



Carbon Capture and Storage: Analysis of Potential Liabilities Associated with Groundwater Contamination Due to Geological Sequestration Operations

September 10, 2008

Prepared by Fredric P. Andes and Kari A. Evans, members of the Barnes & Thornburg LLP Water Team, for the American Public Power Association (APPA)

Background

Carbon capture and storage (CCS) has been identified as a key component of any strategy to address rising levels of greenhouse gasses in the atmosphere, which is widely believed to be contributing to climate change. CCS involves capturing carbon dioxide (CO₂) from emission sources, and injecting it into deep underground geologic formations below the lowest source of drinking water. Figure 1 shows the locations of deep saline aquifers, which are considered suitable repositories for CO₂. The concept is to trap the CO₂ in a form and location such that it can be stored indefinitely, rather than being released to the atmosphere.

Although the whole purpose of CCS is to store CO₂ in a stable form and location so that it is not released to the atmosphere, there are concerns that migration of CO₂ from the deep rock formations GS could occur, posing potential threats to underground sources of drinking water (referred to as “USDWs”). To address this concern, U.S. EPA issued a proposed regulation this year to establish permitting requirements for underground injection of CO₂, which U.S. EPA is calling geological sequestration (GS).¹ U.S. EPA is

¹ 73 Fed. Reg. 43492 (Jul. 25, 2008); the comment period ends November 24, 2008. The notice can be found at <http://edocket.access.gpo.gov/2008/pdf/E8-16626.pdf>. U.S. EPA’s Advance Notice of Proposed Rulemaking on Regulating Greenhouse Gas Emissions Under the Clean Air Act (<http://www.epa.gov/climatechange/anpr.html>) also contains background information on CCS, including GS.

proposing to use the existing framework of the Underground Injection Control (UIC) program of the Safe Drinking Water Act (SDWA) to regulate GS.² The UIC program is meant to protect USDWs from potential contamination by imposing requirements for siting, designing, constructing, monitoring, and maintaining underground injection wells.

In the preamble to the proposed regulation, U.S. EPA acknowledges the following fundamental limitation:

[I]t is recognized that some injection activities may raise cross-state boundary issues that are beyond the scope of this rulemaking.³

This admitted limitation raises questions concerning the impacts of existing state programs regulating water quality on GS. The American Public Power Association (APPA) is evaluating this issue because many questions have emerged regarding liabilities associated with water – particularly groundwater – contamination that could occur as a result of GS. No commercially demonstrated CCS power plants have been built to date, and only a few small scale demonstrations (1 – 2 megawatts) of carbon separation technology are underway.⁴ Thus, there is uncertainty regarding potential effectiveness of CCS technology, including long-term stability of GS. This paper provides an analysis of the potential liabilities associated with groundwater

² 42 U.S.C. 300h *et. seq.*

³ 73 Fed. Reg. at 43497.

⁴ The Swedish power company Vattenfall AB commenced operations on September 9, 2008, at its pilot plant in Germany, a 30 megawatt test unit which cost about \$100 million to build. This pilot project is located at Vattenfall's existing power station in Schwarze Pumpe, Germany, a 600 megawatt plant fueled by lignite. The CO₂ produced by the pilot plant will not be released into the atmosphere; instead, the CO₂ will be almost completely separated, liquefied and further treated for long-term secure underground storage. This geologic sequestration or separation at a commercial scale is announced but not yet operational. The company hopes to have this first plant and other plants operational by 2015, with an ultimate goal of creating commercially viable carbon capture and storage technology by 2020. Vattenfall said its ultimate goal is to reduce CCS costs to approximately \$30 per metric ton (tonne) of captured CO₂, but it noted that the technology would be viable if it could cut the cost to a range of \$35 to \$42 per tonne by 2020.

contamination due to GS operations, including situations in which the geologic formations into which CO₂ will be injected crosses state boundaries.

1. How many states have listed or designated groundwater as “waters of the state,” and what is the significance for getting CCS permitting approval?

The chart at the end of this paper provides a listing of the relevant regulatory definitions for each state and U.S. territory. All states and U.S. territories expressly include groundwater within their definitions of “waters of the state” and/or within their water quality regulatory framework. However, states generally segregate their surface water quality standards and Clean Water Act (CWA) permitting programs from their groundwater quality protection measures.

The potential significance this existing state framework presents for obtaining CCS permitting approval cannot be fully understood at this time, because much will depend on whether states will decide to use their existing authorities or adopt new measures to impose requirements or liabilities that will be more stringent than the U.S. EPA UIC permitting program for GS. The federal UIC program allows states to adopt and implement programs that are more stringent than the federal program.⁵

Furthermore, there could be unintended consequences and associated potential liability relative to imprecise applicability of state clean water programs. For example, if a state includes groundwater in its definition of “waters of the state,” and has an antidegradation policy that covers all waters of the state, it is possible that even if the state does not do anything to implement the antidegradation policy as it concerns groundwater, one could raise a claim that the policy would apply to introduction of a new wastestream to a groundwater source, as would be the case with GS operations.

⁵ 42 U.S.C. § 300h-2(d).

