
Legislative Environmental Policy Office

Coal Bed Methane Water

An overview of water right issues

Prepared for
THE WATER POLICY INTERIM COMMITTEE

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Introduction

In an issue survey at the beginning of this interim, members of the Water Policy Interim Committee rated the use of coal bed methane (CBM) water as a high priority for study. Two bills that died in the 2009 Legislature proposed to create a temporary beneficial use permit for CBM water. Subsequently, the 2009-10 WPIC work plan identified the permitting of coal bed methane wells as one of its study areas.

The extraction of CBM is a process regulated by several agencies. This paper is intended to provide a general overview of permitting for the beneficial use of CBM water.

Speakers at the January meeting will discuss permitting for the use of CBM water and other issues. They will be available for questions.

Figure 1 is a flow chart of the permitting process for oil and gas operations, including CBM.

Overview

Coal bed methane occurs naturally within coal seams. Evidence of CBM production exists as early as 1926, but most production has taken place in the last two decades following tax incentives approved by Congress to boost domestic exploration into alternative energy sources.¹

The Powder River Basin in Montana and Wyoming is one of the country's major sources of coal bed methane. The vast majority of the producing wells are located in Wyoming. However, it is possible that thousands of wells could be drilled in Montana in the coming years.²

While there are several issues related to CBM production, the management of water produced in conjunction with the extraction of the gas is likely the topic of most controversy. To extract CBM

¹ Coal Bed Natural Gas Handbook, 2004. U.S. Department of Energy.

² The Final Supplement to the Statewide Oil and Gas Environmental Impact Statement, Alternative H, predicts more than 16,000 CBM wells.
<http://www.deq.state.mt.us/COALBEDMETHANE/FinalEIS/FinalSuppCBM.pdf>

from a coal seam, ground water is removed to lower the pressure and release the gas. Water production is higher in the initial stages of production, decreasing as more methane is released.³

Putting CBM produced water to a beneficial use, such as stock watering or irrigation, presents a valuable option to landowners in arid areas where CBM is located. The beneficial use of water is one of several management options that a CBM operator may use in combination to dispose of the water.

The use of CBM water for beneficial purposes is a key part of the Final Supplement to the Statewide Oil and Gas Environmental Impact Statement, issued in 2008. The preferred alternative selected by the Bureau of Land Management (BLM) will require operators to submit water management plans that provide a rationale for using, or not using, injection, treatment, surface discharge, infiltration, storage, evaporation, or beneficial uses.

The agency prefers that beneficial uses, such as livestock watering, dust control, and managed irrigation, be utilized. The BLM estimates that 20% of produced water would be used beneficially.⁴

However, the amounts of water extracted, as well as the quality of the water, raises concerns about effects on stock and domestic supplies due to draw down, as well as impacts to surface water quality and soils from water management practices.⁵

In 2007, there were 863 Montana wells producing coal bed methane, water, or both. The average water production per well ranged from 1.7 gpm to 13 gpm, for a total of more than 1.6 million gallons of water pumped that year.⁶

³ This differs from conventional natural gas wells, where water production increases as the volume of gas decreases. Coal Bed Natural Gas Handbook, 2004. U.S. Department of Energy.

⁴ Final Supplement to the Statewide Oil and Gas Environmental Impact Statement, Alternative H, October 2008. <http://www.deq.state.mt.us/COALBEDMETHANE/FinalEIS/FinalSuppCBM.pdf>

⁵ 2007 Annual coal bed methane regional ground-water monitoring report: Northern portion of the Powder River Basin. Montana Bureau of Mines and Geology. A 2008 report is expected soon. <http://www.mbmgt.mtech.edu/mbmgcat/catMain.asp>

⁶ Ibid.

For the same year, the 4,658 wells in northern Wyoming produced almost 4.7 million gallons of water.⁷

Montana Regulations

The Montana Board of Oil and Gas Conservation (MBOGC) oversees most facets of CBM development in the same way it does other oil and gas operations. A statute passed in 1961, before CBM development began in the state, speaks to the management of water produced in association with oil or gas extraction within a controlled ground water area.⁸

The production, use, or disposal of that water is under the "prior jurisdiction" of the Board of Oil and Gas Conservation, but the Department of Natural Resources and Conservation (DNRC) can petition for hearings on the operations.⁹

That statute was acknowledged in 1999 when the DNRC created the Powder River Basin Controlled Ground Water area, which deals specifically with the management of water produced from CBM extraction. The order states that water levels in targeted aquifers could be reduced near project areas for long periods of time in an area where water is scarce. It also called for extended monitoring of ground water data.¹⁰

However, the order said that the extraction of water, though necessary to obtain the CBM, is not a "desired product of the operation" and therefore is not a beneficial use, subject to permitting from the DNRC. But, reflecting the law, the order said that the DNRC could petition the MBOGC for hearings on matters of CBM development that could effect existing water rights.¹¹

⁷ Ibid.

⁸ A variety of factors may lead to the formation of a controlled ground water area to protect water quantity or quality. 85-2-506, MCA.

⁹ 85-2-510, MCA.

¹⁰ Final Order In the Matter of the Designation of the Powder River Basin Controlled Ground Water Area, 1999.

http://www.dnrc.mt.gov/wrd/water_rts/cgwa/powder_riverbasin/powder_final_order.asp

¹¹ Ibid.

Though a beneficial water use permit is not required in Montana to extract CBM, a permit is required if that water is put to beneficial use, in part defined as a purpose that uses "water for the benefit of the appropriator, other persons, or the public, including but not limited to agricultural, stock water, domestic, fish and wildlife, industrial, irrigation, mining, municipal, power, and recreational uses."¹²

In 2001, the Legislature passed a measure detailing the management of ground water produced during coal bed methane extraction. It requires certain management options be regulated by the DNRC and the Department of Environmental Quality (DEQ). Ground water produced in association with a coal bed methane well must be managed in any of the following ways:¹³

- * used as irrigation or stock water or for other beneficial uses in compliance with Title 85, chapter 2, part 3;

- * discharged to the surface or surface waters subject to the permit requirements of Title 75, chapter 5;¹⁴

- * reinjected to an acceptable subsurface strata or aquifer pursuant to applicable law;¹⁵

or

- * managed through other methods allowed by law.

Another section of law says that the management of CBM ground water through discharge,

¹² 85-2-102, MCA.

¹³ 82-11-175, MCA.

¹⁴ In 2003 and 2006, the Montana Board of Environmental Review revised water quality standards affecting discharge permits for coal bed methane in the Powder River Basin. The Environmental Protection Agency approved the standards, which were challenged. In 2008, the Montana Supreme Court upheld the rules, writing that they have a scientific basis and are consistent with, and not more stringent than, EPA policy. However, in October 2009, a U.S. District Judge in Wyoming vacated EPA approval of the standards, saying the federal agency did not consider industry's legitimate concerns about the lack of scientific basis for the 2003 standards and failed to make plain its course of inquiry, analysis, and reasoning for approving the 2006 standards. As of December 2009, it is not known what action the EPA will take.

¹⁵ Reinjection is regulated by the MBOGC. The Record of Decision for the Final Supplement of the EIS considered, but did not fully analyze, reinjection as a management option for CBM water. It cited a study that found favorable conditions for reinjection exist in about 9% of the area. The agency said that while injection may be technically and economically feasible in some aquifers as a way of conserving water, it cannot be regarded as appropriate in all settings.

reinjection, or any other method allowed by law is not a waste of water. Other uses of water that do not constitute waste include the disposal of ground water from a mine to preserve it in good condition or the disposal of ground water used for milling, smelting, other processes involving metallic ores.¹⁶

These sections of law were disputed in a 2008 court case in Big Horn County. At issue were whether the Constitution and the Water Use Act (WUA) required that CBM water be put to a beneficial use and whether or not 85-2-505 and 85-11-175 provided the statutory means for the beneficial disposition of water.

In short, Judge Blair Jones ruled that "the production, use, or disposal of large quantities of CBM ground water must serve a statutorily defined beneficial use." He also wrote that the two sections of law are constitutional.¹⁷

In reaching those conclusions, the Judge Jones raises issues that may be of interest to the WPIC.

The DNRC argued that the extraction and disposal of CBM water is not a beneficial use requiring a water right. The agency cited examples of disposal that do not require a water right including the dewatering of a gravel pit, the removal of contaminated mine water, or the land application of sewage effluent.

"The DNRC has reasoned that it is the regulator of water rights, not the regulator of water disposal and that not all diversions of water involve a water use or require the security of a water right," Jones wrote. But he said the amount of water involved in CBM production and the fact that the area in question is a controlled ground water area are distinctions that require regulatory review to ensure mandates of the Constitution and the WUA are being met.¹⁸

The judge cites 85-2-510, which gives the Board of Oil and Gas Conservation prior jurisdiction in controlled ground water areas over the production of ground water related to oil and gas wells,

¹⁶ 85-2-505, MCA.

¹⁷ DV-05-70, Order on Summary Judgment Motions- Diamond Cross, Et. Al. Vs. Deq, Et. Al.

¹⁸ Ibid.

but acknowledges that the DNRC has a role. Jones said the two agencies should work together to "evaluate the management of CBM ground water for beneficial purposes under the recognized criteria of the WUA."¹⁹

"The WUA provides criteria to be considered when senior users may be adversely impacted by a proposed water appropriation," Jones wrote. "To the extent the WUA is applied equally to all potential appropriators of water, equal protection concerns are minimized. Moreover, the significant State interest in the management of enormous quantities of the State's ground water is advanced by appropriate State agency review."²⁰

Another court decision in 2008 provided the basis for proposed legislation in 2009.

Fidelity Exploration and Production Co., which produces CBM in the Powder River Basin, applied to the DNRC for two beneficial use permits to market CBM water in Montana and Wyoming. Proposed uses included dust suppression, irrigation, fire control, and stock and wildlife watering.

In accordance with 85-2-311, the company was required to show that water is physically and legally available, the appropriation works are adequate, that there would be no adverse effect to prior appropriators, and the proposed use is beneficial. The assertions of physical availability and beneficial use were not questioned. But controversy ensued around the comparison required between the physical water supply with existing legal demands. The application said the point of diversion and the source supply was not the ground but rather the company's pipeline, which stored the water after it was pumped from the ground. Since the pipeline acted as a reservoir that no other water user could access, there could be no adverse effect.²¹

The DNRC hearing examiner concluded that the source of the water to be appropriated was not the ground, but the pipeline. Citing the Powder River Basin Controlled Ground Water Area Order and 85-2-510, MCA, the examiner wrote that the "Legislature intended (but did not expressly

¹⁹ Ibid.

²⁰ Ibid.

²¹ Proposal for Decision, Application Nos. 42B-30011045 and 42B-30014358 by Fidelity Exploration.
http://www.dnrc.mt.gov/wrd/water_rts/hearing_info/significant_hearingdecisions/fidelity_exploration_pfd.pdf

state) that water produced by CBM development is to be considered something other than ground water ..."²²

"Considering water developed through CBM development as not being a "ground water" appropriation but as an appropriation from their pipeline is more consistent with the statutory scheme of ... 82-11-175 and is eminently more practical," the examiner wrote, adding that if the company wanted to dispose of the water through other means, a beneficial use permit would not be required.

Additionally, the examiner wrote, use of the water is limited because it exists in the pipeline only when CBM is being produced.

"If Fidelity was granted a water right for ground water, then presumably when the methane runs out, Fidelity could still exercise their ground water right indefinitely," the examiner wrote. "Such a result, the Legislature most certainly did not contemplate happening."²³

The DNRC approved the Montana permit, but denied the Wyoming permit.²⁴

Both decisions were the subject of judicial review. District Judge Thomas Honzel ruled that since the source of supply is actually ground water, neither application should be approved. When the examiner ruled that the water produced was not ground water, Honzel said other water right

²² Order on Scope of Issues for Application Nos. 42B-30011045 and 42B-30014358 by Fidelity Exploration.
http://www.dnrc.mt.gov/wrd/water_rts/hearing_info/significant_hearingdecisions/fidelity_order-hearingexaminer.pdf

²³ Ibid. The examiner did not note that 85-2-303, MCA, provides that an unproductive oil or gas well can be converted to a water well, subject to Title 85, chapter 2.

