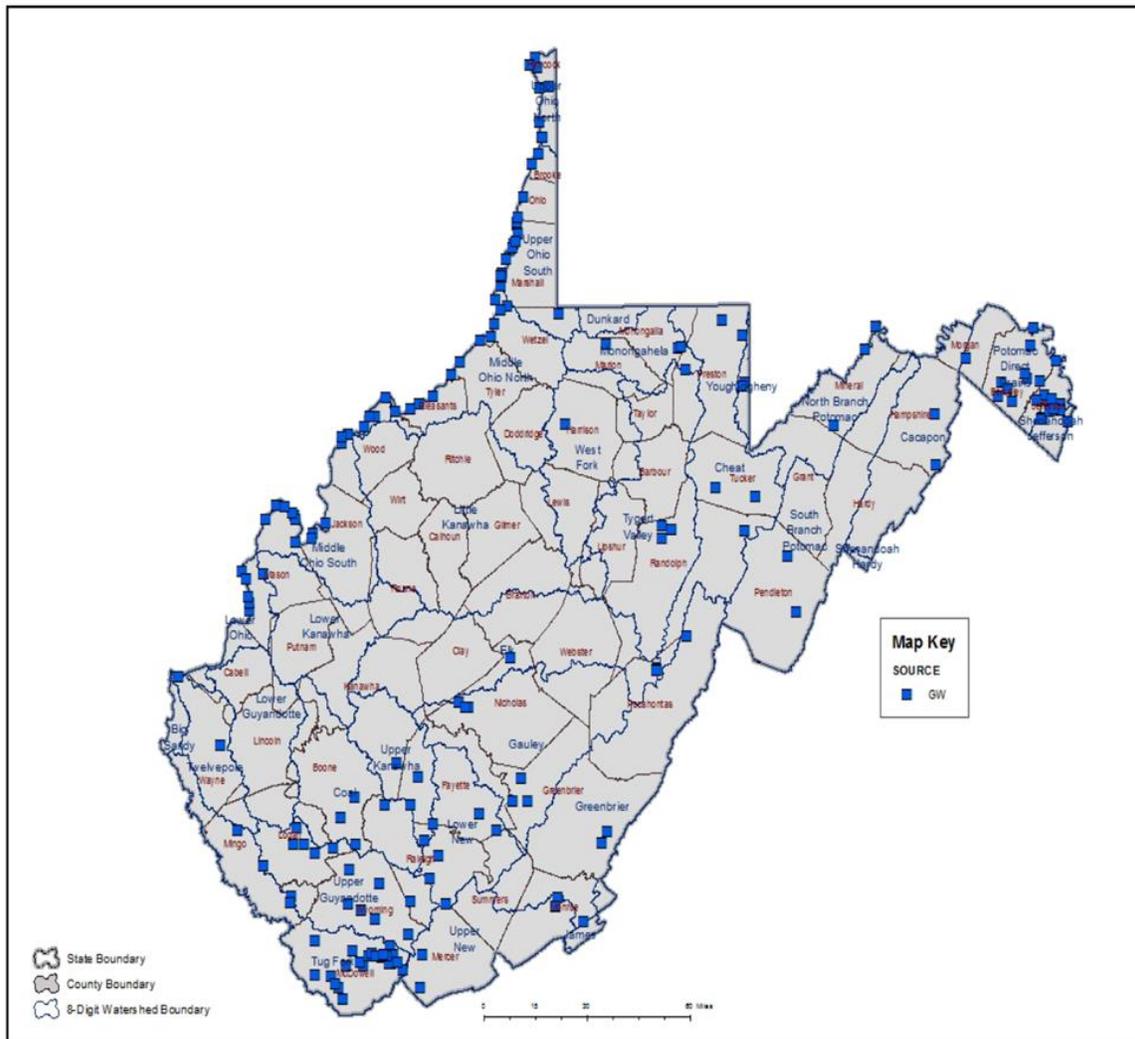


Fig O.3 Mapped Locations of Groundwater Withdraws by Large Quantity Users⁵⁷

⁵⁶ West Virginia Department of Environmental Protection, Charleston, *Groundwater Programs and Activities Biennial Report to the Legislature*, 11 (2018), <https://dep.wv.gov/WWE/Programs/gw/Documents/Groundwater%20Report.pdf> (last visited Aug. 2, 2020).

⁵⁷ West Virginia Department of Environmental Protection, *West Virginia Water Resource Management Plan*, https://dep.wv.gov/WWE/wateruse/WVWaterPlan/Documents/WV_WRMP.pdf, (Last visited Aug. 2, 2020).

The West Virginia Conservation Agency focuses conservation efforts on the maintenance and/or improvement of water quality relative to natural resource use, with a primary focus on agriculture and construction activities, though it primarily focuses on surface water quality, groundwater resources are addressed by assisting with the implementation of best management practices, providing technical support, and providing outreach programs.⁵⁸

The regulatory authorities may be contacted at the following addresses:

West Virginia Department of Health and Human Resources.⁵⁹

<http://www.dhhr.wv.gov>
One Davis Square, Suite 100 East
Charleston, West Virginia 25301
Tel: (304) 558-0684

West Virginia Department of Environmental Protection.⁶⁰

<http://www.dep.wv.gov>
601 – 57th Street
Charleston, WV 25304
Tel: (304) 926-0495

West Virginia Bureau for Public Health, Office of Environmental Health Services.⁶¹

<http://www.wvdhhr.org>
350 Capitol Street

⁵⁸ West Virginia Department of Environmental Protection, Charleston, *Groundwater Programs and Activities Biennial Report to the Legislature*, 15 (2018), <https://dep.wv.gov/WWE/Programs/gw/Documents/Groundwater%20Report.pdf> (last visited Aug. 2, 2020).

⁵⁹ West Virginia Department of Environmental Protection, *West Virginia Water Resources Management Plan*, 82 (Nov. 22, 2013), retrieved from: <https://dep.wv.gov/WWE/wateruse/WVWaterPlan/Pages/default.aspx> (last visited Aug. 2, 2020).

⁶⁰ W. Va. Code Ann. § 22-12-4 (West, Westlaw through legis. of 2020 Reg. Sess.); *see also* W. Va. Code Ann. § 22-12-5 (b) (West, Westlaw through legis. of 2020 Reg. Sess.).

⁶¹ West Virginia Department of Environmental Protection, Charleston, *Groundwater Programs and Activities Biennial Report to the Legislature*, 4 (2018), <https://dep.wv.gov/WWE/Programs/gw/Documents/Groundwater%20Report.pdf> (last visited Aug. 2, 2020); W. Va. Code Ann. § 22-12-4(d) (West, Westlaw through legis. of 2020 Reg. Sess.).

Charleston, WV 25301
Tel: (304) 558-2971

West Virginia Department of Agriculture.⁶²
<http://www.agriculture.wv.gov>
1900 Kanawha Boulevard
East State Capitol, Room E-28
Charleston, WV, 25305
Tel: (304) 558-3550

West Virginia Conservation Agency⁶³
<http://www.wvca.us>
1900 Kanawha Boulevard, East
Charleston, WV 25305
Tel: (304) 558-2204

9. Special Districts

West Virginia does not have any special groundwater districts.

10. Transboundary Arrangements

It does not appear that West Virginia is a party to any transboundary arrangements or conflicts.

11. Native American Rights

It does not appear that the state grants exemptions, benefits, or concessions to Native American tribes.

⁶² West Virginia Department of Environmental Protection, Charleston, *Groundwater Programs and Activities Biennial Report to the Legislature*, 11 (2018), <https://dep.wv.gov/WWE/Programs/gw/Documents/Groundwater%20Report.pdf> (last visited Aug. 2, 2020).

⁶³ West Virginia Department of Environmental Protection, Charleston, *Groundwater Programs and Activities Biennial Report to the Legislature*, 15 (2018), <https://dep.wv.gov/WWE/Programs/gw/Documents/Groundwater%20Report.pdf> (last visited Aug. 2, 2020).

