

**CENTER FOR BIOLOGICAL DIVERSITY
GRAND CANYON TRUST
LIVING RIVERS
SIERRA CLUB**

Via U.S. and Electronic Mail

December 10, 2012

Director (210)
Attention: Brenda Hudgens-Williams
P.O. Box 71383
Washington, D.C. 20024-1383
Brenda_Hudgens-Williams@blm.gov

Re: Protest of Proposed Land Use Plan Amendments (PRMP Amendments) for Allocation of Oil Shale and Tar Sands Resources on Lands Administered by the Bureau of Land Management in Colorado, Utah, and Wyoming and Final Environmental Impact Statement (FEIS)

Dear Ms. Hudgens-Williams:

This Resource Management Plan Protest is submitted on behalf of the Center for Biological Diversity (“Center”), Grand Canyon Trust (“Trust”), Living Rivers, and Sierra Club regarding the Bureau of Land Management’s (BLM) *Proposed Land Use Plan Amendments (PRMP Amendments) for Allocation of Oil Shale and Tar Sands Resources on Lands Administered by the Bureau of Land Management in Colorado, Utah, and Wyoming and Final Environmental Impact Statement (FEIS)*. The Notice of Availability of the PRMP amendments and FPEIS was published by the Environmental Protection Agency (EPA) in the Federal Register on November, 13th 2012 (77 Fed. Reg. 67664), therefore, this Protest is being timely filed in accordance with 43 C.F.R § 1601.5-2. Pursuant to the instructions contained in BLM’s “Dear Reader” letter accompanying the PRMP amendments, this protest is being provided via email with a timely postmarked copy sent via U.S. Mail to the address above.

PROTEST

1. PROTESTING PARTIES: CONTACT INFORMATION AND INTERESTS

This Protest is filed on behalf of the Center for Biological Diversity, Grand Canyon Trust, Living Rivers and the Sierra Club, as follows.

a. Center for Biological Diversity

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Center for Biological Diversity

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The Center is a non-profit environmental organization with more than 450,000 members and online activists, including many members who live and recreate in the areas in and affected by actions taken within the planning area in Colorado, Utah and Wyoming. The Center uses science, policy and law to advocate for the conservation and recovery of species on the brink of extinction and the habitats they need to survive. The Center has and continues to actively advocate for increased protections for species and habitats in the planning area on lands managed by the BLM. The lands that will be affected by the decision include habitat for many listed, rare, and imperiled species that the Center has worked to protect including the Colorado pikeminnow, razorback sucker, humpback chub, White River beardtongue and many other species which will be affected by actions authorized or allowed under the PRMP amendments. The Center's board, staff, and members use the lands and waters within the planning area, including the lands and waters that would be affected by actions under the PRMP amendments, for quiet recreation (including hiking, biking and camping), scientific research, aesthetic pursuits, and spiritual renewal.

b. Grand Canyon Trust

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Grand Canyon Trust is a non-profit corporation headquartered in Flagstaff, Arizona with over 3,500 members. The mission of the Grand Canyon Trust is to protect and restore the canyon country of the Colorado Plateau – its spectacular landscapes, flowing rivers, clean air, diversity of plants and animals, and areas of beauty and solitude. One of the Trust's goals is to ensure that the Colorado Plateau is a region characterized by vast open spaces with restored, healthy ecosystems, and habitat for all native fish, animals, and plants. The Trust's board, staff, and members use the lands and waters within the planning area, including the lands and waters that would be affected by actions under the PRMP amendments, for quiet recreation (including hiking, biking, fishing, rafting and camping), scientific research, aesthetic pursuits, and spiritual renewal.

c. Living Rivers

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Living Rivers is a regional nonprofit organization that promotes river restoration through mobilization. By articulating conservation and alternative management strategies to the public, we seek to revive the natural habitat and spirit of rivers by undoing the extensive damage done by dams, diversions and pollution on the Colorado Plateau. Living Rivers' staff, board and members use the lands and waters within the planning area, including the lands and waters that would be affected by actions under the PRMP amendments, for quiet recreation (including hiking, biking, rafting and camping), scientific research, aesthetic pursuits, and spiritual renewal.

d. Sierra Club

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The Sierra Club is a national nonprofit organization of approximately 600,000 members dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth's ecosystems and resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives. The Sierra Club's Rocky Mountain Chapter has approximately 15,300 members in the state of Colorado, the Utah Chapter has approximately 3,600 members, and the Wyoming Chapter has approximately 880 members. The Sierra Club's staff and members use the lands and waters within the planning area, including the lands and waters that would be affected by actions under the PRMP, for quiet recreation (including hiking, biking and camping), scientific research, aesthetic pursuits, and spiritual renewal.

The Center, Trust, Living Rivers and Sierra Club participated in the planning process to the degree required by law, including through the submission of comments to BLM regarding the environmental impacts of plan activities. Our comments addressing numerous issues with the plan are attached and incorporated by reference herein. As detailed in those comments and comments of others, and as explained below, the Center, Trust, Living Rivers and Sierra Club believe that the PRMP and accompanying FEIS are inadequate to ensure compliance with the procedural and substantive mandates of the Federal Land Policy and Management Act (FLPMA), the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Clean Air Act (CAA) and other federal and state laws and policies.

2. ISSUES AND PARTS OF THE PRMPS PROTESTED:

The Center, Grand Canyon Trust, Living Rivers and Sierra Club protest the proposed adoption of the BLM's preferred alternative which allows leasing and development of oil shale and tar sands on BLM lands without adequate analysis of, or mitigation for, the direct, indirect and cumulative impacts of such activities on air and water quality, wildlife and climate. Protesters join in and adopt by reference the issues raised and protested in the protests filed by Western Resources Advocates, Southern Utah Wilderness Alliance, and Biodiversity

Conservation Alliance. As outlined therein and below, by adopting the preferred alternative, BLM would find itself in violation of FLPMA, NEPA, ESA and the CAA. BLM should therefore withdraw the PRMP amendments and FPEIS, prepare a SEIS that addresses the deficiencies in the FEIS, and issue new PRMP Amendments that comply with applicable statutory mandates and better protect the resources BLM is entrusted to manage.

3. STATEMENT OF REASONS WHY THE PROPOSED DECISION IS UNLAWFUL:

BLM's proposed decision to adopt the PRMP amendments is substantively and procedurally flawed. A concise statement of those reasons follows.

- The PRMP amendments and FPEIS are not consistent with FLPMA which requires BLM to prevent unnecessary or undue degradation of public lands. 43 U.S.C § 1732(b). Congress enacted a policy that “the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values...” 43 U.S.C. at § 1701(a)(8). FLPMA also directs BLM to manage the lands under its jurisdiction in such a manner that will “best meet the present and future needs of the American people;” “provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions;” and “take[] into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish...” *Id.* § 1702(c). In addition, the law requires BLM to “minimize adverse impacts on the natural, environmental, scientific, cultural, and other resources and values (including fish and wildlife habitat) of the public lands involved.” *Id.* § 1732(d)(2)(a). In promulgating the PRMP amendments and FPEIS and allocating land for oil shale and tar sands development, the BLM cannot (1) ensure that it is preventing or minimizing undue degradation of public lands, (2) ensure that public lands are being “managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values...”, or (3) ensure that it is minimizing “adverse impacts on the natural, environmental, scientific, cultural, and other resources and values (including fish and wildlife habitat) of the public lands involved.” To the contrary, the PRMP amendments will, as presently authorized, and as proposed to be managed under the PRMP cause, or are likely to cause, unnecessary and undue degradation of land, air, climate, water, vegetation and wildlife resources BLM is mandated to protect through, *inter alia*, surface disturbance, habitat degradation, air pollution, greenhouse gas emissions, and surface and groundwater depletion and contamination.

- The PRMP amendments and FPEIS are not consistent with FLPMA, which requires BLM to prepare and maintain adequate inventory data on the resources of an area and that information is used to inform the planning process. 43 U.S.C. § 1711(a); 43 U.S.C. § 1701(a)(2). The BLM's failure to prepare and maintain adequate inventory data for resources in the planning area, such as but not limited to data on special status species populations, trends, and locations, forecloses an informed PRMP amendment planning process. For example, lack of adequate location data precludes a conclusive analysis of whether many special status species occur on lands allocated for development, or therefore whether and how those species will be impacted by development. BLM's failure to prepare and maintain inventory data for these and other resources precludes an informed planning process, it forecloses BLM's ability to identify and mitigate resource impacts and ensure against undue degradation to public lands, and it violates FLPMA.

- The PRMP amendments are not consistent with the ESA, which requires BLM to ensure the survival and recovery of listed species and to utilize its authorities to conserve such species. 16 U.S.C § 1536. BLM lands in the plan area are critical for the survival and recovery of federally threatened, endangered and candidate species, including the Colorado pikeminnow, razorback sucker, bonytail, humpback chub, Kendall warm springs dace, Canada lynx, Mexican spotted owl, southwestern willow flycatcher, whooping crane, western yellow-billed cuckoo, Gunnison's and greater sage grouse, land chance townsendia, Ute ladies'-tresses, and other federally-listed and candidate species. Greenhouse gas emission resulting from aBLM's proposed decision to allow oil shale and tar sands development in and near important habitats for such species is plainly inconsistent with mandates for these species' survival and recovery, as the further loss and degradation of habitat that such development will cause will set back recovery efforts for these species and is at odds with their recovery plans. Moreover, the stipulations for such development in the PRMP amendments, while perhaps lessening the negative impacts that flow from such development in their absence, are wholly inadequate to fully negate the negative impacts from such development to those species' survival and recovery. The ESA requires Section 7 consultation for "any action [that] may affect listed species or critical habitat." 50 C.F.R. § 402.14. Under the ESA's governing regulations, agency "action" means "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Courts have determined that the "act of approving, amending, or revising" a land management plan constitutes 'action' under Section 7 of the ESA. *Forest Guardians v. Forsgren*, 478 F.3d 1149, 1154 (10th Cir. 2007). Unless and until BLM undertakes formal consultation with FWS pursuant to Section 7 of the ESA to ensure that the direct, indirect and cumulative impacts of the PRMP amendments will not result in prohibited take or jeopardy of federally listed species, a decision approving the PRMP amendments will violate ESA. In addition to its ESA violations, the PRMP does not comply with BLM Manual 6840: Special Status Species Management and BLM Manual 6500: Wildlife and Fisheries Management, which requires BLM to "restore, maintain, and improve wildlife habitat conditions." Oil shale and tar sands development in special status species habitat is clearly inconsistent with these mandates.

- The PRMP amendments and FPEIS are not consistent with NEPA, which requires BLM to take a hard look at direct, indirect and cumulative effects of the PRMP amendments, including in this case effects to and from greenhouse gas emissions and climate change. 40 C.F.R. § 1508. The BLM failed to estimate cumulative greenhouse gas emissions and other pollutants that could result from all phases (exploration, extraction, processing, transportation, refining, end-use combustion) of oil shale and tar sands development that would result from the PRMP amendments. The FPEIS claims that such analysis is not possible because of uncertainties relating to oil shale and tar sands development technology. For example, BLM states, "The maximum potential increase in cumulative GHG emissions from all potential oil shale and tar sands activities cannot be predicted with accuracy." PEIS at 4-61. Nowhere in the PEIS does BLM attempt to estimate cumulative greenhouse gas or other pollutant emissions resulting from future development under the PRMP amendments. BLM's failure to assess, or even attempt to assess, the cumulative greenhouse gas emissions or other pollution resulting from development activities allowed by the PRMP amendments violates NEPA.

- The PRMP amendments and FPEIS are not consistent with NEPA, which requires BLM to evaluate in its EIS cumulative effects. 40 C.F.R. § 1508.27(b)(7). Cumulative impacts are

broadly defined to include impacts from “past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.” *Id.* In Utah, oil shale and tar sands are found on BLM lands as well as on are both State and Tribal lands; in Utah’s Uintah Basin, the State has authorized development of both tar sands and oil shale. BLM is required but in this case failed to evaluate the impacts of the present and future development activities of oil shale and tar sands of all lands in Utah as a NEPA cumulative impact analysis.

- The PRMP amendments and FPEIS are not consistent with NEPA, which requires BLM to take a hard look at the indirect effects of reasonably foreseeable activities, including greenhouse gas and other emissions resulting electricity production used for in-situ oil shale development. 40 C.F.R. § 1508. The BLM failed to analyze the full suite of emissions that would result from the increased need for electrical power generation to support in-situ oil shale production, even at the RD&D level. As noted in protesters’ PDEIS comments, even using BLM’s conservative energy use factors, the electricity needed to support even 50,000 barrels / day of development is equivalent to 15% of the generation from the electric power industry (from coal) in 2010 in Colorado and Utah and 12% in 2010 in Wyoming. It is quite possible that the region simply cannot withstand, without adverse effects, the significant increases in water use and greenhouse gas, mercury, NO_x, particulates and other pollutant emissions would result from increased power needs. BLM’s failure to fully analyze and disclose these potential emissions and their effects on various resources violates NEPA.

- The PRMP amendments and FPEIS are not consistent with NEPA, which requires BLM to take a hard look at the indirect effects of reasonably foreseeable activities, including greenhouse gas and other emissions resulting from refining and end-use combustion of mined oil. 40 C.F.R. § 1508.8(b). BLM defines its PRMP land use allocations as “activities and foreseeable development that are allowed, restricted, or excluded for specific areas covered by a land use plan.” PEIS at 1-1. Because the entire purpose of oil shale and tar sand development is to have it refined and burned, resulting greenhouse gas emissions are therefore reasonably foreseeable “direct or indirect” impacts of the PRMP amendments. They are “indirect effects which . . . are later in time or farther removed in distance, but are still reasonably foreseeable.” 40 C.F.R. § 1508.8. Comments on BLM’s PDEIS stated that, “NEPA regulations require that NEPA documents address not only the direct effects of federal proposals, but also ‘reasonably foreseeable’ indirect effects,” and, “BLM is required to take a hard look at direct, indirect, and cumulative impacts to and from climate change in the planning area in the RMP.” Western Resource Advocates et al. at 29. BLM’s failure in the FPEIS to analyze, or even attempt to analyze, the effects of emissions from refining and end-use combustion violates NEPA.

- The PRMP amendments and FPEIS are not consistent with Section 106 of the National Historic Preservation Act, which requires BLM to consider impacts to properties, sites, and objects that are included or are eligible for inclusion in the National Register of Historic Places, including tribal cultural and religious resources, and consult with the Advisory Council on Historic Preservation and affected tribes before approving the amended resource management plans. 16 U.S.C. § 470f; 36 C.F.R. § 800.2(c)(2)(ii); 36 C.F.R. § 800.1(c) (requiring consultation early in decision-making process). Approving the proposed amendments to the ten management plans is an “undertaking.” 16 U.S.C. § 470w(7). BLM’s failure to undergo consultation prior to approvals the Amendments violates the NHPA. *See* 36 C.F.R. § 800.2(c)(2)(ii)(A) & (C). BLM also violated NHPA by failing to consider the Amendments’ effects on cultural and religious

sites, identify any adverse effects, and avoid or mitigate any adverse effects. See 36 C.F.R. §§ 800.5, 800.6.

- The PRMP amendments and FPEIS are not consistent with the EPAct, which requires that oil shale or tar sands development on public lands may proceed only in an “environmentally sound manner.” NEPA standing alone does not necessarily mandate an environmentally sound outcome as a substantive matter, such result is required here. See, e.g., *Wyo. Outdoor Council v. U.S. Army Corps of Eng’rs*, 351 F. Supp. 2d 1232, 1240 (D. Wyo. 2005) (“NEPA mandates that federal agencies take into consideration the impacts of their actions on the environment in the hopes that such consideration will lead to environmentally sound decisions that balance the needs of humans and the environment in which they live”). The FPEIS and other studies demonstrate, however, that oil shale and tar sands development, as would be allowed by the proposed PRMP Amendments, would not proceed in an “environmentally sound” way, but would destroy habitat; alter topography; displace and kill birds and animals; destroy plants including oil shale endemic species; require vast energy inputs that may emit up to four times more greenhouse gas pollution than conventional oil production; exacerbate to global warming and regional drying; and deplete and pollute water. The development would literally transform hundreds of thousands of acres of public lands into an industrial zone. Because the PRMP amendments allocate land to oil shale and tar sands development that would not and cannot proceed in an “environmentally sound manner,” BLM cannot proceed with the proposed action.

- The PRMP amendments and FPEIS are not consistent with Secretarial Orders (S.O.) No. 3289, which mandates that all Department of the Interior agencies “analyze potential climate change impacts when undertaking long-range planning exercises, setting priorities for scientific research and investigations, developing multi-year management plans, and making major decisions regarding potential use of resources under the Department’s purview.” S.O. 3289, *incorporating* S.O. 3226. The PRMP amendments and FPEIS falls squarely under this guidance. The PEIS states, “The maximum potential increase in cumulative GHG emissions from all potential oil shale and tar sands activities cannot be predicted with accuracy.” Protestors’ cited climate change impact analysis requirements S.O. 3289 and S.O. 3226 in comments on BLM’s PDEIS. *Western Resource Advocates* at 28 and 29. BLM’s failure to assess, or even attempt to assess or estimate, direct, indirect and cumulative greenhouse gas emissions from oil shale and tar sands activities prevents a full analysis of “potential climate change impacts when undertaking long-range planning exercises” and violates S.O. 3289 and S.O. 3226.

- The PRMP amendments are not consistent with the CAA which requires BLM to comply with, *inter alia*, the national primary and secondary ambient air quality standards, 40 C.F.R. § 50.1-50.14, along with requirements for the prevention of significant deterioration of air quality, 40 C.F.R. §§ 51.166 & 52.21, protection of visibility, 40 C.F.R. § 51.300, along with the general conformity prohibition, 40 C.F.R. 51.580. The PFEIS did not fully analyze whether the proposed oil shale and tar sands activity allowed under the PRMP amendments will comply with the NAAQS and will prevent significant deterioration (PSD) of air quality, as required by the Clean Air Act (CAA). The BLM acknowledges that “It is not possible to predict site-specific air quality impacts until actual oil shale projects are proposed and designed” and does not undertake such analyses. PFEIS at 4-54. The BLM failed to complete an analysis to determine (1) compliance with the NAAQS, (2) how much of the incremental amount of air pollution allowed in clean air areas (*i.e.*, PSD increment) has already been consumed in the affected areas, and (3) how much additional increment consumption will occur due to development allowed by the

PRMP Amendments. Without this analysis, the BLM cannot ensure that the air quality in the study areas will not deteriorate more than allowed under the CAA. Finally, the BLM failed to provide a complete an analysis of impacts of development allowed by the PRMP Amendments to air quality values, including visibility, in impacted Class I and sensitive Class II areas.

- In addition to each of the substantive violations outlined above, the PRMP Amendments and FEIS also violate the procedural requirements of NEPA that all significant environmental impacts be analyzed and alternatives that minimize such impacts be considered. In each case, the inadequate and inaccurate analysis leading to the substantive violation of FLPMA, ESA, and/or CAA described above also give rise to a corresponding violation of NEPA. Moreover, because BLM relied exclusively on oil shale and tar sands development scenarios in all alternatives and failed to analyze an alternative that allocated no land to future oil shale and tar sands development to mitigate climate change impacts and other risks to the environment, BLM failed to consider a reasonable range of alternatives, rendering the FEIS woefully deficient.

For reasons stated above, as well as in the attached and cited documents incorporated by reference herein, the PRMP Amendments and accompanying FEIS, will, if adopted unchanged, result in violations of BLM's obligations under FLPMA, CAA, ESA, NEPA and other laws and regulations. An appropriate response to this protest would be for BLM to withdraw the PRMP amendments, prepare an SEIS, and issue new PRMP amendments consistent with statutory obligations as outlined above. Please do not hesitate to contact us if you have any questions or to schedule a protest resolution meeting.

Sincerely,



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Attachments:

- (1) 13 May 2011 Scoping Comments
- (2) 27 April 2012 Draft PEIS Comments
- (3) 2 May 2012 Draft PEIS Comments

**Biodiversity Conservation Alliance ~ Center for Biological Diversity
Colorado Environmental Coalition ~ EcoFlight ~ Defenders of Wildlife
Natural Resources Defense Council ~ National Wildlife Federation
The Sierra Club ~ Southern Utah Wilderness Alliance
Western Resource Advocates ~ The Wilderness Society
Wilderness Workshop ~ Wyoming Outdoor Council**

May 13, 2011

BLM Oil Shale and Tar Sands Resources Leasing Programmatic EIS
Argonne National Laboratory
9700 South Cass Avenue
Argonne, IL 60439

VIA EMAIL

Re: Scoping Comments on Oil Shale and Tar Sands Resources Programmatic EIS

Dear Reviewers:

Thank you for this opportunity to comment on the scope of issues to be considered in the Bureau of Land Management's (BLM) oil shale and tar sands Programmatic Environmental Impact Statement (PEIS). We represent individuals who live in close proximity to the areas identified for oil shale and tar sands leasing, and many others who are concerned about the fate of their public lands.

Based on the BLM's analysis to date, it is clear that commercial development of oil shale and tar sands would irreparably harm local lives and livelihoods. Development would also compromise a wide range of environmental values, including clean air, clean water, climate, recreation, water supply, and wildlife habitat. For these reasons, we strongly applaud the BLM's decision to take a fresh look at the 2008 Final Oil Shale and Tar Sands Programmatic Environmental Impact Statement (FPEIS) and Resource Management Plan (RMP) amendments, and to consider alternatives not previously evaluated. We strongly encourage the BLM to fold into its analysis a realistic assessment of industry's ability to commercially-develop oil shale and tar sands, and the tradeoffs our country will need to make should we pursue these water- and energy-intensive, high-carbon fuels.

Since the BLM issued its FPEIS and RMP amendments in late 2008, industry's oil shale and tar sands research and development efforts have continued to lag. As the current oil shale research, development and demonstration (RD&D) lessees quarterly reports to the BLM make clear, industry is years away from knowing whether their technologies will be commercially viable, not to mention whether they would pursue commercial development. By extension, the BLM is years away from being able to quantify with any real certainty the economic, social and environmental

impacts of commercial oil shale development. The same holds true for tar sands. Nevertheless, by prematurely amending 12 RMPs, as the BLM did following the issuance of the FPEIS, the BLM sent the message that oil shale and tar sands can be developed and that the impacts can be appropriately mitigated. The BLM's analysis, however, does not support that conclusion.

More specifically, the BLM opened roughly 2 million acres of public land to oil shale and tar sands development despite the fact that the agency, by its own admission, relied on a handful of theoretical development scenarios, and then projected the combined impacts over 2 million acres. Since that time, the BLM has learned very little new information about the state of technologies, the impacts of such technologies, and how commercial development would align with other land uses. There thus remains sufficient reason to warrant the BLM proceeding slowly.

As the BLM proceeds with its review, the BLM should not use this PEIS as a means to simply reaffirm its prior decisions. As Secretary Salazar and Director Abbey noted when announcing the start of this review, there are many unknowns, and it is incumbent on the BLM to make sound land use decisions that protect our western heritage. Sound land use decisions bring together sound science with good public policy.

The Obama Administration is committed to sound science. One of the failures of the FPEIS is that it cast aside science and the concerns of federal agencies – specifically, the United State Fish and Wildlife Service, the National Park Service and the Environmental Protection Agency (EPA) – in a drive to achieve political ends. Accordingly, the FPEIS is anathema to the intent and purpose of the National Environmental Policy Act (NEPA).¹ NEPA's primary intent is to protect and enhance the environment. As the Supreme Court has stated, NEPA represents a "broad national commitment to protecting and promoting environmental quality."² Using analyses such as the FPEIS to approve a massive but uncertain development scheme violates Congressional intent. As stated in NEPA's preamble:

The purposes of this chapter are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; [and] to enrich the understanding of the ecological systems and natural resources important to the Nation[.]³

As we discuss in these comments, through this review, the BLM has an opportunity to correct the many problems in the FPEIS and restore reason to the federal oil shale and tar sands policy. In undertaking this review, it is imperative that the BLM examine the full suite of issues associated with commercial development. That includes examining the science and identifying what the agency knows and does not know, and basing land use decisions on that knowledge, not on the hope that one day issues will be solved.

One example where the BLM can correct deficiencies in the FPEIS is in the adoption of enforceable mitigation measures. Another area is taking a broad look at full suite of cumulative

¹ 42 U.S.C. §§ 4321-4370f.

² See *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 348 (1989) (citing 42 U.S.C. § 4331).

³ 42 U.S.C. § 4321.

and connected actions. For example, by segmenting the power production needs associated with commercial development out of the FPEIS, the BLM failed to analyze all connected actions. Those needs and corresponding impacts to air, water and climate must be considered in this review.

Another issue the BLM must analyze concerns the value of oil shale and tar sands as energy sources. As the Obama Administration seeks to balance competing energy sources and develop clean energy solutions, it is imperative that the BLM evaluate the quality of these energy sources. For instance, in 2008, the BLM failed to adequately consider the climate impacts of oil shale development. Thanks to Dr. Adam Brandt at Stanford University, the BLM now has good data it can use in its evaluation. This evaluation is essential if the BLM is to support the President's clean energy standard. Similarly, since 2008, based on research conducted by Dr. Cutler Cleveland at Boston University, we now have good data regarding oil shale's poor energy return.

Taken together, we have independent confirmation that oil shale would provide high levels of greenhouse gasses, while provide a minor return on energy. When coupled with oil shale's high water demands – a concern that Secretary Salazar often identifies – oil shale's threats raise serious questions about the wisdom (not to mention the commercial feasibility) of pursuing these dirty fuels. Tar sands present similar challenges. These and other data points must be thoroughly evaluated in the review.

During this review, it is likewise imperative that the BLM work with the EPA and the Council on Environmental Quality to evaluate how pursuing commercial development of oil shale and tar sands squares with the administration's climate and energy goals. This PEIS review provides the only comprehensive evaluation the BLM has committed to undertaking. Only through a thorough interagency review can we be assured that the PEIS will analyze the full suite of the environmental impacts and be assured that NEPA's primary mandate to protect and enhance the environment can be met. Accordingly, it is absolutely necessary that the BLM take a broad view and engage other federal agencies charged with both developing climate and energy policy, and protecting the environment.

As the BLM takes a fresh look at the FPEIS, the agency must evaluate whether it has sufficient information to amend RMPs to allow for large-scale commercial development. The 2005 Energy Policy Act (EPAct) mandated a fundamentally flawed approach to oil shale and tar sands development – namely, placing research and commercial development on parallel paths. Research must precede commercial development, and opening 2 million plus acres to a type of development that remains experimental undermines sound land management policy. It is also germane that a considerable amount of private land and minerals is available to the oil industry without BLM involvement. Accordingly, should BLM open any public lands to commercial development, the agency must open minimal acreage. If research later proves that the environmental, cultural, social and other impacts are minimal and manageable, the agency can always open additional lands to leasing. But, opening vast acres to leasing, as was done under the FPEIS, without being able to adequately predict and analyze the full suite of impacts and develop enforceable mitigation measures belies sound land management.

As we discuss in our comments, we believe that in addition to the alternatives the BLM identified in the *Federal Register* notice, the agency should also evaluate:

1. Citizen proposed wilderness areas
2. Limiting development to deposits that yield 25 gallons/ton or more and are 25 feet thick or more.

Building a new energy economy is central to the long-term economic, social and environmental health of our nation. We need to focus our resources on supporting energy efficiency and clean, renewable energy sources that are known to protect the environment and are economically sound. Oil shale and tar sands run counter to these goals.

Respectfully submitted,

Erik Molvar, Executive Director
Biodiversity Conservation Alliance

Brendan Cummings, Public Lands Director
Center for Biological Diversity

Elise Jones, Executive Director
Colorado Environmental Coalition

Bruce Gordon, Founder and President
EcoFlight

Peter Nelson, Director, Federal Lands Program
Defenders of Wildlife

Bobby McEnaney, Senior Public Lands Analyst
Natural Resources Defense Council

Kathleen C. Zimmerman, Senior Policy Advisor, Public Lands Program
National Wildlife Federation

Kate Colarulli, Associate Director, Beyond Oil
The Sierra Club

Stephen Bloch, Energy Program Director/Attorney
Southern Utah Wilderness Alliance

Mike Chiropolos, Lands Program Director
Western Resource Advocates

Nada Culver, Senior Counsel
The Wilderness Society

Peter Hart, Conservation Analyst/Staff Attorney
Wilderness Workshop

Bruce Pendery, Staff Attorney
Wyoming Outdoor Council

Detailed Scoping Comments on Oil Shale and Tar Sands PEIS

Because of the length of our comments, following is an outline to help guide the reader.

- I. Overview – BLM has an opportunity to restore order the federal oil shale and tar sands policy
- II. The legal framework for the PEIS
 - A. The National Environmental Policy Act
 - B. Cumulative and connected impacts
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- B. Water Availability – How much water development might require and what's at stake
- C. Water quality
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- E. Aquatic species
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- I. Climate change
 - i. Legal and policy basis for the BLM evaluating climate change
 - ii. Overview of climate impacts in the West
- J. Air resources
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- M. Master leasing plans
- N. Additional conservation areas in Colorado
- O. Recreational areas in Wyoming

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- A. Lack of a comprehensive regulatory framework
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I. Overview – BLM has an opportunity to restore order the federal oil shale and tar sands policy

Section 369 of the Energy Policy Act of 2005 (EPA) directed the BLM to “develop the information necessary to complete a programmatic environmental impact statement for a commercial leasing program for oil shale and tar sands resources on public lands, with an emphasis on the most geologically prospective lands within each of the States of Colorado, Utah,

and Wyoming.”⁴ While the BLM identified significant impacts in 2008 Final Oil Shale and Tar Sands Programmatic Environmental Impact Statement (FPEIS) from commercial development, the agency lacked the information necessary to fulfill Congress’ mandate that the FPEIS support a commercial leasing program. As the FPEIS specifically provides:

The BLM originally intended the PEIS to support the amendment of land use plans to allocate areas open to commercial leasing and development of oil shale and tar sands, as well as to support the issuance of such leases. However, in consultation with the cooperating agencies, it was determined that the analysis to support immediate leasing decisions would require making speculative assumptions regarding potential, unproven technologies, and, consequently, the decision to offer specific parcels for lease was dropped from consideration in the PEIS.⁵

The BLM was correct in identifying the FPEIS’ limitations and in limiting the reach of the FPEIS. Nevertheless, despite these key limitations inherent in the FPEIS, the BLM used that analysis to amend 12 RMPs to open more than 2 million acres of federal public land to application for commercial leasing. That step was deeply flawed. That is why this review is of vital importance. Only by reviewing past analyses and decisions can the BLM restore order to the federal oil shale process. That means, as Secretary Salazar has often noted, the BLM must focus on RD&D – to get good, current, independently-verifiable data to support land use decisions before large tracts of public land are committed to development. Land use decisions made without the benefit of research will continue to suffer from the same fundamental flaws the BLM encountered when it issued the FPEIS.

Interior agencies raised concern with the BLM’s initial review. In its April 17, 2008, letter to the BLM, the National Park Service’s (NPS) Regional Director, Michael Snyder, recommend the BLM “postpone the programmatic environmental impact analysis until the recently approved Research, Development and Demonstration projects bring to light results that can be applied to large scale development.”⁶ As the BLM noted in the FPEIS, “the BLM’s analysis did not contain enough information on the specific environmental, cultural, and socioeconomic effects of such development.”⁷ The BLM instead used comparable data from other “surface disturbing mineral development activities.”⁸ While there are strong comparisons to make between strip mining and some oil shale and tar sands technologies, a full and accurate comparison cannot and should not be made. Nevertheless, the BLM opted to open more than 2 million acres of federal lands for application for commercial leasing.

The central problem the BLM faces in reviewing the FPEIS is that since none of the RD&D lessees have a proven and demonstrated extraction technology, adequate and appropriate analysis of the environmental and socio-economic impacts of oil shale development is problematic at best. While there has been a great deal of speculation about the state of research and the

⁴ Public Law 109-58.

⁵ FPEIS, at ES-3 (emphasis added).

⁶ National Park Service, Comments on 2008 Oil Shale and Tar Sands DPEIS, April 2008, at 4. (on file with the BLM)

⁷ FPEIS, at 1-3.

⁸ FPEIS, at 1-3.

promising results industry claims it is achieving, a review of the quarterly reports RD&D lessees submit to the BLM prove that no new data regarding the commercial viability of technologies and their associated impacts has yet been generated.

Accordingly, the BLM should revoke its prior decision to open lands for oil shale and tar sands development until it secures environmental analyses based on contemporary data, not the 1980 Congressional Office of Technology Assessment (OTA) study and other mineral extraction activities. (The only notable exception would be the lands associated with the RD&D round one preference right lease areas.) If research later proves that the environmental, cultural, social and other impacts are minimal and manageable, the agency can always open additional lands to leasing following a new NEPA analysis. As we noted in our cover letter, opening public land without being able to adequately evaluate the full suite of impacts and develop enforceable mitigation measures undermines the intent and spirit of Federal Land Policy and Management Act (FLPMA)⁹ and sound land management practices.

II. The legal framework for the PEIS

As discussed below, the FPEIS does not meet the intent and spirit of NEPA. It likewise does not meet FLPMA's multiple use mandate. The PEIS must correct these deficiencies.

A. The National Environmental Policy Act

The National Environmental Policy Act¹⁰ (NEPA) requires federal agencies to prepare a detailed statement on the environmental impacts of a proposed "major federal action" and all of the reasonable alternatives thereto before authorizing any such action.¹¹ An agency proposal for major federal action exists for NEPA purposes "at that the stage . . . when an agency subject to [NEPA] has a goal and is actively preparing to make a decision on one or more alternative means of accomplishing that goal and the effects can be meaningfully evaluated."¹² NEPA's purpose is to promote efforts "which will prevent or eliminate damage to the environment",¹³ to inform the public of environmental consequences,¹⁴ and to "help public officials . . . take actions that protect, restore, and enhance the environment."¹⁵

Under NEPA, the PEIS must analyze "connected", "cumulative", and "similar" actions and three types of impacts.¹⁶ Connected actions are those which are "closely related," including those that "[c]annot or will not proceed unless other actions are taken", or those that "[a]re interdependent parts of a larger action and depend on the larger action for their justification."¹⁷ Cumulative actions are those that "have cumulatively significant impacts and should therefore be discussed in the same impact statement."¹⁸ Similar actions include those that have "common timing or

⁹ 43 U.S.C. §§ 1701 – 1785.

¹⁰ 42 U.S.C. §§ 4321-4370f.

¹¹ *Id.* at § 4332(2)(C).

¹² 40 C.F.R. § 1508.23.

¹³ 42 U.S.C. § 4321.

¹⁴ 40 C.F.R. § 1500.1(b).

¹⁵ *Id.* at § 1500.1(c).

¹⁶ *Id.* at §§ 1508.25, 1508.7, 1508.8.

¹⁷ *Id.* at § 1508.25(a)(1).

¹⁸ *Id.* at § 1508.25(a)(2).

geography.”¹⁹ In order to assess “significance,” NEPA requires consideration of “[w]hether the action is related to other actions with individually insignificant but cumulatively significant impacts.”²⁰

The three types of impacts to be studied in an environmental impact statement are those that are “direct,” “indirect,” and “cumulative.”²¹ Direct effects are those that “are caused by the action and occur at the same time and place.”²² Indirect effects are those “which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.”²³ A project’s “cumulative impact,” is

the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.²⁴

While the FPEIS uses the term “cumulative impacts” it does not identify such impacts. Instead, the FPEIS defers its analysis of the cumulative impacts of developing oil shale and tar sands to future analyses to be conducted on a lease-by-lease basis. This approach is inconsistent with NEPA.

B. Cumulative and connected impacts

One of the most glaring gaps in the FPEIS concerns identification of connected actions; a second is the BLM’s thin analysis of cumulative impacts. As discussed above, identifying and evaluating the cumulative and connected impacts arising from a federal action is a central component of NEPA. The BLM is required to consider not only the single proposed action – amending RMPs to designate lands available for leasing – but also connected actions (actions which are closely related) and cumulative actions (actions, which when viewed with other proposed actions, have cumulatively significant impacts).²⁵ Closely related actions include any reasonably foreseeable oil shale and tar sands project that would not occur “but for” authorization provided in the RMP.

Cumulative and connected impacts assessments help assure that FLPMA’s requirements regarding no degradation to the environment are met. Courts have held that there are situations where an agency must consider several related actions in a single NEPA document. The U.S. Court of Appeals for the Fifth Circuit held that in a cumulative impact analysis, an agency should consider “(1) past and present actions without regard to whether they themselves triggered NEPA responsibilities and (2) future actions that are ‘reasonably foreseeable,’ even if

¹⁹ *Id.* at § 1508.25(a)(3).

²⁰ *Id.* at § 1508.27(b)(7).

²¹ *Id.* at § 1508.25(c); *see also id.* at §§ 1508.7, 1508.8.

²² *Id.* at § 1508.8(a).

²³ *Id.* at § 1508.8(b).

²⁴ *Id.* at § 1508.7. *See also* *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1379 (9th Cir. 1998) (stating that with respect to a cumulative impacts analysis, an agency must provide “some quantified or detailed information” because “[w]ithout such information, neither courts nor the public . . . can be assured that the [agency] provided the hard look that it is required to provide.”).

²⁵ 40 C.F.R. § 1508.25

they are not yet proposals and may never trigger NEPA-review requirements.²⁶ The court noted that the applicable law “does not limit the inquiry to the cumulative impacts that can be expected from proposed projects; rather, the inquiry also extends to the effects that can be anticipated from “reasonably foreseeable future actions.”²⁷

Similarly, the U.S. Court of Appeals for the Ninth Circuit has specifically required analysis of activities on both public and private land, since both may impact federal resources; the court also found cumulative impacts analysis insufficient where it did not include foreseeable projects in the same geographical region.²⁸ Identifying these impacts is vital to the decision-making process as the “primary purpose” of the PEIS is to “insure that the policies and goals defined in [NEPA] are infused into the ongoing programs and actions of the Federal Government.”²⁹

A landscape level analysis of proposed commercial oil shale and tar sands development must likewise evaluate the distribution of resources and supporting facilities across the affected states. This analysis is a critical component of any NEPA analysis, even if site-specific analyses are deferred until authorization of specific projects. As the U.S. Court of Appeals for the Second Circuit has held that analyzing the overall environmental risks involved in transporting oil from off-shore leases was appropriate and necessary in a PEIS, although specific analysis of individual pipeline locations could be deferred.³⁰

C. Overview of actions and impacts the BLM must analyze in the PEIS

Once commercial development projects are planned, it is reasonably foreseeable that additional energy infrastructure and refining projects will be developed. The increased infrastructure and the clustering of projects to access and service the oil shale and tar sands leasing areas is likely to have a cumulatively significant effect on the resources in the area. Support facilities such as coal-fired electric power plants or other electricity sources must be analyzed for their impacts upon the lands, communities, and resources.

Mainline and branch power lines will be needed to run oil shale facilities. However, likely corridors and their impacts are not identified in the FPEIS, but were instead deferred to project-level NEPA analyses. Nor too were the likely emissions of greenhouse gases from these power plants or their contributions to global warming. Similarly, oil shale and tar sands development would require substantial new construction of regional and feeder pipelines and expansion of existing refineries to transport and process the kerogen and bitumen. These connected systems and their impacts were not analyzed in the FPEIS.

Other impacts and actions that should be addressed in a cumulative fashion include, but are not limited to:

1. road construction,
2. activities leading to soil and vegetation disturbance,

²⁶ See, *Fritiofson v. Alexander*, 772 F.2d 1225, 1245 (5th Cir. 1985).

²⁷ *Id.* at 1243

²⁸ See, *Natural Resources Defense Council v. U.S. Forest Service*, 421 F.3d 797, 815-16 (9th Cir. 2005); *Muckleshoot Indian Tribe v. U.S. Forest Service*, 177 F.3d 800 (9th Cir. 1999).

²⁹ 40 C.F.R. § 1502.1

³⁰ *County of Suffolk v. Secretary of Interior*, 562 F.2d 1368, 1376-1377 (2nd Cir. 1977) (It was “essential to consider and weigh the environmental aspects of transportation, as well as of exploration and production.”).

3. activities leading to changed habitat structure,
4. activities leading to habitat fragmentation, and
5. activities causing air or water pollution.

Similarly, given that cumulative actions are actions that, incrementally, have significant impacts, even if the individual impacts are minor, the BLM should broaden the scope of the FPEIS to include analysis of the cumulative effects of other actions and projects already approved under each RMP. First among many are oil and gas development.

We appreciate the enormous challenge Congress created when it directed the BLM to undertake a programmatic assessment of oil shale and tar sands development. Due to the paucity of information regarding the technologies to be used and the scale of development, the cumulative impacts are difficult to define. The BLM cedes this point in the FPEIS: “Analysis of the cumulative effects in this PEIS will be qualitative to reflect the limited and highly speculative character of the information available, and the limited nature of the decision to be made on the basis of this PEIS.”³¹ As BLM notes numerous times throughout the FPEIS, it is virtually impossible to identify with any certainty the scope of environmental, social and economic impacts that will result from oil shale development. Clearly, what the agency has not done is comply with applicable rules for dealing with situations in which necessary information is incomplete or unavailable.³²

Instead, the BLM’s opt-out is to note that there will be subsequent project-specific NEPA analyses. While that may be the agency’s intent, the FPEIS nevertheless amends existing RMPs, and the subsequent NEPA analyses the BLM will be driven by lease applications and thus will not necessarily address landscape level actions and associated impacts. Instead, there is ample precedent that the agency’s subsequent NEPA analysis for individual projects will be limited and will rely on this FPEIS to justify placement of projects in proximity to designated leasing areas. This approach contravenes NEPA and thus raises critical questions regarding BLM’s legal basis for amending the RMPs. As the courts have found, an insufficient cumulative or connected impact analysis of actions within a larger region will render NEPA analysis insufficient.³³

Accordingly, as the BLM undertakes this PEIS, it must remedy this deficiency to foster informed public participation in the RMP revision and informed decision-making by BLM.

D. Mitigating environmental impacts

At the most fundamental level, NEPA is intended to help public officials make decisions that are based on an understanding of environmental consequences, and to take actions that protect, restore, and enhance the environment.³⁴ Federal agencies are required, to the fullest extent possible, use all practicable means consistent with the requirements of NEPA to “restore and enhance the quality of the human environment and avoid or minimize any possible adverse

³¹ FPEIS, at 6-135.

³² See 40 C.F.R. § 1502.22.

³³ See, e.g., *Kern*, 284 F.3d at 1078.

³⁴ See 40 C.F.R. § 1500.1(b).

effects of their actions upon the quality of the human environment.”³⁵ A key element in meeting this mandate is developing and implementing mitigation measures.

Council on Environmental Quality (CEQ) regulations define mitigation as:

1. Avoiding the impact altogether by not taking a certain action or parts of an action.
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
5. Compensating for the impact by replacing or providing substitute resources or environments.³⁶

Effective mitigation starts at the beginning of the NEPA process, not at the end, and must be included as an integral part of the alternatives development and analysis process.

In addition to these long-standing regulations, in January 2011, CEQ issued new mitigation guidance.³⁷ The guidance stresses the importance of mitigation in the alternatives analysis, in project design, and in other contexts. This guidance clearly provides that mitigation measures be “explicitly described as ongoing commitments and should specify measurable performance standards and adequate mechanisms for implementation, monitoring, and reporting.”³⁸ A key element of determining mitigation effectiveness is establishing baseline resource conditions.

In general, the guidance directs agencies to:

1. commit to mitigation in decision documents when they have based environmental analysis upon such mitigation;
2. monitor the implementation and effectiveness of mitigation commitments;
3. make information on mitigation monitoring available to the public; and
4. remedy ineffective mitigation when the Federal action is not yet complete.

The mitigation measures identified in the FPEIS do not meet these standards. First, the measures identified are generic, speculative, and lack any assurance that if implemented will avoid, minimize, rectify, reduce, eliminate or compensate for impacts associated with oil shale or tar sands development. Instead the FPEIS states what the lessees might be required to do, but does not link mitigation measures with specific steps that should be taken in specific resource areas or over a larger landscape. Second, the FPEIS does not link cumulative impacts with mitigation measures.

These shortcomings must be remedied in the PEIS.

³⁵ *Id.* at 1500.2(f).

³⁶ 40 C.F.R. § 1508.20.

³⁷ 76 Fed. Reg. 3843 (January 21, 2011).

³⁸ *Id.*

E. Federal Land Policy Management Act

Any policies toward the leasing and development of oil shale and tar sands on federal public lands managed by the BLM must also comply with relevant aspects of FLPMA.³⁹ Congress enacted FLPMA “to provide guidance and a comprehensive statement of congressional policies concerning the management of the public lands”⁴⁰ FLPMA establishes a policy of “multiple use” management pursuant to which BLM must “recognize competing values,” which is to be done by “using the Act’s procedures in a dynamic, evolving manner to accommodate these competing demands.”⁴¹

FLPMA directs the BLM to manage public lands for multiple uses and sustained yield.⁴² The Secretary is required to “use and observe the principles of multiple use and sustained yield” in developing and revising land use plans.⁴³ “Multiple use” is defined as managing the lands so that the various resources (“recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values”) “are utilized in the combination that will best meet the present and future needs” of the public⁴⁴; “sustained yield” is defined as managing to maintain regular renewable resource outputs in perpetuity.⁴⁵

Congress also directed the BLM to conduct inventories of the public lands and to incorporate those inventories into management decisions.⁴⁶ The BLM is thus required to “take any action necessary to prevent unnecessary or undue degradation of the lands.”⁴⁷ RMPs, in turn, must “provide for compliance with applicable State and Federal air, water noise, or other pollution standards or implementation plans”⁴⁸ Implementing regulations specifically require that BLM ensure compliance with federal and state air quality standards.⁴⁹

These provisions are applicable to all resource uses and decisions affecting BLM lands.⁵⁰ It serves as foundation for all analyses in the PEIS and activities undertaken pursuant to RMPs.

III. Alternatives the BLM should evaluate

The FPEIS clearly provides commercial oil shale and tar sands development activities will directly displace other land uses from development areas.⁵¹ Development of these deposits is thus incompatible with other public land uses. The sheer amount of land BLM opened to commercial development promised extraordinary displacement of existing uses and public land values.

³⁹ 43 U.S.C. §§ 1701-1785.

⁴⁰ *Rocky Mtn. Oil & Gas Ass’n v. Watt*, 696 F.2d 734, 737 (10th Cir. 1982).

⁴¹ *Id.* at 738; *see also* 43 U.S.C. §§ 1701 - 1702(c).

⁴² 43 U.S.C. § 1732(a).

⁴³ *Id.* at 1712(c)(1).

⁴⁴ *Id.* at 1702(c).

⁴⁵ *Id.* at 1702(h); *see also* *Pub. Lands Council v. Babbitt*, 529 U.S. 728, 738 (2000) (discussing standards); *Pennaco Energy, Inc. v. U.S. Dept. of Interior*, 377 F.3d 1147, 1151 (10th Cir. 2004) (discussing standards).

⁴⁶ 43 U.S.C. §§ 1711(a) (inventories), 1712 (resource management planning).

⁴⁷ *Id.* at § 1732(b).

⁴⁸ *Id.* at § 1712(c).

⁴⁹ *See* 43 C.F.R. §§ 2920.7(b), 3162.5-1.

⁵⁰ 43 U.S.C. § 1732(b).

⁵¹ FPEIS at 4-17.

Displaced uses of public land that will result from this huge allocation of public resources to a single use include: recreation, mining, hunting, oil and gas production, livestock grazing, wild horse and burro herd management, communication sites, and ROW corridors. The most geologically prospective lands also overlap with important wildlife and plant habitat, lands with wilderness character, areas of critical environmental concern, other important ecological resources, unique geologic features, irreplaceable paleontological and cultural resources, as well as important watersheds and riparian areas. This time around, the BLM must protect other values and uses.

The following discussion sets out several environmental issues that the BLM should address in the PEIS in order to comply with current legal interpretation of agency responsibilities for preparation of a PEIS under NEPA. Further, protecting these resources and the resources discussed in subsequent sections represents good environmental stewardship.

In the PEIS, the BLM should evaluate the following alternatives:

- No leasing in wilderness, including citizen proposed wilderness
- No leasing in all designated and proposed areas of critical environmental concern
- No leasing in the Adobe Town Very Rare or Uncommon Area
- No leasing in sage-grouse core areas and other priority habitats
- Alternative C from the FPEIS
- Limiting development to deposits that yield 25 gallons/ton or more and are 25 feet thick

The BLM should also include Alternative A (“No Action Alternative”) from the FPEIS in this review.

A. Wilderness⁵²

The oil shale and tar sands Notice of Intent to Prepare a PEIS (NOI) provides that one of the alternatives the BLM shall review is “(1) All areas that the BLM has identified or may identify as a result of inventories conducted during this planning process, as lands containing wilderness characteristics.”⁵³ The NOI further provides “Lands that the BLM identifies as having wilderness characteristics will be considered during this planning initiative, as described above, and consistent with Secretarial Order No. 3310, dated Dec. 22, 2010, and BLM Manuals 6301 and 6302.”⁵⁴ As discussed below, the congressional funding limitation for fiscal year 2011 limiting implementation of S.O. 3310 does not relieve the BLM from either considering wilderness as part of this PEIS, or relieve the BLM from fulfilling its statutory obligations to inventory and manage federal lands for wilderness characteristics.

i. BLM must inventory for wilderness character and protect wilderness characteristics

The lands the BLM analyzed for commercial leasing in the FPEIS include lands with wilderness characteristics. Some of these lands are included in BLM inventories and would be protected from oil shale and tar sands development in the FPEIS; others are identified in citizen

⁵² In support of this discussion, please see Attachment 1, NRDC maps.

⁵³ 76 Fed. Reg. 21003, 21004 (April 14, 2011)

⁵⁴ *Id.*

inventories, and could be subject to commercial development. The BLM must inventory the resources of these public lands,⁵⁵ and in the land use planning process, including revisions of RMPs, take into account the inventory and determine which multiple uses are best suited to which portions of the planning area.⁵⁶ BLM's obligation to protect these wilderness quality lands is a foundation of FLPMA and sound land use planning.

FLPMA requires the BLM to maintain a current inventory of its resources and to regularly update that inventory. FLPMA directs that BLM to

prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values (including, but not limited to, outdoor recreation and scenic values). . . . This inventory shall be kept current so as to reflect changes in conditions and to identify new and emerging resource and other values. The preparation and maintenance of such inventory or the identification of such areas shall not, of itself, change or prevent change of the management or use of public lands.⁵⁷

This requirement stands despite the 2003 Norton-Leavitt settlement that rescinded the Wilderness Inventory Handbook, and the recent funding limitation Congress imposed prohibiting the BLM from implementing S.O. 3310 for fiscal year 2011. As the U.S. Court of Appeals for the Ninth Circuit recently held, wilderness characteristics are one of the resources of the public lands that the BLM must inventory under FLPMA, as confirmed by federal courts. As the Court stated,

wilderness characteristics are among the “resource and other values” of the public lands to be inventoried under § 1711. BLM's land use plans, which provide for the management of these resources and values, are, again, to “rely, to the extent it is available, on the inventory of the public lands, their resources, and other values.” 43 U.S.C. § 1712(c)(4).⁵⁸

In addition, the Ninth Circuit stated that it did not need to consider the legality of the 2003 Norton-Leavitt settlement, acknowledging that: “Wilderness values are among the resources which the BLM can manage under 43 U.S.C. §§ 1712 and 1732.”⁵⁹ In other words, BLM has ongoing obligations to fulfill FLPMA's mandate to inventory and manage the resources of the public lands.

In addition to the agency's legal obligations to inventory lands with wilderness characteristics, the BLM must make decisions regarding how to balance the management of resources on public lands, including wilderness-quality lands. Once the BLM identifies lands with wilderness characteristics, the agency should apply management to preserve those qualities under FLPMA and the Land Use Planning Handbook, notwithstanding the status of S.O. 3310.

⁵⁵ 43 U.S.C. § 1711

⁵⁶ 43 U.S.C. § 1712

⁵⁷ 42 U.S.C. § 1711(a)

⁵⁸ *Or. Natural Desert Ass'n v. BLM*, 531 F.3d 1114, 1119 (9th Cir. 2008).

⁵⁹ *Id.* at 1132.

ii. The BLM must protect lands with wilderness characteristics

In both Alternatives B and C of the FPEIS, the BLM excluded from commercial leasing all wilderness areas, wilderness study areas and other areas that are part of the National Landscape Conservation System (NLCS).⁶⁰ As the BLM explained, “certain lands within the oil shale and tar sands resource areas are excluded from commercial leasing on the basis of existing laws, regulations, Executive Orders (E.O.s), administrative land use plan designations as noted below, or withdrawals.”⁶¹ The NLCS lands include National Monuments, National Conservation Areas, Wild and Scenic Rivers, and National Historic and Scenic Trails.⁶²

We strongly support the BLM’s decision in the FPEIS to exclude these areas from commercial leasing. In addition, the BLM should exclude citizen proposed wilderness areas from commercial leasing.

In addition to the following details about Colorado and Utah, please see the section below titled “Recreational Areas in Wyoming.”

iii. Colorado proposed wilderness and wilderness-quality lands should be protected from oil shale development

BLM must consider protecting from oil shale development areas with wilderness character, including those outside of Wilderness Study Areas (WSA). Though we do not have a complete list of areas within the geologically prospective study area with wilderness character, all such areas should be protected from oil shale development. There was very little discussion about lands with wilderness character in the FPEIS, but, as discussed above, BLM does have a statutory obligation to maintain an active and updated inventory of wilderness quality lands and consider protecting those areas in management decisions.

A 2000 wilderness inventory undertaken for the Roan Plateau Planning Area, for example, found 19,322 acres of wilderness quality lands.⁶³ (That entire landscape has been included in federal wilderness legislation.) In a decision that has been challenged and remains unresolved, the BLM decided not to manage these areas to protect the wilderness character. Importantly, not all of the land inventoried in 2000 overlaps with the area opened to oil shale development in 2008, but 10,389 acres in the East Fork of Parachute Creek met the criteria for a WSA⁶⁴ and it was opened to oil shale development in the 2008 Plan. Because areas with wilderness character like the East Fork of Parachute Creek retain such a wealth of visual, botanical, wildlife, and ecological values, oil shale should be excluded from these areas. To the extent that the BLM does not have an up-to-date inventory of lands with wilderness character for any of the impacted Colorado field offices, the agency must undertake such an inventory and consider protecting existing wilderness characteristics by disallowing development of oil shale.

⁶⁰ FPEIS, at ES-7 (oil shale) and ES-8 (tar sands).

⁶¹ FPEIS, at 1-9.

⁶² FPEIS, at 2-24.

⁶³ Roan FEIS (2006), at 3-113.

⁶⁴ Roan Plateau RMPA (2002), at 20.

In addition, Colorado State Wildlife Areas should be protected from oil shale development. Six Colorado State Wildlife Areas (SWAs) abut BLM lands or overlap with BLM managed subsurface resources opened for oil shale development in 2008. These areas include: the Shell Oil SWA – hunting lease, and the Yellow Creek Unit, the Square S Summer Range Unit, the Square S Ranch Unit, the Little Hills Unit, and the North Ridge Unit of the Piceance SWA. These areas provide important habitat for wildlife as well as recreational opportunities and an economic draw for local communities. These areas must be protected from both direct and indirect impacts associated with oil shale development.

Finally, BLM should protect core and linkage areas within Heart of the West Wildland Network Design from oil shale development.⁶⁵ The Heart of the West conservation plan is a science- and GIS-based blueprint for sustainable development in the Wyoming Basins Ecoregion spanning southeast Idaho, southwest Wyoming, northwest Colorado and northeast Utah. BLM should develop an alternative that prevents oil shale and tar sands leasing and development in core areas and corridors identified through this rigorous science-base modeling.

iv. Utah proposed wilderness areas that should be protected from oil shale and tar sands development

The following discussion concerns areas proposed for wilderness protection in Utah. These areas should be protected from oil shale and tar sands development.

a. Dirty Devil and Fiddler Butte

The Dirty Devil and Fiddler Butte Citizen Proposed Wilderness (CPW) contain an abundance of archeological resources. Studies by the NPS and the BLM in this area have suggested that this region contains an average density of twenty-four archeological sites per square mile. This means that in the Dirty Devil region alone there are likely hundreds and hundreds of rock shelters, campsites, lithic scatters, stone tool quarries, and petroglyph sites.

The Dirty Devil CPW wilderness is home to antelope, bighorn sheep, and at least nine species of plants and animals identified as “sensitive” by the BLM. It is a landscape of narrow redrock canyons surrounded by vast slickrock bowls and cliffs. Plateaus above the canyons provide important habitat for plants and animals. This area was also frequented by outlaws; Butch Cassidy and the Wild Bunch were the most famous of the lawbreakers to hang out here. The Dirty Devil has served as the setting for many Western novels, including one by Zane Grey.

The Fiddler Butte area possesses some of the most spectacular scenery in the United States. This area, along with the Dirty Devil River CPW, would be totally inappropriate for tar sands development.

The BLM agrees that the majority of the relevant Dirty Devil and Fiddler Butte CPWs contain wilderness characteristics. The relevant resource management plan even manages portions of this area to preserve those wilderness characteristics.

⁶⁵ http://www.voiceforthewild.org/Heart_of_the_West/HeartoftheWestPlan.pdf (last accessed May 11, 2011)

b. White Canyon/Fort Knocker Canyon⁶⁶

Each year nearly 100,000 visitors explore Natural Bridges National Monument, searching for the solitude, beauty, and silence that are unique to the Colorado Plateau. Few of these visitors realize that the 7,600-acre national monument is surrounded by thousands of acres of BLM wild lands including the drainages of White Canyon.

White Canyon has carved a maze of canyons deep into the Cedar Mesa Sandstone layer. These canyons are among the world's foremost displays of erosion sculpting, and the upper part of White Canyon was included within Natural Bridges National Monument in recognition of this distinction. The sinuous canyons on the BLM lands alternately narrow down into cool, dark, armspan-width slots and then widen again into coves littered with 40-ton house-sized rocks and pocket forests of cottonwood, ponderosa, and fir.

The canyon walls are honeycombed with alcoves, arches, windows, hanging gardens, and grottoes; the canyon floors are riddled with potholes. In places, natural spring water forms deep pools, and occasional rainstorms bring torrents of floodwater raging through the boulder gardens and thundering over pour-offs in spectacular waterfalls. Well over 100 miles of narrow, winding canyons in the White Canyon proposed wilderness complex (including White Canyon, Fort Knocker Canyon and Tuwa Canyon) form a network so labyrinthine that outstanding solitude is assured. Fort Knocker Canyon winds through sandstone bench lands surrounded by thousand-foot high mesas and buttes, and feeds into the lower reaches of White Canyon before it flows into the Colorado River arm of Lake Powell. This remote area is becoming internationally recognized for its dark night skies, offering some of the best stargazing in the world.

White Canyon's intermittently flowing water is an attraction for wildlife, and surely attracted the Ancestral Puebloans to the area, as remnants of their culture, ranging from scattered stone-working sites to impressive cliff dwellings, are located throughout the proposed wilderness.

The Glen Canyon/San Juan River area contains significant cultural resources.

The cultural resources found within the jurisdiction of the [Monticello Field Office] constitute some of the most aesthetically appealing and scientifically significant resources anywhere on the Colorado Plateau. The more than 26,000 documented archaeological sites in the area, the majority on BLM-administered lands, constitute the most significant concentration of cultural resources in the state of Utah. The extraordinary number and density of sites (cf. DEIS 1-4) makes the region among the most significant concentrations of archaeological sites anywhere in the western United States.⁶⁷

⁶⁶ See Utah Wilderness Inventory, at 94 (1999) (describing Fort Knocker Canyon).
<http://www.access.gpo.gov/blm/utah/pdf/se94.pdf>. (last accessed May 11, 2010)

⁶⁷ Colorado Plateau Archaeological Alliance Comments re: Monticello DEIS/DRMP at 3 (submitted Jan. 31, 2008).

A more recent report prepared by the Colorado Plateau Archaeological Alliance entitled “Farming and Foraging on the Southwestern Frontier,” further details the significant cultural resources found within the proposed mater leasing plan for this area.⁶⁸

c. Bitter Creek⁶⁹

The Bitter Creek proposed wilderness unit straddles the Colorado/Utah state lines high in the remote Eastern Book Cliffs. The area contains spectacular scenic vistas and offers sublime opportunities for solitude. Deep canyons cut through the pale Mesa Verde sandstone, and crenellated ridges buttress the sky. Within the unit, elevations range from 6,000 to 8,000 feet, and canyon slopes rise 600 to 800 feet. Bitter Creek and Rat Hole Canyon, two major drainages, wind through the area, each extending a number of side canyons like fingers into the surrounding mesas.

Vital riparian zones support box-elders and aspens, willows, sedges, and various reptile and amphibian species along the waterways in the canyon bottoms. Many wet meadow areas punctuate the folded landscape and support communities of grasses and wildflowers, insects and birds. At lower elevations, bench- and ridge-top vegetation consists of sagebrush, rabbitbrush, greasewood, and a variety of grasses. Above 7,400 feet, the drainages are dominated by pinyon-juniper woodlands on south facing slopes, and by Douglas-firs and quaking aspens on the northern aspects. Peregrine falcons and golden eagles nest in the cliffs and hunt in the river drainages, deer and elk forage along the mesa tops and in the canyons, and black bears roam the broken terrain.

With its convoluted topography, screening vegetation, and wide variety of plant and animal species, the Bitter Creek Addition provides outstanding opportunities not only for solitude, but also for primitive and unconfined recreation. Hunting, fishing, camping, hiking, photography, and wildlife viewing are all popular in the area. Backpacking and horseback riding opportunities abound in the area's many and extensive scenic side canyons.

In addition to the inspiring scenery and vital habitat, a number of pictograph and petroglyph sites, as well as historic homesteads, grace the area, lending it archaeological and historical significance. Queen Chipeta, wife of Ute Chief Ouray, was intelligent, talented, and hard working, a model of constancy and courage during a desperate time. She acted as a messenger of goodwill between Indians and Whites, meeting with President McKinley and performing many acts of kindness and sacrifice, and thus earning her place among tribal leaders. Her eponymous canyon traverses the heart of the Bitter Creek Wilderness in Utah and provides access to many side canyons. Her legend informs the rich cultural heritage of the area.

⁶⁸ A copy of “Farming and Foraging on the Southwestern Frontier” is available online at <https://research.wsulibs.wsu.edu:8443/dspace/handle/2376/2643>.

⁶⁹ In its 1999 Utah Wilderness Inventory, BLM determined that the so-called “Cripple Cowboy” wilderness inventory area had wilderness characteristics, <http://www.access.gpo.gov/blm/utah/pdf/ne142.pdf>, a determination BLM confirmed in the Vernal RMP – along with acknowledging for the first time that the citizen’s “Bitter Creek” unit have wilderness characteristics. Vernal PRMP/FEIS at 3-45 to -47. *See generally* http://www.blm.gov/ut/st/en/fo/vernal/planning/supplemental_rmp/background_documents.html. The citizen’s proposed “Bitter Creek” unit includes both the Cripple Cowboy and Bitter Creek units.

In addition to documenting wilderness characteristics, Utah BLM found the Bitter Creek and Bitter Creek-P.R. Springs area to meet relevance and importance criteria for designation as an area of critical environmental concern (ACEC) based on these same values, stating:

Relevance Criteria: The area has relevance due to the existence of an old growth forest, significant cultural and historic resources, important watershed, and critical ecosystem for wildlife and migratory birds.

Importance Criteria: The relevant values described above have substantial significance due to qualities that make it fragile, sensitive, rare, irreplaceable, exemplary, and unique. The ancient pinyon forest is over 1,200 years old, and includes the Utah champion pinyon, which is irreplaceable. Within the unit is the ancestral home of the Northern Ute Tribe when they were relocated from Colorado in the late 1800s. Many features, including graves, are within the potential ACEC, but specific locations are not known. Also in the potential ACEC is the most extensive wetland in the multi-state Book Cliffs. It exists because of a uniquely perched water table. This wetland and surrounding watershed is unique as a critical ecosystem for migratory birds and a wide variety of wildlife.⁷⁰

d. Dragon Canyon

The Dragon Canyon proposed wilderness unit consists of several large canyons that run south to north to Evacuation Creek. These include Davis, Side, Atchee, and Dragon Canyons in Utah, and Little Whiskey Creek in Colorado.

In this area, vital riparian zones support box elders and aspens, willows, sedges, and various reptile and amphibian species along the waterways in the canyon bottoms. Many wet meadow areas punctuate the folded landscape and support communities of grasses and wildflowers, insects and birds. At lower elevations, bench- and ridge-top vegetation consists of sagebrush, rabbitbrush, greasewood, and a variety of grasses. Above 7,400 feet, the drainages are dominated by pinyon-juniper woodlands on south facing slopes, and by Douglas-firs and quaking aspens on the northern aspects. Peregrine falcons and golden eagles nest in the cliffs and hunt in the river drainages; deer and elk forage along the mesa tops and in the canyons; and black bears roam the broken terrain. Other wildlife species include Townsend's big-eared bat, dwarf shrew, ringtail cat, Lewis' woodpecker, and ferruginous hawk and black bear fall concentration area. Expanding upon the important watershed values in Utah, the area provides protection for Whiskey Creek, Little Whiskey Creek, Tent Creek, Davis Creek, and West Evacuation Creek.

Significant cultural resources are found within the broader area. According to the Colorado Office of Archaeology and Historic Preservation there are forty-three registered sites with the Colorado portion of the Dragon Canyon unit alone. The type and significance of these sights is not available to the public. It is likely that the Utah portion of the Dragon Canyon unit also contains a similarly-high density of archaeological sites.

Superior visual resources exist in the area. These values are also significant, relevant and important given the threats these and similar values face in the broader landscape. The Utah

⁷⁰ Vernal RMP Draft RMP at G-4 to -5.

BLM found the Utah portions of the Dragon/Atchee/Davis Canyon area to have relevant “Scenic, cultural resources and natural systems.”⁷¹ Within the broader context of the Piceance Basin and the threats to the area these values are of substantial significance and must be protected.

e. Lower Bitter Creek

The Lower Bitter Creek proposed wilderness unit is dominated by Lower Bitter Creek itself, with its rich riparian corridor and intermittent stream that runs northwest to southeast through the center of the unit. Several deep washes enter Bitter Creek as it passes through this unit. In addition, some portions of the unit are desert landscape with sparse vegetation, while other locations support thick pinyon and juniper forests intermixed with sagebrush parks. The unit also has several prominent unnamed rock buttes that present striking features in the landscape.

Bitter Creek and its drainage provide excellent wildlife habitat for many State sensitive species including ferruginous hawk, burrowing owl, sage grouse, bald eagle, dwarf shrew, ringtail cat, black-footed ferret, as well as big game species such as mule deer and elk. Occasionally, a cougar or a bobcat can be seen. This unit may also be home to the Graham Beardtongue (penstemon *Grahamii*), a state sensitive plant species. A short day hike to several of the buttes provides unsurpassed views of this unique geologic region.

In 2007, the Vernal Field Office determined that 11,417 acres of the proposed Lower Bitter Creek wilderness unit contain wilderness characteristics.

f. Sunday School Canyon

The Sunday School Canyon proposed wilderness unit is adjacent to the northern boundary of the Winter Ridge WSA and is bounded topographically by Wood Canyon on the south, Buck Canyon to the north, the Willow Creek drainage on the west, and Seep Ridge to the east. Beyond adopting the name of its most prominent feature, the unit encompasses the entire Sunday School Canyon drainage. Upper portions of this canyon system are broad, shallow, and park-like. The canyon becomes increasingly entrenched as one proceeds down through its multiple layers of exposed geology. During wetter periods, the area is drained by an intermittent stream that runs through this canyon.

Pinyon and juniper forests that dominate the higher elevations within the unit become less prominent in lower areas. Other vegetation, including sagebrush, cactus, yucca, rabbitbrush, and native grasses are interspersed throughout the unit. The transition from lower desert to higher forested areas is important to wildlife and primitive recreation opportunities.

Wildlife viewing opportunities abound, as the unit is critical deer and elk winter habitat. In addition, on a hike up a canyon or along a ridge, a visitor may observe wild horses galloping through the landscape, or raptors circling for prey or soaring on thermals. The unit also contains either substantial, high-value, or substantial habitat for certain species of special concern, including: the state threatened ferruginous hawk, bald eagle, the burrowing owl, big free-tailed bat, sage grouse, Lewis’ Woodpecker, ringtail cat, dwarf shrew, short-eared owl, Townsend’s big-eared bat, and Utah Milk Snake. Special status plant species within the unit include the federally threatened Uinta Basin Hookless cactus, the Graham’s beardtongue (an ESA

⁷¹ Vernal RMP DEIS, at G-7.

candidate), and the Barneby's columbine, the Caespitose Cats-eye, the Grass Goldenweed, and Garrett's beardtongue.

The varied topography, wildlife, scenic vistas, and vegetation combine to create an overwhelmingly natural landscape with outstanding opportunities for solitude and a primitive, unconfined type of recreation. The unit offers incredible sight-seeing, with dramatic views of several prominent geological features including Big Pack Mountain, the Uinta Mountains, the Willow Creek drainage, the southern portions of Seep Ridge, and Bates Knolls. In addition, the potential for cultural sites exists along Willow Creek and its side drainages, as well as along Seep Ridge.

g. Seep Canyon

The Seep Canyon proposed wilderness unit is comprised of sandstone rimrocks, towering cliffs, broken slopes, broad valleys, and endless ridge lines. Besides Seep Canyon and Seep Ridge, other predominant canyons and ridges include Park Canyon, Park Ridge, Crooked Canyon, and many other side canyons and nameless draws and ridge lines. The several canyon systems drain north toward Sweet Water Canyon. The scenery created by this topographic feature is both stunning and intricate, and more distant views of the prominent buttes within the Lower Bitter Creek proposed wilderness unit, and McCook Ridge are spectacular.

Dense pinyon and juniper forests that dominate the landscape are interspersed with sagebrush, grasses, oakbrush, cacti, yucca, and other species. Isolated stands of aspen and Douglas fir are also present within the unit.

The Seep Canyon wilderness unit is important habitat for elk, deer, and several other wildlife species; cougar and golden eagles are also present. In addition, the area overlaps lands subject to a long-term black bear study by Brigham Young University and sponsored by the Utah Division of Wildlife Resources. The area contains habitat for the federal and state threatened Mexican spotted owl, the federal and state endangered willow flycatcher, and the state threatened Ferruginous Hawk. The area also provides critical habitat for the northern goshawk, and ringtail cat. It is also high value habitat for the bald eagle, burrowing owl, Lewis' woodpecker, Williamson's sapsucker, Townsend's big-eared bat, and the Utah milk snake.

h. Turtle Canyon, Desbrough, and Desolation Canyon

All three of these units are found in the western Book Cliffs and West Tavaputs Plateau. They are remarkable areas, rich with wildlife habitat, soaring escarpments, and delicate ecology. The BLM agrees that these areas contain wilderness characteristics. Oil shale or tar sands development in any of these areas would destroy the primitive character of this area. These three units help form possibly the largest unprotected roadless areas in the contiguous United States.

i. Sids Mountain

The Sids Mountain citizen wilderness proposal area encompasses a large portion of the remarkable San Rafael Swell. This large geologic uplift is a maze of canyons, cliffs, shrubland, and arroyos. It is home to the largest population of desert bighorn sheep in Utah.

v. Wyoming proposed wilderness areas that should be protected from oil shale and tar sands development

The following areas are proposed for wilderness protection in Wyoming. These areas should be protected from oil shale and tar sands development: Adobe Town, Kinney Rim North, Kinney Rim South, Red Creek Badlands, Devils Playground, Buffalo Hump, and Sand Dunes, including citizens' proposed additions to existing WSAs. These lands are identified on GIS datasets included as Attachment 13.

B. Areas of Critical Environmental Concern (ACEC)⁷²

FLPMA defines ACECs as “areas within public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life or safety from natural hazards.”⁷³ Under FLPMA, BLM is obligated to “give priority to the designation and protection of areas of critical environmental concern [ACEC].”⁷⁴

For potential ACECs, management prescriptions are to be “fully developed” in the RMP.⁷⁵ ACECs also include Research Natural Areas (RNAs), established for their significant biological and physical features, including plant or animal species or geological, soil or water features. RNAs have “ecological or other natural history values of scientific interest” and are managed for research and educational purposes. Outstanding Natural Areas (ONAs) are another type of ACEC, established to preserve scenic values and natural wonders. ONAs contain unusual natural characteristics and are managed primarily for educational and recreational purposes.

In the FPEIS, BLM opened all ACECs to application for commercial leasing, except for lands where mineral development is not currently allowed. This commitment to protect only a portion of ACECs is insufficient. While all ACECs are designated to protect different and unique values, commercial-scale oil shale and tar sands development would undermine the values for which these ACECs were designated.

As the FPEIS identified, oil shale and tar sands country includes important ACECs. We therefore strongly support the BLM's decision to revisit its decision in the FPEIS to limit protection of these public lands to only those areas currently closed to mineral development.

In addition to the following details about Colorado and Utah, please see the section below titled “Recreational Areas in Wyoming.”

i. Colorado ACECs that should be protected from oil shale development

East Fork Parachute Creek – The Area was designated as an ACEC for visual, wildlife, fisheries, botanical and ecological values.⁷⁶ East Fork Parachute Creek is a biologically

⁷² In support of this discussion, please see Attachment 1, NRDC maps.

⁷³ 43 U.S.C. § 1702(a).

⁷⁴ 43 U.S.C. § 1712(c)(3).

⁷⁵ Manual 1613, Section .22 (Develop Management Prescriptions for Potential ACECs).

⁷⁶ Roan Plateau Plan Amendment (2002), at 20.

significant tributary to the Colorado River.⁷⁷ Any oil shale development in this area will likely have significant impacts on the important values for which this ACEC was designated.

The Creek provides year-round habitat for Colorado River Cutthroat Trout (CRCT), the only native trout in the Colorado River basin. The CRCT has been designated a “special status species” by the BLM and is classified as a “sensitive species” by Regions 2 and 4 of the US Forest Service, and the states of Colorado, Utah, New Mexico and Wyoming.⁷⁸

East Fork Parachute Creek is also identified as one of the five areas containing conservation populations by the *Conservation Agreement and Strategy for Colorado River Cutthroat Trout in the States of Colorado, Utah, and Wyoming*.⁷⁹ These populations also meet the BLM’s own criteria for a conservation population.⁸⁰ The Conservation Agreement gives highest priority for management and protection to streams identified as containing conservation populations. Populations of CRCT in East Fork Parachute Creek are at least 90% genetically pure.⁸¹ The BLM considers the entire watershed to be important to the long-term functionality of vital ecosystem processes that maintain upland and stream habitats important to these fishes.⁸² Also, the BLM declared, “these streams are regionally and nationally important producers of native, genetically pure and naturally reproducing Colorado River cutthroat trout,” going on to proclaim that these streams should be given the “highest priority for management and protection.”⁸³

The importance of these trout populations is clear. This area must be protected from oil shale development in order to ensure the subspecies continues reproducing and recruiting. Oil shale development will likely result in increased sedimentation, reductions in water quantity and quality, ground water flow alteration, and increased likelihood of water contamination with toxic byproducts. These impacts will add stresses to CRCT populations and, in so doing, may undermine one of the values this ACEC was designated to protect.

Other values for which this ACEC was designated include scenery as well as unique and rare plant communities. Of special note is a 200-foot canyon waterfall. The BLM has described the waterfall as a “national park quality scenic attraction.” The ROD for the Designation of ACECs for the Roan RMPA and EIS designated the lower stretches of the East Fork of Parachute Creek as a VRM 1.⁸⁴

A rare community of Mancos columbine, and a BLM “sensitive plant,” Eastwood’s monkeyflower, are also present in the unique hanging gardens in this ACEC. Also found are

⁷⁷ ROD Designating ACECs for the Roan Plateau RMPA and EIS (2008), at 5.

⁷⁸ *Conservation Status of Colorado River Cutthroat Trout*, USDA Forest Service (1996), at 1; Available at: http://www.fs.fed.us/rm/pubs_rm/rm_gtr282.pdf.

⁷⁹ Available at: <http://www.USFWS.gov/mountain-prairie/species/fish/crct/CRCT/>.

⁸⁰ A conservation population is defined as: “A reproducing and recruiting population of native cutthroat trout that is managed to preserve the historical genome and/or unique genetic, ecological, and/or behavioral characteristics within a specific population and within geographic units.” See Roan Plateau Planning Area Proposed Plan/Final EIS, pp. 3-114.

⁸¹ Roan Plateau Plan Amendment (2002), at 20.

⁸² *Id.*

⁸³ *Id.*

⁸⁴ ROD (2008), at A-8.

several plant communities such as the Colorado blue spruce/red osier dogwood, the boxelder, narrowleaf cottonwood, red osier dogwood community, and the Indian ricegrass shale barrens community. These communities are considered rare globally and in Colorado.

There are also a few imperiled plants in this ACEC that may be particularly susceptible to oil shale development. Utah fescue, for example, is a perennial grass and an oil shale endemic species found within East Fork Parachute Creek ACEC. Hanging garden sullivantia is found in this area. Southwest stickleaf, a BLM sensitive species, is an oil shale endemic that frequently occurs in the area. The Roan Plateau Final EIS makes it clear that this ACEC “contains a diversity of rare or uncommon riparian plant communities and BLM sensitive plant species.”⁸⁵ The EIS goes on to say: “the rare plants and plant communities found in this drainage are of excellent condition and abundance and are vulnerable to adverse change.”⁸⁶

Trapper/Northwater Creek ACEC – This area was designated for wildlife, fisheries, botanical and ecological values, and all values therein should be protected. Trapper and Northwater Creeks are tributaries to the Colorado River, and the creeks provide year-round habitat for CRCT. This ACEC is a critical conservation area for the CRCT. Three of the five conservation populations of CRCT that exist atop the plateau are found within this ACEC. Included in these are “core conservation populations,” identified by a genetic purity of 99% or higher.⁸⁷

The BLM considers the entire watershed vital to the long-term functionality of ecosystem processes that maintain upland and stream habitats important to these fishes.⁸⁸ The BLM also said, “These streams are regionally and nationally important producers of native, genetically pure and naturally reproducing Colorado River cutthroat trout.”⁸⁹ The nearly pure genetic populations of CRCT that exist in this area are irreplaceable, and should be protected from any habitat degradation that may accompany development of oil shale in the area.

Botanical and ecological values sought to be protected in this ACEC include hanging garden sullivantia and Utah fescue. Combining known occurrences of hanging garden sullivantia in the Trapper/Northwater Creek ACEC with known occurrences in the East Fork Parachute Creek ACEC accounts for 62% of total known occurrences.⁹⁰ Utah fescue is a perennial grass and an oil shale endemic. The Indian ricegrass shale barrens community can also be found in this ACEC. This community is found in only three other Western Colorado counties.⁹¹

The important CRCT populations as well as rare plant communities and species in this ACEC, should be protected. Opening this area to oil shale development may undermine protection of these values and undermine stated BLM management priorities.

⁸⁵ Roan Plateau FEIS (2006), at 3-116.

⁸⁶ *Id.*

⁸⁷ *Id.* at 3-116.

⁸⁸ Roan Plateau Plan Amd. (2002), at 27.

⁸⁹ Roan Plateau FEIS (2006), at 3-116.

⁹⁰ *Id.* at 3-117.

⁹¹ *Id.*

The Duck Creek, Ryan Gulch, Dudley Bluffs ACECs – These areas are located within the White River Field Office in the northern portion of the Piceance. These ACECs provide habitat for several federally and state-listed threatened plant species and candidate species.⁹² Federally threatened, endangered, proposed, and candidate species include the Dudley Bluffs bladderpod, the Piceance twinpod, the Ute-lady’s tresses orchid, the Graham beardtongue, and the White River beardtongue.

Along with important and imperiled plant species, these ACECs also retain unique and irreplaceable cultural resources.⁹³ Among cultural resources of note is a Wickiup Village in and around the Duck Creek ACEC.⁹⁴ This village is listed on the National Register of Historic Places and is one of the cultural resources that should remain unharmed by oil shale development. Other cultural resources in these ACECs identified by the cultural resource interpretation program undertaken by the White River Field Office should also be preserved.

ii. Potential ACEC’s in Colorado that should be declared off-limits from oil shale development

The FPEIS provides “potential ACECs that are currently under consideration for designation as part of ongoing land use planning efforts would be available for application for commercial leasing in the future.”⁹⁵ Given the critical nature of environmental values at risk in these ACECs and the BLM’s admission that oil shale development is incompatible with other uses, this decision is extremely troubling. At the very least BLM should defer a final decision on availability for oil shale leasing until a final determination has been made about ACEC designation in the RMP process.

Snake John Subcomplex of the Coyote Basin Complex – Portions of the Snake John Subcomplex that occur in the White River Field Office were nominated by the Center for Native Ecosystems (CNE) in 2007 due to recent mapping of white-tailed prairie dogs.⁹⁶ This area and this habitat should be protected from oil shale development.

The Snake John Subcomplex is also important habitat for the endangered black-footed ferret. The black-footed ferret is one of the most endangered mammals in North America. Ferrets historically occupied more than 100 million acres of western grasslands, from the Rocky Mountains eastward throughout the Great Plains, but are now reduced to a handful of reintroduction sites in the wild. Healthy ferret populations require very large prairie dog complexes. Dramatic prairie dog declines have taken a brutal toll on the ferret. Prairie dogs make up 90% of the ferret’s diet.

The Coyote Basin complex is thought to have been among the most robust white-tailed prairie dog colonies in Colorado historically. Reintroduced black-footed ferrets currently occupy the Wolf Creek complex in Colorado, the Coyote Basin complex in Utah and Colorado, and the Snake John complex in Utah. These complexes constitute the most important habitat for white-

⁹² DPEIS at 3-125.

⁹³ *Id.*

⁹⁴ White River Field Office RMP Amd. (2007), at 4-69.

⁹⁵ FPEIS, at 4-21.

⁹⁶ Attachment 2.

tailed prairie dogs and black-footed ferrets in Colorado and Utah, and are within the portions of the white-tailed prairie dog's range in Utah and Colorado that are expected to see the most substantial increases in oil and gas development over the next 20 years. These areas were also opened to oil shale development through the FPIES and RMPs. In areas where energy development overlaps occupied white-tailed prairie dog habitats, the resulting habitat loss and fragmentation will have negative effects on individuals and populations, including mortality, noise disturbance, and habitat loss and fragmentation. There is a threshold level at which point habitat loss and fragmentation will threaten local white-tailed prairie dog populations and reduce prairie dog abundance to a level that is too low to provide an adequate prey base for black-footed ferrets.

In addition to being a federally listed endangered species, black-footed ferrets are a Colorado Division of Wildlife Endangered Species and a Comprehensive Wildlife Conservation Strategy Science Forum Species of Most Concern. The fact that the endangered black-footed ferret is dependent on healthy populations of white-tailed prairie dog warrants special management of the habitat that these species rely upon to protect them from oil shale development.

Dudley Bluffs bladderpod and twinpod habitat outside of existing ACECs – There are occurrences of Dudley Bluffs bladderpod and Dudley Bluffs twinpod outside of existing ACECs. These areas were nominated as ACECs by the CNE in 2007.⁹⁷ In that nomination, CNE recommended 300-foot buffers protecting all known occurrences of these plants to ensure ongoing function of ecosystem processes. USFWS's 1993 recovery plan and the agency's 2008 5-Year Review of the Dudley Bluffs bladderpod and Dudley Bluffs twinpod listed oil shale development as "the primary threat to both species..."⁹⁸ The Review called oil shale development an "imminent" threat.⁹⁹ BLM's own analysis lists threats to these plants associated with oil shale development:

...direct injury and mortality of individuals, soil and seed bank disturbance and removal, vegetation clearing, habitat fragmentation, dispersal blockage, alteration of topography, changes in drainage patterns, erosion, sedimentation from runoff, oil and contamination spills, fugitive dust, increased human access and human collection, spread of invasive plant species, air pollution, and loss of pollinator habitat.¹⁰⁰

In the USFWS's 5-year Review the agency estimated that 36% of known occupied habitat for both the bladderpod and the twinpod is not protected by ACEC designation and that "[p]ermanent protective land management designations are necessary on all, or nearly all, occupied BLM land in order to fully achieve recovery."¹⁰¹ In other words, protection of occupied Dudley Bluffs bladderpod and twinpod habitat in areas proposed for ACEC designation are necessary to ensure recovery of these listed species. These areas should be unavailable for oil shale development.

⁹⁷ *Id.*

⁹⁸ See <http://www.USFWS.gov/mountain-prairie/species/plants/dudleybluffs/Final5YearReview.pdf>, at 12.

⁹⁹ *Id.*

¹⁰⁰ Bureau of Land Management-White River Field Office. 2007. Piceance Development Project Assessment and Decision Record CO-110-2005-219-EA. 316 pp. See also, <http://www.USFWS.gov/mountain-prairie/species/plants/dudleybluffs/Final5YearReview.pdf>, at 13.

¹⁰¹ See <http://www.USFWS.gov/mountain-prairie/species/plants/dudleybluffs/Final5YearReview.pdf>, at 5.

Graham's Penstemon habitat outside the Raven Ridge ACEC – In 2007 CNE petitioned for expansion of the existing Raven Ridge ACEC to include a USFWS designated critical habitat unit for Graham's penstemon. The petition included half-mile buffers around all known Graham's penstemon occurrences per recommendation of Dr. Vince Tepedino of the Logan Bee Lab. Half-mile buffers are necessary to protect Graham's penstemon pollinators. Again, these areas should be closed to oil shale development.

Narrow-stem gilia habitat outside the existing Lower Greasewood ACEC – In 2007 CNE petitioned for expansion of the existing Lower Greasewood ACEC to include known additional occurrences of narrow-stemmed gilia. Known occurrences should be protected from oil shale development with 300-foot buffers.

Narrowleaf evening primrose habitat outside existing ACECs – In 2007 CNE petitioned for ACEC designation of two known narrowleaf evening primrose occurrences near existing and proposed ACECs in the White River Field Office. The petition also recommended a 300-foot buffer around known occurrences. These proposed ACECs should be protected from oil shale development.

White-tailed prairie dog complexes – In addition to BLM-surface portions of the Snake John Subcomplex of the Coyote Basin Complex, in 2007 CNE also nominated for ACEC designation all other BLM-surface portions of white-tailed prairie dog complexes constituting 5000 acres or more (including both historically and currently occupied acreage) within the White River Field Office.

iii. Potential ACECs in Utah that should be declared off-limits from oil shale and tar sands development

The following potential ACECs in Utah that the BLM identified in Table 3.1.1-10 of the FPEIS should also be protected from oil shale and tar sands development:

Bitter Creek and Bitter Creek/PR Springs – This 147,425-acre potential ACEC is located high in the remote Book Cliffs of eastern Utah. The Vernal RMP considered this ACEC in order to protect “old-growth pinyon pine, cultural resources, historical features, and watersheds.”¹⁰² All of these relevant values would be severely impacted by oil shale or tar sands development.

Nine Mile Canyon – Nine Mile Canyon is often referred to as the world's longest art gallery for good reason. This stunning area is replete with cultural resources. Few areas have a higher concentration of known cultural resources in such a limited place.

This potential ACEC is split between the Price and Vernal field offices. The Price RMP considered an ACEC up to 49,000 acres in size.¹⁰³ The Vernal RMP considered an ACEC that

¹⁰² Vernal Proposed RMP and Final EIS at 4-428.

¹⁰³ Price Proposed RMP and Final EIS at 2-116.

would have included 81,168 acres.¹⁰⁴ The BLM identified this area because of its world-class archeological treasures. It includes “Fremont, Ute, and Archaic rock art and structures.”¹⁰⁵

Although both the Price and Vernal RMPs designated an ACEC that would protect some of the resources of this area the designated ACEC is smaller than potential ACECs for this area that were considered in both plans.

Main Canyon – Main Canyon is a large, potential ACEC that was considered in the Vernal RMP. This potential ACEC covers 100,915 acres. Sitting in the heart of the remote Book Cliffs region, the Main Canyon ACEC is home to crucial habitat for deer and elk.¹⁰⁶ It also contains sites of the historical Northern Ute migration route.

Dirty Devil/North Wash – This large potential ACEC covers some of the most spectacular scenery on the Colorado Plateau. The Richfield RMP considered a potential ACEC that would have designated 205,300 acres of land for the protection of such values as scenery, cultural resources, paleontological resources, wildlife, and special status species.¹⁰⁷ The Mexican spotted owl is among the sensitive species that make their homes in this potential ACEC.¹⁰⁸

White River – The Vernal RMP included a potential ACEC of 47,130 acres surrounding the deep canyon of the White River. This potential ACEC would have protected “unique geologic formations with spectacular vistas and the high-value river riparian ecosystem.”¹⁰⁹ The White River “provides critical habitat for the endangered Colorado pikeminnow, as well as habitat for other threatened, endangered, and sensitive species, including the razorback sucker, flannel mouth sucker, roundtail chub, Yellow-billed Cuckoo, Peregrine Falcon, and Bald Eagle.”¹¹⁰

Coyote Basin-Kennedy Wash, Coyote Basin-Coyote Basin, Coyote Basin-Myton Bench, and Coyote Basin-Snake John – This complex of potential ACECs in the Vernal Field Office would provide protection for a myriad of sensitive species. Those special species that use this area include the pronghorn, bobolink, ferruginous hawk, peregrine falcon, sage grouse, long-billed curlew, grasshopper sparrow, short-eared owl, big free-tailed bat, black-footed ferret, ringtail cat, and dwarf shrew.¹¹¹

Four Mile Wash – This 50,280-acre potential ACEC is located along the Green River, just north of Desolation Canyon. It includes “high-value scenery, riparian ecosystems, and special status fish species” as resources worthy of protection.¹¹² This potential ACEC includes amazing examples of more recent rock art. For example, visitors to this area can find representations of railroad trains drawn by Utes.

¹⁰⁴ Vernal Proposed RMP and Final EIS at 4-434.

¹⁰⁵ *Id.*

¹⁰⁶ *Id.* at 4-435.

¹⁰⁷ Richfield Proposed RMP and Final EIS at 2-121.

¹⁰⁸ *Id.*

¹⁰⁹ Vernal Proposed RMP and Final EIS at 4-433.

¹¹⁰ *Id.*

¹¹¹ *Id.* at 4-430.

¹¹² *Id.*

Sids Mountain Potential ACEC – The Sids Mountain potential ACEC was identified by the BLM as containing outstanding scenery with a large diversity of landforms and colors. “Landforms include rounded domes, high truncated buttes, and vertical cliffs dissected by deep canyons. The change in form and elevation is highly visible.” The BLM also stated that “[v]ivid colors range from light buff and brown sandstones to the light gray-green vegetation on the mesas and in the canyons.”

iv. Wyoming ACECs and potential ACECs that should be protected from oil shale development

The following ACECs in Wyoming established under the Green River Resource Management Plan should be protected from oil shale development: Cedar Canyon ACEC (approximately 2,550 acres); Greater Red Creek ACEC (approximately 131,890 acres - originally Red Creek ACEC, expanded from 55,880 acres to include relevant and important values in the Currant Creek and Sage Creek Drainages); Greater Sand Dunes ACEC (approximately 38,650 acres); Natural Corrals ACEC (approximately 1,276 acres); Oregon Buttes ACEC (approximately 3,450 acres); Pine Springs ACEC (approximately 6,030 acres, expanded from 90 acres to include adjacent relevant and important values); White Mountain Petroglyphs ACEC (approximately 20 acres); South Pass ACEC (approximately 53,780 acres); Special Status (Candidate) Plants ACEC (approximately 900 acres); and Steamboat Mountain ACEC (approximately 43,270 acres).

In addition, the following potential ACECs should also be excluded from oil shale leasing: sage-grouse potential ACECs in the South Pass and Salt Wells areas as identified in the Sage-Grouse Plan Amendment process and others that may be identified in the Pinedale Field Office; the Monument Valley Management Area as identified in the Green River RMP; and the Powder Rim the migration corridor for the Grand Teton pronghorn herd, extending southward from Trapper’s Point to Seedskaadee National Wildlife Refuge. In addition, Seedskaadee NWR itself should be excluded from oil shale leasing.

C. Adobe Town Very Rare or Uncommon Area – The entire area should be excluded from leasing

This PEIS presents an important opportunity to protect the Adobe Town Very Rare or Uncommon Area. The State of Wyoming’s 2008 designation of the Adobe Town area as Very Rare or Uncommon under the state Environmental Quality Act should provide the BLM with the legal basis for protecting this entire area. In the FPEIS, only lands designated as WSA within Adobe Town were protected from commercial development. With Very Rare or Uncommon designation being finalized in 2008, the BLM now has a strong basis for protecting this area’s environmental and cultural resources.

Adobe Town has been called the crown jewel of the Red Desert – encompassing irreplaceable ecological, geological, historical and recreation values. At 180,910 acres, Adobe Town is Wyoming’s largest and most spectacular desert wilderness. Stretching 26 miles north to south and 19 miles east to west, this area is one of the last places in Wyoming where visitors can take in views of pristine landscape that stretch from horizon to horizon. The landscape ranges from banded badlands to mazes of arches, pinnacles, and spires, offering spectacular scenic vistas and important wildlife habitat.

Adobe Town was designated as s Very Rare or Uncommon due to its geological, fossil, scenic, wildlife, and cultural/historical values. Non-coal surface mining (which would include oil shale) is expressly prohibited in Very Rare or Uncommon areas, except in cases where surface mining would not detract from such qualities. Because scenic qualities are part of the designation, there is no possibility that an exemption for oil shale mining could be issued.

In its formal designation of this area, Wyoming’s Environmental Quality Council stated, “The designation protects the area from non surface coal mining only. The designation would prevent surface mining for oil shale and uranium, as well as gravel pit mining.”¹¹³ While part of the Very Rare or Uncommon area is a Wilderness Study Area (WSA), which cannot be made available for oil shale leasing under the FPEIS, the remainder is outside the WSA. All of Adobe Town as a state of Wyoming Very Rare and Uncommon area, not just the WSA, should be protected from oil shale development. Further, Adobe Town geological formations, abundant fossil resources, historical and prehistoric sites and features, rare and sensitive (including crucial) wildlife habitats, and scenic values are comparable to existing national park units, and thus are of national value. Left unprotected, these treasures are at risk of elimination.

The Adobe Town area should be managed on a landscape level, through a variety of management designations. By managing this area as a whole, the BLM can better protect its important and varied values. This concept is supported by the recently released *America’s Great Outdoors* report, which recommends the agency incorporate landscape-scale conservation and restoration as a priority in BLM resource management plans and programs.¹¹⁴

i. Adobe Town: Historical, prehistorical, and archaeological values

Adobe Town has a number of historical, prehistorical and archaeological values that meet the criteria for Very Rare or Uncommon designation. It is mentioned prominently in the journals of the Geological Exploration of the 40th Parallel (circa 1869), and was used as a hideout for fresh horses by Butch Cassidy and his gang during the Tipton train robbery of 1900. The area has a high density of archaeological sites dating back 12,000 years, and is still used as an important religious site by Native Americans today.

Adobe Town is mentioned prominently in the Report of the Geological Exploration of the 40th Parallel, a federal document authored by eminent geologist Clarence King in 1869. This area was identified by King as the most superlative geological landscape found along the survey route. King described the general landscapes as follows:

From twelve to fourteen miles southwest of the head of Bitter Creek are seen exposures of the soft green clays, marls, and whitish-gray ands of which the upper beds of the Bridger group are made. Passing eastward of Pine Bluffs [known today as Pine Butte], the country is covered with more or less drifting sand, which forms noticeable trains of dunes. The sand suddenly gives way to the soft Bridger

¹¹³ Final Order at 18. Available online at <http://deq.state.wy.us/eqc/orders/Rare%20or%20Uncommon%20Closed%20Cases/07-1101%20Adobe%20Town/Adobe%20Final.pdf> (last accessed April 20, 2011).

¹¹⁴ <http://americasgreatoutdoors.gov/report/>

beds which are intricately eroded into branching ravines [Adobe Town and Skull Rims]. This bad-land country extends southeastward to the mouth of a dry valley [Sand Creek] north of Cherokee Ridge [Powder Rim/Cherokee Rim], and from that point a chain of bluff escarpments extends northeasterly for twelve or fourteen miles.¹¹⁵

In addition to the historical noteworthiness of the Geological Exploration, Adobe Town is also unusually rich in archaeological sites. According to BLM,

Significant archaeological resources are found throughout the [Adobe Town] WSA, representing continuous occupation from Paleo Indian through late Prehistoric periods, that is, for the past 12,000 years. The cultural site density of the WSA is estimated to be 30 surface sites per square mile, which is unusually high.¹¹⁶

ii. Adobe Town: Geological values

Adobe Town is a geological masterpiece, dominated by outcroppings of the Washakie formation, a deep bed of volcanic ash deposited 50 million years ago during the Yellowstone eruptions as airborne ash and fluvial desposits of ash interbedded with reddish sandstone that forms rimrock. In 1981, BLM described the geology of the rims as follows:

They are composed of green, gray, and red tuffaceous and arkosic sandstone and minor beds of green shale, light-gray and green tuff, gray siltstone and conglomerate. The exposed beds have created the colorful landscape the Adobe Town Area is known for.¹¹⁷

These are the epitome of fragile lands, with highly erodible soils (both the tuffaceous sandstone and the stabilized sand dunes mantled with a fragile veneer of vegetation) and the towers, arches, and balanced rocks which would easily be toppled by mechanical disturbance.

Above the rims, unique geological features include desert pavement and stabilized sand dunes. The rims have been whittled by erosion into spires and pinnacles, solifluction caves (known locally as ‘mud caves’) large enough to walk through, natural arches, lone towers, groups of castellated pillars, window rocks, grottoes, buttes, caprocks, mushrooms, hat rocks, and eroded badlands banded with pink, red, and purple tones. According to BLM, “Skull Creek Rim, in the core of the area recommended for wilderness, contains some of the most unique and extensive badlands formations in Wyoming.”¹¹⁸ BLM described the effect of this surreal landscape as follows:

¹¹⁵ King, Clarence. 1870. Report of the Geological Exploration of the Fortieth Parallel. Washington, DC: Government Printing Office.

¹¹⁶ BLM 1991. Wyoming statewide wilderness study report: Wilderness Study Area specific recommendations. Cheyenne: BLM Wyoming State Office.

¹¹⁷ BLM 1981. Overland Planning Unit, URA Step III (Present Situation), .48 Wilderness Resources. Rawlins: BLM.

¹¹⁸ BLM 1991, at 184.

Many of the spires take on strange life-like forms – stone sentinals (sic) frozen in time standing guard over their silent desert domain. Walking amidst groups of these strange spires gives one the eerie feeling of being watched – by beings who have witnessed the evolution of Adobe Town for millennia.¹¹⁹

In addition, the paleontological resources of Adobe Town are among the finest deposits of Eocene mammals and reptiles in the world. According to BLM, “The Adobe Town area is known as one of the three most valuable sites in North America for certain types of mammalian fossils.”¹²⁰ BLM further noted,

The WSA is nationally known for the educational and scientific study of paleontological resources. Fossil remains of mammals are numerous and widely distributed throughout the area. Two notable mammalian fossils found in the area are the Uintathere and Titanother. The Uintathere was a large mammal about the size and configuration of an African rhinoceros. The species of Titanother found in the WSA was a tapir-like mammal, about 40 inches in height. This area has been identified as one of the premiere sites in North America for paleontological resources.¹²¹

iii. Adobe Town: Wildlife values

Adobe Town also has a host of sensitive wildlife habitats that are crucial or vital to meeting the very rare or uncommon designation criteria. These habitats include nest sites, sage-grouse lek sites, prairie dog colonies, and big game crucial winter ranges. The cliffs and pillars found throughout Adobe Town provide ideal nesting habitat for raptors, offering numerous nesting platforms out of the reach of ground-based nest predators. Raptor nest sites, sage-grouse lek sites, and big game crucial winter ranges are exceptionally sensitive to, among other things, development, as temporary disturbances can lead to nest failure or displacement of big game onto marginal ranges where they may not be able to survive.

The white-tailed prairie dog is a BLM Sensitive Species and also is recognized as a Sensitive Species by the Wyoming Game and Fish Department. There is a small white-tailed prairie dog colony observed at T 14N R97W sec. 12, SE ¼, which has been active at least between 2001 and 2006; white-tailed prairie dogs were also observed in Section 13 NW ¼ of the same township in 2006. Active white-tailed prairie dog colonies also occur in Horseshoe Bend south of the Haystacks.¹²²

There are a number of known golden eagle nest sites, including two nest sites along the western end of The Haystacks (T16N R97W Sec. 10 NE ¼ and T16N R97W Sec. 15 SW ¼), one along Haystack Wash as it leaves the rimrock area (T16N R96W Sec. 30 NW ¼), and one on the lower rim (T15N R96W Sec. 18 NW ¼). In the Rawlins Field Office, two golden eagle nests occur in the southern end of the WSA, with additional nests known from the Willow Creek Rim in the

¹¹⁹ BLM 1981, at 4.

¹²⁰ BLM 1991, at 187.

¹²¹ BLM 1991, at 188.

¹²² BLM 2003. Draft Environmental Impact Statement, Desolation Flats Natural Gas Field Development Project. Rawlins Field Office, Figure 3-1, at I-7.

eastern proposed expansion unit and on outcrops to the west of Sand Creek in the southeastern part of the area.

The greater sage-grouse is a BLM Sensitive Species and also is listed as a Sensitive Species by the Wyoming Game and Fish Department. (Sage-grouse are discussed in further detail below.) There are three known sage-grouse leks – one in the southeastern proposed expansion, another north of the WSA and south of The Haystacks, and a third in the northeastern lobe of the WSA. Sage-grouse leks are the hub of nesting activity, and typically most of the hens bred at a lek nest within 3 miles of the lek site. Thus, the area around each lek also constitutes important nesting habitat.

There is a desert elk herd, known to the Wyoming Game and Fish Department as the Petition Herd, which is one of the few true desert elk herds in North America, spending the entire year in the Red Desert. This elk herd is therefore very rare. Its activities are centered on the Powder Rim.

Known prairie falcon nest sites within the proposed Very Rare or Uncommon area include one at T16N R95W Sec. 19 NW ¼; two near Manuel Gap (T16N R97W Sec. 27 SW ¼ and T16N R97W Sec. 28 SW ¼); and T15N R96W Sec. 19 NE ¼.¹²³ Prairie falcons with fledgling young were observed roosting on a pinnacle just off the Skull Creek Rim at T13N R97W during the early summer of both 2005 and 2006. Prairie falcons with fledgling young were also sighted at T15N R97W Section 19 SW ¼ on July 9, 2006. A known prairie falcon nest also was recorded by BLM on the bluffs above Willow Creek in the eastern proposed expansion.

Several other raptors are on the BLM and Wyoming Game and Fish Department Sensitive Species Lists. The burrowing owl, which is a prairie dog obligate species that nests in burrows of prairie dog towns, has one known nest location in the southwestern corner of the WSA. The ferruginous hawk, the largest hawk in Wyoming, has nest sites confirmed by BLM two miles south of Manuel Gap and in the southeastern proposed expansion.

Due to the rugged and inaccessible nature of much of Adobe Town, no thorough and systematic inventory of nesting raptors has ever been performed. For instance, there are several known nest sites of ferruginous hawks active in recent years which are not in the BLM's database, even in accessible areas. An occupied and active ferruginous hawk nest was observed by Erik Molvar and Joel Sartore on the eroded walls far below East Fork Point at T14N R96W Section 8 SWSE on May 4, 2004. In addition, an active and occupied ferruginous hawk nest was documented in the Haystacks at T17N R96W Section 33 SWSE by Liz Howell, and separately by Erik Molvar, during summer of 2005. The same nest was found to be active again in 2006 by Erik Molvar.

The mountain plover is recognized as a BLM Sensitive Species and as a Sensitive Species by the Wyoming Game and Fish Department. Until recently, it was listed as Threatened under the Endangered Species Act (ESA). The Horseshoe Bend area south of The Haystacks contains vital

¹²³ BLM 2001. Decision Record/FONSI/Environmental Assessment, Veritas Haystacks Geophysical Project. Rock Springs Field Office.

mountain plover nesting habitat with a number of confirmed plover sightings.¹²⁴ Mountain plovers have also been sighted atop the Adobe Town Rim at T15N R98W Section 25 NE ¼, and at the southern edge of the Adobe Town Rim.

The Great Basin gopher snake is listed as a BLM Sensitive Species. This species has been photographed along the Adobe Town Rim at T15N R97W Section 19, NW ¼.

The Haystacks is identified by the Wyoming Game and Fish Department as crucial mule deer winter habitat. There is also a substantial amount of pronghorn crucial winter range south of Horseshoe Bend along the branches of Haystack Creek. In addition, portions of the area on the north slope of the Powder Rim are mule deer crucial winter range.¹²⁵

iv. Adobe Town: Scenic values

The scenic values of Adobe Town are the most impressive of any desert landscape in Wyoming. It has long attracted the attention of writers and authors. In the 2006-2007 edition of *Wilderness* magazine, writer Allen Best characterizes Adobe Town as “a giant museum of geological curiosities.” In 2004, Kerry Brophy wrote of Adobe Town in *Wyoming Wildlife* magazine as “about as lonesome and lovely a place as you’re likely to find”. Adobe Town is also featured in the guidebook *Wild Wyoming*, which characterized the area as “a landscape worthy of National Park status.” World-renowned author Annie Proulx described Adobe Town as “The maze of badland formations, mesas, and buttes combine with brilliantly colored rock strata to create spectacular canyonland scenery.”

More recently, Adobe Town has become a mecca for photographers, and photographs have been included in calendars, coffee table books such as *Wind River Wilderness*. A scenic photograph of Adobe Town appeared in the July 2005 issue of *National Geographic*. Internationally known nature photographer Tom Mangelson noted, “Adobe Town is truly one of the crown jewels of the West, one of the signature Red Desert landscapes that cannot be allowed to fall under the blade of the bulldozer.”¹²⁶ Photographer Ron Marquart described Adobe Town as follows: “Its landscape is comparable to Bryce Canyon, Canyonlands and Badlands National Parks, and represents the most intricate, outstanding badlands topography in the U.S.” Adobe Town was also featured in the new book of photography published by Laguna Wilderness Press, *Wyoming’s Red Desert: A Photographic Journey*.

These scenic values are also important economic values. Both must be protected.

v. Adobe Town: Recreation

Currently, the Adobe Town area is used primarily for recreation. Hikers and photographers concentrate efforts along the Adobe Town Rim, in The Haystacks, and atop the Skull Creek Rim. The unit is an excellent rockhounding area, with moss agates and other semiprecious stones to be found, especially atop the Adobe Town Rim. The flats along the eastern end of the unit are a well-known trophy antelope hunting area, and The Haystacks, Adobe Town Rim, and Powder

¹²⁴ BLM 2003. Draft Environmental Impact Statement, Desolation Flats Natural Gas Field Development Project. Rawlins Field Office. Figure 3-2, p. I-10

¹²⁵ BLM 2005. Environmental Assessment for the Cherokee West 3D Seismic Project. Rawlins Field Office.

¹²⁶ *Protect Adobe Town, today*, Rawlins Daily Times, January 19, 2006, p. 7

Rim are also known mule deer hunting areas. Due to the tangled web of gas field roads to the east of Adobe Town, most visitors approach from the north and west.

D. Greater Sage-Grouse

We strongly support the BLM's decision to include a more thorough review of the greater sage-grouse in the PEIS. Notably, while the BLM is taking comments on the scope of this review, the agency is also taking comments on the proposed TransWest Express Line transmission project. That project, like oil shale and tar sands development, will force the agency to ensure its decisions and development activities that follow can protect this important species. Should the BLM not protect this species and its numbers continue to decline, all energy development in the three-state region, including important renewable energy projects, will be seriously compromised.

As the BLM is acutely aware, listing under the ESA is not hypothetical. Since the FPEIS was issued in 2008, the USFWS ruled the sage-grouse is "warranted but precluded" under the ESA. As the agency cautions, "Evidence suggests that habitat fragmentation and destruction across much of the species' range has contributed to significant population declines over the past century. If current trends persist, many local populations may disappear in the next several decades, with the remaining fragmented population vulnerable to extinction."¹²⁷ The USFWS determined that southwestern and central Wyoming and northwestern Colorado are strongholds for sage-grouse, with some of the highest estimated densities of males anywhere in the remaining range of the species. The USFWS also identified this high-density sagebrush area as one of the highest priorities for conservation consideration as it comprises one of two remaining areas of contiguous range essential for the long-term persistence of the species."¹²⁸

The BLM recognizes the challenge. As the BLM correctly stated in the FPEIS, "[G]reater sage-grouse have experienced long-term declines because of degradation and loss of important sagebrush steppe and grassland habitat."¹²⁹ In addition, as the BLM clearly states, "the decline in greater sage-grouse populations is believed to be the result of a number of factors, including oil and gas wells and their associated infrastructure, traffic, power lines, urbanization, recreation, predators, and a decline in the quality and quantity of sagebrush habitat."¹³⁰

That is why the BLM flagged sage-grouse and oil shale in Instruction Memorandum 2010-071.¹³¹ The precarious nature of the species survival and the nexus to energy development is also why former Wyoming Governor Dave Freudenthal proactively designated core protection areas. It is also why in 2007, the Center for Native Ecosystems petitioned for ACEC designation all known sage-grouse lek sites within the White River Field Office plus four-mile buffers around each site. As provided in the IM, and consistent with Wyoming's strategy and CNE's petition, one way of to achieve these goals is to establish No Surface Occupancy (NSO).

¹²⁷ <http://www.fws.gov/mountain-prairie/species/birds/sagegrouse/> (last accessed April 27, 2011)

¹²⁸ 75 Fed. Reg. 13910, 13950 (March 23, 2010).

¹²⁹ FPEIS, at 3-148.

¹³⁰ FPEIS, at 3-149.

¹³¹ IM 2010-071 provides: Screen new oil shale lease applications to identify whether the proposed leasing area includes priority habitat. If so, alert the applicant as early as possible that, pending NEPA analysis, the application may be delayed or denied or that lease stipulations and project conditions of approval may be imposed that designate avoidance areas or include No Surface Occupancy restrictions, for example.

As noted above, oil and gas development has negatively impacted sage-grouse populations. Because oil shale and tar sands would be concurrent with oil and gas and other uses, the PEIS must consider the cumulative impacts of the proposed action in combination with these uses.

i. Additional details about the sage-grouse

The sage-grouse is a reasonably good umbrella species for many types of sagebrush obligate wildlife, from pronghorns and pygmy rabbits to BLM Sensitive songbirds.¹³² The maintenance of high-quality sagebrush steppe habitats, particularly nesting and wintering habitats, is necessary to maintain viable sage-grouse populations. That's why large sage-grouse Core Areas like South Pass and the Kinney Rim/Vermillion have been proposed for protection from future oil and gas leasing under the BLM's Wyoming sage-grouse plan amendment.

To ensure viable sage-grouse populations, it is important to consider nesting, brood-rearing, and winter habitats. Holloran and Anderson found that 64% of sage-grouse females nested within 5 km of a lek.¹³³ Connelly proposed comprehensive guidelines regarding the management of sage-grouse, focused around the conservation of breeding/nesting habitat, late summer brood-rearing habitat, and wintering habitat.¹³⁴

In western Wyoming, Lyon found that sage-grouse moved an average of 1.1 km from the nest site for early brood-rearing, and late brood-rearing habitats averaged 4.8 km distant from the early brood-rearing areas.¹³⁵ In Bates Hole, Holloran found that early brood rearing habitats are typified by decreased sagebrush cover and height and increased forb abundance, and movement to riparian sites occurred as uplands became desiccated.¹³⁶ In addition, as Erik Molvar, a Wyoming-based wildlife biologist and a signor to these comment explains in Attachment 3, "the availability of forage with a high nutritional content is an important factor determining brood success. Broods require forbs, insects and cover for growth, concealment and shade (Autenreith 1985)." Additionally, Molvar explains, "Mesic meadows and surface waters are focal points of sage-grouse activity during certain times of year. Mesic sites associated with springs, seeps, and streams are critical for sage-grouse on a year-long basis, and assume even greater importance as brood rearing habitat (Autenreith et al. 1982)."

As for winter habitats, non-migratory sage-grouse winter on their nesting and brood-rearing habitats, while migratory populations may travel some distance to winter on traditional wintering areas. A western Wyoming study determined sage-grouse traveled at least 35 km to separate

¹³² Mezquiza et al

¹³³ Holloran, M.J., and S.H. Anderson. 2005. Spatial distribution of greater sage-grouse nests in relatively contiguous sagebrush habitats. *Condor* 107:742-752.

¹³⁴ Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. *Wildl. Soc. Bull.* 28:967-985.

¹³⁵ Lyon, A.G. 2000. The potential effects of natural gas development on sage-grouse (*Centrocercus urophasianus*) near Pinedale, Wyoming. M.S. Thesis, Univ. of Wyoming, 121 pp.

¹³⁶ Holloran, M.J. 1999. Sage-grouse (*Centrocercus urophasianus*) seasonal habitat use near Casper, Wyoming. M.S. Thesis, Univ. of Wyoming, 130 pp.

wintering grounds.¹³⁷ In Colorado's North Park, Beck found that grouse migrated 5-20 km away from breeding areas during winter.¹³⁸

Additionally, researchers appear to be unanimous in their recommendations that sage-grouse winter habitat be protected from disturbance. According to Beck and Braun, "Areas of winter concentrations of sage-grouse need to be documented and afforded maximum protection."¹³⁹ Lyon recommended that sage-grouse wintering habitats be placed off-limits to oil and gas development.¹⁴⁰ Thus, in the oil shale and tar sands planning areas, the BLM needs to rapidly identify sage-grouse winter concentration areas and place the areas off-limits to surface disturbance. Since oil shale development would remove all shrubs, development clearly falls into the category of activities that should be prohibited by the BLM.

Another issue that warrants attention is vegetation treatments. Because the sage-grouse is dependent on sagebrush, sagebrush treatments are likely to have major impacts on sage-grouse population viability. The PEIS should evaluate the cumulative effects that oil shale and tar sands development would have when combined with past and current vegetation treatment programs. The PEIS should also consider the reduction and/or elimination of vegetation treatment projects. Call and Maser asserted that the spraying of sage-grouse nesting habitats is deleterious because it reduces nest cover from avian predators and suppresses forbs that are important in the sage-grouse diet.¹⁴¹

In the PEIS the BLM must also evaluate the effects of industrial activities on sage-grouse populations. Strip mining for coal has been shown to impact sage-grouse populations through major local decreases in recruitment.¹⁴² Because oil shale development either involves strip mining directly, or in the case of in situ methods a level of habitat destruction roughly equivalent to strip mining, areas near sage-grouse leks should be avoided. Road development can also lead to lek abandonment.¹⁴³ In western Wyoming, Lyon found that for sage-grouse leks within 3 km of oil and gas developments experienced reduced brood survivorship.

When evaluating these and other impacts, oil and gas development provides a good starting point for the BLM's analysis. As Molvar explains, over the past 10 years, oil and gas development has posed perhaps the greatest threat to sage-grouse viability in the region. Over 8% of the total range of sage-grouse has already been impacted by oil and gas development; in addition, the Wyoming Basin and Colorado Plateau ecoregions are among those areas that have the greatest proportion of land under lease (and therefore at risk for future industrialization). In a study near

¹³⁷ Berry, J.D., and R.L. Eng. 1985. Interseasonal movements and fidelity to seasonal use areas by female sage-grouse. *J. Wildl. Manage.* 49:237-240.

¹³⁸ Beck, T.D.I. 1977. Sage-grouse flock characteristics and habitat selection in winter. *J. Wildl. Manag.* 41:18-26.

¹³⁹ Beck, T.D.I., and C.E. Braun. 1980. The strutting ground count: Variation, traditionalism, and management needs. *Proc. Ann. Conf. West. Assn. Fish and Wildl. Agencies* 60:558-566, at 564.

¹⁴⁰ Lyon, A.G. 2000. The potential effects of natural gas development on sage-grouse (*Centrocercus urophasianus*) near Pinedale, Wyoming. M.S. Thesis, Univ. of Wyoming, 121 pp.

¹⁴¹ Call, M.W., and C. Maser. 1985. Wildlife habitat in managed rangelands--The Great Basin of southeastern Oregon: Sage-grouse. USDA Gen. Tech. Rept. PNW-187, 29 pp.

¹⁴² Braun, C.E. 1986. Changes in sage-grouse lek counts with advent of surface coal mining. *Proc. Issues and Technology in the Management of Impacted Western Wildlife*, Thorne Ecol. Inst. 2:227-231.

¹⁴³ *Id.*

Pinedale, Wyoming sage-grouse from disturbed leks where gas development occurred within 3 km of the lek site showed lower nesting rates (and hence lower reproduction), traveled farther to nest, and selected greater shrub cover than grouse from undisturbed leks.¹⁴⁴ Oil shale development, while having a much greater intensity of development – 100% landscape destruction rather than the 3-5% of a typical oil and gas field – also involves heavy vehicle traffic, human activity at the site of production, and networks of roads and potentially pipelines to support it.

Current BLM nest buffers for oil and gas of ¼ mile for NSO and 2 miles for seasonal stipulations are grossly inadequate to maintain sage-grouse viability in the planning area. The lek buffer must be based not only on maintaining the lek but also the nesting habitat that surrounds the lek. In addition, seasonal prohibitions that prohibit only construction activities near leks are pointless: If roads or wells are built near leks during the off-season, the resulting regular vehicle traffic will have major negative impacts when the sage-grouse are present, effectively circumventing any mitigative value of delaying construction activities.

We therefore recommend that the PEIS and RMP amendments include a 3-mile NSO and no surface disturbance/vegetation treatment buffer at minimum (5 miles would be preferable) for sage-grouse leks, winter habitat, and other vital sage-grouse habitats.

In addition to these comments, Erik Molvar's comments in Attachment 3 are included as part of these general comments and are incorporated herein. Among other things, those comments detail scientific justifications for our positions, as well as provide bases for additional use restrictions necessary to protect the sage-grouse.

E. Alternative C from the FPEIS -- BLM's reason for rejecting Alternative C was flawed

We strongly support BLM's decision to evaluate Alternative C from the FPEIS. The primary difference between Alternative C and the preferred alternative is that Alternative C "exclude[s] lands that are identified as requiring special management or resource protection in existing land use plans."¹⁴⁵

Alternative C would have opened more than 830,000 acres of land for allocation for commercial oil shale leasing and approximately 229,000 acres of tar sands land in Utah. Unlike the preferred alternative which establishes oil shale and tar sands as primary uses of federal land, Alternative C seeks to balance competing needs, goals and interests.

For example, Alternative C also sought to exclude commercial leasing from all ACECs. As noted above, the preferred alternative only limited commercial development to ACECs that are currently closed to mineral development. The USGS shared this concern. As the agency stated in their comments to the BLM on the draft PEIS, "the final PEIS would be enhanced if further justification for the preferred Alternative B as compared to Alternative C could be provided as

¹⁴⁴ Lyon, A.G. 2000. The potential effects of natural gas development on sage-grouse (*Centrocercus urophasianus*) near Pinedale, Wyoming. M.S. Thesis, Univ. of Wyoming, 121 pp.

¹⁴⁵ FPEIS, at ES-6.

explicitly as possible given the potential for much greater impacts on areas of critical environmental concern in Alternative B.”¹⁴⁶

Alternative C also seeks protect important habitat. Notably, the USFWS, in their comments to the BLM, expressed support for this alternative, as the preferred alternative would likely negatively impact species, including endangered species.

Finally, Alternative C also seeks to lessen the broad air quality impacts that both the EPA and National Park Service conclude would arise as a result of the preferred alternative. While we disagree with opening any oil shale and tar sands lands absent independent reviews of commercially-viable technologies, we recognize the importance of Alternative C’s additional protections. Those protections are, fundamentally, necessary to protecting special lands and to meeting FLPMA’s multiple use mandate. The protections afforded by the preferred alternative are insufficient.

In rejecting Alternative C, the BLM’s rationale as expressed in the November 2008 Record of Decision reflects a fundamental misunderstanding of the Section 369 of EPAct. Section 369(d)(1) provides the BLM shall conduct a programmatic EIS “with an emphasis of the most geologically prospective lands within each of the State of Colorado, Utah and Wyoming.” The BLM concluded that through this provision, Congress charged the BLM with opening the most amount of land possible.¹⁴⁷ That interpretation is inaccurate.

Congress directed the BLM to focus its PEIS on the “most geologically available lands.” Nowhere in the Act does did Congress direct the BLM to open to application for commercial leasing all “geologically available lands.” After all, as the BLM correctly appropriately concluded in the FPEIS,

a significant portion of the land within the most geologically prospective oil shale areas is already undergoing mineral development, particularly for the development of oil and gas resources. Commercial development, using any technology under consideration in this PEIS, is largely incompatible with other mineral development activities and would likely preclude these other activities while oil shale development and production are ongoing.¹⁴⁸

To conclude, as the BLM did in the ROD, that Congress prioritized oil shale (or tar sands) development over oil and gas development and all other uses of public land is not supported by either the facts or national policies. After all, in EPAct, Congress did not amend FLPMA’s multiple use mandate.

The BLM’s reasoning in must be remedied in the PEIS and subsequent ROD.

¹⁴⁶ USGS, Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008, at 1. (on file with the BLM)

¹⁴⁷ See generally ROD at 16-23.

¹⁴⁸ FPEIS, at 4-18.

F. Lands with deposits 25 gallons/ton or more and 25 feet thick or greater

In Colorado and Utah, the most geologically prospective deposits are “those deposits that yield 25 gallons of shale per ton of rocks (gal/ton) or more and are 25 ft. thick or greater.”¹⁴⁹ In Wyoming, the standard is 15/15. The BLM’s determination to alter for Wyoming the definition of “geologically prospective” highlights how poor the deposits are in that state. It also raises serious questions regarding how the agency defines “geologically prospective.” As the agency stated in the FPEIS, in Wyoming “the oil shale resource is not as of high quality as it is in Colorado and Utah.”¹⁵⁰

The BLM cites EPO Act as the basis for opening resource-poor oil shale deposits in Wyoming to commercial application. EPO Act provides the BLM “shall complete a programmatic environmental impact statement for a commercial leasing program for oil shale and tar sands resources on public lands, with an emphasis on the most geologically prospective lands within each of the States of Colorado, Utah, and Wyoming.”¹⁵¹ In requiring the BLM to evaluate “the most geologically prospective lands” in each state, EPO Act does not in turn require the BLM to open resource-poor lands to application for commercial development. That is a construct the BLM developed to meet a policy goal of opening the largest acreage for commercial development.

Additionally, because the BLM uses different standards for different states, the agency must define what “geologically prospective” means. Congress did not define it, and nor did the BLM in the FPEIS. The closest the BLM comes to define “geologically prospective” is found in footnote C to Table C-1 in the FPEIS.¹⁵² In that footnote, the BLM states that “geologically prospective” was defined by different parties over a period of 28 years. For Wyoming, the BLM relies on Wiig. Notably, though, in a 2006 email, Wiig, a BLM employee, argues that “oil shale zones with an average quality less than 20 gal/ton are not considered likely to be developed.”¹⁵³ Wiig goes on to state that 90% of the oil shale resources in Wyoming are less than 20 gal/ton.¹⁵⁴

It is unclear from the FPEIS and response to comments whether the BLM included an economic component in defining “geologically prospective.” What is clear is that in concluding that in Wyoming’s 15/15 standard is “geologically prospective,” the BLM discounts the economic viability of this standard.

Further, in October 2008, Scott Quillinan of the Wyoming State Geological Survey (WSGS) prepared a spatial analysis of oil shale deposits that met the 25/25 threshold. This analysis was based on data contained in the USGS Open-File Report 2008-1152, titled “Fischer assays of oil-shale drill cores and rotary cuttings from the greater Green River Basin, Southwestern Wyoming.” The WSGS analysis shows a substantial acreage of Wyoming lands meet the 25/25 threshold. (See Attachment 5.) Thus, it is completely unnecessary to lower the threshold for oil

¹⁴⁹ FPEIS, at 1-6.

¹⁵⁰ FPEIS, at 1-6.

¹⁵¹ EPO Act Sec. 369(d)(1).

¹⁵² FPEIS, at C-18.

¹⁵³ See Attachment 4.

¹⁵⁴ *Id.*

shale leasing in Wyoming. The lack of a consistent standard across the three-state region suggests the BLM is acting arbitrarily and capriciously.

Further, NEPA requires federal agencies to develop a full range of alternatives. The fact that the BLM altered the definition of “geologically prospective” instead of analyzing 25/25 across the three raises questions about compliance with NEPA. Accordingly, we request that the BLM include an alternative that excludes from commercial application lands that do not meet the 25/25 threshold in all three states.

In adopting a different standard for Wyoming, the BLM is suggesting that there are geologically prospective lands in the state. That suggestion and conclusion raises the false pretense that oil shale development can or should be pursued on Wyoming lands below the 25/25 threshold. The BLM was right in making deposits unavailable for leasing in Colorado and Utah that were less than 25/25, but wrong to lower the standard in Wyoming. By adopting the 25/25 standard for all three states, the BLM can provide collateral protections from ill-considered oil shale projects for lands with wilderness characteristics, key sage-grouse habitats, and big game crucial ranges and migration corridors in Wyoming which are underlain by uneconomic oil shale deposits.

IV. Additional considerations for the PEIS review

As part of the review of alternatives, the BLM should also examine the following.

A. The PEIS must evaluate and consider the environmental baseline of the area

The BLM lands that are eyed for oil shale and tar sands development are currently hosting an oil and gas boom. They are the foundation of diversified economies. These fossil fuel development activities are widespread, and are impacting local economies and the environment in a number of ways. While there will be dips in the pace of development, the BLM is forecasting that conventional energy will continue on these lands for generations.

Establishment of baseline conditions is a requirement of NEPA. In Half Moon Bay Fisherman’s Marketing Ass’n v. Carlucci, the Ninth Circuit states that “without establishing . . . baseline conditions . . . there is simply no way to determine what effect [an action] will have on the environment, and consequently, no way to comply with NEPA.”¹⁵⁵ The court further held that “[t]he concept of a baseline against which to compare predictions of the effects of the proposed action and reasonable alternatives is critical to the NEPA process.”

The court’s reasoning aligns with CEQ’s recent guidance to federal agencies regarding appropriate mitigation measures. As CEQ noted, “Completing environmental data collection and analyses prior to project implementation provides an understanding of the baseline conditions for each potentially affected resource for reference when determining whether the predicted efficacy of mitigation commitments is being achieved.”¹⁵⁶

In the PEIS and for years to follow, it remains imperative that the BLM study and produce analyses quantifying and qualifying the site-specific environmental baseline conditions. The USGS review that Secretary Salazar initiated to evaluate and establish baseline water quality

¹⁵⁵ 857 F.2d 505, 510 (9th Cir. 1988).

¹⁵⁶ 76 Fed. Reg. 3850.

conditions in Colorado's Piceance Basin is a critical piece of establishing baseline conditions. BLM, however, needs to go further and evaluate water quality conditions on all lands the BLM might open for commercial oil shale and tar sands leasing, as well water quality in downstream reaches of the Green, Colorado, and Yampa Rivers inhabited by the Endangered Colorado pikeminnow, razorback sucker, bonytail, and/or humpback chub. Further, the PEIS baseline monitoring should include information on air quality (both near communities and in nearby Class 1 airsheds under the Clean Air Act), water quality, water availability, wilderness values, wildlife habitat, and existing federal land uses.

Only by establishing a baseline will we have a scientifically-defensible means to determine the net impacts of oil shale and tar sands development and the cumulative impacts of all energy development activities. Moreover, the BLM in the PEIS should establish that any leasing program for oil shale and tar sands would require new site-specific environmental baseline measurements.

B. Water Availability – How much water development might require and what's at stake

Water is the West's most valuable and sought-after natural resource, as our arid environment is largely defined by the absence of water. In Colorado and Utah, in particular, water is becoming an increasingly scarce resource, and will be largely if not completely spoken for by 2050, the timeline the BLM projects industry could develop large-scale operations. Any discussion and evaluation of water availability and water consumption projections for oil shale and tar sands – no matter how great or little – must be viewed in the context of states' water availability projections.

In Colorado, the December 2010 Statewide Water Supply Initiative (SWSI) projected that by 2050, after taking into account conservation, statewide municipal and industrial (M&I) demand will increase 55-83% over 2008 baseline demand.¹⁵⁷ M&I does not include water for oil shale or thermoelectric power production, so any water for oil shale, including water for electricity/energy production, will come in addition to statewide M&I demands. To meet these demands – demands that are principally driven by an increasing population – the state projects that large quantities of water currently used for agriculture will be diverted to M&I uses. Meeting these increased M&I water demands alone will prove challenging. How Colorado would meet these obligations should large-scale oil shale development come to fruition is daunting.

If one thinks water is tight in Colorado, Utah, the nation's second driest state, presents even greater challenges. As the state concluded in its recent 10 year energy study,

Limited quantities of water may be available for new energy development. Most areas of the state are closed to new surface- and ground-water appropriations (especially new consumptive appropriations) and those that are still open are primarily for ground water in relatively small quantities. What little may be currently available will undoubtedly decline over the next decade. Water currently used at other facilities or by other water

¹⁵⁷ Statewide Water Supply Initiative (SWSI), Final 2010 M&I Water Use Projections, Table 3-3, "M&I Forecast by River Basin." At 3-11. <http://cwcbweblink.state.co.us/weblink/0/doc/144800/Electronic.aspx?searchid=c1469548-e589-49df-a54f-6b03612a38e3> (last accessed May 2, 2011).

users may be purchased for use in energy development in the future....Given Utah's population growth and projected economic growth over the next decade, the possibility of increased drought, and with limited new water resources available, water consumption of energy resources should be given careful consideration....As an arid state, an energy portfolio that encourages low water-use technologies should be considered.¹⁵⁸

Since the release of the FPEIS in 2008, companies pursuing oil shale development have claimed that they are reducing the amount of water that would be needed to produce shale. None of these claims appears to be supported by independently-verifiable data. Claims made to the media, on websites, and in power point presentations have consistently been devoid of facts or data.

Since the 2008 PEIS was released, two public reports have been released which reinforce the BLM's conclusions in the FPEIS that substantial quantities of water will be needed. These public reports stand in contrast to industry's claims. In 2009, Western Resource Advocates, one of the signors to these comments, issued "Water on the Rocks: Oil Shale and Water Rights in Colorado."¹⁵⁹ As "Water on the Rocks" detailed, water districts and companies seeking to develop shale hold substantial water rights that could be used for commercial development. On the Colorado River and White River in Colorado, these parties own or have right to 11,366 cfs and 1,623,422 af of water. To put these volumes in context, the Denver-metro area, with a population of approximately 2 million, uses roughly 225,000 af of water per year. Utilizing a portion of these rights would still dwarf Denver's annual use.

Logically, if industry were able to reduce their water consumption needs, then companies and districts would be willing to part with large portions of their existing rights. After all, according to proponents' logic, they do not need this much water. Yet, as evidenced by the ongoing Yellow Jacket and Conoco-Philips water court diligence litigations, the parties are fighting to maintain their holdings. Following issuance of the FPEIS, Shell Oil, which owns or has rights to 893.43 cfs and another 147,750 af, sought to increase their water rights.

The October 2010 Governmental Accountability Office (GAO) report on oil shale and water raises a number of related concerns.¹⁶⁰ That report, "Energy-Water Nexus: A Better and Coordinated Understanding of Water Resources Could Help Mitigate the Impacts of Potential Oil Shale Development," concluded that oil shale would likely require 4-to-5 barrels of water for every barrel of oil produced from shale.¹⁶¹ That conclusion aligns with the FPEIS' conclusions.

Moreover the GAO offered this important cautionary note:

Water is likely to be available for the initial development of an oil shale industry, but the size of an industry in Colorado or Utah may eventually be limited by water availability. Water limitations may arise from increases in water demand from municipal and

¹⁵⁸ "Energy Initiatives and Imperatives: Utah's 10-Year Strategic Energy Plan," March 2011, at 25. <http://www.energy.utah.gov/index.htm> (last accessed May 6, 2011).

¹⁵⁹ <http://www.westernresourceadvocates.org/land/wotrreport/index.php> (last accessed on May 6, 2011).

¹⁶⁰ GAO, "Energy-Water Nexus: A Better and Coordinated Understanding of Water Resources Could Help Mitigate the Impacts of Potential Oil Shale Development". October 2010.

¹⁶¹ *Id.* The GAO concluded the range of water-to-oil is 1:1 to 20:1. The report further stated 4-5 barrels of water to oil was a good working figure.

industrial users, the potential of reduced water supplies from a warming climate, fulfilling obligations under interstate water compacts, and the need to provide additional water to protect threatened and endangered fishes.¹⁶²

The GAO also offered the following:

The unproven nature of oil shale technologies and choices in how to generate the power necessary to develop this resource cast a shadow of uncertainty over how much water is needed to sustain a commercially viable oil shale industry....These nascent efforts do not adequately define current baseline conditions for water resources in the Piceance and Uintah Basins, nor have they begun to model the important interaction of groundwater and surface water in the region.¹⁶³

As discussed above, any water for oil shale or tar sands must be viewed in the context of competing water needs. The GAO reaffirms what many have been saying – water is the critical issue for developing oil shale, but major questions remain. Oil shale and tar sands development would have broad impacts on water availability (and quality), but there are a number of unanswered questions that we must answer before considering commercial development. Oil shale’s impacts would be felt throughout Colorado and Utah as these states seek divide up a dwindling resource. How we balance existing obligations and resource limitations against growing state-wide water needs remains a mystery, but it is an issue we need to solve before considering commercial development.

In Colorado, the challenge in meeting projected water needs, even without oil shale, is how to meet demand and ensure long-term water supplies for agriculture. In the FPEIS, the BLM concluded that large-scale development would result in the further drying up of agriculture – and that the shift of water from agricultural to oil shale would fundamentally transform western communities to industrial-based communities. (In addition to evaluating this issue in the context of water, it should also be evaluated in the socio-economic section.)

Among the impacts the PEIS must analyze is the potential magnitude of converting water from agricultural uses to industrial uses. Large-scale oil shale and tar sands production likely will shift hundreds of thousands of acre-feet from agricultural use, resulting in the dry-up of hundreds of thousands of acres of agricultural lands. This conversion of water must also be connected analytically to the potential impacts of soil erosion, sediment loading in streams, and other environmental resource issues.

Similarly, the PEIS must look closely at existing agreement to protected endangered fish in Colorado and Utah. As Dan Luecke stated in his comments on the 2008 draft PEIS, “If the Colorado River’s endangered fish are ever to be restored it will be in the upper basin. Oil shale and tar sands development, were it to occur on even a modest scale, would seriously undermine the past successes and future potential of recovery efforts. The most important basins for the native fish are the very ones on which BLM leasing alternatives have painted bulls-eyes. For all

¹⁶² *Id.*

¹⁶³ *Id.* at 44-45.

practical purposes, the oil shale/tar sands Draft PEIS fails to address this issue in any serious way.”¹⁶⁴

As Luecke explained,

The agreement, the Upper Colorado River Endangered Fish Recovery Implementation Program (RIP), established as its central feature the working assumption that the native fish could be recovered while, at the same time the states of Colorado, Utah, and Wyoming developed water to which they were entitled under the Colorado River Compact and the Upper Colorado River Compact. The parties to the agreement structured it in such a way as to accommodate both environmental and water development concerns. This accommodation provides ESA coverage for water depletions in exchange for support of water and habitat related improvement activities designed to restore the native fish populations to self-sustaining levels.¹⁶⁵

This program, including related water needs, must be duly evaluated in the PEIS.

Perhaps the biggest challenge for the upper basin states is how to meet projected water needs without resulting in a call on the Colorado River. Under the terms of the 1922 Colorado River Compact, the four Upper Basin states (Colorado, New Mexico, Utah, and Wyoming) were thought to be entitled to consume 7.5 million af of basin water annually. Based on this assumption, in 1948 the Upper Basin states apportioned use of their share; under that agreement, Colorado was given 51.75%, Utah 23%, Wyoming 14%, and New Mexico 11.25%. A huge uncertainty that states are evaluating is how much water may be available under the Compact.

It is now generally believed that the Upper Basin’s share is less than 7.5 million af. How much less and how oil shale and tar sands development would affect obligations under the Compact remain highly unclear. The BLM must evaluate these issues in the PEIS.

In evaluating water for oil shale development, a cautionary note is needed. The aforementioned SWSI study included water for oil shale. The underlying study conducted by AMEC concluded that oil shale in a three-basin region would require, on the upper end, up to 120,000 af annually. AMEC’s conclusions are notable for a few reasons. First, they relied on industry providing unverifiable data regarding how much water they might need. In all cases, none of the data is based on proven technologies. Second, the oil shale-to-water ratios only considered water in the three basin region. Water for electricity production and upgrading would be used outside of these three basins and thus are not included in the 120,000 af figure. Third, the AMEC report stated, “If electricity is generated by coal-fired thermal generation within the study area, rather than combined cycle gas turbines, total water use for the *high* scenario would increase by approximately 170,000 af/year.” If further provided “If byproduct water from in situ production is not used to satisfy process needs, total water use for the *high* scenario will increase by an additional 60,000 af/year.”

¹⁶⁴ Dan Luecke, Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008, at 1-2. (on file with the BLM)

¹⁶⁵ *Id.*

So, as the BLM reevaluates how much water might be need as part of commercial production, we strongly recommend that the BLM separate fact from wishful thinking. Taking this step is important in meeting NEPA's "hard look" requirement.

C. Water quality

Water quality remains a primary concern to both surface water and groundwater. As the GAO noted in its October 2010 oil shale report, "oil shale development could have significant impacts on the quality and quantity of water resources." Tar sands development would pose similar risks. Both retort and in-situ development would risk water quality degradation.

When these resources are mined and retorted, some of that water is "produced" and can be released into adjacent watercourses. The produced water may be filled with chemicals and organic materials that can significantly degrade water quality in the region. Mining operations, such as those proposed for both oil shale and tar sands in Utah, would leave large piles of spent shale or tar sands, which could leach remaining hydrocarbons, salts, trace metals, or other minerals into surface and groundwater supplies.

As the BLM recognizes in the FPEIS, salinity in the Colorado basin is a huge issue.¹⁶⁶ Processed water is already looming as an expensive issue even without oil shale and tar sands development. Michael Vandenberg of the Utah Geological Survey notes "saline water disposal is the single most pressing issue with regard to increasing petroleum and natural gas production in the Uinta Basin of Utah." These concerns would be a potentially limiting factor in commercial development of oil shale and tar sands.

In oil shale retorting, for example, two kinds of "processed" water are generated: water already in the ground, and water that is "liberated" from the rock when it is heated to release the oil locked in the rock. Each poses its own water quality problems and challenges. Water that is generated when the shale rock is heated generally contains phenols, hydrogen sulfide and other organics. Hydrogen sulfide is an extremely hazardous gas that can cause breathing problems and can affect the central nervous system¹⁶⁷.

As with so much about oil shale and tar sands, there are unanswered questions about how produced water will be treated: Stored indefinitely in lined ponds? Treated and released back into rivers? Left to leach into aquifers? Plans submitted to the BLM proposed storing and trucking this retort water to some off-site treatment or disposal facility.¹⁶⁸ Whether that can be done safely remains to be seen.

A report by David Atkins, a hydrologist from Watershed Environmental LLC in Colorado who submitted comments for the BLM environmental assessment of the OSEC's oil shale RD&D lease, says the companies have simply not done an adequate water quality analysis to be given

¹⁶⁶ FPEIS, at 3-63.

¹⁶⁷ http://www.osha.gov/OshDoc/data_Hurricane_Facts/hydrogen_sulfide_fact.pdf

¹⁶⁸ Oil Shale Research, Development and Demonstration Project, White River Mine, Uintah County, Utah Environmental Assessment, April 2007, at 32

http://www.blm.gov/pgdata/etc/medialib/blm/ut/vernal_fo/planning/white_river_oil_shale.Par.44590.File.dat/OSEC%20Oil%20Shale%20Final%20EA%20EA%20UT%20-%2020080%20-%202006%20-%20280.pdf,

permission to proceed. Atkins says it is highly unlikely that energy companies would be able to prevent contaminants from oil shale retorting and mining from reaching groundwater. “If all the spent shale generated is determined to leach hazardous substances, according to the [Environmental Assessment], the entire 38-acre dump would be encapsulated to eliminate infiltration and leaching,” Atkins’ report states.¹⁶⁹

In situ oil shale development could pose its own problems. Shell Oil, one of the RD&D lessees, is working to develop a freeze wall to protect groundwater. Whether this technology is viable, not to mention protective of groundwater at a commercial scale, remains unknown. Others, such as Chevron and AMSO, are looking to develop shale below the groundwater zone. What is unclear, among other things, is whether their fracking and down-hole heating technologies would create fissures that would result in pathways being created. If so, and their RD&D analysis remains unclear, groundwater could be contaminated.

In addition, there are no guarantees that the freeze walls for in situ operations will be maintained in perpetuity. The BLM must therefore evaluate in the PEIS the impact of the freeze walls thawing and releasing the constituents into the ground. Will, for instance, groundwater then flow through strata produced for oil shale? What would be the environmental impacts of hydrocarbons and heavy metals, for instance, mixing with groundwater? After all, the primary purpose of utilizing a freeze wall is to create and maintain that physical separation.

Tar sands development – both in situ and retort processing – presents its own challenges. For in situ tar sands extraction, the process of injecting high pressure steam or a combination of high pressure steam and chemicals into relatively porous tar sands layers poses significant challenges for neighboring groundwater resources. Because the steam increases the viscosity of the bitumen, residual steam under intense pressure would mobilize organic compounds from the tar sands deposits and contaminate neighboring groundwater aquifers with residual petrochemicals and salts. This tendency to contaminate groundwater resources beyond the bounds of the tar sands deposit is especially problematic when chemical-laced steam is used because the chemicals are designed to bond to residual petrochemicals at the molecular level.

Experimental retort processing in Utah is poised to enter into commercial production using chemical separation techniques for removing the bitumen from the tar sands deposits. Beyond the significant land use impacts resulting from what essentially amounts to strip mining of the tar sands, industry is experimenting with the use of terpene compounds to separate the bitumen from the sands, and intends to deposit the waste stream of this process back into the mine pit without treatment. This dumping poses a significant threat to groundwater resources in the area for two reasons. First, the terpene compounds themselves are toxic to the environment and will migrate, along with excess salts, into local aquifers. Second, the terpene compounds bond with the petrochemicals from the tar sands and the process does not completely remove the molecules from the waste stream. As a result, the highly toxic terpene-petrochemical molecules will migrate offsite contaminating area aquifers.

¹⁶⁹ David Atkins, Comments on Environmental Assessment for OSEC’s RD&D lease. October 16, 2006. (on file with the BLM)

Elevated levels of Total Dissolved Solids (TDS) resulting from oil shale production also pose a threat to Endangered fishes. In the context of surface mining and retorting for oil shale, Pimintel and Bulkley¹⁷⁰ reported that for juvenile fishes, Colorado squawfish preferred TDS 560-1150 mg/l and avoided >4,400 mg/l; humpback chub preferred 1000-2500 mg/l and avoided >5100 mg/l; bonytail preferred preferred 4100-4700 mg/l and avoided < 560mg/l and >6600 mg/l. Tested at 12°C; TDS tolerances may have been higher if tested at a warmer temperature. These researchers stated,

Nevertheless, problems could arise for fish in localized situations where saline oil-shale-processing waters enter tributaries of the main river system. Fox et al ...found that TDS concentrations of oil-shale-process waters ranged from 1,750 to 24,500 mg/liter and averaged 6,800 mg/liter. Tributaries polluted with such high TDS concentrations may be avoided by these species resulting in a loss of habitat.¹⁷¹

For these reasons, we strongly applaud DOI's decision to direct USGS to undertake an analysis of baseline water resource conditions. As the BLM noted when launching this initiative, through this analysis, the BLM will improve its "understanding of groundwater and surface water systems that could be affected by commercial-scale oil shale development." Only with this data, however, will the BLM be able to develop effective mitigation measures. This review should include all oil shale and tar sands areas that the BLM is considering opening through RMP revisions. Given the ongoing oil and gas development activities in oil shale and tar sands country, this analysis and development of appropriate mitigation measures is doubly important.

In the PEIS, the BLM should identify what it knows and does not know, including the state of technologies and likely impacts on water quality. Only then can the public be assured that the document reflects a hard look at the resource and potential demands commercial development of oil shale and tar sands would place on human health and the environment.

In addition to the water quality concerns identified in this section, please also see "Aquatic Species" found later in these comments.

D. Wild and Scenic Rivers

BLM must protect all areas eligible for Wild and Scenic designation from oil shale and tar sands development.

In Colorado, BLM examined the eligibility of streams and stream segments for Wild and Scenic River status in 2002. The eligibility report showed portions of East Fork Parachute Creek, East Middle Fork Parachute Creek, Trapper Creek, and Northwater Creek are all eligible for Wild and Scenic River status.¹⁷² These streams are all "free-flowing" and contain outstandingly, remarkable values – unique, rare, or exemplary botanical/ecological, scenic features or fishery values that are significant on a regional or national scale. These river segments hold many and

¹⁷⁰ Pimintel, R., and R.V. Bulkley. 1983. Concentrations of total dissolved solids preferred or avoided by Endangered Colorado River fishes. *Trans. Am. Fish. Soc.* 112:595-600.

¹⁷¹ *Id* at p. 599.

¹⁷² Roan FEIS (2006), at 3-121.

various important values and should not be open to commercial oil shale development. These areas, along with all watersheds eligible for Wild and Scenic designation, should be protected from development.

In addition, many other watersheds deserve protection. Some of these areas may have special designations, such as the Parachute Creek Watershed Management Area and portions of Trapper and Northwater Creeks designated as an ACEC.¹⁷³ Other undesignated watersheds also deserve protection. For example, portions of Trapper and Northwater Creeks are not included in the Trapper/Northwater Creek ACEC deserve protection from oil shale development. In fact, it is the critical high reaches of these watersheds that were excluded from ACEC designation. Obviously, industrial development higher up in these watersheds has the potential to impact downstream values, including the values for which the ACEC was designated. At risk, in this case, would be nearly all of the Northwater Creek and a significant portion of the Trapper Creek populations of CRCT. In Wyoming, the BLM determined that Skull Creek is among the watercourses found to be eligible for Wild and Scenic River designation.¹⁷⁴

Potential impacts are serious. Sediment caused by surface disturbing activities may choke aquatic insects and trout eggs. In the event of a spill or a mining mishap, toxic effluent may do the same. In this drainage, downstream habitat is the best CRCT habitat. Below the confluence of Trapper and Northwater Creeks this drainage attains the volume and depth necessary to maintain suitable CRCT habitat. Allowing oil shale development, or any surface disturbing development, in the upstream portion of the Northwater drainage poses an unnecessary risk to CRCT populations lower in the watershed. In order to protect this sensitive resource, oil shale development be prohibited in the entire drainage. Importantly, we are not asking for expansion of the current ACEC boundary. We are simply asking the BLM to eliminate the entire watershed from availability for future oil shale development to protect “critical” environmental values at risk.

Other watersheds where oil shale development should not be allowed include: Clear Creek, Spring Creek, Corral Gulch, Ryan Gulch, