

11th Annual Montana Water Law Conference

ENERGY & WATER: Federal Clean Water Act Case & Policy Update

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- I. **Introduction**—The production of energy frequently implicates issues of water quality and quantity and in a warming and changing climate, these issues can be made more acute. This outline focuses on commonly-encountered water quality issues in the development of oil and gas, coal, solar, geothermal, and hydropower energy resources. It also addresses recent legislative, administrative, and judicial developments in the area of water quality that have the potential to impact energy development.

- II. **Oil and Gas**—Oil and gas development in the Rocky Mountain region is experiencing a boom, with rig counts in the intermountain west at close to an all-time high throughout much of summer 2011.¹

- 98% of the natural gas consumed in the United States is produced domestically.
- 30% of that gas in the Rocky Mountain region.

Many aspects of oil and gas development implicate matters of water quality, both within the framework of the Clean Water Act (“CWA”), 33 U.S.C. § 1251 *et seq.*, and matters beyond the scope of the CWA.

- a. **Pipeline Safety**—In the wake of the large Exxon Mobile Silvertip Pipeline oil spill on the Yellowstone River, the much smaller Blackfoot Reservation pipeline failure, and the Enbridge oil spill in Michigan, significant attention is being paid to onshore oil and gas pipeline safety, both in Montana and nationally.
 - i. **Additional Oversight**—As a result of the recent Montana oil spills and other recent onshore oil spills throughout the country, additional state and federal oversight is likely to occur.

¹ See Baker Hughes Rotary Rig Count, available at: http://investor.shareholder.com/bhi/rig_counts/rc_index.cfm.

- **Montana Oil Pipeline Safety Council (“OPSC”)**—In response to the Yellowstone River oil spill, Governor Schweitzer, by Executive Order No. 10-2011, created the OPSC. The OPSC is tasked with developing a work plan to collect information on the status of all existing oil and gas pipelines crossing under Montana’s rivers and streambeds. The OPSC is to “analyze and critique the safety of each pipeline” and “assess the risk of ruptures and leaks in all sections of pipeline that cross Montana’s rivers and streams.” The OPSC, which held its first meeting on August 3, 2011, is made up directors from the Montana Department of Environmental Quality, Department of Natural Resources and Conservation, and Department of Transportation.

 - **U.S. Pipeline and Hazardous Materials Safety Administration (“PHMSA”)**—PHMSA, the federal agency tasked with permitting interstate pipelines, ensuring pipeline safety, and investigating pipeline-related accidents, will likely be getting additional federal oversight. At separate Senate Committee on Environment and Public Works and Energy and Commerce Committee hearings held in July 2011, a number of Senators expressed dismay over the PHMSA’s inability to provide data on river and stream crossings and pipeline safety compliance records.² Additionally, the Energy and Commerce Committee has indicated a desire to address whether current pipeline regulations, which require the burying of pipelines four feet below riverbeds, are adequate.³
- ii. **Keystone XL Pipeline**—The Silvertip and other oil spills have increased the level of concern and rhetoric surrounding the proposed \$7 billion Keystone XL Pipeline. The Keystone XL Pipeline, proposed by Canadian company TransCanada, would transport bitumen oil from Canada’s oil sands across the mid-section of the U.S., including Montana, to a termination point along the Gulf Coast in Texas. As an international pipeline, the U.S. State Department has to approve the pipeline and conduct National Environmental Policy Act (NEPA) analysis. After EPA leveled criticisms at the Draft Environmental Impact Statement, the State Department prepared a revised document. The State Department issued a Final Environmental Impact Statement (FEIS) at

² See e.g., Senate EPW July 20, 2011 hearing transcript <http://epw.senate.gov>.

³ Energy and Commerce Committee Internal Memorandum regarding PHMSA pipeline safety standards, available at: <http://republicans.energycommerce.house.gov/Media/file/Hearings/Energy/071511/Memo.pdf>

the end of August 2011.⁴ The FEIS's analysis of potential impacts associated with the pipeline suggests that there would be no significant impacts to most resources along the proposed project corridor. The FEIS contemplates implementation of 57 project-specific conditions developed by PHMSA, including specifications regarding pipe material density and design, temperature controls, depth of cover, state-of-the-art leak detection and requiring the development of numerous contingency plans. The FEIS concludes that these conditions would result in a pipeline project safer than most domestic oil and gas pipelines constructed pursuant to current federal regulations. Much of the opposition to the pipeline has come from the environmental community and communities along the route voicing concerns about potential harms related to oil spills and water quality, as well as arguments focused on the tar sands contribution to climate change. On Tuesday, August 30, 2011 actress Darryl Hannah joined the 500+ protestors arrested outside the White House. The Governor of Nebraska, Dave Heineman, has asked that the pipeline be re-routed to avoid the Ogallala Aquifer – a drinking water source – in his and other states. However, the FEIS concluded that alternative routes avoiding the Ogallala Aquifer were not environmentally preferable. A final decision is expected in November 2011 by the State Department, following the 90-day comment period on the FEIS.

- b. **Hydraulic Fracturing**—Widely used for decades in the natural gas industry, hydraulic fracturing is a process where water (99%), sand, grains, ceramics and/or chemicals are injected underground into a wellbore at a rate sufficient to increase downhole pressure, causing the geologic formation to fracture, create fissures and release natural gas. The gas is brought to the surface by a separate pipeline than the pipe used to inject and withdraw the frac fluid. “Fracing” is estimated to be used in 9 out of 10 natural gas wells worldwide. The process has been used commercially since the late 1940s, but technological advances including fracing and horizontal drilling have allowed the development of significant new reserves of shale oil (Bakken formation in Montana and North Dakota) and of shale gas in Texas and states accustomed to oil and gas development and in states with little current experience of oil and gas development. The recent boom in shale gas, particularly in the major populated center of Pennsylvania and New York, has resulted in significant media attention being paid to fracing and concerns that the

⁴ Text of EIS available at : <http://www.keystonepipeline-xl.state.gov/clientsite/keystonexl.nsf?Open> ; Executive Summary available at: http://www.keystonepipeline-xl.state.gov/clientsite/keystonexl.nsf/03_KXL_FEIS_Executive_Summary.pdf.

process negatively impacts water quality. Water use in hydraulic fracturing includes:

- Water acquisition for fracturing;
- Mixing of chemicals and proppants with water to create frac fluid
- Injection of frac fluid
- Handling of produced water or flowback water (pits or storage tanks)
- Waste water treatment or disposal

- i. **Fracing and the CWA**—Because the fracing process primarily involves injection of fracing fluid into the subsurface, most of the provisions of the CWA – which is focused on surface water discharges – do not apply to the fracing process itself, but are rather triggered through surface disposal of flowback fluids. Injection wells are regulated by the EPA and states under the Safe Drinking Water Act (SDWA).⁵ In most states, EPA has delegated Underground Injection Control (UIC) permitting to the states. Typically UIC Class II injection permits, which address oil and gas related injection wells, are delegated to the State Oil & Gas Conservation Commissions with the state environmental agency or EPA handling other types of injection permits. Hydraulic fracturing, which does not permanently dispose of a fluid underground, was not regulated by SDWA, but was regulated by the States typically under a UIC Class II permits. After the 1997 *LEAF*⁶ case, the question was joined on whether or not hydraulic fracturing should be covered by the SDWA. In response to *LEAF*, a 2004 EPA study found that fracing of coalbed methane wells posed “little or no threat” to drinking water.⁷ In the Energy Policy Act of 2005, hydraulic fracing was exempted from the Safe Drinking Water Act, 42 U.S.C. § 300(h) (“the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fraction operations”). This Act also exempted oil and gas construction sites from the CWA stormwater regulations, 42 U.S.C. 1362. However, there is some speculation that the EPA may attempt to regulate some aspects of the fracing process through establishment of Total Maximum Daily Loads (“TMDLs”) for certain high hazard constituents and new Effluent Limit Guidelines (“ELGs”) for the natural gas industry.⁸

⁵ 40 C.F.R. §§ 144-148.

⁶ *Legal Environmental Assistance Foundation, Inc. v. EPA*, 118 F.3d 1467, 1478 (11th Cir. 1997).

⁷ U.S. EPA, June 2004, *Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs*, EPA Document #816-R-04-003, p. ES-16.

⁸ For a discussion of speculation regarding the possibility that EPA may set TMDLs and ELGs affecting fracing, see <http://www.frackinginsider.com/regulatory/is-epa-shifting-towards-fracking-regulation-under-the-clean-water-act>.

ii. **Legislative and Administrative Attempts at Regulation of Hydraulic Fracturing**

EPA Study—The EPA is currently conducting a congressionally mandated two-year study to examine the relationship between fracing and drinking water resources. The study is expected to be completed in 2012, with the final report to follow in 2014. Specifically, the EPA states the “study is designed to examine the conditions that may be associated with the potential contamination of drinking water resources, and to identify the factors that may lead to human exposure and risks.”⁹ On June 23, 2011, the EPA announced seven case studies to assess the potential impacts of hydraulic fracturing on drinking water resources. Two of these studies, conducted in Pennsylvania and Louisiana, will be prospective and the EPA will monitor key aspects of the hydraulic fracturing process through the lifecycle of a well. Five of the studies will be retrospective and look at groundwater in areas where fracing has been used. These studies will be conducted in North Dakota, Texas, Colorado, and Pennsylvania. EPA is also developing guidelines for permits under the SDWA for the use of diesel in fracturing, perhaps by the end of 2011.¹⁰

U.S. Department of Energy, Secretary of Energy Advisory Board—On May 5, 2011, Energy Secretary Steven Chu announced a subcommittee of environmental, industry and state regulatory experts to make recommendations to improve the safety and environmental performance of the shale gas fracing process. At hearings held in June 2011, energy company representatives argued that the states, not the federal government should continue to take the lead in regulating the fracing process because the regulations should be tailored to “unique regional conditions.” In August 2011, the subcommittee issued its initial report in which it called for better tracking and more careful disposal of fracing fluid as well as the creation of a federal database containing the chemical constituents of all fracing fluids used.¹¹ While the report described the risk of drinking water contamination as “improbable,” it nonetheless calls for more research into this area.

