

**FILED**

**BEFORE THE ENVIRONMENTAL QUALITY COUNCIL  
OF THE STATE OF WYOMING**

**JAN 16 2007**

**Terri A. Lorenzon, Director  
Environmental Quality Council**

IN THE MATTER OF THE PETITION OF POWDER RIVER )  
BASIN RESOURCE COUNCIL TO AMEND WYOMING )  
WATER QUALITY RULES, CHAPTER 2, APPENDIX H & I )

DOC #05-3102 )

**COMMENTS OF MERIT ENERGY COMPANY IN OPPOSITION TO  
PROPOSED RULES**

Merit Energy Company (Merit) appreciates the opportunity to submit comments to the Environmental Quality Council on this very important and far-reaching issue. It is the position of Merit that the rules proposed by the Powder River Basin Resource Council (PRBRC) are beyond the scope of this Council's authority to enact and are in violation of both the Wyoming Environmental Quality Act and the Federal Clean Water Act. The current regulatory framework has been subjected to proper rulemaking procedures and has proven effective in balancing the interests of industry, agriculture, and the environment. PRBRC's proposed rules are neither necessary, nor permissible, and should be rejected. The Department of Environmental Quality and the Environmental Quality Council lack the statutory authority to regulate water quantity or determine beneficial use. That authority is vested in the State Engineer and the Board of Control. Further, while both the Wyoming Environmental Quality Act and the Federal Clean Water Act utilize broad definitions of pollution, both the Federal and State statutes contemplate permissive discharges that meet certain requirements. Rules that effectively bar all discharges by imposing impossibly high and scientifically unsupported standards contravene both State and Federal law, and are beyond the power and authority of this Council. Finally, the proposed rules will result in a severe economic loss to Wyoming communities, the labor force, agricultural, and the State of Wyoming through loss of

business, a loss of wildlife and livestock habitat and beneficial use, and loss of tax revenues. The rules proposed by PRBRC must be rejected.

**THE PETITION IS BEYOND THE STATUTORY AUTHORITY OF THE DEQ AND EQC AND CONFLICTS WITH THE CONSTITUTIONAL POWERS GRANTED TO THE STATE ENGINEER AND BOARD OF CONTROL**

It is well settled in Wyoming law that an administrative agency has limited powers and can do no more than it is statutorily authorized to do. *U.S. West Communications, Inc. v. Wyoming Public Service Commission*, 988 P.2d 1061, 1068 (Wyo. 1999). Because an administrative agency has only the powers granted to it by statute, the justification for the exercise of any authority by the agency must be found within the applicable statute. *French v. Amax Coal West*, 960 P.2d 1023, 1027 (Wyo. 1998). An agency may not exceed the authority expressly delegated to it by the Legislature when the agency is promulgating regulations. *State Department of Revenue and Taxation v. PacifiCorp*, 872 P.2d 1163, 1166 (Wyo. 1994). Therefore, a statute will be strictly construed when determining the authority granted to an administrative agency, and reasonable doubt of the existence of the authority must be resolved against the exercise thereof. *In re LePage*, 18 P.3d 1177, 1180 (Wyo. 2001). “A doubtful power does not exist.” *Id.* at 1181, quoting *French v. Amax Coal West*, 960 P.2d 1023, 1027 (Wyo. 1998). “Any agency decision that falls outside the confines of the statutory guidelines articulated by the legislature is contrary to law and cannot stand.” *LePage*, 18 P.3d at 1180, quoting *Tri County Telephone Assc., Inc. v. Wyoming Public Serv. Com’n.*, 910 P.2d 1359, 1361 (Wyo. 1996). The Wyoming Supreme Court summarized as follows:

A regulatory agency ... has no inherent or common-law powers. Stated in another manner, an administrative body has only the power and authority granted by the constitution or statutes creating the same. Such statutes must be strictly construed or "any reasonable doubt of existence of any power must be resolved against the exercise thereof. A doubtful power does not exist.

*Montana Dakota Util. v. PSC*, 847 P.2d 978, 983 (Wyo. 1993), citing *Tri-County Elec. Ass'n. v. City of Gillette*, 525 P.2d 3, 8-9 (Wyo. 1974). The *Montana Dakota* Court concluded that:

Since we strictly construe the statutes under which [the agency] exercises is regulatory power, it logically follows that we also must strictly construe the rules promulgated and adopted by [the agency] pursuant to those statutes.

*Id.* at 983-984, citing *International Ass'n. of Fire Fighters, Local No. 279, v. Civil. Serv. Comm'n.*, 702 P.2d 1294, 1297 (Wyo. 1985). When the proposed rules before this Council are measured against these fundamental principles of Wyoming law, there is only one conclusion -- -- the proposed rules are not authorized by law and are beyond the power of the Environmental Quality Council.

A search of the statutes that grant authority to the Environmental Quality Council, the Department of Environmental Quality, and the Water Quality Division does not reveal any specific authority for the regulation of water quantity. The authority to regulate water quantity rests solely with the Wyoming State Engineer and the State Board of Control pursuant to the Wyoming Constitution. Article 8, §5 of the Wyoming Constitution addresses the powers of the State Engineer, who "shall have general supervision of the waters of the state and of the officers connected with its distribution." Article 8, §2 of the Wyoming Constitution provides that the Board of Control shall "have the supervision of the waters of the state and of their appropriation, distribution, and of

the various officers connected therewith.” The Board of Control has broad powers, both direct and the implied. *White v. Wheatland Irrigation District*, 413 P.2d 252, 258 (Wyo. 1966).

The determination of beneficial use of water is exclusively within the prerogative of the State Engineer. W.S. §§ 41-3-931, 41-4-502, Wyoming Constitution, Article 8, Section 3. In addition, Section 1104 of the existing DEQ regulations acknowledges that beneficial use determinations governing ground water are within the sole province of the State Engineer.

"Section 3. Underground Water Protected.

(a) All waters, including ground waters of the State, within the boundaries of the State of Wyoming are the property of the State; and control of the beneficial use of waters of the State resides with the Wyoming State Engineer.

(b) Nothing herein contained shall be construed so as to interfere with the right of any person to use water from any underground water source for any purpose identified in W.S. 35-11-102 and 35-11-103(c)(i); or to limit or interfere with the jurisdiction, duties or authorities of other Wyoming State agencies or officials."

The Wyoming Legislature gave specific recognition to the authority of the State Engineer and the Board of Control when it established the Environmental Quality Act by limiting its applicability. W.S. 35-11-1104 provides, in pertinent part:

“(a) Nothing in this act:

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**(iii) Limits or interferes with the jurisdiction, duties or authority of the state engineer, the state board of control\*\*\*.”** (Emphasis supplied)

The law is crystal clear. The only authority to regulate water quantity lies with the State Engineer and the Board of Control. Any attempt by the Department of Environmental



Quality or the Environmental Quality Council to adopt rules governing water quantity or beneficial use is beyond their authority and is unlawful.

The proposed rules violate the authority of the State Engineer and Board of Control to regulate water quantity in Wyoming. The State Engineer has stated that "storage of CBNG water is recognized as a beneficial use." See *State Engineer CBNG Surface Water Policy*, attached hereto as **Exhibit A**. The proposed rules attempt to limit discharge to the extent "actually used by livestock or wildlife." Actual consumed used by agriculture and wildlife is impossible to prove and is directly contrary to the expressed public policy and determination of the State Engineer.

In Formal Opinion Number 2006-001, the Wyoming Attorney General addressed the issue of whether the Environmental Quality Act grants the authority to regulate water quantity. In the Opinion, the Attorney General, citing from the Petition, stated "The Petition is clear that it wants DEQ to consider '... the impacts to land and water that [are the] result of quantity, rather than quality.'" *Opinion* at 2. The Opinion went on to state, "the EQA does not authorize such action." *Id.* The Attorney General reiterated its position in a letter to the EQC dated July 12, 2006. "As discussed in Formal Opinion 2006-001, it is our opinion that the Council does not have jurisdiction to address the quantity of water actually used, but does have the authority to address issues involving the quality of discharged water." Only the State Engineer has the authority to regulate water quantity, even with respect to water produced through oil and gas exploration and development. See W.S. 41-3-903 and 904. Attempts by the EQC, the DEQ, or any other entity, to regulate outside the purview of water quality, would run afoul of the existing statutory scheme and would be beyond the scope of EQC's authority.

As noted, the power to regulate water quantity is vested, by Constitution and statute, in the State Engineer and the Board of Control. The proposed rules purport to shift that authority to the DEQ and the EQC. In effect, the proposed rules would allow an individual landowner on a watershed, allegedly concerned with water quantity under the guise of water quality, to prevent all other users on the watershed from receiving water. This flies in the face of the Wyoming Constitution, Wyoming Statutes, and the well-established and effective practice of prior appropriation. It would effectively divest the State Engineer and the Board of Control of their authority and would disrupt over one hundred years of prior appropriation. Indeed, it would be completely contrary to Article 1, Section 31, of the Wyoming Constitution, which states,

Water being essential to industrial prosperity, of limited amount, and easy of diversion from its natural channels, its control must be in the state, which, in providing for its use, shall equally guard all the various interests involved.

Any rule, such as those proposed by PRBRC, which entitles individuals to assert control over a watershed, is clearly a direct violation of the Constitution and should be rejected. The proposed rules are also contrary to the well-established principle that the State has an easement for a right of way to flow waters down the natural channels of the State. "The title to waters within this State being in the State, in concomitance, it follows that there must be an easement in behalf of the state for a right of way through their natural channels for such waters upon and over lands submerged by them or across the bed and channels of streams or other collections of water." *Day v. Armstrong*, 362 P.2d 137, 145 (Wyo. 1961). As noted above, W.S. 41-3-903 and 904 support the conclusion that produced water in a watercourse is water belonging to the State and subject to the State's easement to flow waters in the channel. The proposed rules ignore this well-established

principle of Wyoming water law and are not supported. The rules would also result in waste and in the inefficient use of the valuable waters of this State and would be contrary to public policy.<sup>1</sup>

The proposed rules are also unsupported by the Clean Water Act. Section 5 of the Clean Water Act, provides:

"Except as expressly provided in this chapter, nothing in this chapter shall... be construed as impairing or in any manner affecting any right or jurisdiction of the States with respect to the waters (including boundary waters) of such States."

33 U.S.C. §1370(2). Any attempt to claim support for the proposed rules in the Clean Water Act is unsupported by the law as the rules cannot impair, abrogate, or supersede the power of the State Engineer over water quantity.

The DEQ and other State agencies addressed the Petitioner's comments on this subject previously in its Response to Comments submitted in connection with the revisions to Chapter 2, WQRR. In pertinent part, the June 2004 response of DEQ concerning Appendix H rejected the claims now being made by the Petitioner:

"40 CFR allows for the discharge of produced water if the water is used by wildlife or agriculture during periods of discharge. **This was a provision that was supported by the Wyoming DEQ, Wyoming Game and Fish and many landowners within Wyoming to allow for the continued use of produced water rather than reinjecting the water. It is the DEQ's opinion that there should not be a quantity limitation related to the agricultural and wildlife use determination.** The federal regulations did not contemplate a maximum allowable flow rate but rather the water being discharged was actually used by wildlife or agriculture during periods of discharge. **It was not the intent of the federal regulations that all of the water be consumed.**" (Emphasis supplied)

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<sup>1</sup> In a dissenting opinion, Chief Justice Hill stated, "As demonstrated by the events of this past summer, it is difficult to imagine a more important public policy issue in Wyoming than the continued viability of its water resources. *Polo Ranch Co. v. City of Cheyenne*, 61 P.3d 1255, 1265(Wyo. 2003).

The approach encouraged by the proposed rules has been addressed in detail and rejected.

There is no reason to revisit these matters again.<sup>2</sup>

**THE PROPOSED RULES WOULD BAN ALL PRODUCED WATER DISCHARGES WITHOUT THE EXCEPTIONS CONTEMPLATED IN THE CWA AND THE EQA**

Pursuant to the Federal Clean Water Act (CWA), the discharge of water produced in oil and gas operations into the waters of the nation is generally prohibited. 40 C.F.R. 435.32. There are however, exceptions to the general rule, which permit the discharge of oil and gas produced water under approved circumstances. One exception, particularly relevant to the present case, exists for water that is used in agriculture and wildlife propagation. 40 C.F.R. §§ 435.51-52. The CWA defines such uses in terms of water quality. “The produced water is of good enough quality to be used for wildlife or livestock watering or other agricultural uses and that the produced water is actually put to such use during periods of discharge.” 40 C.F.R. § 435.51(c). The rules proposed by PRBRC completely ignore this exception and would effectively ban the discharge of such water entirely by establishing impossible, and unsupported, water quality standards.

The Wyoming Environmental Quality Act (EQA) also seeks to prevent pollution generally. Like the CWA, however, the EQA does not indiscriminately ban all discharges, but recognizes exceptions to the general rule and allows the discharge of produced water under various circumstances. This is vitally important to an arid region like Wyoming. Indeed, the exception to the general prohibition on discharges is spelled out unambiguously in W.S. § 35-11-301, “(a) No person, **except when authorized by a**

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<sup>2</sup> It is important to note that Chapter 2 was recently revised and adopted on November 10, 2004 after a lengthy and thorough four-year review process. This process indicates DEQ’s support for the current

**permit** issued pursuant to the provisions of this act, shall: (i) Cause, threaten or allow the discharge of any pollution into the waters of the state...” (emphasis added.) The definition of pollution as used in the EQA is found at W.S. § 35-11-103(c)(i).

"Pollution" means contamination or other alteration of the physical, chemical or biological properties of any waters of the state, including change in temperature, taste, color, turbidity or odor of the waters or any discharge of any acid or toxic material, chemical or chemical compound, whether it be liquid, gaseous, solid, radioactive or other substance, including wastes, into any waters of the state which creates a nuisance or renders any waters harmful, detrimental or injurious to public health, safety or welfare, to domestic, commercial, industrial, agricultural, recreational or other legitimate beneficial uses, or to livestock, wildlife or aquatic life, or which degrades the water for its intended use, or adversely affects the environment. This term does not mean water, gas or other material which is injected into a well to facilitate production of oil, or gas or water, derived in association with oil or gas production and disposed of in a well, if the well used either to facilitate production or for disposal purposes is approved by authority of the state, and if the state determines that such injection or disposal well will not result in the degradation of ground or surface or water resources;

While this definition is broad, one cannot overlook the explicit provision for exceptions permitting the discharge of produced water in Wyoming. The current regulatory scheme does more than merely provide a broad definition of pollution. It very clearly provides exceptions to the general rule that pollution cannot be discharged. After defining the term, the statutes and rules proceed to establish the guidelines for when, where, and how the “pollution” can be discharged. It is here that the current framework differs from the rules proposed by PRBRC. Whereas the existing scheme clearly and unambiguously provides for permissible discharges, the stringent standards proposed by these rules will result in a complete ban on all surface discharges. Indeed, DEQ, in its

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scheme. *Also see* DEQ Comments, filed January 5, 2007.

Comment Letter dated January 5, 2007, recognized the overreaching nature of the proposed rules and objected to them.