P. Wyoming

Wyoming follows the prior appropriation doctrine in allocating groundwater rights, which is based on the “first in time, first in right” rule.¹ The permitting scheme also requires beneficial use.²

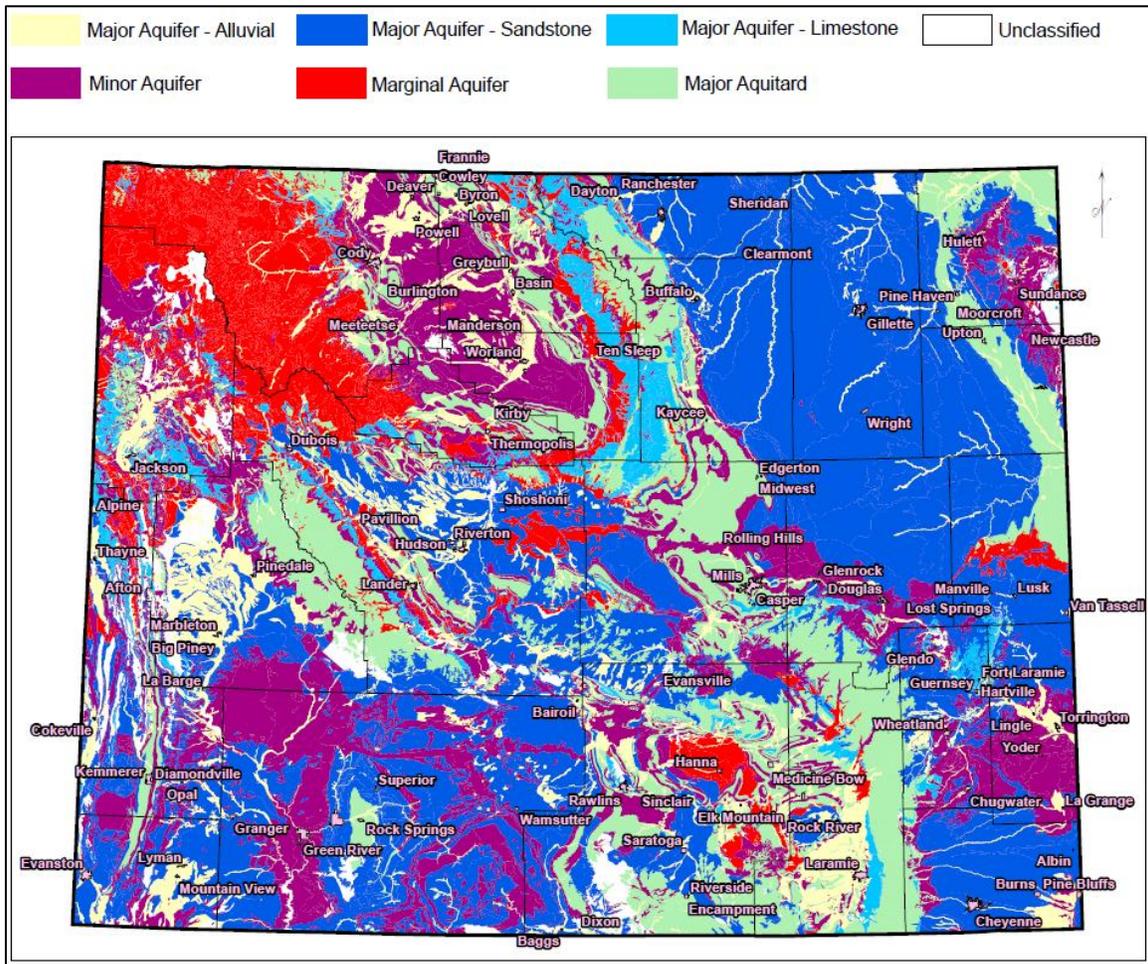


Fig. P.1 Hydrogeology of Wyoming³

¹ Wyo. Stat. Ann. § 41-3-101 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

² *Id.*

³ *Statewide Framework Water Plan*, Wyoming Water Development Office, p. 4-20, https://waterplan.state.wy.us/plan/statewide/Volume_I.pdf (Last visited March 8, 2022).

1. Definition, Basis of Rights, Standards, and Interactions

Wyoming defines “underground water” as “any water, including hot water and geothermal steam, under the surface of the land or the bed of any stream, lake, reservoir, or other body of surface water, including water that has been exposed to the surface by an excavation such as a pit.”⁴ Spring water is not included in the definition of “underground water,” but is regulated as such if (1) the flow of the spring is less than twenty-five gallons per minute, and (2) the spring water is withdrawn for domestic or stock purposes.⁵ Additionally, “by-product water” – “water which has not been put to prior beneficial use, and which is a by-product of some non-water-related economic activity and has been developed only as a result of such activity” – is also managed as underground water.⁶ The Wyoming statutes define an “aquifer” as “any underground geological structure or formation having boundaries that may be ascertained or reasonably inferred, in which water stands, flows or percolates.”⁷

Wyoming’s permitting scheme uses prior appropriation system for underground water with a beneficial use requirement.⁸ Beneficial use is the measure and limit of the right

⁴ Wyo. Stat. Ann. § 41-3-901(ii) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO). Wyoming uses the term “underground water” instead of “groundwater” in reference to water withdrawals. Wyo. Stat. Ann. § 41-3-901(a)(ii). “Groundwater” is used for water quality and contamination purposes. Wyo. Stat. Ann. § 35-11-103(c)(vi). Although this distinction exists, both the Wyoming Supreme Court and the Wyoming statutes use the terms interchangeably. See Wyo. Stat. § 41-3-917(a) (“[B]y securing approval of the state board of control if the *groundwater* right has been adjudicated or if the *groundwater* right has not been adjudicated but the water has been applied to beneficial use” (emphasis added); *Ann Belle Fourche Pipeline Co. v. Elmore Livestock Co.*, 669 P.2d 505, 511 (Wyo. 1983) (using “groundwater” throughout the opinion, and using “underground water” only in reference to permits and withdrawal rights); *William F. West Ranch, LLC v. Tyrrell*, 206 P.3d 722, 725 (Wyo. 2009).

⁵ Wyo. Stat. Ann. § 41-3-902 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁶ Wyo. Stat. Ann. §§ 41-3-903 – 04 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO) (including but not limited to water used for the operation of an oil well or mining activity).

⁷ Wyo. Stat. Ann. § 41-3-901(iii) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁸ Wyo. Stat. Ann. § 41-3-101 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

to use appropriated groundwater;⁹ however, the right to withdraw for a beneficial use is not guaranteed. If any well unreasonably interferes with a domestic or livestock well, the State Engineer may require the interfering user to cease or reduce withdrawals.¹⁰

Wyoming protects underground appropriators through the prior appropriation “first in time, first in right” prioritization rule.¹¹ Wyoming issues permits, an unperfected water right, which can become a fully vested in the form of certificates.¹² Beneficial use is a required criteria to obtain a permit, which must be adjudicated by the State Board of Control (Board of Control), composed of the State Engineer and the Superintendents for each Water Division of the State, before it can become a perfected water right and a certificate can be secured.¹³

A permit provides an appropriator with the right to build a well and put the water to beneficial use. After the permit is granted, the applicant must apply the water to a beneficial use no more than three years after the date of the permit’s approval.¹⁴ After completion of the well,¹⁵ the adjudication must adhere to the terms of the permit.¹⁶ Beneficial use will then be evaluated after submission by the appropriator to the appropriate water division superintendent and, if everything is complete, a certificate will be issued by the Board of Control.¹⁷ A certificate perfects the water right into a

⁹ *Id.*

¹⁰ Wyo. Stat. Ann. § 41-3-911(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹¹ Wyo. Stat. Ann. § 41-3-911(b) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹² Wyo. Stat. Ann. § 41-3-935 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹³ *Id.*

¹⁴ Wyo. Stat. Ann. § 41-3-934 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹⁵ Wyo. Stat. Ann. § 41-3-935(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO) (defining completion of a well as possible to install a pump and pump water).