Department of the Interior, Bureau of Land Management—The BLM announced in March 2011 that it would examine regulating fracing of federal

⁹ EPA hydraulic fracturing study website available at:

<http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/index.cfm>.

¹⁰ See <http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/index.cfm>.

¹¹ The SEAB report is available at: http://www.shalegas.energy.gov/resources/081111_90_da:y_report.pdf.

oil and gas.¹² BLM held a series of forums on the practice in Bismarck, ND, Denver, CO, and Little Rock, AR. Interior focused on disclosure of chemicals; well constructional integrity; produced water management; and protection of groundwater.

Securities Exchange Commission—In late August, 2011, the SEC announced it was getting into the fracking action by asking oil and gas companies to provide detailed information (chemicals used and efforts to minimize environmental impacts, including water usage) about their use of hydraulic fracturing.¹³ This information is to be given to the SEC confidentially, with the expectation that the SEC may require public disclosure in required corporate filings.

Congressional Hearings—Recent federal legislative attempts at fracking regulation have been unsuccessful, thus far. The proposed FRAC Act of 2009, (H.R. 1084, S. 587) which died in committee, would have amended the SDWA to allow the EPA to regulate hydraulic fracturing and require industry to reveal the chemicals used in fracturing fluid. Colorado Reps. Diana DeGette and Jared Polis re-introduced the FRAC Act in May 2011, but, no action has been taken by the House. However, in the last 6 months, 7 congressional committees, ranging from the House Oversight and Government Reform Committee to the House Science, Space, and Technology Committee, have held hearings to examine the growing body of data about the fracking process and its potential threats to the environment and public health. On January 31, 2011, the House Committee on Energy and Commerce issued the results of its investigation into the use of diesel fuel in fracking.¹⁴

State Legislation—Almost all of the state-level attempts to regulate fracking have focused on requiring disclosure of the chemical components of fracking fluid. Industry has largely been opposed to disclosure of frac fluid composition, largely citing trade secret concerns over the formulas. Several states, including Colorado, Wyoming, and Texas have state laws mandating chemical component disclosure to one degree or another.

¹² BLM press release available at: http://www.blm.gov/wo/st/en/info/newsroom/2011/april/NR_04_01_2011.html.

¹³ For article summarizing the SEC regulations, *see* <http://online.wsj.com/article/SB10001424053111904009304576528484179638702.html>.

¹⁴ Report available at: <http://democrats.energycommerce.house.gov>. Search hydraulic fracturing.

- In 2008, Colorado implemented Rule 205 to require a chemical inventory of all chemicals used at the wellsite. This summer, the Governor directed an added disclosure requirement be added to the rules. In Wyoming, the rules were revised in 2010 to require disclosure to the Wyoming Oil & Gas Commission the chemicals used during well stimulation. This can be kept confidential for proprietary reasons by the Commission.¹⁵
- In Texas, the legislature enacted a law to mandate chemical disclosure of fracking fluids with some proprietary information protections. HB 3328.¹⁶

Recent legislative efforts to craft similar state legislation in Montana have failed, most recently in the February 2011 defeat of Senate Bill 86. However, on August 26, 2011, the Montana Board of Oil and Gas adopted five new rules requiring partial disclosure of the chemical components of fracking fluid, but similar to Wyoming providing some protection for trade secret chemical products. Such information must nonetheless be disclosed if necessary to respond to a spill or release of trade secret chemical products. See MAR 36.22.608; 36.22.1015; 36.22.1016; 36.22.1106¹⁷. The rules encourage posting information on FracFocus website.

State/Industry Disclosure—The Groundwater Protection Council and the Interstate Oil and Gas Compact Commission created the FracFocus website to allow individual companies to post detailed information on a well-by-well basis.¹⁸ The site also includes a description of fracking, groundwater protections, chemical use, state regulations and a FAQ section.

Litigation—There are a growing number of legal disputes throughout the country involving the hydraulic fracturing process. Most of these cases involve complaints by landowners adjacent to or nearby areas where fracking has been employed arguing that the fracking process has impaired the quality of their groundwater. The complaints are largely based on common law tort claims such as nuisance, negligence, trespass, and fraudulent concealment or misrepresentation. See, e.g., *Zimmermann v. Atlas America, LLC*, No. 2009-7564 (Pa. Ct. Comm. Pl., Sept. 21, 2009) (Plaintiff surface owners with farming operation claimed that their surface lands and aquifers were

¹⁵ Wyoming Stimulation regulations, Chapter 3, Section 45 at: <http://wogcc.state.wy.us/rules-statutes.cfm>.

¹⁶ Texas House approves fracking disclosure bill, *Houston Chronicle* (May 11, 2011).