2. **If a nearby state has a groundwater determination of water of the state, what liability could attach to a utility in an adjacent state for having injected CO₂, or produced briny water or any contaminant related to drilling and injection (i.e., muds, cement, salty produced water, mercury, arsenic, boron, NORM).**

U.S. EPA's proposed regulation (including the preamble) addresses how the UIC program for GS would interact with the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or "Superfund").⁶ While uncertainty remains regarding whether and how these federal remediation laws would apply to GS activities, it appears likely that Superfund liability could attach to those involved in GS operations if a UIC program regulating GS operations is incorporated into the applicable or relevant and appropriate requirements (ARARs) that govern Superfund remediation activities. Additional information about potential liabilities under RCRA and Superfund are explored in another APPA white paper on the legal and environmental challenges associated with CCS.⁷

As discussed in the previous section of this paper, what is less clear is how the proposed regulation would interact with existing state water quality and groundwater protection programs, particularly in cross-boundary situations. Although U.S. EPA has stated that the proposed regulation does not address cross-boundary water quality issues, such issues will undoubtedly arise. These issues have been clearly addressed in surface water situations regulated by the CWA. In *Arkansas v. Oklahoma*, the U.S. Supreme Court considered whether an NPDES permit issued by U.S. EPA to a sewage treatment plant in Arkansas was invalid due to claims that the discharge to a waterbody upstream of

⁶ 73 Fed. Reg. at 43503-43504.

⁷ "Carbon Capture and Sequestration: Legal and Environmental Challenges Ahead," prepared by Marianne Horinko, The Global Environment & Technology Foundation, for APPA (Aug. 2007).

the Illinois River, which in turn flows into Oklahoma, could cause or contribute to a violation of Oklahoma water quality standards.⁸ The Court ruled that the CWA pre-empts a neighboring state from bringing a common law action against discharges from NPDES-permitted facilities. In such situations, the permitting authority (U.S. EPA or a state with delegated permitting authority) must consider the downstream impacts to neighboring states when issuing the permit.

The SDWA does not contain a similar provision respecting the IUC program. Also, as noted in the previous section of this paper, the SDWA does not pre-empt states from adopting or enforcing their own laws or regulations on underground injection as long as the UIC program requirements are met. Thus, the potential exists for states with sufficient state-based authority to take action concerning groundwater contamination associated with a GS operation in a neighboring state.

Perhaps the greatest potential liability associated with GS is tort actions in which a party claims it has been injured by groundwater contamination due to CO₂ storage. In particular, there is a concern about long-term liability once an injection well has been closed. Potential tort liability for GS is similar in nature but distinguishable from the liability that has been associated with MTBE, the fuel additive that reduced certain air emissions but also resulted in drinking water contamination due to leaking underground storage tanks and spills. MTBE contamination litigation has been filed by private citizens and states against companies that produced and used MTBE. Much of that litigation has been based upon product liability claims – *i.e.*, that MTBE, as manufactured

⁸ 503 U.S. 91 (1992).

and used as fuel additive, was a defective commercial product that caused injury. In contrast, GS does not produce a “product,” but is a containment or disposal method.

When questioned about this liability issue, U.S. EPA officials have stated that they do not believe the agency has the authority to address it by regulation, and that an act of Congress would be necessary. Congressional action would certainly be the best method to assure that tort liability is limited. Congress has taken such action in other situations in which it has been deemed necessary and in the public interest to enable important activities. For example, Congress has enacted the Price-Anderson Nuclear Industries Indemnity Act to address liability issues related to non-military nuclear facilities.⁹ The Price-Anderson Act provides partial indemnification against liability claims arising from nuclear incidents. It also creates an insurance system in which the nuclear industry funds claims up to a certain level, with any excess in claims being covered by the federal government. Such an approach was deemed necessary by Congress to overcome the concerns of potential nuclear energy investors about open-ended liability. The U.S. Supreme has upheld the constitutionality of the Price-Anderson Act with the following specific findings:

(a) The record supports the need for the imposition of a statutory limit on liability to encourage private industry participation and hence bears a rational relationship to Congress’ concern for stimulating private industry’s involvement in the production of nuclear electric energy.

(b) Assuming, *arguendo*, that the \$560 million fund would not insure full recovery in all conceivable circumstances, it does not follow that the liability limitation is therefore irrational and violative of due process. When appraised in light of the extremely remote possibility of an accident in which liability would exceed the statutory limit and Congress’ commitment to “take whatever action is deemed

⁹ 42 U.S.C. § 2210.

necessary and appropriate to protect the public from the consequences of” a disaster of such proportions, the congressional decision to fix a \$560 million ceiling is within permissible limits and not violative of due process.

(c) The District Court’s finding that the Act tends to encourage irresponsibility in matters of safety and environmental protection cannot withstand careful scrutiny, since nothing in the liability-limitation provision undermines or alters the rigor and integrity of the process involved in the review of applications for a license to construct or operate a nuclear power plant, and since, in the event of a nuclear accident the utility itself would probably suffer the largest damages.

(d) The Act provides a reasonably just substitute for the common law or state tort law remedies it replaces, and nothing more is required by the Due Process Clause. The congressional assurance of a \$560 million fund for recovery, accompanied by the statutory commitment to “take whatever action is deemed necessary and appropriate to protect the public from the consequences of” a nuclear accident, is a fair and reasonable substitute for the uncertain recovery of damages of this magnitude from a utility or component manufacturer whose resources might well be exhausted at an early stage. And, at the minimum, the statutorily mandated waiver of defenses establishes at the threshold the right of injured parties to compensation without proof of fault and eliminates the burden of delay and uncertainty that would follow from the need to litigate the question of liability after an accident.

(e) There is no equal protection violation, since the general rationality of the Act’s liability limitation, particularly with reference to the congressional purpose of encouraging private participation in the exploitation of nuclear energy, is ample justification for the difference in treatment between those injured in nuclear accidents and those whose injuries are derived from other causes.¹⁰

A similar situation exists with the potential for large-scale GS of CO₂ in the United States. It is possible that through Congressional action on CO₂ or through a state-by-state BACT determination that IGCC plus CCS technologies for CO₂ sequestration

¹⁰ *Duke Power Co. v. Carolina Environmental Study Group*, 438 U.S. 59, 60-61 (1978).

would be the presumed required coal based generation technology to control CO₂, in the near future—perhaps as early as 2009 or 2010. GS is often presumed to be a key strategy for reducing future CO₂ emissions to the atmosphere. The federal government appears to expect that private industry will take the lead in financing, constructing, operating and maintaining GS sites. Therefore, in exchange for performing this “public good” (*i.e.*, reducing the environmental impacts associated with production of a public commodity), Congress might opt to limit industry’s liability for unanticipated and unintended consequences of GS, including groundwater contamination. However, to date, none of the leading bills in Congress to address CO₂ from power plants have included any revisions to existing Federal environmental laws to address liability.