As noted by DEQ, utilizing the definition of “pollution” from the Environmental Quality Act, Subsection (a)(iii) of Appendix I would result in a complete ban on the issuance of any permit for any discharge of produced water. Subsection (a)(iii) of Appendix I unambiguously bans any discharge unless the permit applicant demonstrates that it would “not cause contamination or other alteration of the physical, chemical, or biological properties of any waters of the state.” Adopting this approach would preclude all discharges of any produced water whose chemistry was not identical to that of the receiving stream. In application, this rule would prohibit all discharges. DEQ has stated: “Petitioners have taken the definition of ‘pollution’ from sections 35-11-103(c)(i) of the Environmental Quality Act (EQA), put it in the regulation, and have essentially stated that no CBM operator can discharge effluent which meets the definition of ‘pollution’ or would cause ‘pollution’ in the stream.” Letter from John Wagner to Mark Gordon (Jan. 5, 2007) at 1. This provision, DEQ says, “would prohibit any CBM discharge if there were any physical, chemical or biological alterations to the receiving waters caused by the discharge.” *Id.* at 2. DEQ effectively summarized as follows:

The primary purpose of the EQA is to require the DEQ to control environmental degradation by establishing permitting rules, regulations, processes, guidance and policy that allow ‘pollution’ or changes to the environment to occur, but within clear and defined boundaries. . . . [I]t is not the intent [of the EQA] to prohibit every discharge or activity which meets the definition of ‘pollution,’ but to adequately control such discharges.

*Id.* at 2. The proposed rules are beyond the scope of EQC and DEQ’s authority and must be rejected.

**THE PROPOSED RULES ARE ILL ADVISED BECAUSE THEY WILL HARM PRODUCTION OF BENEFICIAL WATER AND ARE HARMFUL TO AGRICULTURE, THE ENVIRONMENT, AND THE ECONOMY OF WYOMING**

Despite PRBRC's attempts mid-petition to apply the proposed rules only to CBM, Merit has reason to believe that the proposed rules could be applied to all produced water in Wyoming. Though Merit does not concede this point, it is possible that the more stringent rules proposed by PRBRC could be subject to legal challenge and possibly applied to conventional production. Should this happen, the rules would cause extensive damage to conventional oil production and the resulting benefits from that production. Merit Energy produces crude oil at the Hamilton Dome Field located 25 miles northwest of the Thermopolis, WY, in Hot Springs County, Wyoming. Merit holds two (2) NPDES permits (WY0000175 and WY0000680) to discharge produced water from Hamilton Dome Field into unnamed tributaries that eventually flow into Cottonwood Creek. The data below represents a summary of a Use Attainability Analysis filed by Merit with the Department of Environmental Quality concerning its Hamilton Dome operations and the impact on the economy and environment. The continual water discharge is estimated at 210,000 barrels of water per day, or 13 cfs. Requiring Merit to treat the water in order to meet the standards of the proposed rules is not economically feasible and the Field would have to be shut in.<sup>3</sup> The resulting loss to agriculture, wildlife, the environment, Hot Springs County, and Wyoming, would be devastating.

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<sup>3</sup> The average cost of reinjection is \$200,000 per well, with an initial capital investment of \$14 million. In addition, a disposal facility with storage capacity of 250,000 barrels and a sufficient pump capacity would require an additional \$5 million investment, for a total capital cost of reinjection at Hamilton Dome of \$19 million. Lease operating expense would increase by approximately \$150,000 per month due to increased electrical demands and facility maintenance expense. Because wellbores that would have to be converted are currently producing oil wells, there is an estimated loss of oil production of 600 barrels of oil per day.

Treatment of the water on the surface would require a capital investment of approximately \$500 per gallon per minute of treatment capacity. At the current discharge rate of 210,000 barrels per day, this would result in a \$3 million capital expenditure. More important, the associated increase in operating expenses would be approximately \$250,000 per month.

The agricultural community is largely in agreement that ranching operations along Cottonwood Creek would cease altogether with the closure of the Hamilton Dome Field. Produced water provides late season grass and hay irrigation and year-round livestock watering. The beneficial uses would be otherwise limited to scant resources from natural runoff in the early summer season, and would not viably support ranching operations. Attached to this submission as Appendix A are Landowner Questionnaire Responses and an Affidavit, which support the agricultural need for the water. Notable are the comments of Frank Rhodes, a rancher at Cottonwood Creek for 45 years. His Affidavit, under oath, includes the following comments:

"The produced water was extremely valuable to my ranching operations.

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After produced water was discharged, I witnessed a large increase in the number of ducks, geese, pheasants, and mule and white deer on or around Cottonwood Creek.

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The produced water from the Hamilton Dome Oilfield has been invaluable to my ranching operations as well as the other ranches and farms that are along Cottonwood Creek below the confluence (sic) the produced water with Cottonwood Creek, and has created a very beneficial environment for the area's wildlife.

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Without the produced water, Cottonwood Creek and the surrounding area would return to the dry, arid condition that existed prior to Cottonwood Creek being a year-round stream due to produced water, and ranchers, farmers, and the wildlife would suffer greatly."

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Neither reinjection nor reverse osmosis treatment of Hamilton Dome produced water is acceptably cost-effective. Merit would shut in and abandon the field.



In stark contrast to the Petitioner's theories and models, Landowner Assessments clearly demonstrate that, in real life, there are no adverse health effects on livestock or wildlife from Cottonwood Creek due to the produced water from Hamilton Dome. They show positive impacts, no adverse health effects, and vast improvement of wildlife.

The loss of Hamilton Dome discharge into Cottonwood Creek would result in a corresponding loss of:

1600 acres of irrigated cropland;

4000 tons of annual hay production;

15 to 20% reduction in herd size (about 3200 cows) and eight \$2 million reduction in related sales receipts (based on \$650 per head); and

20 full-time and seasonal jobs in the ranching industry.

Merit has conducted an extensive economic evaluation of the economic significance of the Hamilton Dome Field. It is attached as Appendix B. A summary of the assessment follows.

The IMPLAN model was used to estimate the total economic losses to Hot Springs County, if the Hamilton Dome Field were shut in. Excluding losses from cessation of Merit's Hamilton Dome production operations, Hot Springs County is estimated to lose \$3.3 million in total economic output, a loss of \$645,000 in annual labor income, and a net loss of 32 full and part - time jobs.

Fiscal contributions of Hamilton Dome are significant. Annual crude production from the Hamilton Dome Field averages approximately 1.67 million barrels. Hamilton Dome supports an estimated total of 186 jobs in the State of Wyoming, including 136 jobs in Hot Springs County and 50 jobs elsewhere in Wyoming. The associated

Hamilton Dome labor income impact in Hot Springs County totals \$4.07 million and \$2.54 million elsewhere-in Wyoming.

Merit Energy is the largest taxpayer in Hot Springs County. Merit Energy is the county's largest source of property tax. The property tax revenue from Hamilton Dome averages 29% of the total property tax revenue of all countywide taxing entities (\$1.9 million). Hamilton Dome accounts for the following revenue contributions to major funds and entities in Hot Springs County:

County General Fund: 9% of total General fund revenues.

Library, fair board, hospital: 27% of the library system's total revenues, 15% of the Fair Board's total revenues, and 2% of the Hot Springs County Memorial Hospital District's total revenues.

Hot Springs County Weed and Pest District. 9% of the District's pest eradication budget and 29% of its mosquito control budget.

Hot Springs County Rural Fire Protection District: 29% of the district's budget.

Hot Springs County School District #1: \$1.4 million annually for school related funds. This loss would increase the school debt service mill levy for other county taxpayers by 2.8 mills, and based upon a five-year average. Assuming no change in enrollment levels, the Wyoming School Foundation Fund would experience a net cost of \$1.235 million from lost revenues and additional entitlement costs.

Hamilton Dome production has provided severance taxes of approximately \$1.8 million annually to the State of Wyoming. Federal mineral royalty payments for Hamilton Dome production average \$4.4 million. Wyoming's share of those royalties averages approximately \$2.2 million annually. Merit pays over \$400,000 in sales and

use taxes on the purchase of goods and services for the Hamilton Dome Field. Hamilton Dome's crude production represents approximately 33% of the daily feedstock supply needed to sustain Wyoming's refineries at full production. Hamilton Dome supplies more than 20% of the crude necessary to sustain asphalt and road oil production. Loss of this production would have a direct impact on Wyoming's refineries.

Merit has studied the impact on wetlands caused by the loss of Hamilton Dome produced water. The wetlands were inventoried and mapped. Soils were analyzed. The study, completed in early 2003, demonstrated that a loss of Hamilton Dome discharge would eliminate approximately 600 acres of high quality wetlands. This totally includes nearly 100 acres supported directly by discharge and another approximately 500 acres along Cottonwood Creek that are indirectly supported by the discharge.

Conversion of Cottonwood Creek from a perennial to an ephemeral stream would impact riparian vegetation, and result in a decline of wildlife population and displacement of wildlife species. Francis Petera, the Director of the Wyoming Game and Fish Department, wrote to John Wagner of the Water Quality Division on June 20, 1990 and commented on produced water from Hamilton Dome:

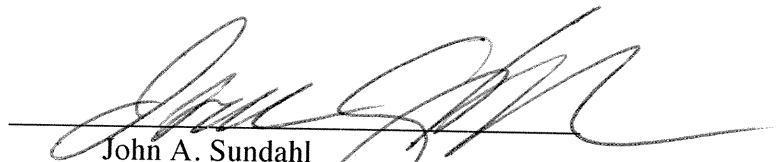
"Without further evidence that points to harming the wildlife or people in the area, the produced water does provide substantial benefits to the wildlife resource which is using this area."

The water produced from the Hamilton Dome Field would not meet the levels suggested in the proposed rules for Total Dissolved Solids and Sulfates and surface discharges of the water would cease. Because the produced water from the Hamilton Dome Field would not meet the standards in the proposed rules, the loss of that produced water would have a devastating impact on the environment, wildlife, the agricultural

community, the labor force, and Hot Springs County, in addition to Wyoming's General Fund. For all of the reasons set forth in these comments, Merit Energy Company respectfully urges the Environmental Quality Council to reject the rules proposed by PRBRC.

**RESPECTFULLY SUBMITTED** this 16<sup>th</sup> day of January, 2007.

**MERIT ENERGY COMPANY**



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**CERTIFICATE OF SERVICE**

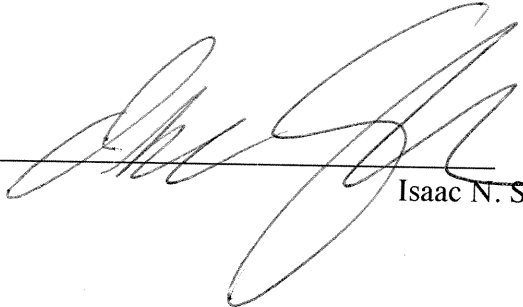
I certify the foregoing pleading was served on this 16<sup>th</sup> day of January, 2007, and that copies were served as follows:

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John Corra, Director  
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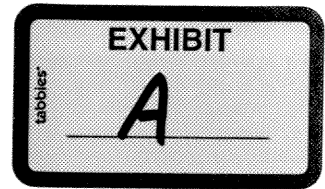
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DAVE FREUDENTHAL  
GOVERNOR

PATRICK T. TYRRELL  
STATE ENGINEER

## REVISED INTERIM POLICY MEMO

TO: State Engineer's Office  
FROM: Patrick T. Tyrrell, State Engineer *PTyrrell*  
DATE: April 26, 2004  
SUBJECT: State Engineer's Office permitting requirements for water produced during the recovery of coal bed methane (CBNG)

*THIS POLICY SUPERSEDES THE INTERIM POLICY MEMO DATED AUGUST 2, 2002.*

THIS POLICY APPLIES TO BY-PRODUCT WATER DEVELOPED BY CBNG WELLS ONLY!!  
THE 1978 POLICY REGARDING 10 ACRE-FEET RESERVOIRS ASSOCIATED WITH  
GROUNDWATER ONLY DOES NOT APPLY TO CBNG WELLS!!

Prior to drilling a water well for the purpose of extracting methane gas from coal beds, a ground water (well) permit, using form U.W.5, must be obtained from the State Engineer. The beneficial use of this water, as stated on the application form, is water produced in production of coal bed methane gas. Unless specified in the well permit, there is no other beneficial use of this produced water authorized by the issuance of the well permit.

In accordance with § 41-3-301, W.S., 1977, as amended, a reservoir permit is required from the State Engineer for any impoundment that stores, for beneficial purposes, the un-appropriated waters of the state of Wyoming. Unless specified in the ground water permit, water produced in the production of coal bed methane gas has no other implied use and is considered to be un-appropriated waters of the state of Wyoming.

### GROUND WATER

If the CBNG-produced water will be discharged and not used for any other beneficial purposes, no further ground water permitting is required.

If the CBNG-produced water will be used for any purposes other than coal bed methane production, these uses must be specified in the well application at the time of filing. If the CBNG-produced water will be stored in some type of impoundment, Surface Water reservoir filing procedures must be followed unless there will be no other beneficial use of the water and the impoundment is located off the channel of a

natural water course. Under these specific conditions, the Wyoming Oil and Gas Conservation Commission rules will apply.

#### SURFACE WATER

If an impoundment will be used to store CBNG-produced water for additional beneficial uses, a reservoir permit must be obtained from the State Engineer prior to commencement of construction of the impoundment.

The reservoir permitting process for on channel, CBNG-produced water impoundments falls into two general categories:

1. Impoundments with a capacity of twenty (20) acre-feet or less and with a dam height of twenty (20) feet or less.
2. Impoundments with a capacity in excess of twenty (20) acre-feet or with a dam height exceeding twenty (20) feet.

The storage of CBNG produced water is recognized as a beneficial use.

#### FILING METHODS

METHOD A: For use when CBNG water storage is the sole use and the operator/producer is the applicant.

Reservoir applications filed under these procedures will be limited to a life of fifteen (15) years or until the facility ceases to receive CBNG water discharges, whichever is sooner, and will carry a mandatory breach limitation to occur upon cancellation of the permit.

For impoundments that fall into category (1), Form SW-CBNG should be used and it need not be accompanied by a USGS Quadrangle map.

For impoundments that fall into category (2), the SW-3 application form must be used with a beneficial use of CBNG water storage and the application must be accompanied by a certified, blackline, mylar or linen map. The map may be certified by either a Wyoming -licensed professional engineer or land surveyor unless the impoundment falls under the auspices of the Safety of Dams Law (dam height greater than 20 feet or storage capacity of 50 acres-feet or more, in which case, the map must be certified by a Wyoming-licensed professional engineer. This certified map must be prepared in accordance with the policies established by the State Engineer's Office.

METHOD B: When the reservoir is intended to remain after storage of CBNG water ceases and the where the underlying landowner is the permit applicant or co-applicant.

For impoundments that fall into category (1), the Special Application filing procedures may be used which allow for the use of a USGS

Quadrangle map to serve as the permit map to accompany the SW-3 and SW-3A application forms. If a stock reservoir will be constructed, the SW-4 application form should be used. A stock reservoir filing using the SW-4 application form need not be accompanied by a USGS Quadrangle map.

For impoundments that fall into category (2), the SW-3 application form must be used and the application must be accompanied by a certified, blackline, mylar or linen map. The map may be certified by either a Wyoming-licensed professional engineer or land surveyor unless the impoundment falls under the auspices of the Safety of Dams Law (dam height greater than 20 feet or storage capacity of 50 acre-feet or more), in which case, the map must be certified by a Wyoming-licensed professional engineer. This certified map must be prepared in accordance with the policies established by the State Engineer's Office.

#### ON-CHANNEL IMPOUNDMENTS

All on-channel impoundments must have a storage permit from the State Engineer prior to commencement of any construction (or modification/improvement of an existing reservoir) of the reservoir. An existing reservoir to be used to store CBNG-produced water, without a State Engineer permit, has no standing and, as such, will be treated as if it doesn't exist and will be subject to all requirements of a new, properly-authorized CBNG reservoir constructed within the law. Any unpermitted, on-channel impoundment is subject to breach at all times.

Any new on-channel impoundment that will be built to store CBNG-produced water must be equipped with a controllable, low-level outlet pipe to allow for proper regulation. The minimum size of the low-level outlet pipe is 12 inches in diameter. A larger outlet may be required if conditions warrant. Larger drainages may require larger outlets. The potential for a call for priority regulation by downstream senior appropriators may also require the installation of a larger outlet pipe. The operator should contact the State Engineer's Office in this regard.

Any new on-channel impoundment that will be built to store CBNG-produced water may not capture natural runoff from the drainage on which it is located unless said runoff exceeds the average annual peak runoff event. To accomplish this, the on-channel facility must be equipped with a self-regulating runoff by-pass facility that will prevent flows up to and including the average annual peak runoff event from being stored. If a runoff event exceeds that of the average annual peak runoff event, that portion of the runoff in excess of the average annual peak runoff event may be stored in the impoundment but must be released to satisfy downstream, senior appropriators should it be required under priority regulation.



In lieu of the requirement for a self-regulating runoff by-pass facility, an application for a permit for an on-channel impoundment must be accompanied by a water administration plan that can demonstrate that the proposed reservoir will not negatively impact the drainage upon which the reservoir is proposed to be built. The water administration plan must either show how runoff (either the average annual peak or some lesser amount if approved by the SEO) will be made available to the drainage downstream of the reservoir irrespective of existing, downstream development (reservoirs) or channel conditions, or how in some other fashion senior, downstream water rights will be satisfied.

Any existing, permitted on-channel reservoir will not be subject to the above stipulations.

If an existing, permitted on-channel reservoir is to be enlarged to provide additional storage of coal bed methane water, a self-regulating runoff by-pass facility must be installed or a water administration plan filed. The by-pass facility and water administration plan must meet the same requirements listed above.

If the height of the dam on an existing, permitted on-channel reservoir is to be increased to provide additional freeboard, an uncontrolled primary spillway must be installed with its invert elevation at the historic high water level such as to allow inflow above the historic volume to pass through the reservoir. This primary spillway shall not be less than 12-inches in diameter and must meet the same requirements listed above for a self-regulating runoff bypass facility.

#### OFF-CHANNEL IMPOUNDMENTS

An off-channel impoundment may be built to store CBNG-produced water. The off-channel impoundment should be positioned so the potential to store surface runoff is minimal. By-pass facilities or berms may be used to preclude surface runoff from entering the pond. Off-channel impoundments that store no surface runoff (direct precipitation is considered to be negligible) need not be designed with an outlet. The operator must be aware that any runoff that is impounded in the reservoir may have to be passed to downstream, senior appropriators in the event of a call for priority regulation.

#### BENEFICIAL USE OF CBNG-PRODUCED WATER

The beneficial use of CBNG-produced water may be classified into two (2) categories:

1. Inactive use of CBNG-produced water due to evaporation and/or infiltration.
2. Active use of CBNG-produced water by discharging from the

reservoir such as land application or in a leach field.

CBNG-produced water use under category (1) needs no further discussion.

For use of CBNG-produced water under category (2) the operator must specify the points of land application on the map which accompanies the reservoir application. This is accomplished by the use of X's in the appropriate 40-acre subdivisions where water will be applied. The pipeline/nozzle system should be shown in sufficient detail so it is clear where the water will be applied. No water right will be established at the points of land application of CBNG-produced water.

Due to the fact that CBNG-produced water is not native to the drainage, a CBNG-produced water storage reservoir will be allowed multiple or continuous fills from CBNG sources only. The following limitations will be placed on any reservoir permit where water will be evacuated for CBNG-produced water use:

Nothing herein is intended to create a water right that attaches to the land application or leach field points of use. The points of land application/leach field are shown for informational purposes only.

For most of the year, this drainage has flow as a result of CBNG wells discharging in the area. Therefore, if there is not natural flow available, this water is not subject to a downstream priority call for regulation and, as such, the reservoir IS NOT subject to the one-fill rule.

#### BREACHING REQUIREMENTS

Dams designed to hold CBNG-produced water and natural runoff will be conditioned to allow breaching (or reduction in size) upon cessation of receiving CBNG-produced water. Contingent requirements are as follows:

1. If the structure is situated off-channel and captures no natural runoff, breaching may not be required.
2. On-channel structures may remain if down sized to stock pond capacity and dam height if the landowner's written consent is obtained.
3. All other structures are subject to a breaching requirement:
  - a. The "permissive" requirement, which would apply in most cases, is worded as follows: This reservoir stores only water that is produced as a by-product of coal bed methane production. When coal bed methane

production ceases, the State Engineer may require the owner to breach the dam or reclaim the pit to allow for proper water administration.

- b. The "mandatory" requirement will be used in drainages and locations where the Superintendent of the water division in which the reservoir is located has predicted administrative problems. That wording is as follows: This reservoir stores only water that is produced as a by-product of coal bed methane production. When coal bed methane production ceases, the owner of this reservoir shall breach the dam or reclaim the pit to allow for proper water administration.

The above requirements are for ponds holding only CBNG-produced water. If stock, fish and wildlife, fish propagation or other uses are included, some consideration will be given to maintaining those storage capacities post-CBNG. Landowner consent must be obtained to leave these reservoirs with the concurrence of the Superintendent. All landowner consents to leave CBNG reservoirs in place must include language committing the landowner to proper long-term maintenance of the structure.

#### RESERVOIR OWNERSHIP

LANDOWNER: It is acceptable to file an application for a CBNG reservoir in the name of the landowner. If no agent has been listed, the landowner will receive all correspondence regarding the application and the reservoir.

OPERATOR/PRODUCER: It is acceptable to file an application for a CBNG reservoir in the name of the operator/producer. The operator/producer must submit a certification supplying the name and address of the landowner on which the reservoir will be constructed. The certification must also certify that the operator/producer has contacted the landowner and made them aware that they intend to construct the reservoir on lands owned by the landowner. Applications filed in this manner will be issued with mandatory breach limitations to occur after CBNG water production ceases. Dam site reclamation may also be required. Once approved, a copy of the permit will be sent to the landowner as well as the operator/producer. The operator/producer will be responsible for all actions regarding the application, permit, and reservoir.

JOINT APPLICANTS: The operator/producer and the landowner may file jointly. Both parties will then be contacted about the application unless one party is designated as the agent to receive and respond to inquiries about the application during processing or the reservoir after construction. Both parties will then be responsible for inquiries about the application, permit, or reservoir. Mandatory

breach limitations will be placed on the permit unless the landowner has indicated their desire to retain the reservoir after CBNG water production is complete.

These guidelines are the State Engineer's Office requirements for dealing with CBNG-produced water. The CBNG operators should be advised that they must contact the Wyoming Oil and Gas Conservation Commission and the Department of Environmental Quality/Water Quality Division for their requirements concerning water produced from the development of coal bed methane.

**LANDOWNER AFFIDAVIT AND TESTIMONY**

**APPENDIX A**

**BEFORE THE WYOMING DEPARTMENT OF  
ENVIRONMENTAL QUALITY, WATER QUALITY DIVISION**

**RENEWAL OF MERIT ENERGY )  
COMPANY'S PERMITS TO )  
DISCHARGE, PERMIT NUMBERS )  
WY0000175 AND WY0000680 )**

**AFFIDAVIT OF FRANK RHODES**


I, Frank Rhodes, being duly sworn upon his oath, being of lawful age and otherwise competent to testify and having personal knowledge of the matters contained herein do state:

1. I was a rancher on six to eight miles of Cottonwood Creek from 1948 to 1993, just north of Hamilton Dome, Wyoming.
2. During this time, I ranched approximately 13,000 acres of deeded land, and approximately 26,000 acres of land leased from the Bureau of Land Management.
3. I ranched on Cottonwood Creek prior to the time when produced water was discharged from the Hamilton Dome oil field into Cottonwood Creek.
4. Prior to produced water being discharged, Cottonwood Creek would only flow from approximately March to July or August, and would sometimes be dry as early as June. For the rest of the year, Cottonwood Creek was dry with the exception of intermittent flows of rain or snow melt.
5. Prior to the discharge of produced water, I had to use well water to water my livestock.
6. After produced water was discharged into the Cottonwood Creek, the creek would flow year-round.
7. My ranch, which was sold in 1993, has water rights for water out of Cottonwood Creek and one of the unnamed tributaries into which the produced water is discharged.
8. I used the produced water to water my livestock and irrigate hay. The produced water was extremely valuable to my ranching operations.
9. Additionally, after produced water was discharged, I witnessed a large increase in the number of ducks, geese, pheasants, and mule and white-tail deer on or around Cottonwood Creek.

10. The produced water from the Hamilton Dome oil field has been invaluable to my ranching operations as well as the other ranches and farms that are along Cottonwood Creek below the confluence the produced water with Cottonwood Creek, and has created a very beneficial environment for the area's wildlife.

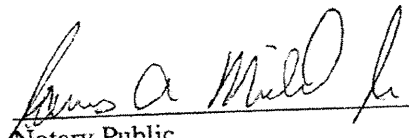
11. Without the produced water, Cottonwood Creek and the surrounding area would return to the dry, arid condition that existed prior to Cottonwood Creek being a year-round stream due to produced water, and ranchers, farmers, and the wildlife would suffer greatly.

**FURTHER AFFIANT SAYETH NAUGHT.**

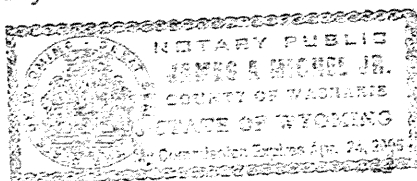
  
\_\_\_\_\_  
Frank Rhodes

STATE OF WYOMING            )  
  )SS:  
COUNTY OF HOT SPRINGS    )

The foregoing instrument was subscribed and sworn to before me by Frank Rhodes on the 26 day of August, 2002.

  
\_\_\_\_\_  
Notary Public

My Commission Expires: April 24, 2006



HAMILTON DOME WATER DISCHARGES  
TO COTTONWOOD CREEK:

**LANDOWNER ASSESSMENTS**

GROUNDWATER HYDROLOGY ISSUES

1. Does the current flow of Cottonwood Creek affect the water table level on your property? If yes, do you see increased vegetation in areas of high groundwater table? (i.e. along stream banks) How much? ( 5 feet, 5 yards, 20 yards, etc.)
2. How many additional livestock can you operate with due to this increased vegetation from the raised groundwater table? (None, 5%, 10%, 20%, etc.)
3. Have you seen any affect of the water table in any water wells in the area? If yes, "What is the depth of the well(s)?"

SURFACE WATER HYDROLOGY ISSUES

*States West will assess the current hydrology of Cottonwood Creek and predict the hydrology if the discharges were to cease.*

1. Do you have any knowledge of conditions of Cottonwood Creek before 1950? If Yes: How many years out of 10 would it normally be dry at some time during the year? What month would it normally go dry? In the spring, when would water start running in the stream above Hamilton Dome?
2. Do you irrigate with water solely from Hamilton Dome discharges?
3. Do you irrigate with water that is mixed with runoff? If yes: How do you determine if the water quality is adequate for irrigation?
4. How many times a year do you irrigate?
5. Have you seen any impact to your fields from irrigating with Cottonwood Creek water?
6. Have you ever seen any adverse health effects on livestock or wildlife from Cottonwood Creek?



HAMILTON DOME WATER DISCHARGES  
TO COTTONWOOD CREEK:

LANDOWNER ASSESSMENTS

GROUNDWATER HYDROLOGY ISSUES

1. Does the current flow of Cottonwood Creek affect the water table level on your property? If yes, do you see increased vegetation in areas of high groundwater table? (i.e. along stream banks) How much? ( 5 feet, 5 yards, 20 yards, etc.) YES, YES
2. How many additional livestock can you operate with due to this increased vegetation from the raised groundwater table? (None, 5%, 10%, 20%, etc.)
3. Have you seen any affect of the water table in any water wells in the area? If yes, "What is the depth of the well(s)?" NO

SURFACE WATER HYDROLOGY ISSUES

*States West will assess the current hydrology of Cottonwood Creek and predict the hydrology if the discharges were to cease.*

1. Do you have any knowledge of conditions of Cottonwood Creek before 1950? If Yes: How many years out of 10 would it normally be dry at some time during the year? What month would it normally go dry? In the spring, when would water start running in the stream above Hamilton Dome? NO
2. Do you irrigate with water solely from Hamilton Dome discharges? YES
3. Do you irrigate with water that is mixed with runoff? If yes: How do you determine if the water quality is adequate for irrigation? YES, historic use of this same water proves it is adequate
4. How many times a year do you irrigate? most fields get 2 per year
5. Have you seen any impact to your fields from irrigating with Cottonwood Creek water? NO
6. Have you ever seen any adverse health effects on livestock or wildlife from Cottonwood Creek? NO

HAMILTON DOME WATER DISCHARGES  
TO COTTONWOOD CREEK:

**LANDOWNER ASSESSMENTS**

GROUNDWATER HYDROLOGY ISSUES

1. Does the current flow of Cottonwood Creek affect the water table level on your property? If yes, do you see increased vegetation in areas of high groundwater table? (i.e. along stream banks) How much? ( 5 feet, 5 yards, 20 yards, etc.)
2. How many additional livestock can you operate with due to this increased vegetation from the raised groundwater table? (None, 5%, 10%, 20%, etc.)

3. Have you seen any affect of the water table in any water wells in the area? If yes, "What is the depth of the well(s)?"

*I CAN'T REALLY ANSWER THESE FIRST THREE QUESTIONS BECAUSE THE CREEK HAS ALWAYS RUN SINCE WE HAVE OWNED THE PROPERTY*

SURFACE WATER HYDROLOGY ISSUES

*States West will assess the current hydrology of Cottonwood Creek and predict the hydrology if the discharges were to cease.*

1. Do you have any knowledge of conditions of Cottonwood Creek before 1950? If Yes: How many years out of 10 would it normally be dry at some time during the year? What month would it normally go dry? In the spring, when would water start running in the stream above Hamilton Dome?
2. Do you irrigate with water solely from Hamilton Dome discharges?
3. Do you irrigate with water that is mixed with runoff? If yes: How do you determine if the water quality is adequate for irrigation?
4. How many times a year do you irrigate?
5. Have you seen any impact to your fields from irrigating with Cottonwood Creek water?
6. Have you ever seen any adverse health effects on livestock or wildlife from Cottonwood Creek? *NO*

ECONOMIC ISSUES

1. What is your typical season/period of use of water from Cottonwood Creek?

Begin: \_\_\_\_\_

End: \_\_\_\_\_

2. For what purpose(s) is the water used? (May indicate more than one answer)

Livestock watering (immediate use): \_\_\_\_\_

Livestock watering (stored/impounded for later use): \_\_\_\_\_

Irrigate Pastures: \_\_\_\_\_

Irrigate Cropland: \_\_\_\_\_

3. How long has your operation used this water?

4. If you checked livestock watering in Question #2, what kind and how many head of livestock are supported by the water?

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Cattle / Sheep / Horses  
(cow-calf pairs)

5. Does the livestock watering occur on your own land, leased private land, or federal/state grazing allotments?

6. If you checked irrigation in Question #2, please describe the type and use of the irrigated acreage.

Acres: \_\_\_\_\_/\_\_\_\_\_  
Pasture / cropland

If cropland, the type of crop grown: \_\_\_\_\_

Average productivity/acre over the past 3 seasons: \_\_\_\_\_

If the crop is alfalfa or grass hay, is it used as winter feed for your herd or is it sold? \_\_\_\_\_

7. How many people, including family members, work or are employed by your operation?

Year-round: \_\_\_\_\_

Seasonal: \_\_\_\_\_

Please review the analysis of the effects of the loss of Hamilton Dome produced water on Cottonwood Creek (i.e., reduced average flow volumes by month). Then address questions 8-12:

8. How would a reduction/loss of the water affect your operation, (e.g., reduce herd size by \_\_\_\_\_, reduce crop production by \_\_\_\_\_%, or \_\_\_\_\_)?
9. Estimate the reduction in your operations annual net income associated with the effects identified in Question #8 above? \_\_\_\_\_
10. Is there an alternative source of water available to replace this water? If yes, please describe, including the costs associated with obtaining water from the alternative source. \_\_\_\_\_
11. How would you adjust your operation's labor to deal with the effects associated with the reduction in water? \_\_\_\_\_
12. Would your operation remain viable with the reduction in volume or the loss of this water?

#### ECOLOGICAL ISSUES

1. What changes have you noticed with regard to wildlife use of the area since the stream became perennial rather than intermittent?
2. Has the ability to produce alfalfa using discharge water increased use of the area by wildlife, especially big game and game birds?
3. What would become of the irrigated hayfields if you could no longer irrigate?
4. Has there been a change in plants (more willows, cottonwoods, marshes, etc.?)

ECONOMIC ISSUES

1. What is your typical season/period of use of water from Cottonwood Creek?

Begin: June  
End: October

2. For what purpose(s) is the water used? (May indicate more than one answer)

Livestock watering (immediate use): X  
Livestock watering (stored/impounded for later use): \_\_\_\_\_  
Irrigate Pastures: \_\_\_\_\_  
Irrigate Cropland: \_\_\_\_\_

3. How long has your operation used this water?

34 years

4. If you checked livestock watering in Question #2, what kind and how many head of livestock are supported by the water?

          /          /  25  
Cattle / Sheep / Horses  
(cow-calf pairs)

5. Does the livestock watering occur on your own land, leased private land, or federal/state grazing allotments? Private Land

6. If you checked irrigation in Question #2, please describe the type and use of the irrigated acreage.

Acres: 320 / \_\_\_\_\_  
Pasture / cropland

If cropland, the type of crop grown: \_\_\_\_\_

Average productivity/acre over the past 3 seasons: \_\_\_\_\_

If the crop is alfalfa or grass hay, is it used as winter feed for your herd or is it sold? \_\_\_\_\_

7. How many people, including family members, work or are employed by your operation?

Year-round: \_\_\_\_\_  
Seasonal: 4

Please review the analysis of the effects of the loss of Hamilton Dome produced water on Cottonwood Creek (i.e., reduced average flow volumes by month). Then address questions 8-12:

8. How would a reduction/loss of the water affect your operation, (e.g., reduce herd size by 100%, reduce crop production by \_\_\_\_\_%, or \_\_\_\_\_)?
9. Estimate the reduction in your operations annual net income associated with the effects identified in Question #8 above? 5,000 to 12,000
10. Is there an alternative source of water available to replace this water? If yes, please describe, including the costs associated with obtaining water from the alternative source. Possible well, 8,000
11. How would you adjust your operation's labor to deal with the effects associated with the reduction in water? WE WOULD BE OUT OF BUSINESS
12. Would your operation remain viable with the reduction in volume or the loss of this water? NO

#### ECOLOGICAL ISSUES

1. What changes have you noticed with regard to wildlife use of the area since the stream became perennial rather than intermittent? WE HAVEN'T OWNED THE LAND LONG ENOUGH TO ANSWER THIS QUESTION
2. Has the ability to produce alfalfa using discharge water increased use of the area by wildlife, especially big game and game birds?
3. What would become of the irrigated hayfields if you could no longer irrigate?
4. Has there been a change in plants (more willows, cottonwoods, marshes, etc.?)  
NO CHANGE. BUT WE HAVE LOTS OF WILLOWS AND TREES ON OUR PROPERTY.

Irby Creek Mule Co.

Jeff Van Antwerp  
224 S. 9<sup>TH</sup> STREET  
Thermopolis, WYO  
22443

Clay Van Antwerp  
805 Bushnell  
Rock Springs, WY  
307-362-4898

ECONOMIC ISSUES

1. What is your typical season/period of use of water from Cottonwood Creek?

Begin: March  
End: Nov

2. For what purpose(s) is the water used? (May indicate more than one answer)

Livestock watering (immediate use):   
Livestock watering (stored/impounded for later use):   
Irrigate Pastures:   
Irrigate Cropland:

3. How long has your operation used this water? minz for 2 year, but this ranch has used the water since 1905 that I know of and probably longer
4. If you checked livestock watering in Question #2, what kind and how many head of livestock are supported by the water?

450 / 40 / 25  
Cattle / Sheep / Horses  
(cow-calf pairs)

5. Does the livestock watering occur on your own land, leased private land, or federal/state grazing allotments? my own + state and federal allot.
6. If you checked irrigation in Question #2, please describe the type and use of the irrigated acreage.

Acres: 661 acres  
Pasture / cropland

If cropland, the type of crop grown: \_\_\_\_\_

Average productivity/acre over the past 3 seasons: 2 ton per acre hay

If the crop is alfalfa or grass hay, is it used as winter feed for your herd or is it sold? feed

7. How many people, including family members, work or are employed by your operation?

Year-round: 7  
Seasonal: 4

Please review the analysis of the effects of the loss of Hamilton Dome produced water on Cottonwood Creek (i.e., reduced average flow volumes by month). Then address questions 8-12:

8. How would a reduction/loss of the water affect your operation, (e.g., reduce herd size by 50, reduce crop production by 50 %, or more)?
9. Estimate the reduction in your operations annual net income associated with the effects identified in Question #8 above? 100,000<sup>00</sup> or more
10. Is there an alternative source of water available to replace this water? If yes, please describe, including the costs associated with obtaining water from the alternative source. no, not that I'm aware of
11. How would you adjust your operation's labor to deal with the effects associated with the reduction in water? I would have to let the small go.
12. Would your operation remain viable with the reduction in volume or the loss of this water? no

#### ECOLOGICAL ISSUES

1. What changes have you noticed with regard to wildlife use of the area since the stream became perennial rather than intermittent? N/A
2. Has the ability to produce alfalfa using discharge water increased use of the area by wildlife, especially big game and game birds? lots of wildlife in this area
3. What would become of the irrigated hayfields if you could no longer irrigate? the would become weed fields
4. Has there been a change in plants (more willows, cottonwoods, marshes, etc.?) N/A



HAMILTON DOME WATER DISCHARGES  
TO COTTONWOOD CREEK:

LANDOWNER ASSESSMENTS

GROUNDWATER HYDROLOGY ISSUES

1. Does the current flow of Cottonwood Creek affect the water table level on your property? If yes, do you see increased vegetation in areas of high groundwater table? (i.e. along stream banks) How much? ( 5 feet, 5 yards, 20 yards, etc.)  
*YES - 10 yds*
2. How many additional livestock can you operate with due to this increased vegetation from the raised groundwater table? (None, 5%, 10%, 20%, etc.)
3. Have you seen any affect of the water table in any water wells in the area? If yes, "What is the depth of the well(s)?" *YES 80'*

SURFACE WATER HYDROLOGY ISSUES

*States West will assess the current hydrology of Cottonwood Creek and predict the hydrology if the discharges were to cease.*

1. Do you have any knowledge of conditions of Cottonwood Creek before 1950?  *NO*  
Yes: How many years out of 10 would it normally be dry at some time during the year? What month would it normally go dry? In the spring, when would water start running in the stream above Hamilton Dome?
2. Do you irrigate with water solely from Hamilton Dome discharges? *NO - BUT SOLELY FROM COTTONWOOD CREEK*
3. Do you irrigate with water that is mixed with runoff? If yes: How do you determine if the water quality is adequate for irrigation? *YES - CLARITY & WATER TESTING*
4. How many times a year do you irrigate? *8-9 MONTHS*
5. Have you seen any impact to your fields from irrigating with Cottonwood Creek water? *POSITIVE IMPACT ONLY*
6. Have you ever seen any adverse health effects on livestock or wildlife from Cottonwood Creek? *NO*

ECONOMIC ISSUES

1. What is your typical season/period of use of water from Cottonwood Creek?

Begin: MARCH  
End: NOVEMBER

2. For what purpose(s) is the water used? (May indicate more than one answer)

Livestock watering (immediate use): YES  
Livestock watering (stored/impounded for later use): Well  
Irrigate Pastures: YES  
Irrigate Cropland: YES

3. How long has your operation used this water?

This property has used Cottonwood Creek water since 1904

4. If you checked livestock watering in Question #2, what kind and how many head of livestock are supported by the water?

<u>200</u>	/	<u>0</u>	/	<u>2</u>
Cattle	/	Sheep	/	Horses
(cow-calf pairs)				

5. Does the livestock watering occur on your own land, leased private land, or federal/state grazing allotments? OWN LAND

6. If you checked irrigation in Question #2, please describe the type and use of the irrigated acreage.

Acres: 340 / 300  
Pasture / cropland

If cropland, the type of crop grown: HAY

Average productivity/acre over the past 3 seasons: 4TON/ACRE

If the crop is alfalfa or grass hay, is it used as winter feed for your herd or is it sold? BOTH

7. How many people, including family members, work or are employed by your operation?

Year-round: 5  
Seasonal: 6

Please review the analysis of the effects of the loss of Hamilton Dome produced water on Cottonwood Creek (i.e., reduced average flow volumes by month). Then address questions 8-12:

8. How would a reduction/loss of the water affect your operation, (e.g., reduce herd size by 50%, reduce crop production by 80%, or \_\_\_\_\_)?
9. Estimate the reduction in your operations annual net income associated with the effects identified in Question #8 above? Cause for Liquidation
10. Is there an alternative source of water available to replace this water? If yes, please describe, including the costs associated with obtaining water from the alternative source. NONE
11. How would you adjust your operation's labor to deal with the effects associated with the reduction in water? Property would be liquidated  
ALL Associated jobs would be lost.
12. Would your operation remain viable with the reduction in volume or the loss of this water? NO - ALL operations would cease.

#### ECOLOGICAL ISSUES

1. What changes have you noticed with regard to wildlife use of the area since the stream became perennial rather than intermittent?  
MORE Wildlife of every kind
2. Has the ability to produce alfalfa using discharge water increased use of the area by wildlife, especially big game and game birds? YES TO BOTH
3. What would become of the irrigated hayfields if you could no longer irrigate?  
DRY LAND pasture - WASTE LAND
4. Has there been a change in plants (more willows, cottonwoods, marshes, etc.?)  
Profoundly YES

HAMILTON DOME WATER DISCHARGES  
TO COTTONWOOD CREEK:

LANDOWNER ASSESSMENTS

GROUNDWATER HYDROLOGY ISSUES

1. Does the current flow of Cottonwood Creek affect the water table level on your property? If yes, do you see increased vegetation in areas of high groundwater table? (i.e. along stream banks) How much? ( 5 feet, 5 yards, 20 yards, etc.)  
*Doesn't Run by my Land.*
2. How many additional livestock can you operate with due to this increased vegetation from the raised groundwater table? (None, 5%, 10%, 20%, etc.)
3. Have you seen any affect of the water table in any water wells in the area? If yes, "What is the depth of the well(s)?" *I have two wells over 300' deep. Since the drought, they haven't been good water. Full of heavy minerals or metals, Sulphur & ~~Calcium~~ Sodium*

SURFACE WATER HYDROLOGY ISSUES

*States West will assess the current hydrology of Cottonwood Creek and predict the hydrology if the discharges were to cease.*

1. Do you have any knowledge of conditions of Cottonwood Creek before 1950? If Yes: How many years out of 10 would it normally be dry at some time during the year? What month would it normally go dry? In the spring, when would water start running in the stream above Hamilton Dome? *only been using since about 1974 or 75 - we start as soon as there's water in spring & thru fall, if there's water - this is second bad drought we*
2. Do you irrigate with water solely from Hamilton Dome discharges? *Yes*  
*Solely From what's in Cottonwood Creek -*
3. Do you irrigate with water that is mixed with runoff? If yes: How do you determine if the water quality is adequate for irrigation?
4. How many times a year do you irrigate? *From April thru Oct. or Nov. AS LONG AS WE CAN BEFORE FREEZES UP.*
5. Have you seen any impact to your fields from irrigating with Cottonwood Creek water? *No.*
6. Have you ever seen any adverse health effects on livestock or wildlife from Cottonwood Creek? *No.*

ECONOMIC ISSUES

1. What is your typical season/period of use of water from Cottonwood Creek?

Begin: early Spring  
End: late fall

2. For what purpose(s) is the water used? (May indicate more than one answer)

Livestock watering (immediate use): Not Allowed  
Livestock watering (stored/impounded for later use): Not Allowed  
Irrigate Pastures: \_\_\_\_\_  
Irrigate Cropland: X \_\_\_\_\_

3. How long has your operation used this water?

Since about 74 or 75, when there was water

4. If you checked livestock watering in Question #2, what kind and how many head of livestock are supported by the water?

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ N/A  
Cattle / Sheep / Horses  
(cow-calf pairs)

5. Does the livestock watering occur on your own land, leased private land, or federal/state grazing allotments? N/A

6. If you checked irrigation in Question #2, please describe the type and use of the irrigated acreage.

Acres: 1311 Not Adjudicated for rest of property.  
Pasture / cropland

If cropland, the type of crop grown: Alfalfa Hay - Grain

Average productivity/acre over the past 3 seasons: Depends on water - 2001 - no crops at all - had no water at all -

If the crop is alfalfa or grass hay, is it used as winter feed for your herd or is it sold? Used for Livestock

7. How many people, including family members, work or are employed by your operation?

Year-round: 1 + wife  
Seasonal: 1

Please review the analysis of the effects of the loss of Hamilton Dome produced water on Cottonwood Creek (i.e., reduced average flow volumes by month). Then address questions 8-12:

8. How would a reduction/loss of the water affect your operation, (e.g., reduce herd size by \_\_\_\_\_, reduce crop production by \_\_\_\_\_%, or \_\_\_\_\_)?  
*I have No idea - MY Cattle drink well water - But I Need the Creek 100% for crop production.*
9. Estimate the reduction in your operations annual net income associated with the effects identified in Question #8 above? \_\_\_\_\_
10. Is there an alternative source of water available to replace this water? If yes, please describe, including the costs associated with obtaining water from the alternative source. None.
11. How would you adjust your operation's labor to deal with the effects associated with the reduction in water? MY PARTNER Would probably have To Seek employment AWAY FROM RANCH IN winter Time -
12. Would your operation remain viable with the reduction in volume or the loss of this water? No.