¹⁷ <http://bogc.dnrc.mt.gov/frac.asp>.

¹⁸ www.fracfocus.org.

contaminated by Atlas's fracing operations, including the drilling of vertical and horizontal wells and the construction of ponds and frac tanks; case still in pretrial stage); *Scoma v. Chesapeake Energy*, No. 3:10-cv-01385 (N.D. Tex., July 15, 2010) (surface owners brought action claiming their water well, which is their only source of water, was contaminated by frac water stored by Chesapeake near the surface owners' property, case still in pretrial stage); *Strudley v. Antero Resources* No. 2011-cv-2218 (Denver County Dist. Ct., Colo. March 23, 2011) (suit brought by surface owners claiming their well water was contaminated, leading to chronic illness of several family members, following Antero's fracing operations). In addition to the landowner claims, there have been several enforcement suits brought by the EPA for alleged violations of certain provisions of the Safe Drinking Water Act from which the fracing process is not exempted. *United States v. Range Production Co.*, No. 3:11-cv-00116 (N.D. Tex., Jan. 18, 2011) (Range refused to obey EPA order to perform studies on water wells to determine whether contamination occurred following Range's fracing operations in the area. Range refused to undertake the EPA-ordered studies relying on a Texas Railroad Commission investigation finding that Range was not at fault for any alleged contamination. EPA brought suit seeking a permanent injunction; case is stayed pending decision by the 5th Circuit determining whether Range's due process rights were violated).

- c. **Coalbed Methane Gas**—Coalbed methane gas ("CBM") is natural gas adsorbed into coal micropores and coal cleats and held in place by water pressure which is reduced by pumping the groundwater out of the wellbore to release the natural gas to flow to the surface. The produced water is then either discharged on the surface or, less frequently, injected back into the ground. Volumes of produced water can be quite large, and, of higher salinity of the receiving water. The Powder River Basin in Wyoming and Montana contains large quantities of CBM, and for the last three years has been the third largest natural gas field in the U.S. The Montana Department of Environmental Quality estimates that one CBM well produces, on average, a total of 17,280 gallons of water per day. According to the Montana Department of Environmental Quality, CBM produced water has a moderately high salinity hazard and often a very high sodium hazard based on standards used for irrigation suitability and also poses certain risks to soil resource quality.¹⁹ Disposal of the large quantities of untreated CBM produced water into surface waters has the potential to negatively affect riparian and wetland areas and certain soil types.

¹⁹ <http://waterquality.montana.edu/docs/methane/cbmfaq.shtml>.

- i. **National Pollutant Discharge Elimination System (“NPDES”) Permits**—the CWA jurisdictional trigger for NPDES permits under CWA § 402 is the discharge of any pollutant from a point source into navigable waters. In *N. Plains Resource Council v. Fidelity Exploration and Development Co.*, 325 F.3d 1155, 1160-61 (9th Cir. 2003), the Ninth Circuit held that produced, unaltered groundwater discharged during the production of CBM satisfies the CWA definition of “pollutant” and states may not exempt discharges of such water from the CWA NPDES requirements.
- ii. **Montana v. Wyoming**—In January 2011, the U.S. Supreme Court heard the case of *Montana v. Wyoming and North Dakota*, involving a dispute over water rights on the Powder and Tongue Rivers. Montana alleged that CBM production in Wyoming and irrigation practices were jeopardizing its water rights. A Special Master was appointed and issued his first report to the U.S. Supreme Court in early 2010, No. 137 Original, “First Interim Report of the Special Master,” which focused on the impact of Wyoming irrigation use. On May 2, 2011, in a 7-1 decision the U.S. Supreme Court found in favor of Wyoming in the context of irrigation – even though the upstream states reduce downstream flows, that does not require the upstream states to use less water or supply downstream states with “replacement” water. 131 S. Ct. 1765, 1773-775 (2011)
- iii. **Technology Based Effluent Limitation Guidelines (“ELGs”)**—The CWA requires EPA to develop ELGs for certain industrial categories. Although ELGs have been developed for a number of different industrial categories, no ELGs have been set for CBM produced water. As a result of federal litigation, in 2008, EPA began a study to determine whether ELGs should be set for the CBM industry in a proposed revision to the Oil and Gas Extraction Point Source Category (40 C.F.R. § 435). An industry initial screening survey was sent out by EPA in February 2009 and a more detailed mandatory survey in October 2009 (Clean Water Act § 308). No final determination has been made as to whether national ELGs will be set for the CBM industry.²⁰ Last year, the Montana Supreme Court held in *N. Cheyenne Tribe v. Montana Department of Environmental Quality*, 234 P.3d 51 (Mont. 2010), that the Montana implementation of the CWA requires the Montana Department of Environmental Quality to impose technology-based effluent limitations of CBM-related discharge permits on a case-by-case basis, even though no industry-wide effluent limitation guideline is available.