¹⁶ Wyo. Stat. Ann. § 41-3-935(b) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹⁷ *Id.*

fully vested water right.¹⁸ The designation of a priority date varies based upon when the water right was obtained and whether the water right is considered vested. Water rights obtained prior to April 1, 1947, have priority based on the date of completion of the well.¹⁹ These rights, however, are only vested if a statement of claim was filed with the State Engineer prior to March 1, 1958.²⁰ Water rights obtained between April 1, 1947, and March 1, 1958, have priority based on the date of filing the statement of claim with the State Engineer's Office and are vested if filed.²¹ Water rights obtained on or after March 1, 1958, have priority based on the filing of the application for a permit.²² If water rights for stock or domestic purposes were obtained prior to December 31, 1972, priority is based on the completion of the well. If obtained on or after December 31, 1972, priority will be based on the date of filing or registering with the State Engineer's Office, since prior to December 31, 1972, stock and domestic wells were exempt from filing.²³

The Wyoming Constitution establishes that, “[n]o appropriation shall be denied except when such denial is demanded by the public interests.”²⁴ Generally, the right to use groundwater will be granted if there is a beneficial use,²⁵ and so long as “the proposed means of diversion and construction are adequate.”²⁶ Whether a use is considered

¹⁸ *Id.*

¹⁹ Wyo. Stat. Ann. § 41-3-936 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

²⁰ Wyo. Stat. Ann. § 41-3-905 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO.); *see also About the Ground Water Division, WYOMING STATE ENGINEER'S OFFICE*, <https://sites.google.com/a/wyo.gov/seo/ground-water> (Last visited July 8, 2017) (explaining the history and creation of underground water regulations in the state of Wyoming).

²¹ Wyo. Stat. Ann. §§ 41-3-905, 41-3-936 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

²² Wyo. Stat. Ann. § 41-3-936 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

²³ *Id.*; JAMES J. JACOBS ET AL., UNIV. OF WYO.: AGRIC. EXPERIMENTAL STATION, WYOMING WATER LAW: A SUMMARY 6–7 (2003).

²⁴ Wyo. Const. Art. VIII § 3.

²⁵ Wyo. Stat. Ann. § 41-3-101 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

²⁶ Wyo. Stat. Ann. § 41-3-931 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO). Just as important to those who wish to withdraw water, no person can engage in construction of a well until a permit is granted. Wyo. Stat. Ann. § 41-3-930(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO). One

‘beneficial’ largely depends on the particular circumstances.²⁷ The Wyoming Constitution vests the Board of Control and the State Engineer with power to manage state water.²⁸ The Board of Control, based in the State Engineer’s Office, is given great leeway to decide what is considered a beneficial use in order “to insure proper administration and use of [the state’s] water.”²⁹ The Wyoming Supreme Court has clearly stated that the Board of Control to determination of what is a beneficial use will be respected by the court if the Board’s decision is challenged because “the Board and State Engineer are better equipped to dispose of such matters.”³⁰

This permit process applies to the issuance of permits outside of control areas, and differs slightly in the three designated control areas.³¹ These control areas are essentially groundwater districts, but do not encompass all the groundwater in the state.³² There are currently three control areas: (1) Platte County, (2) Prairie Center, and (3) Laramie County.³³ In these control areas more scrutiny is given to applications, with an extra round of review by a five-person board required beyond the beneficial use standard.³⁴

exception to this is if “a bore hole constructed for mineral exploration, oil and gas exploration, stratigraphic information or any other purpose not related to groundwater development shall be found to be suitable for the withdrawal of underground water,” the bore hole cannot be beneficially utilized until a permit is granted. Wyo. Stat. Ann. § 41-3-930(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO). The State Engineer adopted the Water Well Minimum Construction Standards, to provide a standard in which groundwater wells must be in compliance with in order to be approved of for use. WY Rules and Regulations ENG GW Ch. 1 s 2.

²⁷ *John Meier & Son v. Horse Creek Conservation Dist.*, 603 P.2d 1283, 1288 (Wyo. 1979) (citing *City and County of Dever v. Sheriff*, 96 P.2d 836, 842 (Colo. 1939)).

²⁸ Wyo. Const. Art. VIII § 2.

²⁹ *John Meier & Son v. Horse Creek Conservation Dist.*, 603 P.2d 1283, 1288 (Wyo. 1979).

³⁰ *John Meier & Son v. Horse Creek Conservation Dist.*, 603 P.2d 1283, 1288 (Wyo. 1979) (citing *White v. Wheatland Irrigation Dist.*, 413 P.2d 252, 258 (Wyo. 1966)) (upholding a decision by the board that storing groundwater for later irrigation was considered a beneficial use).

³¹ Wyo. Stat. Ann. § 41-3-913(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

³² Wyo. Stat. Ann. §§ 41-3-912 —913 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

³³ *Groundwater Control Areas and Advisory Boards*, Wyoming State Engineer’s Office, <https://sites.google.com/a/wyo.gov/seo/ground-water/groundwater-control-areas-advisory-boards> (last visited July 8, 2017).

³⁴ Wyo. Stat. Ann. § 41-3-913(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg.. Subject to revisions by LSO), *see also Groundwater Control Areas and Advisory Board*, WYOMING STATE ENGINEER’S OFFICE, <https://seo.wyo.gov/ground-water/groundwater-control-areas-and->

An application to withdraw groundwater from the control area will be granted if:

[T]he state engineer finds, after receiving the advice of the control area advisory board, that there are unappropriated waters in the proposed source, that the proposed means of diversion or construction is adequate, that the location of the proposed well or other work does not conflict with any well spacing or well distribution regulation, and that the proposed use would not be detrimental to the public interest.³⁵

There are additional reporting requirements for the approval of a permit within fifteen miles of Yellowstone National Park.³⁶ Permittees must establish that the proposed development will have no impact or injurious effect on the features within the Park.³⁷

2. Sources of Law

Article 8 of the Wyoming Constitution and Title 41 of the Wyoming Statutes Annotated are the overarching source of law for underground water allocation in Wyoming.³⁸ The Board of Control implemented the Water Well Minimum Construction Standards to provide a standard in which groundwater wells must stay in compliance.³⁹ Besides the statutes and regulations, there is case law regarding underground water.

3. Scope of Right

a. Groundwater Ownership

advisory-boards (Last visited June 22, 2020) (explaining the purpose and function of the three Control Areas).

³⁵ Wyo. Stat. Ann. § 41-3-915(c) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

³⁶ Wyo. Stat. Ann. § 41-3-930(b) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

³⁷ *Id.* Wells for domestic and stock purposes are exempt from this requirement. Wyo. Stat. Ann. § 41-3-930(b) (Lexis Advance through 2021 General Sess. of the Wyoming Leg.. Subject to revisions by LSO).

³⁸ Wyo. Const. Art. VIII §§ 1–5; Wyo. Stat. Ann. §§ 41-3-101—115, 41-3-901—938 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

³⁹ WY Rules and Regulations ENG GW Ch. 1 s 2.

The state, rather than individual landowners, owns underground water as trustee for the public and not in a proprietary capacity.⁴⁰ Any person who wishes to acquire the right to use underground water must file an application for a permit with the State Engineer. The right to use underground water is attached to the land for any beneficial use for which one may acquire a permit.⁴¹ This is the exclusive manner in which a landowner can obtain a water right, meaning a water right cannot be obtained through adverse possession or prescription.⁴² Additionally, the general rule is that “a water right beneficially used upon land becomes appurtenant to the land. And, when the land is conveyed, the water right passes with it.”⁴³ However, there are circumstances where appropriative rights can be conveyed separately from the land to which they were initially appurtenant, provided that other appropriators are not injured by the conveyance.⁴⁴

b. Scope of Use

i. Permitted and Preferred Uses

Generally, a water permit will be granted so long as there is a beneficial use for the withdrawal;⁴⁵ however, there is no universal list to show all allowable uses or beneficial uses.⁴⁶ Additionally, whether or not the area is a control area changes the permitting process.⁴⁷ The Board of Control is given great leeway to decide what is considered a

⁴⁰ Wyo. Const. Art. VIII § 1; Wyo. Stat. Ann. § 41-3-101 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO); *Merrill v. Bishop*, 287 P.2d 620, 625 (1955).

⁴¹ Wyo. Stat. Ann. § 41-3-930(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁴² *Lewis v. State Bd. of Control*, 699 P.2d 822, 827 (Wyo. 1985).

⁴³ *Bentley v. Dir. Of the Office of State Lands & Invs.*, 160 P.3d 1109, 1123 (Wyo. 2007).

⁴⁴ Wyo. Stat. Ann. §§ 41-3-101, 41-3-102 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO); *Johnston v. Little Horse Creek Irrigating Co.*, 79 P. 22, 31 (Wyo. 1904).

⁴⁵ Wyo. Stat. Ann. § 41-3-101 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁴⁶ Some uses are denoted throughout the Wyoming statutes. See Wyo. Stat. Ann. § 41-3-102(b) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO) (listing the preferred beneficial uses), Wyo. Stat. Ann. § 41-3-101 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO) (identifying “the use of water for the purpose of extracting heat therefrom” as a beneficial use).

⁴⁷ Wyo. Stat. Ann. §§ 41-3-912 – 913 (Lexis Advance through 2021 General Sess. of the Wyoming

beneficial use.⁴⁸ If the water rights holder wishes to change the beneficial use or the place of the existing beneficial use of the water, they must file a petition requesting to do so.⁴⁹

“Rights to underground water [are] subject to the same preferences as provided by law for surface waters.”⁵⁰ The following are the preferred surface water rights in preferential order:

- (1) Water for drinking purposes for both man and beast;
- (2) Water for municipal purposes;
- (3) Water for the use of steam engines and for general railway use, water for culinary, laundry, bathing, refrigerating (including the manufacture of ice), for steam and hot water heating plants, and steam power plants; and
- (4) Industrial purposes.⁵¹

All non-preferred beneficial uses bare the risk of condemnation if they infringe upon existing preferred uses.⁵² Additionally, domestic and stock water rights are superior to both preferred and non-preferred rights.⁵³ A “domestic use” includes any household use

Leg. Subject to revisions by LSO).

⁴⁸ *John Meier & Son v. Horse Creek Conservation Dist.*, 603 P.2d 1283, 1288 (Wyo. 1979).

⁴⁹ Wyo. Stat. Ann. § 41-3-104 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO). *See* Wyo. Stat. Ann. § 41-3-917 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO) (governing changes to well location), Wyo. Stat. Ann. § 41-3-906 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO) (allowing non-preferred rights to be “changed to a preferred use in the manner provided by law for surface waters.”).

⁵⁰ Wyo. Stat. Ann. § 41-3-906 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁵¹ Wyo. Stat. Ann. § 41-3-102(b) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁵² Wyo. Stat. Ann. § 41-3-102 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁵³ Wyo. Stat. Ann. § 41-3-907 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

or the watering of lawns and gardens for noncommercial family use if the area of irrigation is less than one acre and the withdrawal does not exceed twenty-five gallons per minute.⁵⁴ If any water right unreasonably interferes with a well-developed solely for domestic or stock use, the interfering user may be ordered to cease or reduce withdrawals of groundwater by the State Engineer, “unless such appropriator shall furnish at his own expense, sufficient water at the former place of use to meet the need for domestic or stock use.”⁵⁵ Water rights for domestic and stock purposes have highest preference over all beneficial uses.⁵⁶ If there is interference between two domestic or stock users, temporal priority determines who has the better right.⁵⁷ The standard is found in §§ 41-3-906 and 4-2-102(b) of Wyoming statutes.

ii. Location of Use

Wyoming does not prohibit the use of water on non-overlying land. The permit application for a groundwater right requires the reporting of the land of origin and the land of use.⁵⁸ In addition, a water right holder may request a change in well location or place of use at any time.⁵⁹ The right to use water attaches to the land.⁶⁰ If an underground water permit holder wishes to change the location of his well to another location within the same aquifer, he can do so without losing priority, so long as it is in the same vicinity as the original location and the user secures the approval of the Board of Control.⁶¹ In some circumstances, including if the right is a permit instead of a certificate, it is the State Engineer who must approve a proposed change in well

⁵⁴ *Id.*

⁵⁵ Wyo. Stat. Ann. § 41-3-911(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁵⁶ Wyo. Stat. Ann. § 41-3-907 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁵⁷ Wyo. Stat. Ann. § 41-3-911(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁵⁸ State Engineer's Office, Application for Permit to Appropriate Groundwater (2018), <http://seo.wyo.gov/applications-forms> (form U.W.5).

⁵⁹ Wyo. Stat. Ann. § 41-3-104 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁶⁰ Wyo. Stat. Ann. § 41-3-101 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁶¹ Wyo. Stat. Ann. §§ 41-3-104 and 41-3-917 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

location.⁶² Approval may be granted if the use does not injure other lawful appropriators and does not increase the amount of water appropriated in the initial permit.⁶³

Change of use or change in place of use can be allowed with approval.⁶⁴ To change place of use or change current use to a different use, the user must file a petition requesting permission for a change providing all the facts about the existing use and proposed change to the Board of Control. The procedure requires public notice, inspection and hearing if necessary, and a report by the division superintendent.⁶⁵ The Board of Control will consider all the facts surrounding the situation such as the economic loss, whether other sources of water were available, and compensation.⁶⁶

There are no additional limitations or restrictions for users who transfer water in-state, so long as the use of the water is for a beneficial purpose.⁶⁷ However, “water of the state[,] either surface or underground[,] [cannot] be appropriated, stored or diverted for use outside of the state or for use as a medium of transportation of mineral, chemical or other products to another state without the specific prior approval of the legislature.”⁶⁸ Furthermore, “legislative consent . . . shall be based upon consideration of the factors necessary to assure meeting the state's interests in conserving and preserving its water resources for the maximum beneficial use.”⁶⁹ The state is largely concerned that water transfers out of state will have a significant impact on the water in the state.⁷⁰ However,

⁶² *Id.*

⁶³ *Id.*

⁶⁴ Wyo. Stat. Ann. § 41-3-104 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁶⁵ Wyo. Stat. Ann. § 41-3-103 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁶⁶ Wyo. Stat. Ann. § 41-3-104 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁶⁷ Wyo. Stat. Ann. § 41-3-102 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁶⁸ Wyo. Stat. Ann. § 41-3-115(b) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁶⁹ Wyo. Stat. Ann. § 41-3-115(r) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁷⁰ Wyo. Stat. Ann. § 41-3-115(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

any application to transfer less than one thousand acre-feet of water per year out of state does not need legislative approval and shall only abide by the standard underground withdrawal application laws.⁷¹

c. Loss of Water Rights

Groundwater rights, in the form of permits and certificates, can be lost. After a permit is granted, the well must be completed and the water must be applied to a beneficial use by the date specified in the permit.⁷² Otherwise, the State Engineer has the right to cancel the permit, but also may extend the completion date if appropriate.⁷³

Additionally, if the State Engineer finds that the permit holder has willfully violated any provision of the permit, the State Engineer may cancel or suspend the permit.⁷⁴ The only procedural requirements are that the permittee must be given notice and an opportunity to be heard.⁷⁵

Similar to the process for losing a permit, a certificate can be lost. Proper notice to a water rights holder must be given as well as an opportunity to be heard.⁷⁶ Thereafter, if the Board of Control finds that the holder of any certificate of appropriation is willfully violating or has willfully violated any provision of the certificate or any provision of Wyoming Statute § 41-3-917, “then the board of control may cancel or suspend the certificate or impose conditions on the future use thereof to prevent further violation.”⁷⁷ A decision to terminate a certificate may be appealed to the state district court.⁷⁸

⁷¹ *Id.*

⁷² Wyo. Stat. Ann. § 41-3-934 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO) (setting the date of completion as no more than 3 years after date of approval).

⁷³ *Id.* “A well shall be considered complete when it is possible to install a pump and pump water. In the case of an artesian well, completion is the time when the drill rig is moved off of the drilling site.” Wyo. Stat. Ann. § 41-3-935 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁷⁴ Wyo. Stat. Ann. § 41-3-937 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ Wyo. Stat. Ann. § 41-3-616(d) (Lexis Advance through 2021 General Sess. of the Wyoming Leg.

Wyoming statutes make it possible for someone to lose their groundwater right by abandonment.⁷⁹ If the holder of an appropriation for water fails to use the water for the beneficial purposes which it was appropriated for during any five successive years, then they are considered to have abandoned the water right.⁸⁰

“Where the holder of an appropriation of water from a surface, underground, or reservoir water source fails, either intentionally or unintentionally, to use the water therefrom for the beneficial purposes for which it was appropriated . . . during any five successive years, he is considered as having abandoned the water right.”⁸¹

If the permit holder has failed to use their permitted right, “the state engineer may initiate forfeiture proceedings against the appropriator with the state board of control, to determine the validity of the unused right.”⁸² Forfeiture proceedings are separate and distinct from loss of water rights resulting from a violation of a permit or certificate, or of the Wyoming Water Code.⁸³ The superintendents shall notify all owners of the land covered by the appropriation of the hearing, and a transcript of the hearing will be made, given to the Board of Control, and the Board will vote whether or not the water rights holder has forfeited the right.⁸⁴ The owners have two years to contest whether they were given proper notice and, if they can prove they were damaged from not receiving notice of the forfeiture hearing, the Board of Control will be required to reopen the case.⁸⁵

Subject to revisions by LSO).

⁷⁹ Wyo. Stat. Ann. § 41-3-401(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² Wyo. Stat. Ann. § 41-3-402(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁸³ See Wyo. Stat. Ann. §§ 41-3-401–402 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO) (outlining the appropriate proceedings to follow for those who have not violated the permit or provision of the statute, but have abandoned their water right); Wyo. Stat. Ann. § 41-3-937 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO) (setting forth the procedures for suspension or cancellation).

⁸⁴ Wyo. Stat. Ann. § 41-3-402(d) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁸⁵ Wyo. Stat. Ann. § 41-3-402(g) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

Any person who has an adjudicated water right or is the holder of a valid permit from the same source, or the holder of a valid water right entitled to surplus water, may petition the Board of Control to declare a water right abandoned.⁸⁶ Surplus water is water belonging to the state of Wyoming that is in excess of the total amount needed to fill the appropriations to the system.⁸⁷ To declare a water right abandoned the petitioner must prove they would benefit from the declaration of abandonment or would be injured from the reactivation of the abandoned right.⁸⁸

Additionally, municipal corporations have the power of eminent domain to acquire any underground water or water rights for any necessary public purpose.⁸⁹

4. Well Drilling

Wyoming regulates water well drilling. The State Board of Examining Water Well Drilling Contractors and Water Well Pump Installation Contractors is authorized to adopt rules and regulations to monitor and permit wells.⁹⁰ Any person who intends to build a well needs a permit and licensed contractor.⁹¹

⁸⁶ Wyo. Stat. Ann. § 41-3-401(b) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO). To do so requires the neighbor have standing. *See* Wyo. Stat. Ann. § 41-3-40(b) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO) (setting forth those neighbors who are considered to have standing). Note that the board does not have this additional burden. *Joe Johnson Co. v. Wyoming State Bd. of Control*, 857 P.2d 312, 318 (Wyo. 1993) (Thomas, R., concurring) (“While another water user may have difficulty in establishing benefit or injury with respect to an unused water right, the state engineer does not have to meet that burden, and the right may be forfeited as a matter of appropriate management and regulation.”).

⁸⁷ Wyo. Stat. Ann. § 41-4-318 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁸⁸ Wyo. Stat. Ann. § 41-3-401(b) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁸⁹ Wyo. Stat. Ann. § 41-3-906 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO). Additionally, an underground water permit does not entitle the permit holder to any water level or artesian pressure higher than what would maximize its beneficial use. Wyo. Stat. Ann. § 41-3-933. (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁹⁰ STATE BOARD OF EXAMINING WATER WELL DRILLING CONTRACTORS AND WATER WELL PUMP INSTALLATION CONTACTORS, Rules and Regulations Revised 2011 (2011), <http://wwwcb.state.wy.us/PDF/RulesAndRegulations/RulesAndRegsRevisedFinal021511.pdf>; Wyo. Stat. Ann. § 33-42-107 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁹¹ Wyo. Stat. Ann. § 41-3-930 (Lexis Advance through 2021 General Sess. of the Wyoming Leg.

To apply to be a licensed well driller or water well pump installer, individuals must be eighteen years old and complete an application providing “[e]vidence that the applicant has a general working knowledge of well construction and/or pump installation[;] . . . evidence of coverage under a general liability insurance policy” greater than \$300,000; and “submit required fees.”⁹²

5. Hydraulic Connection and Regulation

Wyoming regulates groundwater and surface water interaction. Where surface water and groundwater are so interconnected that it is considered one source of supply, the priorities of both surface and underground water rights will be merged.⁹³ There is no set standard to determine when underground and surface water are so interconnected as to be considered one source of water supply. The State Engineer is authorized to make this determination when deciding whether a “well draws interconnected water.”⁹⁴ In areas that are so interconnected as to be considered one source of water supply, groundwater and surface water must abide by the same priority rights, making it easier to regulate the two rights in conjunction.⁹⁵ However, as pointed out by Lawrence MacDonnell in *Integrating Use of Ground and Surface Water in Wyoming*,⁹⁶ in practice, there is a presumption that the two sources of water are not connected.⁹⁷

There is liability for interference as “Any appropriator of either surface or underground water may file a written complaint alleging interference with his water right by a junior

Subject to revisions by LSO).

⁹² Wyo. Stat. Ann. § 33-42-108 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁹³ Wyo. Stat. Ann. § 41-3-916 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁹⁴ Lawrence J. MacDonnell, *Integrating Use of Ground and Surface Water in Wyoming*, 47 IDAHO L. REV. 51, (2010).

⁹⁵ Wyo. Stat. Ann. § 41-3-906 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).; see Lawrence J. MacDonnell, *Integrating Use of Ground and Surface Water in Wyoming*, 47 IDAHO L. REV. 51, (2010) (discussing various cases and implemented programs that reviewed or regulated the interconnection between surface and underground water).

⁹⁶ Lawrence J. MacDonnell, *Integrating Use of Ground and Surface Water in Wyoming*, 47 IDAHO L. REV. 51 (2010).

⁹⁷ *Id.* at 61.

right.”⁹⁸ Following an investigation, the State Engineer may suggest various means for reducing or eliminating the interference.⁹⁹ If the appropriator is not satisfied with the result, the parties proceed to a hearing and the superintendent reports to the Board of Control who will issue a final decision.¹⁰⁰

6. Aquifer Recharge and Underground Storage

Wyoming does not regulate, encourage, or facilitate aquifer recharge or underground storage programs.

7. Water Management Plan(s)

The Wyoming Water Development Commission is required to create, review, and revise resource plans for river basins that will “implement the policies stated in the Wyoming Constitution and in statutes pertaining to the state’s water and related land resources.”¹⁰¹ To develop these plans, the Commission may undertake a variety of tasks such as hear the views of local groups, and organizations, coordinate with other agencies, conduct studies and research, and more.¹⁰²

The plan must be reviewed and revised “from time to time.”¹⁰³ Currently, a Statewide Framework Water Plan developed by the Wyoming Water Development Office in 2007 “provides information for decision making for a 30-year planning horizon.”¹⁰⁴ The Wyoming Water Development Office also issues plans for seven river basins that

⁹⁸ Wyo. Stat. Ann. § 41-3-911(b) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

⁹⁹ *Id.*

¹⁰⁰ Wyo. Stat. Ann. § 41-3-911(c) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹⁰¹ Wyo. Stat. Ann. § 41-2-107 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹⁰² Wyo. Stat. Ann. § 41-2-108 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹⁰³ Wyo. Stat. Ann. § 41-2-107 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹⁰⁴ *Statewide Framework Water Plan*, Wyoming Water Development Office, <http://waterplan.state.wy.us/plan/statewide/frameworkplan-index.html> (Last visited June 30, 2020).

defines the basins groundwater resources and their potential for development.¹⁰⁵ Additionally, former Governor Mead issued a [plan] entitled “Leading the Charge: Wyoming and Water Strategy” as part of his initiative to proactively manage Wyoming’s water resources.¹⁰⁶

8. Regulatory Authorities

The Wyoming Constitution vests supervision of the state’s water and the appropriation, distribution, and diversion of such in the Board of Control.¹⁰⁷ The Board consists of the State Engineer and four superintendents, each a representative for the four divisions of the state.¹⁰⁸

The State Engineer is appointed by the governor, confirmed by the senate, and is designated president of the Board of Control.¹⁰⁹ The Wyoming Constitution requires the State Engineer to have sufficient knowledge, experience, and skill to make him or her fit for the position.¹¹⁰ The State Engineer is authorized and empowered to give advice to the Board on several different issues and obstacles.¹¹¹ They are also in charge of investigating interference complaints,¹¹² and hold the power to subject any permit to any condition they find necessary in the public interest.¹¹³

¹⁰⁵ *Wyoming River Basin Plans*, Wyoming Water Development Office, <http://waterplan.state.wy.us/plan/plan.html> (Last visited July 30, 2020).

¹⁰⁶ *Leading the Charge: Wyoming Water Strategy*, Governor Matthew H. Mead, <https://waterplan.state.wy.us/plan/statewide/govstrategy/20150115-GovWaterStrategy.pdf> (last visited October 29, 2021).

¹⁰⁷ Wyo. Const. Art. VIII § 2.

¹⁰⁸ *Id.*

¹⁰⁹ Wyo. Const. Art. VIII § 5.

¹¹⁰ *Id.*

¹¹¹ See Wyo. Stat. Ann. § 41-3-909(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO) (noting all of the different powers the State Engineer has in regards to underground water resources.).

¹¹² Wyo. Stat. Ann. § 41-3-911(b) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹¹³ Wyo. Stat. Ann. § 41-3-933 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

The Wyoming Constitution charged the legislature with the duty to divide the state into four water divisions.¹¹⁴ In each division, the state has its own division advisory committee on underground water.¹¹⁵ The division committees provide advice and assistance to the State Engineer and superintendents on a number of interests, problems, and policies related to underground water.¹¹⁶ Each committee consists of three members appointed by the governor, and must adequately represent the landowners and water users within their division.¹¹⁷

Wyoming State Engineer's Office

122 West 25th Street

Herschler Building

1st Floor West

Cheyenne, Wyoming 82002

Board of Control: (307) 777-6178

Groundwater Division: (307) 777-6163

Website: <https://sites.google.com/a/wyo.gov/seo/ground-water>

9. Special Districts

Wyoming has the state divided into water divisions as well as control areas created to provide extra regulation. The Water Board and State Engineer are responsible for creating these divisions.

The state is divided into four water divisions.¹¹⁸ In addition, the State Engineer is authorized to create districts and even sub-districts within these divisions, overlying various aquifers or portions of the aquifers if there is a need to regulate portions of the

¹¹⁴ Wyo. Const. Art. VIII § 4. *See also* Wyo. Stat. Ann. § 41-3-501(Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO) (explaining the geographical locations for the four divisions).

¹¹⁵ Wyo. Stat. Ann. § 41-3-908 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹¹⁶ Wyo. Stat. Ann. § 41-3-908(b) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO) (providing in detail all of the duties of the committees).

¹¹⁷ Wyo. Stat. Ann. § 41-3-908(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹¹⁸ Wyo. Stat. Ann. § 41-3-501 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

aquifers separately.¹¹⁹ The superintendents of these districts have general control to execute laws about distribution of water in their district and are required to regulate the storage of water under all permits approved by the State Engineer.¹²⁰

Control areas can be created to provide additional regulation. The Board has the discretion to create “control areas” for any of the following reasons:

- (i) the use of underground water is approaching a use equal to the current recharge rate;
- (ii) Ground water levels are declining or have declined excessively;
- (iii) Conflicts between users are occurring or are foreseeable;
- (iv) The waste of water is occurring or may occur; or
- (v) Other conditions exist or may arise that require regulation for the protection of the public interest.”¹²¹

“Whenever the [State Engineer] has information leading him to believe that any underground water district or subdistricts should become a control area, he shall immediately report in writing to the board of control all information known by him with reference to said area.”¹²² Within these control areas, the State Engineer is given more regulatory discretion. For each control area, an advisory board shall be created, consisting of five members who represent the landowners within the control area, and providing advice to the State Engineer regarding decisions for the control area.¹²³ When

¹¹⁹ Wyo. Stat. Ann. § 41-3-910 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO); See JAMES J. JACOBS ET AL., UNIV. OF WYO.: AGRIC. EXPERIMENTAL STATION, WYOMING WATER LAW: A SUMMARY 1–2 (2003) (identifying the four separate divisions, including a map of Wyoming showing the boundary lines).

¹²⁰ Wyo. Stat. Ann. § 41-3-503 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹²¹ Wyo. Stat. Ann. § 41-3-912(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹²² Wyo. Stat. Ann. § 41-3-912(b) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹²³ Wyo. Stat. Ann. § 41-3-913 (Lexis Advance through 2021 General Sess. of the Wyoming Leg.

a control area is created, all unadjudicated wells in the control area will then be adjudicated.¹²⁴ If a well owner refuses to have her well adjudicated, or fails to supply necessary information for the adjudication process, his well can be locked or prevented from pumping water.¹²⁵ If after a public hearing and having received advice from the advisory board, the State Engineer finds that the underground water is insufficient for all appropriations, he make take several different actions outlined as “corrective controls.”¹²⁶ These corrective controls can include closing the area to future appropriations, limiting junior appropriators withdrawals, and more.¹²⁷ Currently, there are three control areas in Wyoming: (1) Platte County, (2) Prairie Center, and (3) Laramie County.¹²⁸

Subject to revisions by LSO).

¹²⁴ Wyo. Stat. Ann. § 41-3-914(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹²⁵ Wyo. Stat. Ann. § 41-3-914(b) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹²⁶ Wyo. Stat. Ann. § 41-3-915(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹²⁷ *Id.*

¹²⁸ *Groundwater Control Areas and Advisory Boards*, Wyoming State Engineer’s Office, <https://sites.google.com/a/wyo.gov/seo/ground-water/groundwater-control-areas-advisory-boards> (last visited July 8, 2017).