In the absence of a federal limitation on liability, individual states could adopt their own legislation to limit liability of GS operations. However, a state-by-state approach would not necessarily ensure liability limitations in cross-boundary situations, because the neighboring state may not have a corresponding law. States could also join together to adopt a multi-state compact on GS, including liability limitations. Interstate compacts are provided for in the U.S. Constitution, and are widely used by states to address issues that involve multiple states in situations where Congress has not acted (or in cases where the states have a preference for a Compact as opposed to a federal law).

3. If a state’s groundwater is not classified as a water of the state now and a power plant gets permitted for operation, could it be affected say 5 or 10 years from now if the nearby state designated the groundwater as a water of the state?

As discussed in section 1 of this paper, it appears that all states and U.S. territories already include groundwater within their legal definitions of “waters of the state.” Thus, any potential liabilities associated with GS operations affecting groundwater in a

neighboring state would be present at the time a GS operation is sited and permitted. In other words, potential liability would already exist, and thus would not arise only as the result of future changes in state laws.

4. What are the legal actions available to citizens or private parties or states? Please explain if there are citizen suit actions available through only tort litigation for alleged CWA or SDWA violations or if permits could be either withheld or stopped. In other words could a utility get a permit and be operating a new CCS plant and say 8 years after operation find that its permit to operate was now under question by that state agency or by a nearby state which shares a deep saline aquifer?

Both the SDWA and CWA contain citizen suit provisions, and many states have similar citizen suit laws regarding violations of state-based environmental laws. The CWA provision¹¹ authorizes suits following notice against any person alleged to have violated a CWA effluent standard or limitation or an order issued by U.S. EPA or a state related to such a standard or limitation. A suit may also be filed against U.S. EPA for an alleged failure to perform any non-discretionary CWA act or duty. Suits are foreclosed if U.S. EPA or a state is diligently prosecuting the person alleged to have caused the violation. The SDWA provision¹² contains a similar citizen suit provision. It is important to note that both statutes contain express statements that other statutory or common law rights are not restricted. For example, the CWA states:

Statutory or common law rights not restricted.

Nothing in this section shall restrict any right which any person (or class of persons) may have under any statute or common law to seek enforcement of any effluent standard or limitation or to seek any other relief (including relief against the Administrator or a State agency).¹³

¹¹ 33 U.S.C. § 1365.

¹² 42 U.S.C. § 300j-8.

¹³ 33 U.S.C. § 1365(e).

Thus, private parties would retain a private right of action to pursue suits based upon tort and other common law claims, even if a citizen would be foreclosed under the CWA or SDWA.

About the American Public Power Association

Public power is the term used to describe the more than 2,000 municipal and other state and local community-owned electric utilities that provide electricity for approximately 45 million Americans. These public power systems are among the most diverse of the electric utility sectors, representing utilities in small, medium and large communities in 49 states (all but Hawaii). Seventy-five percent of public power systems are located in cities with populations of 10,000 or less. The majority of public power systems do not generate electricity and serve as distribution utilities. Overall, public power accounts for about 16 percent of all kilowatt-hour sales to consumers. More than 80% of the cities with public power utilities also manage public water utilities.

APPA was created in 1940 as a non-profit, nonpartisan organization. Its purposes are to advance the public policy interests of its members and their consumers, and to provide member services to ensure adequate, reliable electricity at a reasonable price with the proper protection of the environment.

About the Authors

Fredric P. Andes is a partner in the Chicago and Washington, D.C. offices of Barnes & Thornburg LLP, Chairman of the Environmental Department and the leader of the firm's water team. He is also a member of the Firm's Management Committee. Mr. Andes is involved in counseling and litigation on issues arising under various federal and state environmental laws, with a special emphasis on Clean Water Act matters. Mr. Andes is involved in clean water issues on the national and state levels. He was selected by the EPA to serve on the Federal Advisory Committee on the Total Maximum Daily Load (TMDL) Program. He serves as coordinator for the Federal Water Quality Coalition, which is a group of municipal and other regulated parties that participate in EPA rulemakings and policy regarding key Clean Water Act programs. Mr. Andes also advised trade associations, industries, and municipalities on TMDLs, permits, and other water quality matters on the state and federal levels, including development of water quality standards, listings, TMDLs, and permit conditions. Before coming to Barnes & Thornburg, Mr. Andes was a partner with the Chicago law firm of Sonnenschein Nath & Rosenthal. Prior to working in Chicago, he spent nine years practicing environmental law in Washington, D.C. Mr. Andes graduated *cum laude* from Harvard Law School in 1980. He obtained his undergraduate degree from Northwestern University in 1977.

Kari A. Evans is of counsel in the Indianapolis, Indiana office of Barnes & Thornburg LLP where she is a member of the firm's Environmental and Government Services Departments. In April of 2008 she returned to Barnes & Thornburg after serving as policy director for Environment and Natural Resources for Indiana Governor Mitch

Daniels. Ms. Evans previously practiced at Barnes & Thornburg from 2000 to 2005. Ms. Evans represents businesses, local governments, and trade associations throughout the country on all aspects of environmental compliance, including legislative and regulatory development; permitting; and enforcement. She has litigated environmental cases in federal, state, and administrative courts, and has negotiated with federal, state, and local agencies to achieve resolutions to complex environmental issues. As Governor Daniels' policy director for Environment and Natural Resources, Ms. Evans developed and advocated policy on significant national, regional, and state issues, including the Great Lakes Water Resources Compact, Great Lakes water discharge permitting, air quality standards and attainment designations, and mercury emission reduction requirements for electric utilities. Prior to joining Barnes & Thornburg in 2000, Ms. Evans was chief of the Water Rules Section at the Indiana Department of Environmental Management (IDEM). Ms. Evans earned her J.D. *cum laude* from the University of Minnesota Law School and received her B.S. in environmental science from Miami University in Oxford, Ohio.

