



United States  
Department of  
Agriculture

Forest  
Service

Northern Research  
Station  
Sustaining Appalachian  
Forests NRS-01

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Michael Rains, Director  
Northern Research Station  
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Dear Michael:

It is our collective scientific and professional opinions that if drilling in conjunction with the Monongahela National Forest /Berry Energy, Inc. Gas Well B-800 project on the Fernow Experimental Forest proceeds prior to April 2008, the USDA Forest Service, West Virginia Department of Environmental Protection and Berry Energy Inc. will be in violation of the Endangered Species Act Sections 7 and 9 by disturbing and altering hibernation habitat leading to a prohibited "take" of Indiana bats (*Myotis sodalis*). We also believe that the Monongahela National Forest conducted inadequate assessments and analyses for this project relative to known and potential impacts on soil, water and wildlife resources.

We have arrived at these conclusions through considerable review of the scientific literature, documentation of previous Federal actions, dialogue and debate among ourselves, and with other scientific and professional colleagues. Specifically, we believe that the Monongahela National Forest has been inconsistent in applying its own procedural precedence and analytical effort associated with private lands (surface and subsurface) issues, including an earlier gas well project (Berry Energy Inc., Gas Well B-782 Decision Memo 1/31/06) on the Fernow Experimental Forest. We also believe that the Monongahela National Forest erred in finding the B-800 project could be Categorically Excluded because the extant extraordinary circumstances and potential cumulative effects were ignored. We believe the Monongahela National Forest did not recognize or utilize the full width of available decision space to modify project actions that would have provided substantial mitigation. Lastly, this action threatens to harm the integrity and contribution of the long-term silvicultural and watershed research on the Fernow Experimental Forest therefore negating the effectiveness and purpose of a substantial Federal investment.

#### Concerns relative to Endangered Species and NEPA

- The Monongahela National Forest exercised considerable effort/authority with Berry Energy relative to the placement of well B-782 and subsequent road use issues in 2006 to prevent disruption of Northern Research Station activities. This was an excellent example of collaboration to achieve broad agency goals. No substantive endangered species issues arose, nor was the drilling on karst. However, the Monongahela National



Forest claimed no decision space relative to the B-800 action where research also was impacted and there were substantive endangered species concerns linked to an Indiana bat hibernaculum.

- The Monongahela National Forest issued the Decision Memo of 11/12/2007 for Gas Well B-800 under a Categorical Exclusion because no extraordinary circumstances were present. We believe that issues related to the presence of the endangered Indiana bat (Endangered Species Act), drilling on karst (Cave Resource Protection Act) with sensitive soil and water quality issues, adjacency of and presence of this mineral estate in the Congressionally-mandated Otter Creek Wilderness (Wilderness Act) and the presence of the Fernow Experimental Forest (with substantial investment by the United States) do constitute extraordinary measures. Furthermore, impacts of planned gasfield development of 8-10 well sites on the Fernow Experimental Forest along with pipeline placement were omitted from the Decision Memo analysis. This easily shows the affected area to exceed 5 acres. Therefore, we believe a Categorical Exclusion was not appropriate.
- Although similarly claiming a Categorical Exclusion for the B-782 action, U.S. Fish and Wildlife Service records indicate that informal concurrence was sought and granted. This is in keeping with the standard that any Federal action that has a determination of “may affect, not likely to adversely affect” or worse requires informal consultation prior to the signing of the decision memo in West Virginia. The Decision Memo for B-800 was signed and executed by the Forest Supervisor on the same day the “courtesy” Biological Evaluation was completed. This is highly unusual in that it did not allow for U.S. Fish and Wildlife Service consultation, nor did it allow for a technical review for accuracy by the Research Station.
- After publication of the Biological Evaluation, we, as scientists of the Northern Research Station, prepared a letter documenting our disagreements with the conclusions, and indeed with the analyses of the Monongahela’s Biological Evaluation. We requested that the letter be shared with the U.S. Fish and Wildlife Service. The Forest Supervisor did not forward the letter as requested, but rather he informed us that he would discuss these concerns with the leader of the West Virginia Field Office.
- While the probability of impact of drilling on Indiana bats is low, it is neither remote nor discountable. Drilling at the B-800 site through karst of unknown consistency and connection to the Big Springs system could potentially impact an entire hibernaculum of 300 bats with resulting consequences of direct or delayed mortality, long-term population decline and cave microclimate alteration. The Biological Evaluation and the Decision Memo did not provide any appropriate scientifically-based risk analysis for this possible outcome.
- The current standard for unacceptable risk to Indiana bats in West Virginia is illustrated by a recent Biological Opinion from 2/2/2007 provided to the Monongahela National Forest by the U.S. Fish and Wildlife Service regarding access to a jointly held right-of-way with a private landowner: *If a bat using a roost tree that is removed is not killed*

*during the removal, it may be forced to find an alternative roost tree, potentially expending a significant amount of energy that would result in harm or harassment of the individual.* This would similarly imply a “take” situation from cave disturbance even with no direct evidence of mortality.

- The Monongahela National Forest is aware of the considerable regulatory liability facing Berry Energy, but we believe the national forest failed to fully disclose the extent of potential overt and accidental violations of the Endangered Species Act to Berry Energy. Berry Energy professes the desire to be a cooperative partner with the Forest Service in this action, however without full disclosure of risks they have no reason to know that drilling during the hibernation period could constitute regulatory exposure under the Endangered Species Act.
- No analyses of direct or cumulative impacts were provided relative to the possibility of gasfield development or pipeline placement and routing if B-800 contains natural gas (specific impacts listed below) in the Biological Evaluation or Decision Memo. A gasfield of 8-10 wells and pipeline placement will seriously compromise the integrity of numerous existing long-term studies that have been the focus of our silvicultural and watershed research over the past half-century.

### Scientific background

Direct disturbance of wintering Indiana bats or alteration of hibernacula environmental conditions are believed responsible for the largest portion of the overall decline in numbers of Indiana bats. Changes to caves that alter airflow and temperature often will alter the microclimate causing large increases in energy expenditure and transdermal water loss if temperature or humidity levels either exceed or fall below optimal ranges. Effects from alterations, even minor changes, to small cave systems (such as Big Springs Cave on the Fernow Experimental Forest) with lower overall cave volume and structural heterogeneity generally are more pronounced and deleterious to wintering Indiana bats than those in larger cave systems. Mineral development on karst landforms presents challenges for maintaining the integrity of cave systems. Whereas geologists and producers know where limestone geology occurs with high certainty, actual cave systems, voids and anomalies typically are not known without extensive test-drilling; all are routinely encountered in mining and drilling operations. Gas and oil drilling “punctures” of known (presumably mapped) caves also have been documented in the Appalachians, however, most voids or caverns are too small for human passage and are therefore unknown prior to mineral exploration. Although producers do have standard procedures for casing drill pipe through voids, these procedures can take a day or more to apply and in some instances rather than filling up the annular space, casing cement begins to fill the void or cavern. In either case, alteration to cave airflow, temperature and humidity could occur (whether temporary or permanently) causing either a one-time or prolonged arousal of hibernating bats. Drilling also produces low-frequency sound/vibrations that are believed to be capable of disturbing bats depending upon the distance and attenuation qualities of the geologic content. Techniques and modeling exercised for assessing these potential impacts to cave systems and rock formations have been developed and employed in West Virginia and elsewhere.

- No data or relevant citations were provided in the Biological Evaluation to judge the effectiveness of drilling procedures when caverns or voids will be encountered, nor were citations or data provided to quantitatively assess the risk to Big Springs Cave in general or the Indiana bat in particular. For example, what contingencies exist for a cavern break-through or a possible void-filling of casing material to minimize impacts or changes to airflow?
- The value of Compartment 16 with its ongoing silvicultural research as “key” habitat for day-roosting and foraging during the non-hibernation period should not be dismissed based on the findings of Ford et al. 2002, Ford et al. 2005, Keyser and Ford 2006, Ford and Rodrigue unpubl. data, Stihler unpubl. data). Therefore permanent surface alterations for gas well development, whether during the winter or summer, also may constitute extraordinary conditions. Dismissal of this habitat was not adequately supported by cited literature, nor has the field review by national forest personnel of these habitats as key area components been completed.
- Whether the cutting slurry pit is present in the winter or during the post-hibernation period, no data or analyses about the effectiveness of “flagging” as a deterrent to bird or bat activity were presented. Water bodies associated with small forest openings are used by numerous bat species, including Indiana bats, on the Fernow Experimental Forest for foraging and drinking, therefore slurry pits could constitute a considerable hazard.
- The Greenbrier Cave isopod only occurs in/near 18 caves including the Big Springs Cave system. No analyses were presented as to why potential reductions in water quality through increased sediment or changes in salinity could not cause a trend towards federal listing.

#### Our proposals for mitigating the immediate risk of impact to Indiana bats

- The scientists have repeatedly acknowledged that the obvious mitigation for this risk to endangered species would be to delay drilling until mid-April (post-hibernation), when the bats leave Big Springs Cave. However, the consistent answer from the Monongahela National Forest is that “Berry Energy doesn’t want to wait.” This underscores the lack of disclosure by the Monongahela National Forest about risks to the Indiana bat. Postponement of drilling at B-800 until after the 2009 hibernation period would allow personnel from West Virginia DNR and U.S. Fish and Wildlife Service to monitor cave temperature and humidity for a full winter cycle. Moreover, it would allow the Research Station to also develop possible monitoring actions.
- Potential impacts to Indiana bats would be minimized or fully mitigated by locating gas drilling away from areas with limestone geology or those areas with no possible linkage to the Big Springs Cave system. If the Monongahela National Forest must approve the location of the wells, then they must also have the authority to not approve a particular location, or insist on moving to a less contentious site. The B-782 drill site was logged by the Fernow crew and is still available, but the site is no longer slated for development.

- Cave conditions in portions of Hellhole Cave in Pendleton County that are 1 mile or greater from limestone quarrying are monitored for changes in temperature and air pressure by the U.S. Fish and Wildlife Service, WV DNR, Greer Industries and Extreme Endeavors Inc. Distances from B-800 to known (mapped) passages of Big Springs Cave are far shorter, therefore pre-, during and post-drilling monitoring of cave conditions by Berry Energy and the Monongahela National Forest would seem prudent and necessary.

#### Silvicultural research implications for gas well development on the Fernow Experimental Forest

As of 1/22/2008, clearing for B-800 gas well in Compartment 16A is nearing completion. The site required clearing of approximately 3 acres with an access road. Drilling is expected to begin within days. Compartment 16A, where the drill pad is currently being developed, is the location of a crop tree/two-age management study initiated in 1989. It is highly visible and is often used for tours that are a one of our technology transfer techniques to reach numerous educational, professional, and environmental groups. Compartment 39, an even-age management study established 1960 was cleared for the B-782 drill site as requested by Berry Energy but then never used. The assumed pipeline route as indicated by Berry Energy personnel would require clearing and maintaining a right-of-way that could possibly cross and impact:

- Compartment 21: Prescribed fire and variable density thinning study (funded in part by National Fire Plan funding and Indiana bat mitigation efforts).
- Compartment 25A/B: Small tree diameter-limit harvesting study.
- Compartment 26A/B: 6% financial maturity selection harvesting and part of the financial maturity selection study initiated in 1975.
- Compartment 61: 3% financial maturity selection harvesting study
- Watershed V: Single-tree selection replication study and one of the calibrated watersheds on the Fernow.
- Additional impacts to these and other compartments and gauged watersheds from gasfield development have not been considered. This might include compartments linked to Study 2, which dates to 1949 and is believed one of the longest continually running hardwood silviculture studies in North America. Environmental analyses should not be conducted on individual gas well sites in a piecemeal basis, but rather as the whole of the planned gasfield (8-10 wells).

#### Other recommendations to maintain the relevancy of the Fernow Experimental Forest as a vital research forest:

- On 11/6/07, the Monongahela National Forest Supervisor asserted in briefing points to the Regional and Washington offices about the 1915 privately held reservation at the

Fernow and Otter Creek that “Privately held mineral estates are not frequently offered for sale....mineral estates have multiple owners which can complicate any potential sale opportunities.” However, Berry Energy was able to identify the heirs to this estate and lease the mineral rights. Therefore, we believe purchase of the mineral rights to be a viable option, which should be under consideration, although we recognize the potential costs.

- The Forest Supervisor has indicated that the Monongahela National Forest is gathering information on Surface Use Agreements that are used on western lands to allow the Forest Service more authority to guide the locations of mineral development activities to lessen impact on other resources. We support such agreements as an option for the Fernow Experimental Forest.
- At a minimum, we should request Berry Energy meet with the Forest Service to spatially identify the planned 8-10 gas well locations so that all the potential impacts can be fully considered. Working with Berry Energy to mitigate the gas well impacts to surface activities may produce long-term benefits for both parties. Unfortunately, we know of no such request to date by the Monongahela National Forest nor have the personnel from NRS-01 been invited to participate in such discussions.

Sincerely,

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