²⁴ In addition to the criteria for using water in state, an out-of-state proposal must prove that the use is not contrary to water conservation in Montana and is not otherwise detrimental to the public welfare of the citizens of Montana. The DNRC concluded that the Wyoming application did not meet the necessary burden of proof.

holders were prevented from presenting any evidence on whether the proposed water use would adversely impact their water rights.²⁵

Honzel said the water gets to the pipeline by being pumped from the ground through wells. He also wrote that the statutes cited by the DNRC examiner refer to ground water, meaning the application was for ground water, not pipeline water.²⁶

"If the legislature intended something different, it could have said so, but did not," Honzel wrote.

In 2009, the Legislature passed a bill that addressed Honzel's ruling, but it was vetoed by the governor. House Bill No. 575 would have created a temporary permit that the DNRC could issue for the beneficial use of water produced in conjunction with CBM production.²⁷

The only uses allowed under the permit were stock water, managed irrigation with no return flow to surface water, dust suppression, industrial uses, and domestic use. The permits were limited to 2,000 acre feet annually and expired when CBM production ceased.²⁸

Just like any application for an appropriation of ground water, a proposal for the temporary permit would need to meet the permitting criteria, including proving the water is physically and legally available, the appropriation works are adequate, that there would be no adverse effect to prior appropriators, and the proposed use is beneficial.

However, unlike other permit applications, the proposed law stipulated that the source of appropriation for a CBM temporary permit is surface water in a pipeline, pond, pit, or other

²⁵ Memorandum and Order on Petition for Judicial Review, CDV-2007-425, 12/15/2008. <http://www.northernplains.org/news/past-news-room-articles/2008-news-items/2008-court-cases/Honzel%20decision%20on%20water%20rights%2012-16-08.pdf>

²⁶ *Ibid.*

²⁷ <http://data.opi.mt.gov/bills/2009/billhtml/HB0575.htm>

²⁸ Senate Bill No. 505 contained similar provisions. It passed the Senate but died in the House. <http://data.opi.mt.gov/bills/2009/billhtml/SB0505.htm>

structure approved by the MBOGC. Additionally, the bill stated that the DNRC must consider the point of diversion to be the place where the water is diverted from the pipeline, pond, pit, or other structure.

The bill passed the House 56-44 and the Senate 30-20. However, in vetoing the bill, the governor said the measure reversed long-standing water law by not protecting senior water right holders.²⁹

The governor wrote, "Ultimately, the bill fails to reconcile the substantive conflict between the extraction of water in the CBM process and senior water rights."

Mitigation

What role, if any, senior water right holders play in the permitting of CBM water for beneficial uses is debatable. But prior appropriators are addressed in Montana law and are included in the permitting by the MBOGC and the BLM.

When submitting a plan of development with a density of more than one well per 640 acres, a CBM developer must notify ground water right holders whose spring or well is within the development area or within one mile of the exterior boundary of the development area.³⁰

State law provides a measure of protection for water right holders. Coal bed methane developers must notify and offer a "reasonable mitigation agreement" to appropriators of ground water for which the point of diversion is within 1 mile of the CBM well or within a half mile of a well adversely effected by a CBM well.³¹

The mitigation agreement must provide for prompt supplementation or replacement of water from any natural spring or water well adversely affected by the coal bed methane well.

²⁹ <http://data.opi.mt.gov/bills/2009/AmdHtmH/hb0575govveto.HTM>

³⁰ MBOGC Order 151-2008, <http://bogc.dnrc.mt.gov/PDF/May2008Orders.pdf>

³¹ 82-11-175, MCA.