Figure 1: North American Deep Saline Aquifers



Source: National Energy Technology Laboratory (NETL), U.S. Department of Energy

For more information and other White Papers on CCS, please see APPA's website at:
<http://www.appanet.org/files/HTM/ccs.html>

Appendix 1: "Waters of the State" Survey Chart is attached to this paper, which outlines the definition of "Waters of the State" for U.S. States and Territories.

APPA Contact:

Theresa Pugh
Director, Environmental Services
1875 Connecticut Ave, NW, 12th Floor
Washington, DC 20009
202-467-2956
TPugh@APPAnet.org

APPENDIX 1: “WATERS OF THE STATE” SURVEY CHART

STATE	LAW	DEFINITION OF “WATERS OF THE STATE”	LINK
Alabama	ADEM Admin. Code. R. 335-6-335-6-5-.02	“Waters of the State” means all waters of any river, stream, watercourse, pond, lake, coastal, ground or surface water, wholly or partially within the state, natural or artificial. This does not include waters which are entirely confined and retained completely upon the property of a single individual, partnership or corporation unless such waters are used in interstate commerce.	http://www.adem.state.al.us/regulations/Div6a/Div6VolIeff27May2008.pdf
Alaska	AS 46.030.900	“Waters” includes lakes, bays, sounds, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, straits, passages, canals, the Pacific Ocean, Gulf of Alaska, Bering Sea, and Arctic Ocean, in the territorial limits of the state, and all other bodies of surface or underground water, natural or artificial, public or private, inland or coastal, fresh or salt, which are wholly or partially in or bordering the state or under the jurisdiction of the state.	http://www.touchngo.com/lglcntr/akstats/Statutes/Title46/Chapter03/Section900.htm
American Samoa	ASC 24.0201	<p>“Fresh surface waters” means all fresh territorial waters including perennial, intermittent, and ephemeral freshwater streams, all natural and artificial impoundments, springs, seeps and wetlands, including coastal wetlands not surface-connected to the ocean. This includes all surface territorial waters that are not embayments, open coastal waters, or ocean waters.</p> <p>“Ground water” means water in the part of the ground that includes all subsurface waters, basal and parabasal water, perched water, water percolating through the unsaturated zone, and all saline waters below and along the perimeter of the basal fresh water body.</p> <p>“Ocean waters” means those waters that extend from the 100-fathom (600-foot or 183-meter) depth contour seaward.</p> <p>“Open coastal waters” means those waters that begin at the shoreline and extend seaward to the 100-fathom (600-foot or 183-meter) depth contour from mean lower low water. This category includes small bays with good water movement which do not qualify as embayments.</p> <p>“Territorial waters” means waters of the United States as defined in 40 CFR 122.2, as well as those that are located within the jurisdiction of the territory.</p>	http://www.epa.gov/waterscience/standards/wqslibrary/territories/american_samoa_9_wqs.pdf

STATE	LAW	DEFINITION OF “WATERS OF THE STATE”	LINK
Arizona	ARS Title 49-201	“Waters of the state” means all waters within the jurisdiction of this state including all perennial or intermittent streams, lakes, ponds, impounding reservoirs, marshes, watercourses, waterways, wells, aquifers, springs, irrigation systems, drainage systems and other bodies or accumulations of surface, underground, natural, artificial, public or private water situated wholly or partly in or bordering on the state.	http://www.azleg.state.az.us/FormatDocument.asp?inDoc=/ars/49/00201.htm&Title=49&DocType=ARS
Arkansas	AR BLR 8-4-102	“Waters of the state” means all streams, lakes, marshes, ponds, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon this state or any portion of the state.	http://www.arkleg.state.ar.us/NXT/gateway.dll?f=templates&fn=default.htm&vid=blr.code
California	CA CODE 2-13050	“Waters of the state” means any surface water or groundwater, including saline waters, within the boundaries of the state.	http://law.justia.com/california/codes/wat/13050-13051.html
Colorado	5 CCR 1002-31	“State waters” means any and all surface and subsurface waters which are contained in or flow in or through this state, but does not include waters in sewage systems, waters in treatment works of disposal systems, waters in potable water distribution systems, and all water withdrawn for use until use and treatment have been completed.	http://www.cdphe.state.co.us/regulations/wqccregs/index.html
Connecticut	CT Statutes 22a-423	“Waters” means 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	http://cga.ct.gov/2007/pub/Chap446k.htm#Sec22a-423.htm