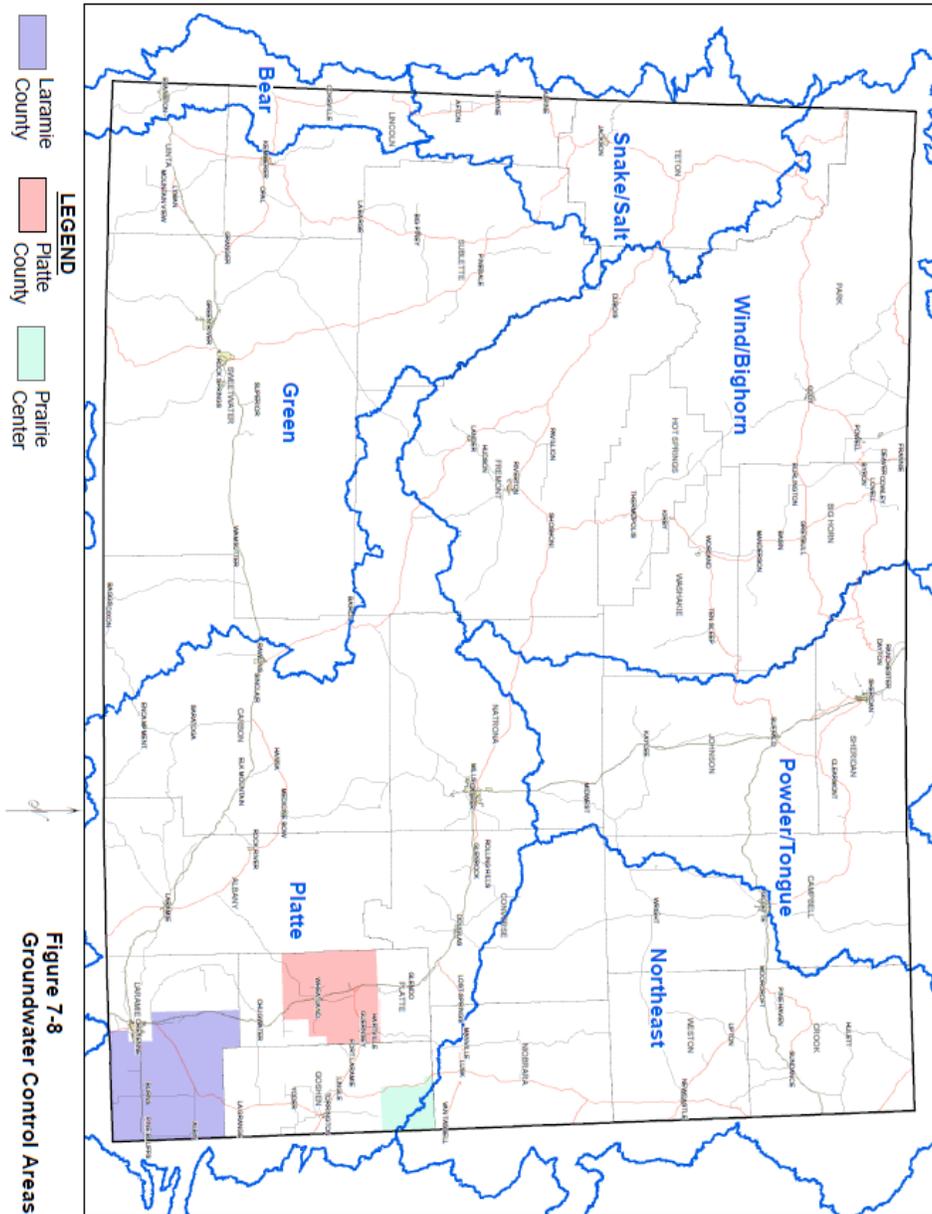


Fig. P.2 Groundwater Control Areas in Wyoming¹²⁹

¹²⁹ *Statewide Framework Water Plan*, Wyoming Water Development Office, p. 7-26, https://waterplan.state.wy.us/plan/statewide/Volume_I.pdf (last visited March 8, 2022).

10. Transboundary Arrangements

Wyoming is party to two interstate water compacts that address groundwater use to the extent that groundwater affects the surface water subject to the agreement.¹³⁰ The Bear River Compact between Utah, Idaho, and Wyoming apportions the “ground water tributary to the Bear River” in the agreement.¹³¹ Additionally, the Upper Niobrara River Compact between Wyoming and Nebraska requires the states to obtain information about the groundwater for its equitable division to supplement the compact as it relates to surface water.¹³²

Both agreements’ objectives are to prevent controversies surrounding the sources of water that they reference.¹³³ The scope of the provision regarding groundwater in the Bear River Compact is limited to how groundwater pumping affects surface water.¹³⁴ The Upper Niobrara River Compact, however, also provides for ongoing research into the connection between groundwater and the surface water subject to the compact.¹³⁵

The Bear River Compact and the Upper Niobrara River Compact are in effect in perpetuity unless Congress revises them. The investigation into the groundwater feeding the Upper Niobrara is specified in the compact to be re-analyzed if necessary.¹³⁶

11. Native American Rights

Wyoming has declined to recognize that reserved rights under the Winters Doctrine

¹³⁰ Wyo. Stat. Ann. §§ 41-12-101; 701 (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹³¹ Wyo. Stat. Ann. § 41-12-101 (Art. V)(A) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹³² Wyo. Stat. Ann. § 41-12-701 (Art. I)(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹³³ Wyo. Stat. Ann. §§ 41-12-101 (Art. I)(A); 41-12-701 (Art. I)(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹³⁴ Wyo. Stat. Ann. § 41-12-101 (Art. V)(A) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹³⁵ Wyo. Stat. Ann. § 41-12-701 (Art. I)(a) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

¹³⁶ Wyo. Stat. Ann. § 41-12-701 (Art. VI)(c) (Lexis Advance through 2021 General Sess. of the Wyoming Leg. Subject to revisions by LSO).

extend to groundwater because of “tradition and a lack of clear acceptance by the [U.S.] Supreme Court.”¹³⁷ In the principal case of the *Big Horn* general stream adjudication (*Big Horn I*), the Wyoming Supreme Court declined to include groundwater within the reserved right that was recognized and quantified for the Eastern Shoshone and Northern Arapaho tribes because the United States Supreme Court had not spoken to the issue.¹³⁸ However, in a 2001 consent decree between the Tribes, Wyoming, and the United States related to the Big Horn adjudication, the tribes received permission to continue using groundwater under pre-1985 rights.¹³⁹ Those groundwater rights cannot be changed from the stipulated amount without approval from the State Engineer’s Office.¹⁴⁰

¹³⁷ Liana Gregory, “*Technically Open*”: *The Debate Over Native American Reserved Groundwater Rights*, 28 J. LAND RESOURCES & ENVTL. L. 361, 367 (2008).

¹³⁸ *In re The General Adjudication of All Rights to Use Water in the Big Horn River System*, 753 P.2d 76, 99-100 (Wyo. 1988).

¹³⁹ Consent Decree Related to Pre-May 15, 1985 Groundwater Uses (December 3, 2001).

¹⁴⁰ *Id.*

Appendix A: State Laws/Regulations Questionnaire

States Groundwater Rights - Laws and Regulations Questionnaire

1. Name of State:
2. Overview of groundwater governance system
 - a. Definition of groundwater, underground water, aquifer, and any other relevant terms
 - b. Characterize system (e.g., Prior Appropriation, Reasonable Use, Absolute Ownership, Correlative Rights, Restatement, or a Combination)
 - c. Briefly describe the legal basis for right
 - i. First in time, overlying land ownership, permit, etc.
 - ii. Standards for right (e.g., beneficial use, reasonable use, etc.)
 - iii. If a combination of systems, describe interactions
3. Identify the source(s) of law for the allocation system (e.g., chief case(s), statute(s), etc.)
4. What is the scope of the right?
 - a. Who “owns” the water? (Is GW owned by individuals, (vested or use right) but held in trust by state? Does the public own groundwater or the right to use it?)
 - b. Scope of limitations on use
 - i. Allowable types of use
 - ii. Preference of use (if any)
 - 1) Hierarchy for purposes of use (e.g., domestic, agriculture, industrial, mining, municipal, etc.)?
 - 2) Standards for preference (beneficial use, reasonable use, etc.)
 - iii. Location of use (permitted/prohibited)
 - 1) Overlying vs. non-overlying land
 - 2) Transport of water (e.g., within a basin, outside a basin)
 - c. Loss of water rights
 - i. Can water rights be lost?
 - ii. If yes, under what circumstances can right be lost? (e.g., abandonment, forfeiture, prescription, eminent domain)