For development of federal minerals, the BLM will require operators to certify that mitigation agreements have been offered in accordance with state law. The agreements also must explain how the operator will respond to wells that are unusable due to methane migration and how health and safety impacts will be monitored and mitigated.³²

The Legislature also created the Coal Bed Methane Protection Program to compensate landowners or water right holders who demonstrate that a CBM operator who caused damage is unlikely to pay.³³

In its findings and declarations, the Legislature said clean burning energy is a priority and Montana possesses a plentiful reserve of clean-burning CBM. But the Legislature noted that the extraction of CBM may adversely impact water quality and availability.

Under the law, a landowner or water right holder may apply for compensation if there is:

- * a loss of agricultural production or a loss in the value of land,
- * a reduction in the quantity or quality of water available from a surface water or ground water source that affects the beneficial use of water, or
- * the contamination of surface water or ground water that prevents its beneficial use.

A landowner may be compensated for loss of agricultural production and income, lost land value, and lost value of improvements caused by CBM development if the land is directly affected by CBM development.

A water right holder may be compensated for damages caused by the contamination, diminution, or interruption of surface water or ground water.

Compensation is limited to \$50,000 or 75% of the damages, whichever is less.

³² Record of Decision for the Final Statewide Oil and Gas Environmental Impact Statement and Proposed Amendment of the Powder River and Billings Resource Management Plans, December 2008. <http://www.deq.state.mt.us/COALBEDMETHANE/FinalEIS/RODforRMPs.pdf>

³³ 76-15-901, MCA through 76-15-905, MCA.

Compensation comes from an account funded by oil and natural gas production taxes. Money in the account is dispersed to conservation districts, which will handle claims. Money for emergencies became available in 2005, but no claims have been filed. Other claims may be filed after June 30, 2011.

By July 2011, it is estimated the account will contain almost \$10 million.

In the supplement to the oil and gas environmental impact statement, the BLM states that CBM production could result in reduced yields for wells and springs that obtain water from the developed coal seams. However, the agency said, impacts would be mitigated by agreements with operators and the provisions of the CBM Protection Program.³⁴

The mitigation criteria were amended by HB575, which was vetoed. Under the measure, the money would have become available immediately upon passage and approval and the maximum compensation would have been \$150,000.

Prior Proposals

Past Legislatures considered the beneficial use of CBM water.

In 2007, Senate Bill No. 223 proposed to create an exemption for the beneficial use of CBM water. The water had to be used on land owned or leased by the appropriator and the amount of water could not exceed 750 acre feet a year. It died in the Senate.³⁵

Also during that session, the Legislature passed Senate Bill No. 407. It required the DEQ to issue a general permit for discharges of CBM water into existing impoundments to water for livestock and wildlife. The discharge for a single impoundment could not exceed 25 acre-feet of water or 75% of the capacity of the impoundment, whichever is less. The governor vetoed the measure,

³⁴ Chapter 4, The Final Supplement to the Statewide Oil and Gas Environmental Impact Statement. <http://www.deq.state.mt.us/COALBEDMETHANE/FinalEIS/FinalSuppCBM.pdf>

³⁵ <http://data.opi.mt.gov/bills/2007/billhtml/SB0223.htm>

saying that the discharges to unlined ponds could violate water quality standards and threatened downstream agriculture.³⁶

Senate Bill No. 437 in 2003 would have exempted the beneficial use of water produced by CBM extraction from the DNRC permitting requirements. It also would have doubled the distances where CBM operators must offer mitigation agreements. It died in the Senate.³⁷

Other States

Western states vary in the approach taken to produced water and whether or not it is subject to permitting under the prior appropriation doctrine.

Like Montana, a water right is not required to extract minerals in Utah. A water right is required to put the produced water to a beneficial use.³⁸

Wyoming has required permitting of water uses for more than a century on the basis of the prior appropriation doctrine. The state does not require a water permit for conventional oil and gas operations, but does for CBM. "The intentional production, or appropriation, of ground water for the CBM production led to the designation of CBM as a beneficial use of water and subsequently, to a requirement for a permit to appropriate the ground water," according to the state engineer.³⁹

Wyoming law also states that well permits are generally granted as a "matter of course, if the proposed use is beneficial, and if the state engineer finds that the proposed means of diversion and construction are adequate." If the application is not in the public's water interest, then it may be denied and subject to review by the state board of control.⁴⁰

³⁶ <http://data.opi.mt.gov/bills/2007/billhtml/SB0407.htm>
<http://data.opi.mt.gov/bills/2007/AmdHtmS/SB0407GovVeto.HTM>

³⁷ <http://data.opi.mt.gov/bills/2003/billhtml/SB0437.htm>

³⁸ Personal correspondence, Dec. 16, 2009, John Mann, Utah Assistant State Engineer.