²⁰ http://water.epa.gov/scitech/wastetech/guide/cbm_index.cfm.

iv. **Microbial Enhanced Hydrocarbon Recovery and Conversion**—In February 2011, Wyoming Governor Matt Mead signed Wyo. Stat. Ann. § 30-5-128 into law authorizing the Wyoming Oil and Gas Conservation Commission to issue orders authorizing well and reservoir injections to enhance recovery of methane (natural gas) hydrocarbons from CBM wells. Microbial enhanced hydrocarbon recovery is a process where water and nutrients are used as stimulation agents to naturally occurring microbes to enhance initial well production and secondary recovery from CBM wells. This process is focused on those areas where natural gas is the result of methanogenesis – action of microbes on coal constitution.²¹ Under the Wyoming law, applicants for permits to use the process must produce evidence that groundwater will not be adversely affected.

III. **Coal**—While Wyoming is the largest coal producer in the U.S., Montana produces 44 million tons annually and is home to one of the largest coal reserves in the world. Coal is heavily exported out of Montana, both domestically and to growing foreign markets, particularly China.

- Although domestic demand for coal has decreased steadily for the last decade, between 2008 and 2011 coal exports to China are forecasted to increase almost 70%.

Roughly 6% of Montana coal is shipped abroad to Asian markets, and this number has steadily increased over the last few years. Earlier this year, Montana Governor Brian Schweitzer and Washington Governor Christine Gregoire held discussions aimed at facilitating the development of a lower Columbia River coal shipping terminal and port to assist international export of Powder River Basin coal. The visit was marked by protests. In 2010, a challenge under the Montana Environmental Policy Act (MEPA), MCA §§ 75-1-101 *et seq.*, was brought against the Arch Coal Company lease of the Otter Creek coal tracts (conveyed to the state in compensation for the federal governments' actions in stopping the New World Mine for alleged water quality concerns).²² In January 2011 the case survived a motion to dismiss brought by Arch and the State of Montana and is currently in the pretrial stage.²³

a. **The Regulatory Framework**—Water quality issues can be impacted during coal mining, coal transportation, and in coal-based power generation. The Surface

²¹ U.S.G.S. "Microbial Natural Gas," http://energy.er.usgs.gov/gg/research/microbial_gas.html; USGS, "Assessment of Undiscovered Biogenic Gas Resources, North-Central Montana Province," National Assessment Fact Sheet (May 2008).

²² *N. Plains Res. Council v. State Board of Land Comm'rs*, DV 38-2010-2480.

²³ <http://www.northernplains.org/judge-allows-otter-creek-lawsuit-to-go-forward/>.

Mining Control and Reclamation Act of 1977 (“SMRCA”)²⁴ is the primary federal law that regulates the environmental effects of surface coal mining in the U.S. and includes provisions for reclamation of water resources adversely affected by past coal mining. 30 U.S.C. §§ 1231, 1233, 1244. Coal mining is generally prohibited in alluvial valley floors.²⁵ The day-to-day coal mining operational impacts to water are regulated by the CWA, with CWA § 402 NPDES permits required for non-fill material discharges into streams and § 404 permits required for mining operations in close proximity to wetlands and water bodies. Prior to development of coal resources, an operator must also obtain a § 401 certification from the state. A controversial proposal for coal-fired power plants is EPA’s cooling water intake rule²⁶. The comment period closed in August and the final rule is expected in less than a year.

- b. **Revised § 404 Definition of “Fill Material”**—Many of the CWA issues in the context of coal mining are concerned with matters primarily faced by Appalachian coal mining operations, such as mountain top mining, valley fills and streamside buffer zones. In 2002, the definition of “fill material” under Section 404 of the CWA was redefined in an effort to remove the ambiguities between the EPA’s regulatory definition of fill material and the Army Corps of Engineer’s definition.²⁷ The term “fill material” now means any material placed in the waters of the United States where the material has the effect of: (1) replacing any portion of a water of the United States with dry land; or (2) changing the bottom elevation of any portion of a water of the United States. There has been significant environmental pushback regarding the definition change, as many believe discharge of coal mining waste should fall under the non-fill definition so that it is regulated by § 402 as a pollutant rather than § 404 as a fill material.

In February 2010, EPA indicated it was looking at beginning rulemaking to once again redefine “fill material,” but more recently has backed away from a change.²⁸ There has been significant pressure on the Obama Administration to redefine “fill

²⁴ 30 U.S.C. § 1230, *et seq.*

²⁵ 30 U.S.C. 1260(b)(5).

²⁶ <http://water.epa.gov/lawregs/lawguidance/cwa/316b/indexcbm>.

²⁷ Claudia Copeland, *Controversies over Redefining “Fill Material” Under the Clean Water Act*, Congressional Research Service, at 1 (April 2009).