STATE	LAW	DEFINITION OF “WATERS OF THE STATE”	LINK
Delaware	7 DNREC 7202	<p>“State Waters” or “Waters Of The State” means all water, on the surface and under the ground, wholly or partially within, or bordering the State, or within its jurisdiction including but not limited to:</p> <ul style="list-style-type: none"> • Waters which are subject to the ebb and flow of the tide including, but not limited to, estuaries, bays and the Atlantic Ocean; • All interstate waters, including interstate wetlands; • All other waters of the State, such as lakes, rivers, streams (including intermittent and ephemeral streams), drainage ditches, tax ditches, creeks, mudflats, sandflats, wetlands, sloughs, or natural or impounded ponds; • All impoundments of waters otherwise defined as waters of the State under this definition; • Wetlands adjacent to waters (other than waters that are themselves wetlands) identified above. <p>Waste and stormwater treatment systems including, but not limited to, treatment ponds or lagoons designed to meet the requirements of the Act (other than cooling ponds which otherwise meet the requirements of subsection (1) of this definition) are not “State waters” or “Waters of the State.”</p>	http://regulations.delaware.gov/AdminCode/title7/7000/7200/7201.shtml#TopOfPage
Florida	FL Stat. 403.031	<p>“Waters” include, but are not limited to, rivers, lakes, streams, springs, impoundments, wetlands, and all other waters or bodies of water, including fresh, brackish, saline, tidal, surface, or underground waters. Waters owned entirely by one person other than the state are included only in regard to possible discharge on other property or water. Underground waters include, but are not limited to, all underground waters passing through pores of rock or soils or flowing through in channels, whether manmade or natural. Solely for purposes of s. 403.0885, waters of the state also include navigable waters or waters of the contiguous zone as used in s. 502 of the Clean Water Act, as amended, 33 U.S.C. ss. 1251 et seq., as in existence on January 1, 1993, except for those navigable waters seaward of the boundaries of the state set forth in s. 1, Art. II of the State Constitution. Solely for purposes of this chapter, waters of the state also include the area bounded by the following: [specific boundaries omitted]</p>	http://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=Ch0403/Sec031.HTM

STATE	LAW	DEFINITION OF “WATERS OF THE STATE”	LINK
Georgia	GA 391-3-6	<p>“Water” or “waters of the State” means any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs, wells, wetlands, and all other bodies of surface or subsurface water, natural or artificial, lying within or forming a part of the boundaries of the State which are not entirely confined and retained completely upon the property of a single individual, partnership, or corporation.</p>	<p>http://www.gaepd.org/Documents/rules_exist.html</p>
Guam	Guam PL 26-32	<p>“Groundwater”: all subsurface water and includes basal and parabasal water, perched water, all water below the groundwater table, water percolating through the unsaturated zone (vadose water), all saline waters below and along the perimeter of the basal fresh water body (freshwater lens), and water on the surface that has been collected with the specific intent of recharging or disposing of that water to the subsurface by means of injection, infiltration, percolation, etc.</p> <p>“Marine Waters”: all coastal waters off-shore from the mean high water mark, including estuarine waters, lagoons and bays, brackish areas, wetlands and other special aquatic sites, and other inland waters that are subject to ebb and flow of the tides.</p> <p>“Surface Waters”: all of surface freshwater and includes: (1) waters that flow continuously over land surfaces in a defined channel or bed, such as streams and rivers; (2) standing water in basins, such as lakes, wetlands, marshes, swamps, ponds, sinkholes, ponding basins, impoundments, and reservoirs, either natural or man-made; and (3) all waters flowing over the land as runoff, or as runoff confined to channels with intermittent flow.</p>	<p>http://www.epa.gov/waterscience/standards/wqslibrary/territories/guam_9_wqs.pdf</p>
Hawaii	H.R.S. 342D-1	<p>“State waters”, as defined by section 342D-1, HRS, means all waters, fresh, brackish, or salt around and within the State, including, but not limited to, coastal waters, streams, rivers, drainage ditches, ponds, reservoirs, canals, ground waters, and lakes; provided that drainage ditches, ponds, and reservoirs required as part of a water pollution control system are excluded.</p> <p>“State waters” means all waters, fresh, brackish, or salt, around and within the State, including, but not limited to, coastal waters, streams, rivers, drainage ditches, ponds, reservoirs, canals, ground waters, and lakes; provided that drainage ditches, ponds, and reservoirs required as a part of a water pollution control system are excluded.</p>	<p>http://www.capitol.hawaii.gov/hrscurrent/Vol06_Ch0321-0344/HRS0342D/HRS_0342D-0001.htm</p>

STATE	LAW	DEFINITION OF “WATERS OF THE STATE”	LINK
Idaho	IDAPA 58.01.02	“Waters And Waters Of The State”: All the accumulations of water, surface and underground, natural and artificial, public and private, or parts thereof which are wholly or partially within, which flow through or border upon the state.	http://adm.idaho.gov/adminrules/rules/idapa58/0102.pdf
Illinois	35 IAC 301	“Waters” means all accumulations of water, surface and underground, natural, and artificial, public and private, or parts thereof, which are wholly or partially within, flow through, or border upon the State of Illinois, except that sewers and treatment works are not included except as specially mentioned; provided, that nothing herein contained shall authorize the use of natural or otherwise protected waters as sewers or treatment works except that in-stream aeration under Agency permit is allowable.	http://www.ipcb.state.il.us/documents/dsweb/Get/Document-33351/
Indiana	IC 13-11-2-265	<p>“Waters”, for purposes of water pollution control laws and environmental management laws, means: (1) the accumulations of water, surface and underground, natural and artificial, public and private; or (2) a part of the accumulations of water; that are wholly or partially within, flow through, or border upon Indiana.</p> <p>(b) The term “waters” does not include: (1) an exempt isolated wetland; (2) a private pond; or (3) an off-stream pond, reservoir, wetland, or other facility built for reduction or control of pollution or cooling of water before discharge.</p> <p>(c) The term includes all waters of the United States, as defined in Section 502(7) of the federal Clean Water Act (33 U.S.C. 1362(7)), that are located in Indiana.</p>	http://www.in.gov/legislative/ic/code/title13/ar11/ch2.html
Iowa	IA Code 455B.171	“Water of the state” means any stream, lake, pond, marsh, watercourse, waterway, well, spring, reservoir, aquifer, irrigation system, drainage system, and any other body or accumulation of water, surface or underground, natural or artificial, public or private, which are contained within, flow through or border upon the state or any portion thereof.	http://www.legis.state.ia.us/IACODE/2003SUPPLEMENT/455B/171.html
Kansas	KS65-161	“Waters of the state” means all streams and springs, and all bodies of surface and subsurface waters within the boundaries of the state.	http://www.kslegislature.org/legsrv-statutes/getStatuteFile.do?number=/65-161.html

STATE	LAW	DEFINITION OF “WATERS OF THE STATE”	LINK
Kentucky	KRS 224A.011	“Waters of the state” means all streams, lakes, watercourses, waterways, ponds, marshes, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, which are situated wholly or partly within, or border upon, this state, or are within its jurisdiction, except those private waters which do not combine or effect a junction with natural, surface, or underground waters.	http://www.lrc.ky.gov/krs/224a00/011.pdf
Louisiana	LAC 33, part IX, Subpart 1, Section 107	“Waters of the State”: both the surface and underground waters within the state of Louisiana including all rivers, streams, lakes, estuaries, ground waters and all other water courses and waters within the confines of the state, and all bordering waters and the Gulf of Mexico.	http://www.deq.louisiana.gov/portal/Portals/0/planning/regs/title33/33v09-200806.pdf
Maine	ME Title 38, Section 361 A	“Waters of the State” means any and all surface and subsurface waters that are contained within, flow through, or under or border upon this State or any portion of the State, including the marginal and high seas, except such waters as are confined and retained completely upon the property of one person and do not drain into or connect with any other waters of the State, but not excluding waters susceptible to use in interstate or foreign commerce, or whose use, degradation or destruction would affect interstate or foreign commerce.	http://janus.state.me.us/legis/statutes/38/title38sec361-A.html
Maryland	MD Code 26.08.01.01	“Waters of this State” includes: (a) Both surface and underground waters within the boundaries of this State subject to its jurisdiction, including that part of the Atlantic Ocean within the boundaries of this State, the Chesapeake Bay and its tributaries, and all ponds, lake, rivers, streams, tidal and nontidal wetlands, public ditches, tax ditches, and public drainage systems within this State, other those designed and used to collect, convey, or dispose of sanitary sewage; (b) The flood plain of free-flowing waters determined by the Department of Natural Resources on the basis of the 100-year flood frequency.	http://www.mde.state.md.us/ResearchCenter/laws_regs/index.asp
Massachusetts	314 CMR 4.03	“Waters of the Commonwealth”: All waters within the jurisdiction of the Commonwealth, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, coastal waters, groundwaters, and vernal pools.	http://www.mass.gov/dep/service/regulations/314cmr_04.pdf
Michigan	MCL 324.30101	“Waters of the state” means groundwaters, lakes, rivers, and streams and all other watercourses and waters, including the Great Lakes, within the jurisdiction of this state.	http://www.legislature.mi.gov/(S(npb1fprfohsvdafzophjhvv1))/mileg.aspx?page=getObject&objectname=mcl-324-3101

STATE	LAW	DEFINITION OF “WATERS OF THE STATE”	LINK
Minnesota	MAR 115.01	“Waters of the state” means all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, reservoirs, aquifers, irrigation systems, drainage systems and all other bodies or accumulations of water, surface or underground, natural or artificial, public or private, which are contained within, flow through, or border upon the state or any portion thereof.	https://www.revisor.leg.state.mn.us/statutes/?id=115.01
Mississippi	MS WPC-1	“Waters of the State” means all waters within the jurisdiction of this State, including all streams, lakes, ponds, wetlands, impounding reservoirs, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, situated wholly or partly within or bordering upon the State, and such coastal waters as are within the jurisdiction of the State, except lakes, ponds, or other surface waters which are wholly landlocked and privately owned, and which are not regulated under the Federal Clean Water Act (33 U.S.C.1251 et seq.).	http://www.deq.state.ms.us/newweb/MDEQRegulations.nsf?OpenDatabase
Missouri	MRS 644.016	“Waters of the state”: all rivers, streams, lakes and other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state which are not entirely confined and located completely upon lands owned, leased or otherwise controlled by a single person or by two or more persons jointly or as tenants in common and includes waters of the United States lying within the state.	http://www.moga.mo.gov/statutes/C600-699/6440000016.HTM
Montana	75-5-103	“State waters” means a body of water, irrigation system, or drainage system, either surface or underground. (b) The term does not apply to: (i) ponds or lagoons used solely for treating, transporting, or impounding pollutants; or (ii) irrigation waters or land application disposal waters when the waters are used up within the irrigation or land application disposal system and the waters are not returned to state waters.	http://www.epa.gov/waterscience/standards/wqslibrary/mt/mt_8_chapter5.pdf
Nebraska	Title 118, Chap. 1	“Waters of the State” shall mean all waters within the jurisdiction of this State including all streams, lakes, ponds, impounding reservoirs, marshes, wetlands, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface or underground, natural or artificial, public or private, situated wholly or partly within or bordering upon the State.	http://www.deq.state.ne.us/

STATE	LAW	DEFINITION OF “WATERS OF THE STATE”	LINK
Nevada:	NRS 445A.415	<p>“Waters of the State” means all waters situated wholly or partly within or bordering upon this State, including but not limited to:</p> <ol style="list-style-type: none"> 1. All streams, lakes, ponds, impounding reservoirs, marshes, water courses, waterways, wells, springs, irrigation systems and drainage systems; and 2. All bodies or accumulations of water, surface and underground, natural or artificial. 	http://www.leg.state.nv.us/NRS/NRS-445A.html#NRS445ASec415
New Hampshire	NH RSA 485-A NH RSA 485-C (Groundwater Protection Act)	<p>The purpose of this chapter is to protect water supplies, to prevent pollution in the surface and groundwaters of the state and to prevent nuisances and potential health hazards. In exercising any and all powers conferred upon the department of environmental services under this chapter, the department shall be governed solely by criteria relevant to the declaration of purpose set forth in this section.</p> <p>“Surface waters of the state” means perennial and seasonal streams, lakes, ponds, and tidal waters within the jurisdiction of the state, including all streams, lakes, or ponds bordering on the state, marshes, water courses, and other bodies of water, natural or artificial.</p> <p>“Groundwaters” shall mean all areas below the top of the water table, including aquifers, wells and other sources of groundwater.</p>	http://www.gencourt.state.nh.us/rsa/html/NHTOC/NHTOC-L.htm
New Jersey	NJAC 7:9B	<p>“Waters of the State” means the ocean and its estuaries, all springs, streams, wetlands, and bodies of surface or ground water, whether natural or artificial, within the boundaries of the State of New Jersey or subject to its jurisdiction.</p>	http://www.state.nj.us/dep/wms/bwqsa/docs/0608_SWQS.pdf
New Mexico	NMAC 20.8	<p>“Water” means all water including water situated wholly or partly within or bordering upon the state, whether surface or subsurface, public or private, except private waters that do not combine with other surface or subsurface water.</p>	http://www.nmenv.state.nm.us/Comm on/regs_idx.html

STATE	LAW	DEFINITION OF “WATERS OF THE STATE”	LINK
New York	NYECL 17-0105	“Waters” or “waters of the state” shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial limits of the state of New York and all other bodies of surface or underground water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters which do not combine or effect a junction with natural surface or underground waters), which are wholly or partially within or bordering the state or within its jurisdiction.	http://law.onecle.com/new-york/environmental-conservation/ENV017-0105_17-0105.html
North Carolina	NC G.S. 143-212	“Waters” means any stream, river, brook, swamp, lake, sound, tidal estuary, bay, creek, reservoir, waterway, or other body or accumulation of water, whether surface or underground, public or private, or natural or artificial, that is contained in, flows through, or borders upon any portion of this State, including any portion of the Atlantic Ocean over which the State has jurisdiction.	http://www.ncleg.net/EnactedLegislation/Statutes/HTML/ByArticle/Chapter_143/Article_21.html
North Dakota	ND Century Code 33-16-02.1	“Waters of the state” means all waters within the jurisdiction of this state including all streams, lakes, ponds, impounding reservoirs, marshes, watercourses, waterways, and all other bodies or accumulations of water on or under the surface of the earth, natural or artificial, public or private, situated wholly or partly within or bordering upon the state, except those private waters that do not combine or effect a junction with natural surface or underground waters just defined.	http://www.health.state.nd.us/WQ/SW/Z7_Publications/B_NDCC_WQS.pdf

STATE	LAW	DEFINITION OF “WATERS OF THE STATE”	LINK
Northern Mariana Islands	2 CMC 3101	<p>“Commonwealth Waters” means all waters, fresh, brackish, or marine, including wetlands, surrounding or within the Commonwealth, as provided for by Federal and Commonwealth law.</p> <p>Whereas the Commonwealth is almost entirely dependent on ground water for its drinking water supplies, these regulations set water quality standards for surface waters and land disposal activities to ensure the protection of this natural resource. Requirements for land disposal activities will be determined according to groundwater management zones promulgated under the CNMI Well Drilling and Well Operation Regulations for Saipan; for Tinian and Rota these requirements will be dependent on known geological and aquifer characteristics, lateral distances to nearby water wells, and general quality and vulnerability of existing ground water until specific groundwater quality management zones are developed.</p>	http://www.epa.gov/waterscience/standards/wqslibrary/territories/northern_mariana_9_wqs.pdf
Ohio	ORC Chapter 6111	<p>“Waters of the state” means all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and other bodies or accumulations of water, surface and underground, natural or artificial, regardless of the depth of the strata in which underground water is located, that are situated wholly or partly within, or border upon, this state, or are within its jurisdiction, except those private waters that do not combine or effect a junction with natural surface or underground waters.</p>	http://codes.ohio.gov/orc/6111
Oklahoma	OAR 785:45-1-2	<p>“Waters of the state” means all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon this State or any portion thereof.</p>	http://www.oar.state.ok.us/oar/codedoc02.nsf/frmMain?OpenFrameSet&Frame=Main&Src=_75tnm2shfcdnm8pb4dthj0chedppmcbq8dtmmak31ctijujrgcln50ob7ckj42tbkdt374obdcli00_
Oregon	OAR 340-041-0001	<p>“Waters of the State” means lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Pacific Ocean within the territorial limits of the State of Oregon, and all other bodies of surface or underground waters, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface or underground waters) that are located wholly or partially within or bordering the state or within its jurisdiction.</p>	http://arcweb.sos.state.or.us/rules/OARs_300/OAR_340/340_041.html

STATE	LAW	DEFINITION OF “WATERS OF THE STATE”	LINK
Pennsylvania	35 P.S. 961.1	“Waters of the Commonwealth” shall be construed to include any and all rivers, streams, creeks, rivulets, impoundments, ditches, water courses, storm sewers, lakes, dammed water, ponds, springs and all other bodies or channels of conveyance of surface and underground water, or parts thereof, whether natural or artificial, within or on the boundaries of this Commonwealth.	http://weblinks.westlaw.com/find/default.wl?spa=pac-1000&rs=WEBL8.08&fn=_top&findtype=VQ&sr=TC&db=1000262&vr=2.0&rp=%2ffind%2fdefault.wl&cite=IC91077C034-3D11DA8A989-F4EECDB8638
Puerto Rico	PR Water Quality Standards	“Waters of Puerto Rico”: All coastal waters, surface waters, estuarine waters, ground waters and wetlands as defined in this Regulation.	http://www.epa.gov/waterscience/standards/wqslibrary/pr/pr_2_wqs.pdf
Rhode Island	RI GA 46-15	“Waters of the State” or “The Waters” means all surface water and groundwater of the State of Rhode Island, including all tidewaters, territorial seas, wetlands, and land masses partially or wholly submerged in water; and both inter- and intra-state bodies of water which are, have been or will be used in commerce, by industry, for the harvesting of fish and shellfish or for recreational purposes.	http://www.dem.ri.gov/pubs/regs/
South Carolina	SC Code 48-1-10	“Waters” means lakes, bays, sounds, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic Ocean within the territorial limits of the State and all other bodies of surface or underground water, natural or artificial, public or private, inland or coastal, fresh or salt, which are wholly or partially within or bordering the State or within its jurisdiction.	http://www.scstatehouse.net/CODE/t48c001.htm
South Dakota	SDAR 74:51:01:01	“Waters of the state,” all waters within the jurisdiction of this state, including streams, lakes, ponds, impounding reservoirs, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, situated wholly or partly within or bordering on the state, but not waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA other than cooling ponds as defined in 40 C.F.R. § 423.11(m) (July 1, 1991).	http://legis.state.sd.us/rules/DisplayRule.aspx?Rule=74:51:01:01
Tennessee	TN Water Control Act of 1977	“Waters of the state”: any and all water, public or private, on or beneath the surface of the ground, which are contained within, flow through, or border upon Tennessee or any portion thereof except those bodies of water confined to and retained within the limits of private property in single ownership which do not combine or effect a junction with natural surface or underground waters.	http://www.aswm.org/swp/tennessee9.htm

STATE	LAW	DEFINITION OF “WATERS OF THE STATE”	LINK
Texas	TX WATER CODE 26	<p>“Water” or “water in the state” means groundwater, percolating or otherwise, lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, wetlands, marshes, inlets, canals, the Gulf of Mexico, inside the territorial limits of the state, and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, navigable or nonnavigable, and including the beds and banks of all watercourses and bodies of surface water, that are wholly or partially inside or bordering the state or inside the jurisdiction of the state.</p>	http://tlo2.tlc.state.tx.us/statutes/docs/WA/content/pdf/wa.002.00.000026.0_0.pdf
Utah	UT Admin. Code R317-1	<p>“Waters of the state” means all streams, lakes, ponds, marshes, water-courses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon this state or any portion thereof, except that bodies of water confined to and retained within the limits of private property, and which do not develop into or constitute a nuisance, or a public health hazard, or a menace to fish and wildlife, shall not be considered to be “waters of the state” under this definition (Section 19-5-102).</p>	http://www.rules.utah.gov/publicat/code/r317/r317-001.htm
Vermont	10 V.S.A. 1390, 1391	<p>“Groundwater” means water below the land surface, but does not include surface waters within the meaning of 10 V.S.A. § 1251(13).</p> <p>It is the policy of the state of Vermont that it shall protect its groundwater resources to maintain high quality drinking water and shall manage its groundwater resources to minimize the risks of groundwater quality deterioration by limiting human activities that present unreasonable risks to the use classifications of groundwater in the vicinities of such activities while balancing the state’s groundwater policy with the need to maintain and promote a healthy and prosperous agricultural community.</p>	http://www.leg.state.vt.us/statutes/sections.cfm?Title=10&Chapter=048
Virgin Islands	12 VIC 7.182(f)	<p>“Waters of the United States Virgin Islands” means all waters within the jurisdiction of the United States Virgin Islands including all harbors, streams, lakes, ponds, impounding reservoirs, marshes, water-courses, waterways, wells, springs, irrigation systems, drainage systems and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, situated wholly or partly within or bordering upon the United States Virgin Islands, including the territorial seas, contiguous zones, and oceans.</p>	http://www.michie.com/virginislands/lpext.dll?f=templates&fn=main-h.htm&cp=vicode

STATE	LAW	DEFINITION OF “WATERS OF THE STATE”	LINK
Virginia	VA Code 62.1-44-2	“Water” includes all waters, on the surface and under the ground, wholly or partially within or bordering the Commonwealth or within its jurisdiction and which affect the public welfare.	http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+62.1-10
Washington	RCW 90.48.020	Wherever the words “waters of the state” shall be used in this chapter, they shall be construed to include lakes, rivers, ponds, streams, inland waters, underground waters, salt waters and all other surface waters and watercourses within the jurisdiction of the state of Washington.	http://apps.leg.wa.gov/RCW/default.aspx?cite=90.48.020
Washington, D.C.	DCMR Title 21, Chapter 11	Waters of the District or District waters - flowing and still bodies of water, whether artificial or natural, whether underground or on land, so long as in the District of Columbia, but excludes water on private property prevented from reaching underground or land watercourses, and also excludes water in closed collection or distribution systems.	http://os.dc.gov/os/cwp/view,a,1207,q,639264.asp
West Virginia	WVC 22-11-3	“Water resources”, “water” or “waters” 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 this state and within its jurisdiction, and includes, without limiting the generality of the foregoing, natural or artificial lakes, rivers, streams, creeks, branches, brooks, ponds (except farm ponds, industrial settling basins and ponds and water treatment facilities), impounding reservoirs, springs, wells, watercourses and wetlands.	http://law.justia.com/westvirginia/codes/22/wvc22-11-3.html
Wisconsin	WI NR 103.03	“Waters of the state” includes those portions of Lake Michigan and Lake Superior within the boundaries of Wisconsin, and all lakes, bays, rivers, streams, springs, ponds, wells, impounding reservoirs, marshes, watercourses, drainage systems and other surface or ground water, natural or artificial, public or private, within the state or its jurisdiction.	http://www.legis.state.wi.us/rsb/code/nr/nr103.pdf
Wyoming	W.S. 35-11	“Waters of the state” means all surface and groundwater, including waters associated with wetlands, within Wyoming.	http://soswy.state.wy.us/Rules/RULES/6547.pdf