- iii. What is the legal procedure for loss?
5. Does the state regulate well drilling?
- a. If yes, briefly describe type of regulations. (e.g., licensing of contractors, permits for drilling, criteria for drilling, well-construction standards, etc.)
 - b. List state authorities responsible for well-drilling oversight
6. Does state law regulate the Ground/Surface Water Interaction?
- a. If so, how?
 - b. Is there a priority among users of hydraulically linked surface and ground waters?
 - c. What is the liability for interference?
7. Does the state regulate, encourage, or facilitate aquifer recharge or underground storage programs? (Increase aquifer levels/health, keep water in aquifer, store excess water, etc.)
- a. If so, briefly describe the programs, policies, and regulations that are in place.
 - b. What is the governmental entity/entities responsible for oversight of aquifer recharge/underground storage?
8. Statewide or Local Water Management Plans
- a. Does the state develop a water management plan? (statewide or local management plans)
 - b. How often is a plan finalized and issued?
9. List the permitting/regulatory authorities for groundwater in the state
- a. Who is/are the Agency/Department(s)
 - b. List contact information (website)
 - c. What is the scope of authority/responsibility? (permitting, monitoring, etc.)
 - d. Are there any special districts present?
 - i. Designated Basins/Districts
 - ii. Critical Groundwater management Areas

10. Transboundary Arrangements and/or Conflicts

- a. Is the state a party to a trans-boundary arrangement that involves or pertains to groundwater resources? (agreement to store/trade/relinquish water or rights)
 - i. What is the scope and objective of the arrangement?
 - ii. How long does it last/ how often must it be renewed?
- b. Is the state involved in a transboundary conflict that involves or pertains to groundwater resources? (litigation/dispute)
 - i. Who are the parties?
 - ii. What is the basic issue in dispute?

11. Native American Rights (pacts, agreements, exemptions, separate regime, etc.)

- a. Does the state grant exemptions, benefits, concessions, etc. to tribes that involves or pertains to groundwater resources? If so, what are they?
- b. If tribal groundwater rights are wholly or mostly separate from the state's regime, please prepare a separate summary of the tribe's groundwater legal regime following (to the extent possible) the same format as provided in this questionnaire. Please attach that summary to your completed summary for this state.

12. Additional Useful Information (including links)

Appendix B: Research Protocol

U.S. GROUNDWATER LAW SURVEY – RESEARCH PROTOCOL

TEXAS A&M UNIVERSITY SCHOOL OF LAW / TEXAS TECH UNIVERSITY SCHOOL OF LAW

Brief Synopsis: We are compiling a comprehensive survey of the various U.S. groundwater law regimes. This research will allow Professors Eckstein and Hardberger to analyze both regional and state comparisons, while also identifying parallels among the different legal regimes. Given the nature of the research, this will provide an expansive audience with a tool that provides laws and regulations for specific states, while also allowing for intra-state comparisons.

Each state differs in the amount of available law that is applicable to groundwater. Some states are rather innovative, while others hardly have a governance structure. Outlined below is a general approach and protocol, to provide guidance and facilitate our efforts to compile a final product that is uniform and consistent throughout.

A. Guidelines Before Starting Research

I. SEE COMPLETED STATE SURVEYS FOR A MODEL GUIDE BEFORE ANSWERING SURVEY QUESTIONS –

- Our shared Google Drive, in folder #1, contains completed state surveys completed. Please read these before beginning your first state survey, as our primary goal is to have a uniform product that represents all fifty states.
- If you cannot respond to one or more of the questions in the questionnaire, or you feel the information is not conclusive, please make note of this in your survey answers as the lack of laws in particular instances can also be significant.
- Different sources (i.e., cases, treatises, articles) may not agree on the classification of a groundwater legal regime. This is important in itself, so please mention it in the appropriate section.
- The sources will not explicitly yield an answer for every question, so do your best to reach the second level of analysis.

II. FOOTNOTES (BLUEBOOK RULES) –

- Provide footnotes for each referenced source and apply citation rules set out in the most recent version of the Bluebook.
- Please use pincites if quoting a case or citing a law review article. We want to make it as easy as possible for the Professors to edit the material, and other researchers to find the sources used.
- Do not use in-text citations for sources, *always use footnotes*
- Also, cite the full source for each citation, rather than using Id.'s. We want to make it as easy as possible to edit the final drafts. At that point, we can clean up and finalize the footnotes.

B. Groundwater Law Research Process

I. WATERS & WATER RIGHTS TREATISE (LEXISNEXIS) –

- Begin your research with this document, which provides an informative outline of water rights for each state. This information, however, is only a starting point, and the material contained in the treatise should be cross-referenced and verified by the actual case or statute.
- The Treatise will give clues to whether the groundwater law for the state is based on statutes or common law, or some derivative of both
- Before reviewing statutes or cases, review the Treatise to identify the particular sources of law for each state. You may cite the Treatise author’s analysis if you find it informative and necessary (e.g., you cannot find any primary sources providing the same information).
- Upon reading this source as background, it will be more efficient to locate the relevant statutes and case law.
- To Access the Treatise, make sure you are logged in on Lexis and go to: <https://advance.lexis.com/api/permalink/74077129-7464-4de0-a09d-504447e75cf7/?context=1000516>. On the dropdown menu, click on Part XI – River Basin and State Surveys, then click on the respective state and navigate to the appropriate section with groundwater law.

II. LAW REVIEW ARTICLES –

- Various scholars have written law review articles about state groundwater law. A quick Westlaw/Lexis search is advantageous. However, please be judicious in assessing whether to use such articles in your research, taking into account the experience and knowledge of the authors.
- If you come across law review articles that are reliable and relevant to your assignment or another state, please upload them to the “Misc. Groundwater Resources” folder in our Google Drive.

III. STATUTES (WESTLAW) –

- Westlaw is often the easiest database to use because you can save a range of statutes at a time.
- Each state is different, but when you locate the water law section, go to the right level, and you can save approximately twenty statutes at a time, which will make your research much more efficient
- To Access Ranges of Statutes: On the WestlawNext homepage, click on Statutes & Court Rules, click on the respective State & Title, on the page that lists the Statutes. Then click on the Select Delivery Method in top right (green arrow), Click Layout and Limits tab, then select desired range.

IV. REGULATIONS (WESTLAW) –

- This is an important aspect of the survey, because these rules often aren't mentioned in the Water Rights Treatise and the administrative regulations may have a direct effect on our target audience.
- These are the codification of the statutes and provide more details regarding the various state agencies' authority.
- To Access State Admin. Codes: On WestlawNext homepage, click on Regulations, then select respective state. Find the relevant state agency (e.g., Alabama Dept. of Natural Resources) and download regulations the same as Statutes.

V. CASE LAW –

- Save a pdf of each case referenced in your survey in our Google Drive within the individual state folder.
- Rather than summarizing opinions and risking the misinterpretation of particular intricacies, consider directly quoting significant rules, holdings, etc.
- Generally, case law should come after statutes and regulations, particularly if the court is interpreting various groundwater regulations and statutes.

VI. STATE AGENCY WEBSITE –

- A quick google search should take you to the particular agency (or agencies) that is in charge of each state.
- You can find the address here, along with related information
- These agency websites also have information on special districts, though many times the state has the authority to create districts, but has not chosen to do so.
- If you find any useful maps, charts, or other images on these websites, especially if they are in high resolutions, please save them to in our Google Drive within the individual state folder. Make sure to provide (either in your state survey or a separate text document) the web address where you found the image.



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