²⁸ Paul Quinlan, *EPA Loses Enthusiasm for Swift Rollback of Bush “Fill Rule*, NYTimes (February 25, 2011), available at: <http://www.nytimes.com/gwire/2011/02/25/25greenwire-epa-loses-enthusiasm-for-swift-rollback-of-bus-27352.html>.

material” so that it more strongly regulates the coal mining industry, but as of September 2011, President Obama has not taken action.²⁹

IV. **Solar Energy**—While solar energy generation is not commonly thought to implicate water issues, water is an important component for utility scale solar power plants, which are often located in the arid Southwest. Two kinds of utility scale solar technologies are currently available: concentrating solar panels (“CSP”) and photovoltaic (“PV”) solar.³⁰ CSP power which uses solar energy to run a steam turbine to produce electricity can be water-intensive. A solar parabolic trough plant can use up to 234 gallons of water per MMBtu while coal or gas-fired plants consume between 1 – 8 gallons per MMBtu. In a wet-cooled CSP plant, large quantities of water are used to cool the steam. Dry-cooling, using air rather than water to cool the steam, is also an available technology, but it results in a less efficient solar plant than a plant employing wet-cooled systems. Some plants combine the two approaches – hybrid cooling – to reduce water consumption but recapture efficiencies.

PV converts solar radiation directly into electrical current through the use of PV cells. Water for cleaning accumulated dust from PV cells is also required for PV solar power generation, however in much lower quantities than is required for CSP.

- a. **CWA Permitting**--In order to comply with the CWA, solar energy developers must obtain § 404 permits before any dredged or fill materials can be placed into “jurisdictional waters” during the solar project construction process. The developer must also comply with all permitting and licensing requirements under CWA § 401. All wastewater and byproducts of wet-cooling systems discharged to a surface water body require NPDES permitting to stay in compliance with § 402 of the CWA. Storm-water permitting can be a challenge for solar power plants in dry lakebeds.
- b. **Water Consumption**—Water consumption by solar power plants is a major issue, particularly those CSP plants utilizing wet-cooled and hybrid cooling systems.³¹
 - Senator John Kyl of Arizona has proposed that solar power plants be limited to dry cooling technology,³² but this proposal has not been formalized or included in any legislation.

²⁹ Earthworks Pressures Obama Administration to Eradicate Mining, Resourcefulearthnews.org (August 16, 2011), available at <http://resourcefulearthnews.org/2011/08/16/earthworks-pressures-obama-administration-to-eradicate-mining/>.

³⁰ For a detailed discussion of the available solar power plant technologies and the impact on water use available, see Glennon and Reeves, *Solar Energy's Cloudy Future*, 1 *Arizona J. of Env'tl Law and Pol'y*, 92 (2010).

³¹ See Glennon and Reeves, *supra* note 17 at 96-102.

- The National Park Service (NPS) has raised concerns about water consumption at BrightSource Energy’s 400 megawatt Ivanpah project, located in the California desert, as well as numerous other projects currently in the planning stages to be located throughout the California and Nevada deserts. In a 2009 memorandum sent by Jon Jarvis, director of the NPS’s Pacific West Region to the BLM Nevada state office, Jarvis stated that the NPS is concerned that “water demand from [CSP] systems employing water-cooled technology could strain limited water resources already under development pressure from urbanization, irrigation expansion, commercial interests and mining.”³³

c. **BLM Solar Programmatic Environmental Impact Statement**—The BLM has been conducting a Solar Energy PEIS since 2008 and in 2011 published a Draft PEIS. The PEIS addresses the more critical issue of water quantity more than any water quality issues. Most of the water quality concerns addressed by the PEIS deal with management of the construction and development phases of solar energy projects. The PEIS also addresses CWA concerns arising in instances where solar energy and transmission line projects are in or adjacent to wetlands or other water bodies and where discharge of steam cooling water is required. The Solar PEIS suggests that developers mitigate potential water quality degradation by planning to avoid impacts on existing surface water features regulated by the CWA.

V. **Geothermal Energy**—Geothermal energy development is highly dependent on water resources. Utility-scale geothermal energy uses heat from the earth to generate power through a steam turbine. In 2005, the Energy Policy Act (§222 and 225) amended the Geothermal Steam Act and directed the BLM and U.S. Forest Service to conduct a PEIS and address a 20 year leasing backlog.³⁴ The PEIS was completed in 2008 and made 111 million acres of BLM land and 79 million acres of U.S. Forest Service lands as open for geothermal leasing. Since then BLM has leased 1 million acres in Utah, Oregon, Idaho, California, Colorado and Nevada. Montana has great potential for geothermal development³⁵, but both the state and the federal government have been slow to act on applications for geothermal leases on public lands. In order to develop geothermal energy in Montana and most other western states, a groundwater right is required.

³² <http://www.azcentral.com/arizonarepublic/news/articles/2010/01/17/20100117water-solar0117.html>.

³³ For text of the NPS memorandum, see http://www.nationalparkstraveler.com/files/Jarvis-Solar_Energy_Memo.pdf.

³⁴ http://www.blm.gov/wo/st/en/prog/energy/geothermal/geothermal_nationwide/Documents/Final_PEIS.html.

³⁵ <http://www.nrel.gov/docs/fy03osti/33530.pdf>.