#### ECOLOGICAL ISSUES

1. What changes have you noticed with regard to wildlife use of the area since the stream became perennial rather than intermittent? Before the Drought we have lots of Wildlife & Wild fowl -
2. Has the ability to produce alfalfa using discharge water increased use of the area by wildlife, especially big game and game birds? yes, when available
3. What would become of the irrigated hayfields if you could no longer irrigate? Have to lay fallow -
4. Has there been a change in plants (more willows, cottonwoods, marshes, etc.?)  
We don't have a tree on our 520 acres -

HAMILTON DOME WATER DISCHARGES  
TO COTTONWOOD CREEK:

LANDOWNER ASSESSMENTS

GROUNDWATER HYDROLOGY ISSUES

1. Does the current flow of Cottonwood Creek affect the water table level on your property? If yes, do you see increased vegetation in areas of high groundwater table? (i.e. along stream banks) How much? ( 5 feet, 5 yards, 20 yards, etc.) *Varies from 15-25 yds.*
2. How many additional livestock can you operate with due to this increased vegetation from the raised groundwater table? (None, 5%, 10%, 20%, etc.) *15%*
3. Have you seen any affect of the water table in any water wells in the area? If yes, "What is the depth of the well(s)?" *Well @ house is 95' and produces in excess of 40 gpm.*

SURFACE WATER HYDROLOGY ISSUES

*States West will assess the current hydrology of Cottonwood Creek and predict the hydrology if the discharges were to cease.*

1. Do you have any knowledge of conditions of Cottonwood Creek before 1950? *If No*  
Yes: How many years out of 10 would it normally be dry at some time during the year? What month would it normally go dry? In the spring, when would water start running in the stream above Hamilton Dome?
2. Do you irrigate with water solely from Hamilton Dome discharges? - *NO*
3. Do you irrigate with water that is mixed with runoff? *YES* If yes: How do you determine if the water quality is adequate for irrigation? - *When there is enough water you utilize it - have had no problems.*
4. How many times a year do you irrigate? *2-6 depending on water*
5. Have you seen any impact to your fields from irrigating with Cottonwood Creek water? *Without it they will die.*
6. Have you ever seen any adverse health effects on livestock or wildlife from Cottonwood Creek? *Absolutely none*

ECONOMIC ISSUES

1. What is your typical season/period of use of water from Cottonwood Creek? - *Non-drought yes.*

Begin: April 1-20 - - - - - Sept. 1-30  
End: May 20-June 30 - - - - - Oct. 1-30

2. For what purpose(s) is the water used? (May indicate more than one answer)

Livestock watering (immediate use): Year round  
Livestock watering (stored/impounded for later use): \_\_\_\_\_  
Irrigate Pastures: Spring & fall  
Irrigate Cropland: Spring & fall

3. How long has your operation used this water? - *We have owned and used this property for 5 years.*

4. If you checked livestock watering in Question #2, what kind and how many head of livestock are supported by the water?

20-40 / 1 / 0 / 1 / 2-4  
Cattle / Sheep / Horses  
(cow-calf pairs)

5. Does the livestock watering occur on your own land, leased private land, or federal/state grazing allotments? *Own land*

6. If you checked irrigation in Question #2, please describe the type and use of the irrigated acreage.

Acres: 25 / 30-35  
Pasture / cropland

If cropland, the type of crop grown: HAY

Average productivity/acre over the past 3 seasons: 1-1 1/2 T (drought years)

If the crop is alfalfa or grass hay, is it used as winter feed for your herd or is it sold? Winter feed

7. How many people, including family members, work or are employed by your operation?

Year-round: 2 [Wife + myself]  
Seasonal: 0



Please review the analysis of the effects of the loss of Hamilton Dome produced water on Cottonwood Creek (i.e., reduced average flow volumes by month). Then address questions 8-12:

8. How would a reduction/loss of the water affect your operation, (e.g., reduce herd size by 50-100%, reduce crop production by 50 %, or \_\_\_\_\_)?
9. Estimate the reduction in your operations annual net income associated with the effects identified in Question #8 above? \$13,500
10. Is there an alternative source of water available to replace this water? If yes, please describe, including the costs associated with obtaining water from the alternative source. No
11. How would you adjust your operation's labor to deal with the effects associated with the reduction in water? Economically unfeasible to operate
12. Would your operation remain viable with the reduction in volume or the loss of this water? No - cease operations.

#### ECOLOGICAL ISSUES

1. What changes have you noticed with regard to wildlife use of the area since the stream became perennial rather than intermittent? Much more wildlife using stream as a water source & the riparian areas.
2. Has the ability to produce alfalfa using discharge water increased use of the area by wildlife, especially big game and game birds? Absolutely - lots of deer, chukar and pheasants.
3. What would become of the irrigated hayfields if you could no longer irrigate? They would die.
4. Has there been a change in plants (more willows, cottonwoods, marshes, etc.?) Yes, without the water the cottonwood community and surrounding riparian areas would cease to exist.

**THE ECONOMIC SIGNIFICANCE OF THE  
HAMILTON DOME OILFIELD**

**APPENDIX B**

**The Economic Significance  
of the  
Hamilton Dome Oilfield**

November 6, 2002

Prepared for  
**Merit Energy Company**

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**Blankenship Consulting LLC**

**Hammer Siler George Associates**

in association with  
**States West Water Resources Corporation**

## EXECUTIVE SUMMARY

Ongoing production of petroleum crude from Merit Energy Company's Hamilton Dome field is a significant source of economic stimulus for Hot Springs County and the State of Wyoming. This report provides an assessment of the contributions of Merit's Hamilton Dome oilfield to the economy of Hot Springs County and the State of Wyoming. In fact, these contributions are proxy measures of the adverse impacts that would result from the premature closure of the Hamilton Dome field. The report focuses on the following aspects of the economy:

- the economic stimulus associated with Hamilton Dome employment, purchases of goods and services, payment of taxes and the associated multiplier effect,
- the effect of Hamilton Dome tax payments on the Hot Springs County tax base and the taxing entities who rely on these payments to help fund services provided to residents, including students enrolled in local public schools,
- hay and livestock production along Cottonwood Creek supported by the discharge of produced water from the Hamilton Dome; and,
- the significance of Hamilton Dome crude oil to the Wyoming refining industry and the production of asphalt and road oil.

The substantial negative economic impacts in Hot Springs County that would accrue to residents, businesses and local governmental entities with premature closure should be taken into account in the overall assessment of the benefits and costs associated with compliance with Class 2C water quality standards.

### **Economic Contributions of Hamilton Dome**

Annual crude production from the Hamilton Dome field averaged 1.67 million barrels over the past five years.

- Employment and Labor Income: Based on annual operating expenses averaged over the past five years, Hamilton Dome supports an estimated 186 jobs in the State of Wyoming including 136 jobs in Hot Springs County (about 4 percent of total employment in the county in 2000) and 50 jobs elsewhere in Wyoming. The associated Hamilton Dome labor income impact in Hot Springs County totals \$4.07 million (about 7 percent of total labor income in the county in 2000) and \$2.54 million elsewhere in Wyoming.
- Overall Economic Output: The economic contribution of the Hamilton Dome oilfield is conservatively estimated at nearly \$28.7 million annually, most of which occurs in Hot Springs County.

### **Fiscal Contributions of Hamilton Dome**

Merit Energy Company is the largest taxpayer in Hot Springs County and the Hamilton Dome field is the county's largest source of property tax.

## *The Economic Significance of the Hamilton Dome Oilfield*

### **Property Tax**

Over the past 5 years, Hamilton Dome property tax revenue has averaged 29 percent of total property tax revenue for all countywide taxing entities (\$1.9 million out of a total \$6.6 million). Property taxes are the largest source of locally-derived funding for local governmental entities and represent a major source of non-earmarked revenue subject to discretionary spending control. Counties are statutorily limited to a 12-mill cap for basic county operating purposes (general fund, hospital, library and fair board), limiting their capacity to increase property taxes to offset reductions in revenues. Hot Springs County's property tax rates are at the 12-mill limit. Consequently, a major reduction in revenues associated with the premature shutdown of the Hamilton Dome field would likely trigger reductions in basic service levels.

Over the past five years, property taxes from Hamilton Dome have accounted for the following revenue contributions to major funds and entities:

- County General Fund: 9 percent of total general fund revenues.
- Library, Fair Board, Hospital: 27 percent of the library system's total revenues, 15 percent of the Fair Board's total revenues and 2 percent of Hot Springs County Memorial Hospital's total revenues.
- Hot Springs County Weed and Pest District: Two separate levies fund operations of the Weed and Pest District. Hamilton Dome property tax revenues provide 9 percent of the district's pest eradication budget and 29 percent of its mosquito control budget.
- Hot Springs County Rural Fire Protection District: Hamilton Dome property tax revenues fund 29 percent of the district's budget. Because the district is staffed by volunteers, a loss of that revenue would not reduce services, but would delay the purchase of needed equipment, supplies and training.
- Hot Springs County School District # 1: Over the past five years, Hamilton Dome property taxes for school-related funds averaged \$1.4 million annually. Of that amount, \$910,000 was for operational purposes and \$188,000 for debt service. The Wyoming School Foundation Fund received an average of \$325,000. The entitlement provisions of the state foundation program would offset any loss in Hamilton Dome property tax revenue on the operating budget. Based on the five-year average, the Wyoming School Foundation Fund would experience a net cost of \$1.235 million from lost revenues and additional entitlement costs, assuming no change in enrollment levels. Reductions in the number of Hamilton Dome-related students would reduce School District #1's entitlement and revenue with little reduction in educational costs. Loss of the Hamilton Dome property tax revenues would increase the school debt service mill levy for other county taxpayers by 2.8 mills, based on the five-year average.

## *The Economic Significance of the Hamilton Dome Oilfield*

### **Severance Tax**

Over the last two years, severance taxes on Hamilton Dome production have averaged \$1.8 million annually.

### **Federal Mineral Royalties**

Over the past two years, federal mineral royalty payments for Hamilton Dome production averaged \$4.4 million. Wyoming's share of these royalties averaged an estimated \$2.2 million annually.

### **Sales and Use Tax**

In 2001, MEC estimates that it paid over \$400,000 in sales and use taxes on purchase of goods and services for the Hamilton Dome field.

### **The Role of Hamilton Dome Produced Water in the Cottonwood Creek Ranching Economy**

Approximately 35 Cottonwood Creek-area landowners benefit directly or indirectly from water discharged from the Hamilton Dome field into the creek. These landowners use the water for irrigation and stock watering purposes. Based on a survey of several of these landowners, the loss of Hamilton Dome discharges into Cottonwood Creek would result in a corresponding loss of:

- 1,600 acres of irrigated cropland,
- 4,000 tons of annual hay production,
- 15 to 20% reduction in herd size (about 3,200 cows) and a \$2 million reduction in related sales receipts (based on \$650 head) and,
- 20 full time and seasonal jobs in the ranching industry.

Additional losses would be likely for ranches not included in the survey. Several ranchers contacted for the survey expressed concern for the economic viability of their operations without the Hamilton Dome water.

The IMPLAN model was used to estimate the total economic losses in Hot Springs County, including the indirect and induced impacts on other sectors, associated with the direct reduction in annual livestock receipts. Those losses, which include a net reduction of \$3.3 million (1.7%) in the county's total annual economic output, a loss of \$645,000 in annual labor income, and a net loss of 32 full and part-time jobs, would be in addition to those impacts directly attributable to the cessation of Merit's Hamilton Dome production operations.

### **The Role of Hamilton Dome in the Wyoming Refining Industry**

Hamilton Dome crude production represents about 3.3 percent of the of the daily feedstock supply needed to sustain Wyoming's five refineries at full production. However, Hamilton Dome supplies more than 20 percent of the crude necessary to sustain asphalt and road

*The Economic Significance of the Hamilton Dome Oilfield*

oil production. The loss of this production coupled with the absence of an alternate supply could threaten the economic viability of one or more Wyoming refineries.

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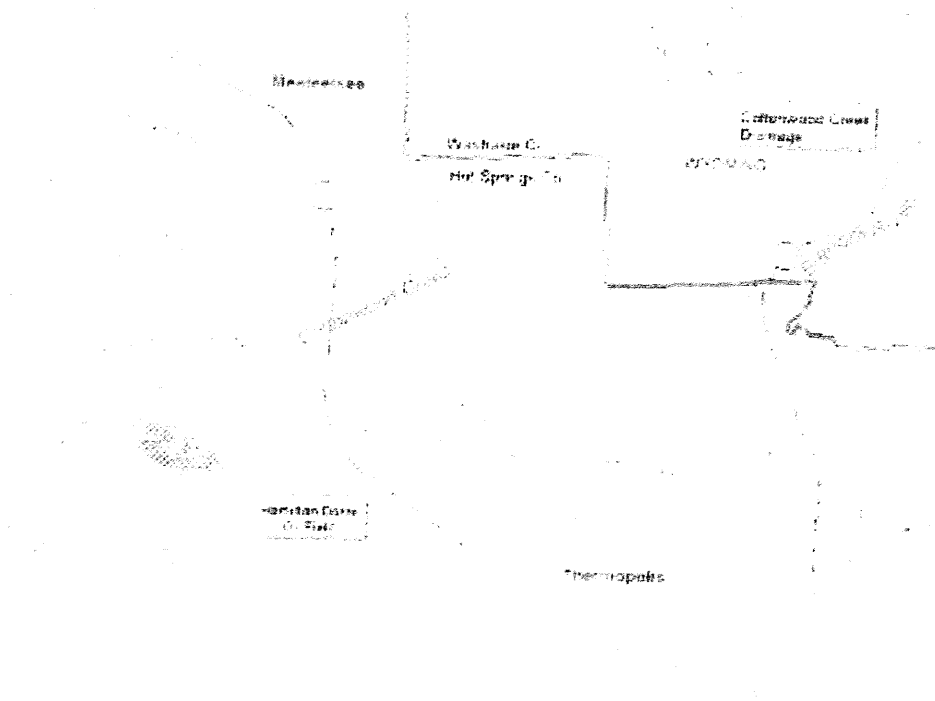


*The Economic Significance of the Hamilton Dome Oilfield*

**INTRODUCTION**

The Hamilton Dome oil field, discovered in 1918, is located 25 miles northwest of the Town of Thermopolis in Hot Springs County, Wyoming. Through 2001, Hamilton Dome had produced 256 million barrels of oil and 1.59 billion cubic feet of natural gas (WOGCC 2001). Merit Energy Company (MEC), the operator of the field, anticipates 2002 production to total 4,250 barrels of oil per day (BOPD), primarily from the Tensleep and Phosphoria reservoirs; the field no longer produces marketable quantities of natural gas. Over the last five years, the Hamilton Dome Field has been on average the eighth most productive oil field in the State of Wyoming, averaging 42 percent of total Hot Springs County oil production and 2.7 percent of total statewide oil production. Oil produced from the field is sold and transported by pipeline to refineries in Wyoming and adjacent states.

**Vicinity Map: Hamilton Dome Oilfield and Cottonwood Creek**



Source: States West Water Resources Corporation

Also during 2002, Hamilton Dome is anticipated to produce 285,000 barrels of water per day (BWPD). An average of 85,000 BWPD is re-injected to enhance oil recovery. The remaining 200,000 BWPD is discharged from two separate points into unnamed tributaries that eventually flow into Cottonwood Creek (MEC 2002). Discharges of water produced from

*The Economic Significance of the Hamilton Dome Oilfield*

Hamilton Dome into the Cottonwood Creek drainage have occurred since the early 1970's. Two NPDES permits, WY0000175 and WY0000680, authorize these discharges.

Cottonwood Creek flows generally eastward from its source in the Owl Creek Mountains at Cottonwood Peak in Township 45 North, Range 102 West. It flows eastward 47 river miles into the Bighorn Basin to its confluence with the Bighorn River in Township 45 North, Range 94 West. Hamilton Dome discharges enter Cottonwood Creek at approximately river miles 12 and 19, measured from the upstream end (Jessen 2002).

Until recently, Cottonwood Creek and the tributaries receiving the Hamilton Dome discharge were classified by the Wyoming Department of Environmental Quality, Water Quality Division (WQD) as Class 4 streams. The water discharged from Hamilton Dome meets standards for Class 4 waters. The WQD recently updated Chapter 1 of the *Wyoming Water Quality Rules and Regulations* to comply with the federal Clean Water Act. As a result of this reclassification, Cottonwood Creek is now classified as 2C and the tributaries that receive Hamilton Dome discharges are classified as 3B. The Hamilton Dome discharges exceed Class 2C standards for several constituents including chloride and selenium.

In order to renew its discharge permits, MEC could be required to treat the Hamilton Dome discharge water to meet Class 2C standards. The company believes the financial impact of treating the discharge to meet Class 2C standards would result in closure of the field (Diem 2002). MEC is working with the Wyoming DEQ/WQD to either reclassify the stream or establish site-specific criteria allowing discharge of the produced water to continue without additional treatment. The company also believes that closure of the field prior to the full recovery of the available crude oil resources would trigger significant economic distress on the local economy. The following regional economic analysis has been prepared to examine those economic implications.

The objectives of this economic analysis are to describe the contributions of the Hamilton Dome oil field to the economies of Hot Springs County and the State of Wyoming, to the tax base of Hot Springs County and its relevant taxing entities, to the ranching economy along Cottonwood Creek, and to the Wyoming petroleum refining industry. The contributions described below are proxy measures of the adverse economic impacts that would result from the premature closure of the Hamilton Dome field. In other words, although the narrative typically discusses the economic contributions in positive or beneficial terms, these contributions are measures of what is "at-risk" from requiring compliance with the more stringent water quality standards, the anticipated result of which would be to halt production.

**ECONOMIC CONTRIBUTIONS OF MERIT ENERGY COMPANY'S HAMILTON DOME OPERATIONS**

On-going production of petroleum crude from the Hamilton Dome field is a source of significant economic stimulus for the Thermopolis and Hot Springs County economies. Moreover, the economic repercussions of that production extend to the broader statewide economy.

With respect to the local economy, the primary economic stimulus encompasses the company's direct payroll and its purchases of goods and services from oil field service companies, utilities and other suppliers and the consumer purchases of its employees. These direct economic infusions indirectly support yet other local businesses and jobs through what is known as the "economic multiplier effect." Finally, production and ad valorem taxes paid by the company, as well as taxes paid by its employees and the businesses and employees whose jobs are supported indirectly by the company's operation help support public education and governmental functions.

A second dimension of the field's economic stimulus derives from its linkages to local farming and ranching located along Cottonwood Creek. Oil production from the Hamilton Dome field yields a substantial quantity of water as a byproduct. Further production is supported by reinjecting a portion of that water into the oil-bearing formations. However, much of that water, about 6,700 acre-feet of water in 2001, discharges into the Cottonwood Creek drainage from where local ranchers subsequently use it for irrigation, stock watering and other agricultural purposes. That water is vital to helping sustain the local agricultural industry because of the region's semi-arid climate. The water also supports wildlife and wildlife habitat in the area.

Yet a third dimension of the field's economic significance is its role in supplying crucial feedstock for the Wyoming refining industry. More specifically, crude from the Hamilton Dome field is transported via pipelines to refineries in Casper and Sinclair, supplying a portion of the total feedstock for those facilities. That supply not only helps sustain the operating viability of those refineries and the economies of the respective communities, but the refined products supply fuel and asphalt to help support the state's economy and highway infrastructure.

Finally, the economic benefits associated with the Hamilton Dome field extend beyond the local communities. Economic linkages between local service firms and suppliers and wholesale and service firms located elsewhere in the state and the flows of consumer purchases to larger regional economies, result in a portion of the indirect and induced "multiplier" effects being captured elsewhere, such as in Cody, Riverton or Casper.

This section of the report examines each of those key economic linkages, quantifying their significance in terms of the numbers of jobs, labor income and annual economic output supported.

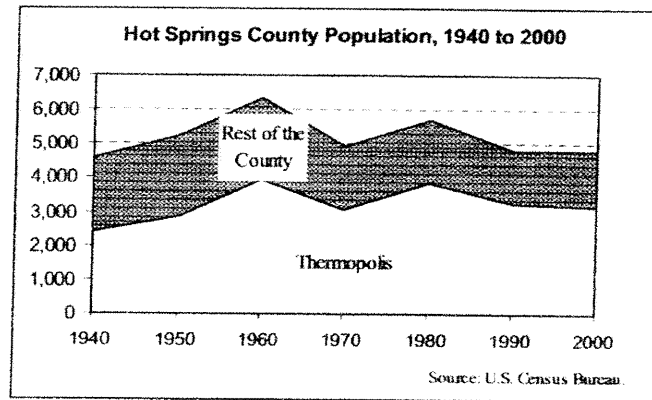
## The Economic Significance of the Hamilton Dome Oilfield

### Local Setting

The Hamilton Dome field is located in Hot Springs County, Wyoming and is part of a broader region known as the Big Horn Basin. The field is 25 miles northwest of Thermopolis, the county seat and its largest community.

Hot Springs County covers an area of more than 2,000 square miles (1,294,080 acres). Approximately 30 percent of the land in the county is in private ownership. Various federal or state agencies manage the remaining lands or hold them in trust for the Eastern Shoshone and Northern Arapaho tribes as part of the Wind River Indian Reservation.

Hot Springs County is rural. Its population has fluctuated over time, primarily in response to energy and mineral exploration and development. Population peaked at 6,365 residents in 1960. By 1990, the county's population had declined to 4,809 with little population growth in the ensuing decade as the county registered a population of 4,882 residents in the 2000 census. Consequently, Hot Springs County ranked 22<sup>nd</sup> among Wyoming's 23 counties in terms of population in 2000.



Throughout its contemporary history, most of the county's residents have lived in Thermopolis. In 2000, Thermopolis had 3,172 residents compared to 1,710 residents in the outlying areas of the county.

The economic mainstays of the county's economy include agriculture, energy and mineral production, and tourism/outdoor recreation. These "basic" industries generate much of the inflow of wealth into the economy through their sales of goods and services. In turn, the responding of business and employee incomes and local taxes support local retail trade, services and the local public sector. There is little manufacturing or regional wholesale trade activity based in Hot Springs County. Unlike the stagnation characterizing the county's recent population growth, total employment in Hot Springs County increased 334 jobs, nearly 12 percent, between 1990 and 2000 – see Table 1 below. Most of the increase was in the retail trade and services sectors.

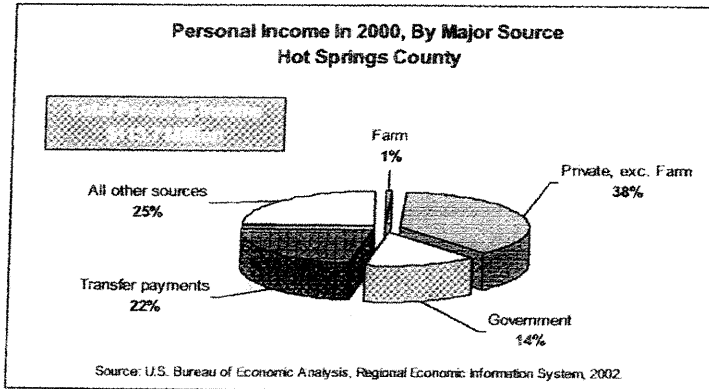
*The Economic Significance of the Hamilton Dome Oilfield*

**TABLE 1  
HOT SPRINGS COUNTY EMPLOYMENT, BY MAJOR CATEGORY**

Category	1990	1995	2000
Farm	206	198	205
Oil, Gas & Mining	230	150	200
Other Private Sector	1,763	2,075	2,155
Government	614	557	587
<b>Total</b>	<b>2,813</b>	<b>2,980</b>	<b>3,147</b>

Source: U.S. Bureau of Economic Analysis, 2002.

Local retail trade and service businesses, as well as local government, gain additional support from consumer expenditures by the relatively large number of retirees living in the county. According to the 2000 census, more than one of every four local households depend on retirement, social security or some other form of government payments for their income. Income



from such transfer payments accounted for 22 percent of the total personal income of \$113.7 million in 2000. While such income serves an important function in supporting the local economy, it tends to be relatively fixed over time. When combined with the limited number of higher-paying jobs in the basic industries, this fact translates into comparatively low per capita income in Hot Springs County. In 2000, Hot Springs

County ranked 15<sup>th</sup> among Wyoming counties with a per capita personal income of \$23,393, nearly 15 percent below the statewide average of \$27,372 per person.

Other major sources of income in Hot Springs County include labor earnings, income derived from dividends, interest and rent, and miscellaneous other income. Private sector earnings, excluding local farming and ranching operations but, including education, is the largest contributor to total income, paying more than \$43.4 million to employees and owners in 2000 (38% of the total). That amount was nearly triple the aggregate government payroll of \$15.7 million. Local farmers and ranchers had a combined income of \$874,000 in 2000, less than 0.8 percent of the total. Dividends, rent and other non-earnings sources of revenue accounted for the remaining \$28.2 million in personal income of local residents.

**Merit Energy's Hamilton Dome Operations**

As described above, Merit Energy's primary economic stimulus arises from its production-related expenditures, including the consumer-related purchases of its employees, and its support of public education and government through the taxes it pays. Merit Energy's Hamilton Dome office is the operational base for eight oil fields in Wyoming's Big Horn Basin.

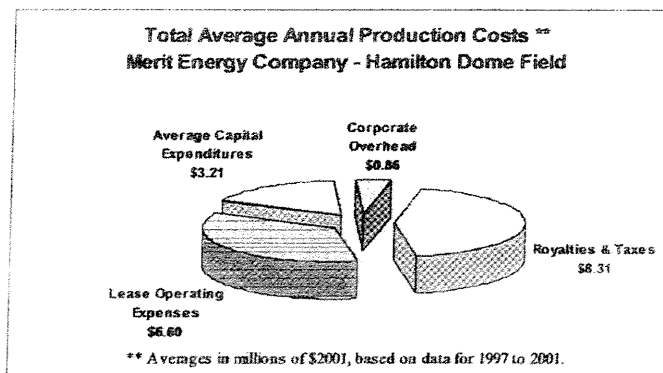
### *The Economic Significance of the Hamilton Dome Oilfield*

Presently, fifteen (15) of the employees in that office are directly associated with the Hamilton Dome field. Suspending production from the field prior to full recovery of the crude reserves would result in a premature loss of these jobs, their associated incomes and the business volume, jobs, incomes and state and local taxes supported indirectly by the company's operations. Those impacts would be significant.

An analysis of the company's operations, completed using a regional economic model, demonstrates the economic significance of Merit Energy's Hamilton Dome operation. The model uses actual production and operating data for the company for the five-year period, 1997 through 2001. The use of a multi-year data set to summarize the company's economic contributions compensates for much of the market induced year-to-year variability in operating and capital expenditures frequently associated with oil and gas production.

The economic analysis completed for this study, used cost of production data supplied by Merit Energy and the IMPLAN economic modeling software. IMPLAN (Impact Analysis for PLANning) is an input-output based model originally developed to assist the U.S. Forest Service in land resource management planning. Subsequently, the model and related software were transferred into the private sector, where it is the subject of ongoing refinement and enhancements to provide the analytical capacity to address a broader range of economic and impact planning issues. IMPLAN is widely recognized and accepted in regional economic and economic impact assessment circles. Results of the analysis include direct and total jobs, income and output associated with the operation.

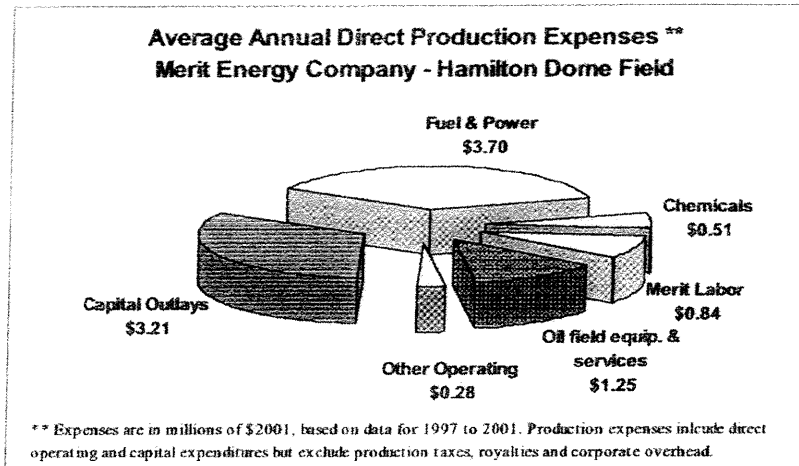
Merit's annual crude production from the Hamilton Dome field averaged 1.67 million barrels of over the past five years. Average annual total costs of production over that same period were \$18.98 million (\$2001). Royalties and taxes account for the single largest category of production costs, \$8.31 million or 44 percent of the total. By comparison, the actual lease operating expenses, which include labor, chemical, equipment, etc., averaged \$6.60 million annually — the distribution of costs, by major category, are shown in the accompanying figure.



Of primary relevance to this analysis are the \$9.81 million in lease operating and capital expenses made by Merit Energy in a typical year. These expenditures represent the day-to-day purchases of goods and services and payroll outlays to staff that cycle into and through the local and statewide economies, supporting other businesses, jobs for Wyoming residents, and taxes to support government. Fuel and power are the company's single largest production expense category, about \$3.70 million annually. Other major categories include labor, replacement

*The Economic Significance of the Hamilton Dome Oilfield*

equipment, chemicals, and capital outlays – see the figure below for the direct production expenses by major category.



In addition to the annual volume of purchases, another key determinant of Merit's economic contribution is the extent to which local suppliers provide goods and services. In that regard, Merit Energy actively strives to support local business. It estimates that almost 99 percent of all its annual purchases are from Wyoming businesses and the bulk of those, totaling more than \$5.54 million annually, are from contractors and suppliers with an operational presence in Hot Springs County. Table 2 below presents the estimated distribution of Merit's annual operating and capital outlay expenses, by major industrial sector.

**TABLE 2**  
**AVERAGE ANNUAL DIRECT PRODUCTION EXPENSES**  
**MERIT ENERGY COMPANY'S HAMILTON DOME FIELD (\$2001)**

Major Industrial Sector	Hot Springs County	Elsewhere In Wyoming	Total in Wyoming
Oil-field Services, incl. capital outlays	\$ 3,365,100	\$ 558,300	\$ 3,923,400
Electrical Power	\$ 167,100	\$ 3,342,600	\$ 3,509,700
Wholesale Trade	\$ 1,125,700	\$ 47,300	\$ 1,173,000
Retail Trade	\$ 6,900	\$ 59,200	\$ 66,100
Other Services	\$ 117,200	\$ 55,000	\$ 172,200
Merit Energy Payroll	\$ 760,100	\$ 84,500	\$ 844,600
<b>TOTAL</b>	<b>\$ 5,542,100</b>	<b>\$ 4,146,900</b>	<b>\$ 9,689,000</b>

Source: Merit Energy Company, 2002.

Oil field services is the largest category of expenditures, and most of the company's annual outlays for such services are to local contractors. With no major electrical generating facilities in Hot Springs County, electrical power is the single largest production expense from outside the local economy.

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Merit Energy currently has 15 employees assigned to the Hamilton Dome operations. However, the significant volume of oil field services and repairs the company contracts to others and its other purchases combine with the jobs supported by employee spending to generate a much higher overall employment impact. Based on the average annual operating expenses, the IMPLAN model estimates a total employment impact from Merit's Hamilton Dome field of 186 jobs statewide; 136 jobs in Hot Springs County and an additional 50 jobs elsewhere in Wyoming – see Table 3. The statewide estimate is exclusive of jobs supported by the expenditures of royalty payments and severance and sales taxes budgeted through the state. The total local jobs supported represents about 4% of total employment in Hot Springs County in 2000.

**TABLE 3  
PRIVATE SECTOR JOBS SUPPORTED IN WYOMING BY MERIT ENERGY  
COMPANY'S HAMILTON DOME FIELD**

	In Hot Springs County	Elsewhere In Wyoming	Total Wyoming Jobs
Merit Energy	15	0	15
Oil-field services & suppliers	36	25	61
Other private sector	24	23	47
Government and Education	<u>61</u>	<u>2</u>	<u>63</u>
<b>TOTAL</b>	<b>136</b>	<b>50</b>	<b>186</b>

Note: The numbers of jobs supported were derived using IMPLAN, based on Merit Energy Company's average annual expenditures for 1997 through 2001.

The largest number of jobs supported is in local government and education (63 jobs). The strong support for these jobs stems from the company's substantial annual tax payments (these payments are discussed further in a later section.)<sup>1</sup> Another 61 jobs in the oil field service and supply industries followed by 47 jobs in wholesale and retail trade, services, construction and other private sector industries.

A corollary dimension of Merit's positive employment impacts is the beneficial impact on personal income. Over the past five years, Merit Energy Company's direct payroll has averaged about \$844,000 annually, though it presently is at about \$740,000 on an annual basis. The incomes supported by Merit's operations in government, education, oil field services and other industries magnify that direct impact. When summed across all industries, the estimated labor income impact in Hot Springs County totals \$4.07 million annually, with another \$2.54 million elsewhere in the state –see Table 4 on the following page. The total local labor income represents nearly 7% of the corresponding total labor income in Hot Springs County in 2000.

<sup>1</sup> The IMPLAN estimates of the number of jobs in education reflect the proportion of the district's total locally derived property taxes paid by Merit. In reality, increases in state school foundation funds would offset much of the loss of Merit's taxes, resulting in a more limited reduction in staffing. Consequently, though the IMPLAN estimates likely overstate Merit's actual employment impacts, they are representative of the company's fiscal support for education.



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**TABLE 4**  
**ANNUAL LABOR INCOME SUPPORTED BY MERIT ENERGY COMPANY'S**  
**HAMILTON DOME FIELD (MILLIONS OF \$2002)**

	In Hot Springs County	Elsewhere In Wyoming	Total
Merit Energy Direct	\$ 0.84	\$ 0.00	\$ 0.84
Oil-field services & suppliers	\$ 1.13	\$ 1.02	\$ 2.15
Other private sector	\$ 0.56	\$ 1.46	\$ 2.02
Government and education	\$ 1.54	\$ 0.06	\$ 1.60
<b>TOTAL</b>	<b>\$ 4.07</b>	<b>\$ 2.54</b>	<b>\$ 6.61</b>

Note: Estimated annual labor incomes were derived using the IMPLAN model and Merit Energy average annual expenditures for 1997 through 2001.

Another measure of the economic contributions of Merit Energy's Hamilton Dome operation is its impact on overall economic output. A conservative estimate of the total statewide impact is nearly \$28.7 million annually, most of which occurs in Hot Springs County. The largest portion of the total is represented by Merit's operations, including contracted services – see Table 5 below. By way of comparison, the total estimated 1999 economic output of Hot Springs County was about \$195 million. The estimate is conservative as it does not account for the output associated with subsequent rounds of government spending and investments supported by the royalty and production tax payments or that associated with the subsequent refining and consumption of refined petroleum products across Wyoming supported by Merit's Hamilton Dome production.

**TABLE 5**  
**ANNUAL STATEWIDE OUTPUT SUPPORTED BY MERIT ENERGY'S**  
**HAMILTON DOME FIELD (MILLIONS OF \$2002)**

Category	Annual Amount
Direct Production Expenses	\$ 9.81
Corporate Overhead	\$ 0.86
Royalties, Taxes and Gross Net Revenue	\$ 13.59
Indirect and Induced Private Sector Output	\$ 4.40
<b>Total Annual Statewide Output</b>	<b>\$ 28.66</b>

Note: The output estimates were derived using IMPLAN and Merit Energy expenditure data for 1997 through 2001

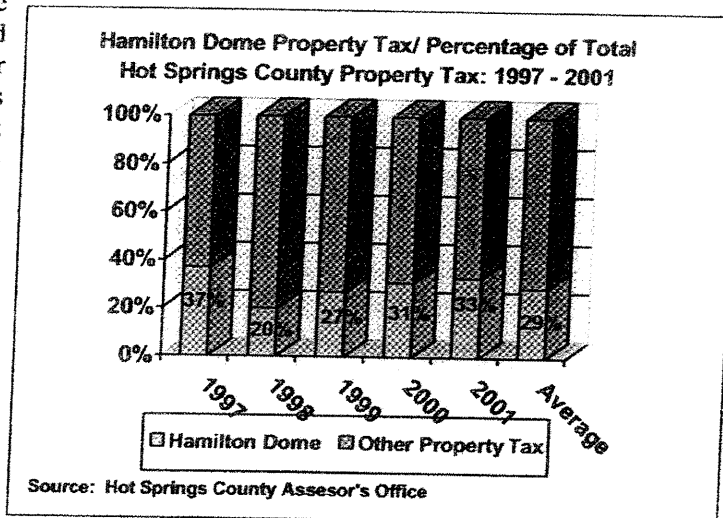
### FISCAL CONTRIBUTIONS OF THE HAMILTON DOME OILFIELD

Wyoming oil producers pay ad valorem property taxes on production and on oilfield facilities, severance taxes on production, and sales and use taxes on some purchases of goods and services. Revenues from these taxes accrue to counties, school districts, and certain special districts, to the state general fund, and to a variety of other state funds and accounts. Additionally, the State of Wyoming receives half of the mineral royalties oil producers pay to the federal government and a portion of these revenues is distributed to local governments.

#### Ad Valorem Property Taxes

Oil producers pay property taxes on the assessed (taxable) value of production and oilfield facilities. Oil production is assessed at 100 percent of the fair market value (wellhead sales price) and facilities are assessed at 11.5 percent of fair market value (depreciated replacement value).

Property tax revenue from production and oil field facilities has accounted for two-thirds to three-quarters of the total property tax revenues received by county-wide taxing entities in Hot Springs County in recent years, (WTA 1997 - 2001). Crude oil production alone accounted for 73 percent of Hot Springs County assessed valuation in 2001 and has averaged 65 percent of total valuation between 1997 and 2001.



MEC is the largest taxpayer in Hot Springs County, and Merit's Hamilton Dome oil field is the county's largest single source of property tax. In 2001, Hamilton Dome accounted for 33 percent of total countywide property taxes paid in Hot Springs County (\$2.7 million out of a total \$8.3 million). Property tax revenue from Hamilton Dome production averaged 29 percent of total property tax revenue over the last five years (\$1.9 million out of an average \$6.6 million) (Deromedi 2002).

#### Property Tax Distribution

Schools receive the lion's share of property tax revenue in Wyoming. In Hot Springs County, an average of 75 percent of total countywide property tax revenue (including the state school

*The Economic Significance of the Hamilton Dome Oilfield*

foundation program and the local school bond issue) has been distributed to schools over the last five years.

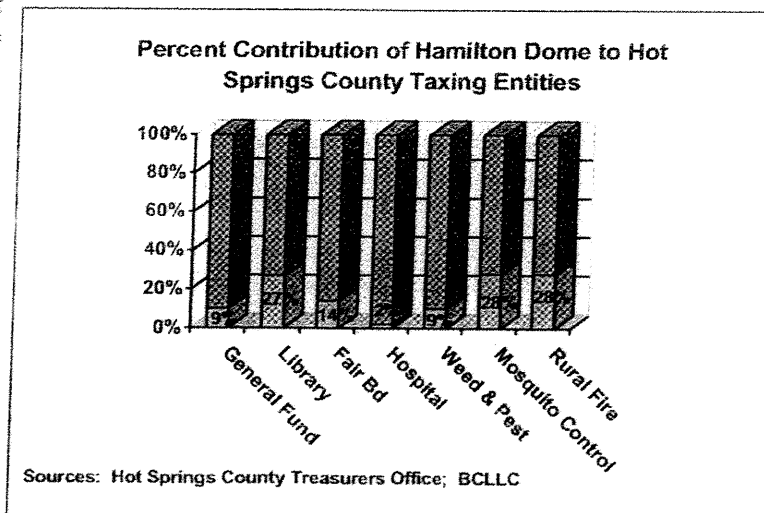
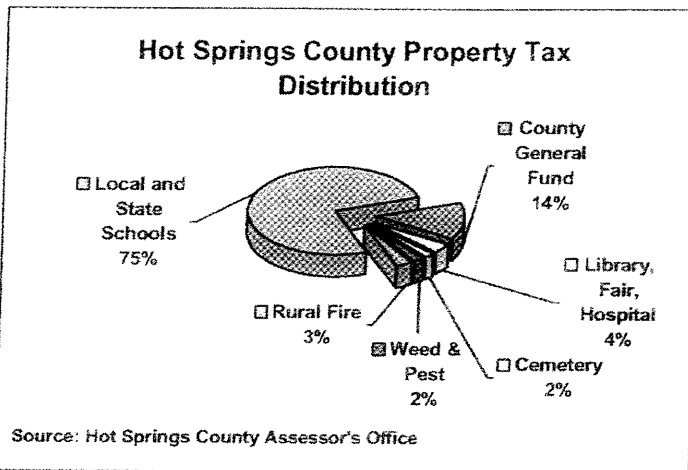
**Hot Springs County General Fund**

On a countywide basis, property tax revenues accrue to the Hot Springs County General Fund, and to the Library, County Fair and County Hospital funds. These entities are limited to a combined total levy of 12 mills, by state statute.

The county general fund provides revenues for all major county functions. Property tax revenues accounted for 40 percent of Hot Springs County general fund revenues during 2001<sup>2</sup>, and averaged 37 percent of general fund revenues over the past four years<sup>3</sup> (Hot Springs County Treasurer's Office).

The relative importance of property tax revenue to the county general fund is greater than its percentage of total revenue however. Much of the county's non-property tax revenue is received from federal or state sources and is earmarked for specific programs or items. In Hot Springs County, property tax is the major source of revenue over which the commissioners exercise discretionary control. Consequently, any substantial reduction in property tax revenue will trigger reductions in basic county services because the commissioners cannot raise the mill levy above the 12-mill limit (Ford 2002).

Hamilton Dome property tax revenue accounted for 12 percent



<sup>2</sup> Total general fund revenues for 2001 were adjusted to account for an early federal PLT payment.

<sup>3</sup> County revenue data for 1997 were not readily available.

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of total Hot Springs County General Fund revenue in 2001<sup>4</sup> (\$356,000 out of a total \$2.986 million), and averaged 9 percent of total revenues over the past four years (\$241,000 out of average total \$2.576 million).

#### **Hot Springs County Library**

The Hot Springs County Library receives property tax revenues from an average one-mill levy. Property tax revenues make up an estimated 95 percent of the library's budget (Bendlin 2002). Based on that estimate, Hamilton Dome property taxes have accounted for an average of 27 percent of the library's budget over the past five years (\$27,000 out of an average total of \$100,000). Because the library is included within the county 12-mill limit, a 27 percent reduction in revenues would result in a corresponding reduction in library services.

#### **Hot Springs County Fair Board**

The Hot Springs County Fair Board receives property tax revenues from a mill levy that has averaged six-tenths of one mill over the last five years. In 2002, property taxes received from a 0.79 mill levy will account for an estimated 52 percent of the fair board's total revenues (Smith 2002). Based on the 1997 through 2001 average property tax contributions, Hamilton Dome Property taxes would account for about 15 percent of the fair board's revenues (\$16,000 out of an average total of \$108,000).

#### **Hot Springs County Memorial Hospital**

The Hot Springs County memorial Hospital receives property tax revenues from a mill levy that has averaged nine-tenths of one mill over the last five years. Property tax accounts for an average of about 6 percent of the hospital's total revenues (Nading 2002) and Hamilton Dome property tax revenue accounts for an average of about 2 percent of the hospital's total revenues.

In addition to the entities identified above, whose property tax levies must fit under the 12-mill cap, other local government entities (districts) also collect property tax revenues. These entities include the Hot Springs County Weed and Pest District, the Hot Springs County Rural Fire Protection District, and Hot Springs County School District # 1.

#### **Hot Springs County Weed and Pest District**

The Hot Springs County Weed and Pest District receives property tax revenues from two separate one-mill levies. A statutory one-mill levy funds 30 percent of the district's weed and pest eradication program, the remainder is funded through payment for services. A one-mill special levy funds 100 percent of the district's mosquito control program (Smith 2002). Over the past five years, Hamilton Dome property tax revenues account for about 9 percent of the district's weed and pest eradication budget (\$27,000 out of an average total of \$312,000) and about 29 percent of the district's mosquito control budget<sup>5</sup> (\$27,000 out of an average total of \$94,000).

<sup>4</sup> Adjusted revenues as discussed in footnote #3.

<sup>5</sup> Based on 2002 budget

### **Hot Springs County Rural Fire Protection District**

The Hot Springs County Rural Fire District receives property taxes from a mill levy that has averaged 2.2 mills over the past five years. The rural portion of the district relies totally on property taxes for funding its operations<sup>6</sup>. The department is staffed by volunteers. Property tax revenues are used to purchase equipment and supplies and to defray training costs. Hamilton Dome property taxes have funded an average of 29 percent of the rural fire district's budget over the past five years (\$60,000 out of an average total \$207,000). A reduction of 29 percent in total revenues would not result in a reduction of services, but it would mean that some needed equipment would not be purchased or replaced in a timely manner (Taylor, 2002).

### **Hot Springs County School District # 1**

Hot Springs County School District # 1 receives property tax revenues from three different mill levies: a 26.5 mill special school levy, a 6 mill mandatory school levy, and a school levy to fund debt service on a bond issue. The latter has averaged 7.4 mills over the past five years. Property tax revenues from the special school and mandatory levies fund school district operations, and have comprised between 44 to 55 percent of the district's total operating budget in recent years (Cady 2002). The district also receives entitlement payments from the Wyoming school foundation fund. Revenues from the debt service levy go toward retiring a school bond issued for facilities construction. The bonds are scheduled to be retired in 2010.

Revenues from a 12-mill levy are distributed to the Wyoming School Foundation Fund. The foundation program guarantees a minimum level of funding, known as entitlement, for all public school students in Wyoming. School districts that cannot raise the specified amount from local resources receive payments from the school foundation fund to make up the difference. School districts whose local property tax base yields revenues substantially above the specified amount are subject to recapture, and the excess funds are paid to the state foundation account by the district. In general, reductions in Hot Springs County School District #1 property tax revenues from the special district and mandatory school levies would be made up by payments to the district from the school foundation fund.

If the Hamilton Dome field were to cease production, the Wyoming School Foundation fund would lose the revenue associated with the Hamilton Dome field, which have averaged \$325,000 annually over the past five years. Additionally, the state foundation fund would have to increase entitlement payments to makeup for the loss of Hamilton Dome-related revenues from the 26.5 mill special school levy and the 6-mill mandatory school levy. Combined revenue from these levies has averaged \$910,000 over the past five years. Therefore, the annual net cost to the Wyoming School foundation fund would total \$1.235 million, based on the five-year average.

Because the school district's entitlement is based in large part on attendance, the district would lose revenue if Hamilton Dome employees moved out of Hot Springs County. The reduction in enrollment would likely be spread across a number of grades and schools; therefore,

<sup>6</sup> The district also provides coverage within the municipal areas, which is funded by contract, and on occasion receives grants to purchase equipment.

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the loss in revenues would not be accompanied by a corresponding reduction in costs. If District # 1 were to lose enrollment, the net cost to the state foundation program would decrease.

The Hot Springs School Bond levy is funded 100 percent by property tax. Over the past five years, the school bond levy would have been an average of 2.8 mills higher without Hamilton Dome property tax revenues.

### **Wyoming Severance Tax**

Wyoming oil producers pay a 6 percent severance tax<sup>7</sup> on oil produced in the state. In 2000, the Hamilton Dome field generated about \$2.1 million in severance tax revenues. In 2001, severance tax revenues from the field totaled about \$1.6 million<sup>8</sup>. These payments represent about 4 and 2 percent of total oil severance taxes for those years, respectively, and 0.08 and 0.04 percent of total severance tax payments.

Severance tax proceeds are distributed to the Mineral Trust Fund, Leaking Underground Storage Tank (LUST) account, the State General Fund, Water Development funds (I and II), Highway Fund, counties, county roads, cities and towns, capital construction, Budget Reserve Account.

### **Royalty Payments**

Oil produced from the Hamilton Dome field generated about \$5.1 million in federal mineral royalties in 2000, and about \$3.7 million in 2001. The federal government distributes 50 percent of federal mineral royalties to the state where the minerals were produced. Hamilton Dome federal mineral royalty revenues to the State of Wyoming totaled \$2.55 million in 2000 and \$1.85 million in 2001.

In Wyoming, Federal Mineral Royalties are distributed to many different entities and funds. These include the University of Wyoming, the Wyoming School Foundation Fund, the Highway Fund, the Highway Fund for County Roads, and local municipal entities. Funds are also provided to special district and school districts for capital construction, state aid to county roads, Legislative Impact Royalty Account, community colleges, transportation enterprise account, general fund administrative account and others.

In 2000, federal mineral royalties generated by Hamilton Dome accounted for an estimated 1.7 percent of all federal mineral royalties to the state<sup>9</sup>, in 2001, Hamilton Dome's contribution was about 0.8 percent of total.

<sup>7</sup> Between 1/99 and 11/99 the severance tax rate was 4 percent. Severance tax rates are less for stripper oil, oil recovered from tertiary methods, new wells, incremental oil from workovers and completions and renewed production.

<sup>8</sup> Prior to 2000, Hamilton Dome was partially owned by another company, therefore total severance tax payments are not available for prior years.

<sup>9</sup> Including coal lease bonuses.

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**Sales and Use Tax**

In Wyoming, sales and use taxes are levied on gross receipts from sales of tangible personal property and selected services including receipts from public utilities. The state levies a 4 percent sales and use tax; 28 percent of the revenues from this tax (less administrative costs) is distributed to the county and incorporated municipalities in the county of origin, according to a population-based formula. Hot Springs County also levies a 1- percent general revenue sales and use tax; proceeds from this tax are distributed to the county and its incorporated municipalities in the same manner as the local portion of the state tax.

It is conservatively estimated that MEC paid \$400,000 in sales and use taxes on purchases of goods used in the Hamilton Dome field during 2001 (Kobielusz 2002). This is about 12 percent of all sales and use taxes collected in Hot Springs County during fiscal year 2001. However, because some vendors may have reported sales and use tax collections in their home counties, it is likely that not all of the local share of these revenues were distributed to Hot Springs county and its incorporated municipalities.

## **ECONOMIC LINKAGES BETWEEN THE HAMILTON DOME OILFIELD AND HOT SPRINGS COUNTY AGRICULTURE**

As across most of Wyoming, farming and ranching in Hot Springs County is a way of life and a mainstay of the local economy. Though constrained by the limited amount of land in private ownership, an arid climate, and the difficult economic market conditions affecting livestock and commodity producers, the county's agriculture sector supports the economic livelihood of many Hot Springs county households.

Every five years the U.S. Census Bureau conducts a census of the nation's agriculture industry. Conducted at the end of those years ending with the number "2" and "7", the census compiles and reports data on production, size and other operating parameters for all farms and ranchers. According to the 1997 census, results of which were published in 1999, a total of 147 farms and ranches operated in Hot Springs County.

The census provides additional insights into these operations and the individuals and families who operate them. In terms of size, 64 of the 147 local farming and ranching operations are small, less than 180 acres. Another 42 are between 180 and 999 acres in size, with 41 operating on 1,000 or more acres. Farming and ranching is the principal occupation of the operator in 85 of 147 cases, while 62 operators are part-time or hobby operators with a principal occupation other than farming.

In terms of tenure or ownership, most of the farms and ranches are family owned and operated; 99 of the farms and ranches are operated by full owners, with another 44 operated by part owners. Among the operators, 38 reported operating the present farm for less than 5 years, compared to 62 operators who had been on the present farm 10 years or longer.

Most of the local agricultural operations engage in cattle ranching, with 17 raising sheep. In 1997, Hot Springs county farmers and ranchers reported a total inventory of 33,279 head of cattle, with sales of another 15,849 head during the previous year. Nearly a third of the total operations are farms engaged primarily in growing alfalfa, barley and other crops.

Local farmers and ranchers reported an aggregate total of 944,205 acres of land in use as part of their operations. The total includes land nearly 899,000 acres of private land and state and federal lands covered by grazing allotments used as pastureland or grazing range. Only about 38,000 acres of the total is irrigated, half of which is pastureland and the other half is cropland. Hay used for winter feed is the predominant crop raised in Hot Springs County. In 1997, more than 30,000 tons of hay was grown on just over 17,300 acres. Because these irrigated lands provide vital winter and spring range and winter-feed for the cattle and sheep herds, they are vitally important to the economic viability of the local agriculture industry.

The combined marketing receipts from livestock and commodity sales totaled \$9.6 million in 1997, an average of about \$65,000 per operation. Of the total, \$8.6 million was derived from livestock sales compared to \$1.0 million from crop sales. However, operators incurred \$7.6 million in production expenses to produce those sales. The major expenses included livestock, feed, fuel, hired labor, interest on loans, rent and property taxes. When these



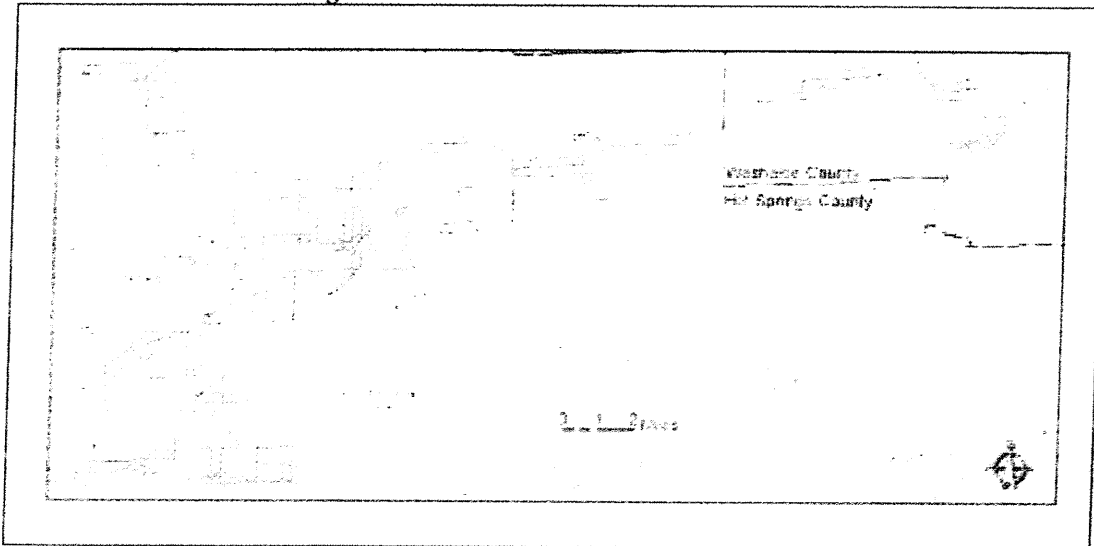
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expenses were combined with other costs, they left a residual net cash return of about \$1.5 million, or an average of only about \$10,200 per operation.

### **Cottonwood Creek**

Approximately 35 landowners have property on or near Cottonwood creek. Virtually all of these landowners benefit directly or indirectly from the water discharged from the Hamilton Dome field. Three ranches immediately adjacent Hamilton Dome have rights to the discharged water, which is used for irrigation and stock watering. Water unused by these ranches flows down Cottonwood Creek and is used by landowners who have rights to Cottonwood Creek water, again for irrigation and stock watering.

### **Private Lands along Cottonwood Creek**



Source: States West Water Resources Corporation

The indirect benefits of the Hamilton Dome water are substantial. Cottonwood Creek is known to have an intermittent flow above the Hamilton Dome discharge points. Natural flow along the creek is strongest in spring and early summer, diminishing to a trickle in mid-summer and in some years, disappearing altogether during late summer and fall.

Because the Hamilton Dome discharge provides a year-round flow, the water table along Cottonwood Creek is continually saturated and the resultant riparian growth stabilizes the streambed. This means that runoff into Cottonwood Creek from snowmelt and rainfall does not have to recharge the water table; virtually the full flow from these events is available for water users along the creek. Likewise, the stabilized streambed reduces siltation of the stream, resulting in more usable water during spring snowmelt and rainstorms.

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Another important benefit of the Hamilton Dome discharge is that the temperature and constant volume minimizes icing of Cottonwood Creek in winter, particularly in the upper reaches. This allows year-round stock watering from the creek, enhancing its value for ranchers.

Although it varies from parcel to parcel, it is likely that more than two thirds of the crop production on irrigated land along Cottonwood Creek is made possible by the availability of water discharged from Hamilton Dome. Most of the irrigated land along the creek is used to irrigate pastures and produce an alfalfa/hay/grass crop, which is used as winter feed for cattle that are grazed on BLM grazing allotments during summer. This ability to graze livestock on leased rangeland during summer, pasture livestock on deeded land along Cottonwood Creek during winter, feed them on hay grown using Hamilton Dome discharge and water them from creek water kept running and open because of Hamilton Dome is key to the continued economic viability of many of the ranches along the creek.

Owners of several of the larger ranching operators along Cottonwood Creek were contacted to discuss the potential impact of curtailed water discharges on their operations. Collectively, these ranchers produce hay on approximately 2,250 acres of irrigated cropland, which in turn supports about 4,650 cows. These estimates reflect "normal" conditions, not the drought conditions that currently exist. In addition, they also create 29 full-time and seasonal jobs for ranch hands. On average, these ranchers estimated that 70% of their annual hay production was dependent on Hamilton Dome water. Prematurely cutting off the water flows would force the ranchers to cut back their herds and reduce the amount of hired labor they use.

For the purposes of this analysis, the loss of Hamilton Dome water is assumed to have a direct, proportional impact on the annual hay and beef production and use of hired labor for these operations. The estimated direct impacts under such a scenario are as follows:

- 1,600 acres converted from irrigated cropland to pasture or non-irrigated cropland
- 4,000 tons less of hay per year (@ net reduction of 2.5 tons per acre)
- A combined herd reduction of 3,200 cows
- An annual reduction of \$2,000,000 in livestock sales receipts (@ \$650 per head)
- A loss of 20 full-time and seasonal jobs in the ranching industry

Additional losses would be likely for ranches not included in the survey

The IMPLAN model was used to estimate the total economic losses in Hot Springs County, including the indirect and induced impacts on other sectors, associated with the direct reduction in annual livestock receipts. Those losses, which include a net reduction of \$3.3 million (1.7%) in the county's total annual economic output, a loss of \$645,000 in annual labor income, and a net loss of 32 full and part-time jobs, would be in addition to those impacts directly attributable to the cessation of Merit's Hamilton Dome production operations.

A further economic effect of the loss of produced water from the Hamilton Dome field would be a reduction in value of the agricultural property along Cottonwood Creek; the value of non-irrigated land is substantially less than the value of irrigated land.

## THE SIGNIFICANCE OF HAMILTON DOME PRODUCTION TO WYOMING'S REFINING INDUSTRY

Wyoming is home to five operating petroleum refineries. With a combined daily average refining capacity of 140,386 barrels per day, Wyoming's refineries represent approximately 5% of the nation's domestic petroleum refining capacity. The refineries, their respective operators, location and daily distillation capacity are listed in the following table.

**TABLE 6**  
**WYOMING PETROLEUM REFINERIES, JANUARY 2001**

<b>Refiner</b>	<b>Location</b>	<b>Daily Capacity (barrels per day)</b>
Frontier Refining Inc.	Cheyenne	38,670
Little America Refining Co.	Evansville	24,500
Silver Eagle Refining	Evanston	3,000
Sinclair Oil Corporation	Sinclair	62,000
Wyoming Refining Co.	Newcastle	12,216
<b>STATEWIDE TOTAL</b>		<b>140,386</b>

Source: U.S. Dept. of Energy, Energy Information Administration, 2001.

In 1997, the refining industry produced more than \$1.2 billion in output, accounting for about 40 percent of the total statewide manufacturing output. Direct employment at the refineries totaled more than 700 jobs in 1997, those jobs averaging about \$50,000 in wages and salaries to yield a combined annual payroll of over \$35 million. Many more jobs and additional payrolls were indirectly supported in the pipeline, trucking and other related industries, as well as through consumer expenditures by the households directly and indirectly employed by the industry.

Crude oil from the Hamilton Dome field plays an important role in supporting the state's refining industry. Hamilton Dome crude is transported via pipeline to one of the in-state refineries via pipeline. Production presently averages about 4,600 barrels per day from the Hamilton Dome field. That production represents about 3.3% of the daily feedstock supply needed to sustain the in-state refineries at full production. In reality, Hamilton Dome's production is especially critical because the oil produced from Hamilton Dome is asphaltic crude, the primary source of asphalt and road oil.

Asphalt is a crucial component of highway construction and maintenance, airport runways and aprons and parking lots. As such, it is vital to sustaining Wyoming's economic health and that of surrounding states through its ties to the construction industry and by providing safe, efficient and reliable transportation capacity for residents, commercial traffic and tourists visiting the state. Furthermore, though accounting for only about 2% of the nation's asphalt and road oil refining capacity, asphalt and road oil production in the state has accounted for almost 10% of the nation's production in recent years.

Having a "local" supply of asphaltic crude is, therefore, important to the economic viability of the in-state refining industry. It helps minimize transportation costs and is vital to maintaining the overall operating efficiency and, hence, the cost competitiveness of the existing

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refineries. Without the supply from Hamilton Dome crude, the economic viability of one or more of the refineries could be threatened.

Such a situation arises because petroleum refineries are not standardized industrial facilities, each able to process the same types of feedstock or produce the same outputs. Rather, refineries are built to different specifications with respect to inputs and outputs. The differences are manifest in the production capacity of different production streams.

Across the nation, the asphalt and road oil production capacity accounts for approximately 5.2% of the total refining capacity. In Wyoming, such capacity represents more than 13% of the total statewide refining capacity and 15% when adjusted to reflect the capacity of the three refineries that produce asphalt. Hamilton Dome supplies more than 20% of the crude needed to sustain those operations. While the prospect of eliminating the Hamilton Dome production might appear of limited consequence, the loss of that supply, coupled with uncertainty regarding the availability and costs of alternative supplies, could adversely affect the operating economics and profitability sufficiently to curtail asphalt production or even undermine the long-term economic viability of one or more Wyoming refineries. Such an event would trigger substantial job and income losses in the affected community and significant negative fiscal impacts for the affected local governments and school districts. Increased reliance on out-of-state supplies risks higher costs and increased potential for delays or disruption of deliveries, both of which have broad economic implications for the state.

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