³⁹ Guidance, CBM/Groundwater permits, State Engineer.
http://seo.state.wy.us/PDF/GW_CBM%20Guidance.pdf

⁴⁰ 41-3-931, Wyoming Code.

In New Mexico, the Oil Conservation Division regulates the disposition of water produced or used in connection with the drilling for, or producing of, oil or gas. No permit is required from the state engineer for the disposition of the water.⁴¹ For oil and gas wells drilled in aquifers of non-potable water more than 2,500 feet deep, the law requires information submitted to the state engineer, but it is not considered as an application for a water right. The law provides that anyone who claims impairment of existing water rights from such a well may file a claim in district court.⁴²

Though it has not been applied to oil and gas operations, New Mexico does require a water right to extract minerals under the Mine Dewatering Act.⁴³

The Colorado Supreme Court recently declared that the extraction of CBM, which involves pumping of ground water, is a beneficial use of the water. The court said a CBM developer should obtain a ground water well permit, and where necessary, provide an augmentation plan.⁴⁴

In light of the court decision, Colorado is considering administrative rules to address the permitting of ground water withdrawals for water produced by oil and gas production. Referring to the court case, the state engineer said oil and gas wells must be in compliance with well permitting regulations and the operation of the wells cannot injure vested water rights. The rules seek to define areas where water withdrawals are "non-tributary," meaning the withdrawal of ground water will not within 100 years deplete the flow of a natural stream at an annual rate of greater than one-tenth of one percent of the annual rate of withdrawal.⁴⁵

⁴¹ 70-2-12 and 70-2-12.1 NMSA.

⁴² 72-12-25 to 72-12-28 NMSA

⁴³ The state engineer evaluates applications under regulations governing ground water appropriations. If existing water rights are not impaired, the permit is issued. The applicant may appeal or file a plan of replacement New Mexico Mine Dewatering Act. Section 72-12A-7. http://law.justia.com/newmexico/codes/nmrc/jd_72-12a-7-19a95.html

⁴⁴ No. 07SA293, Vance v. Wolfe
http://www.courts.state.co.us/Courts/Supreme_Court/opinions/2007/07SA293.pdf

⁴⁵ Rulemaking for produced, non-tributary ground water,
<http://water.state.co.us/wateradmin/NontribGw.asp>

Additional Reading

Throughout this paper are several footnotes that contain links to documents cited that provide more information. Following are three with brief descriptions of the contents.

* The Final Supplement to the Statewide Oil and Gas Environmental Impact Statement.

The Final Supplement to the Montana Statewide Oil and Gas Environmental Impact Statement and Proposed Amendment of the Powder River and Billings Resource Management Plans (FSEIS) is a result of U.S. District Court issued-orders dated February 25, 2005, and April 5, 2005. These orders require BLM to prepare a Supplemental EIS to evaluate a phased development alternative for coal bed natural gas production.

<http://www.deq.state.mt.us/COALBEDMETHANE/FinalEIS/FinalSuppCBM.pdf>

* Record of Decision for the Final Statewide Oil and Gas Environmental Impact Statement and Proposed Amendment of the Powder River and Billings Resource Management Plans, December 2008.