Geothermal power plants generally dispose of the spent groundwater through re-injecting the water back into the ground through separate wells rather than discharging it into surface waters. Accordingly, no NPDES permit is generally required. However, CWA § 401 Water Quality Certification permit is required prior to development. Additionally, a Montana Joint Application 310 Permit, MCA § 75-7-101 *et seq.*, is generally required prior to construction of a geothermal power plant.

- a. **Geothermal PEIS “Best Management Practices”**—The Geothermal PEIS established best management practices for mitigating or eliminating threats to water quality, including: 1) stormwater runoff during exploration; 2) the extraction of geothermal fluids that result in drawdowns in connected shallower groundwater aquifers during drilling operations; and 3) stormwater discharges during construction activities. These concerns are mitigated by following best management practices (found in Appendix D of the PEIS) and through geothermal lease stipulations. These lease stipulations include: 1) no surface occupancy on water bodies, riparian areas, wetlands, playa, and 100-year floodplain; and 2) controlled surface use within 500 feet of riparian or wetland vegetation to protect the values and functions of those areas.

VI. **Hydropower**—Hydropower is by far the largest producer of renewable energy in the United States, at 255 million megawatt hours it accounts for approximately 6 percent of the nation’s net power generation in 2010. This percentage is significantly higher in the northwest, with the hydropower accounting for 42% of net power generation in the five northwestern states and 34% in Montana in 2010. Two of the most commonly used forms of hydropower generation are conventional dam-based and pumped-storage projects.

- a. **Dammed Hydropower projects**—Dammed hydropower projects are by far the most widely used form of hydropower generation in the United States and are regulated by the Federal Energy Regulatory Commission (“FERC”). While generation of energy from hydropower plants does not involve an alteration of water or discharge under § 402 of the CWA, and therefore no NPDES permits are required, when licensing a hydropower project, the licensee must comply with CWA § 401’s state certification requirements. Under CWA § 401, an applicant for a federal license or permit to conduct an activity that will result in a “discharge” under section 401 of the CWA must provide certification from the state to the federal permitting agency that the discharge complies with the CWA. In *S.D. Warren Co. v. Maine Board of Environmental Protection*, 126 S. Ct. 1843 (2006), the Court held that the term “discharge” as used in § 401 applies to all

discharges of water, regardless of whether that water has been altered or pollutants added. Therefore, post-*Warren*, when an applicant applies to FERC for a federal permit to operate a hydroelectric dam, federal licensees must obtain state CWA § 401 certifications that their operations will comply with state water quality standards. This decision represented a significant change to the federal licensing process, and now allows states to impose their own, often quite stringent, water quality goals through the hydropower licensing process.

- b. **Pumped-storage hydropower**—Pumped storage hydropower is a power generation tool used for load balancing. The method stores energy in the form of water, pumped from a lower elevation reservoir to a higher elevation. Low-cost off-peak electric power is used to run the pumps and, during periods of high electrical demand, the stored water is released through turbines to produce electric power. Pumped-storage is the largest capacity form of grid energy storage currently available and will be critical to the use of intermittent energy sources like wind and solar which can produce energy when it is not needed. In 2010, California enacted AB 2514, “Energy Storage Systems” legislation to address this storage component of the State’s move to increased reliance on renewable energy³⁶. As with conventional dammed hydropower projects, pumped-storage hydropower projects require CWA § 401 state certification.

- c. ***PPL Montana, LLC v. State of Montana*, 2010 MT 64, 229 P.3d 421 (2010)**—The Montana Supreme Court recently held that the State of Montana is entitled to compensation under the Montana Hydroelectric Resources Act, MCA §§ 77-4-201 to 211, for use of State riverbeds by private companies for hydroelectric power generation. The Court applied this ruling retroactively, finding that PPL Montana owes the State \$40,956,180.00 for its historic use of the States’ riverbeds. PPL filed a petition for certiorari before the U.S. Supreme Court seeking review of the Montana Supreme Court’s holding that the State was due retroactive and continuing rents for the use of riverbeds. The U.S. Supreme Court denied certiorari on that question, but granted certiorari to determine whether the constitutional test for determining whether a section of river is navigable for title purposes requires a trial court to determine whether the relevant stretch of the river was navigable at the time the State joined the union or may simply deem the river as a whole generally navigable based on the evidence of present-day use.³⁷

³⁶ See also, California Public Utility Commission White Paper, “Electric Energy Storage: An Assessment of Potential Barriers and Opportunities” <http://docs.cpuc.ca.gov/published/graphics/128688.pdf>.

³⁷ 131 S.Ct. 3019 (2011).

VII. CWA and Water Quality Legislative, Administrative, and Judicial and Developments.

- a. **EPA Draft Guidance on Definition of “Waters of the United States”**—In response to the Supreme Court’s decision in *Rapanos v. United States*, 547 U.S. 715 (2006), which held that the term “waters of the United States” as used in the CWA includes “only those relatively permanent, standing or continuously flowing bodies of water . . . ,” the EPA and Army Corps of Engineers in 2007 issued an interpretative guidance memo on Clean Water Act jurisdiction for determining whether a water is a “water of the United States.”³⁸ This memo was criticized by environmental interests as exempting too many water bodies from federal jurisdiction and in the Obama administration the guidance was proposed for revision. On May 2, 2011, the revised guidance was opened for public comment³⁹ and after an extension, the comment period closed at the end of July 2011. Under the proposed guidance, the following five water bodies are defined as “waters of the United States”: traditional navigable waters; interstate waters; wetlands adjacent to traditional navigable waters and interstate waters; non-navigable tributaries to traditional navigable waters that are relatively permanent, meaning they contain water at least seasonally; and wetlands that directly abut relatively permanent waters. In addition, waters that, upon fact-specific inquiry, are determined to have a “significant nexus” to traditional navigable or interstate waters would be protected by the CWA. The draft guidance does not contemplate inclusion of groundwater that is hydrologically connected to tributary or surface waters within the definition of “waters of the United States,” although several comments have urged expansion of the draft guidance to include such waters.

The proposed guidance will substantially increase the number of waters subject to CWA jurisdiction and, not surprisingly, has been itself subject to criticism by the States. For example, the proposed guidance will likely have a significant impact on CWA jurisdiction over non-navigable tributaries, seasonal western washes (particularly those in desert areas), and, potentially, man-made ditches that otherwise meet the definition of tributary waters. The EPA and the Corps clarify in the proposed guidance that “it is intended to describe for agency field staff the agencies’ current understandings; it is not a rule, and hence is not binding and lacks the force of law.” Nonetheless, the proposed guidance will be used by the EPA and the Corps to administer the CWA. It remains unclear whether the EPA or the Corps will engage in formal rulemaking to codify the contents of the proposed guidance.

³⁸ <http://www.epa.gov/owow/wetlands/pdf/RapanosGuidance6507.pdf>.

³⁹ 76 Fed. Reg. 24479 (May 2, 2011).

- b. **Revised CWA 303 Standards**—The EPA is planning to propose changes to CWA § 303 Water Quality Standards “to improve effectiveness in helping restore and maintain the chemical, physical, and biological integrity of the nation’s waters.”⁴⁰ This plan was initially proposed in 2009, with publication expected in the summer of 2011. However, the date targeted for publication has now been pushed back to early 2012. The current regulations have been in place since the early 1980’s. EPA previously attempted to revise the § 303 standards in both the Clinton and Bush administrations, but those efforts were controversial and ultimately scaled back. Areas targeted for revision include tightening of state antidegradation rules; clarifying how states designate particular uses for water bodies; limiting the use of variances to waive water quality standards; and strengthening triennial reviews. EPA is also considering codifying its longstanding policy that fishable/swimmable goals are to be presumed to be attainable, unless otherwise demonstrated.⁴¹
- c. **NPDES Permit for Pesticide Pointsource Discharges**—In response to a 2009 decision by the 6th Circuit Court of Appeals, *National Cotton Council, et al. v. EPA*, which held that discharges to waters of the U.S. from the application of pesticides requires an NPDES permit, the EPA is developing an NPDES general permit for pesticide related pointsource discharges. A draft version of the final pesticide general permit is currently available and covers operators who apply pesticides that result in discharges from the following use patterns: (1) mosquito and other flying insect pest control; (2) weed and algae control; (3) animal pest control; and (4) forest canopy pest control. The draft final permit requires permittees to minimize pesticide discharges, maintain and calibrate equipment, and monitor for and report any adverse incidents. Such permits will be required beginning on October 31, 2011.
- d. **USFS Watershed Conditional Framework Program**—In May 2011, the Forest Service announced the creation of the Watershed Condition Framework (“WCF”) program, an approach to comprehensive management of entire watershed systems within National Forest lands. The WCF proposes to improve the way the USFS approaches watershed restoration by targeting the implementation of integrated activities in specific watersheds that have been identified as priorities for restoration. The WCF will require foresters to look to the cumulative impacts that a number of different forest uses have on a particular watershed when establishing watershed goals. While the intent of the WCF is, “first and foremost” to “protect

⁴⁰ http://water.epa.gov/lawsregs/lawsguidance/wqs_index.cfm.

⁴¹ *Id.*

high-value watershed already in good condition” and maintain the condition of others, foresters are instructed to consider the importance of providing ecosystem services that are important to the public, including production of renewable energy from biomass.

In May 2011, the Ninth Circuit in *Northwest Environmental Defense Center v. Brown*⁴² affirmed that forest roads are CWA point sources. Accordingly, EPA is taking the position that ditches, culverts and channels on forest roads need NPDES permits. In a July 1, 2011 EPA letter, EPA Region 9 directs forestry operators to apply for NPDES permits under EPA’s Multi-sector Industrial Stormwater Permit or an individual NPDES permit.

⁴²640 F.3d 1063, 1070 (9th Cir. 2011).