<http://www.deq.state.mt.us/COALBEDMETHANE/FinalEIS/RODforRMPs.pdf>

* 2007 Annual coal bed methane regional ground-water monitoring report: Northern portion of the Powder River Basin. Montana Bureau of Mines and Geology.

http://www.mbm.mtech.edu/pdf-open-files/mbmg-576-CBM_AnnualReport2007.pdf

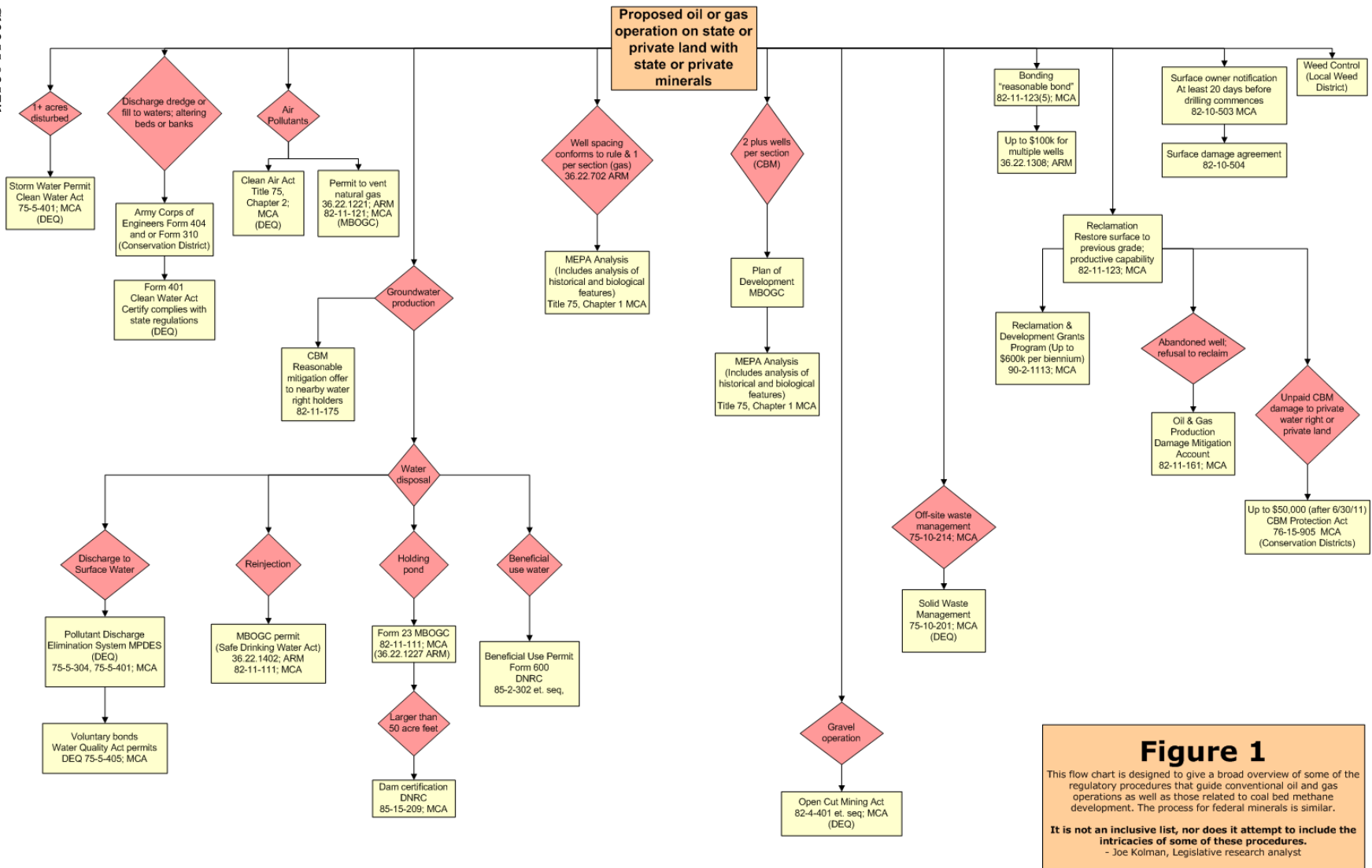


Figure 1
 This flow chart is designed to give a broad overview of some of the regulatory procedures that guide conventional oil and gas operations as well as those related to coal bed methane development. The process for federal minerals is similar.
It is not an inclusive list, nor does it attempt to include the intricacies of some of these procedures.
 - Joe Kolman, Legislative research analyst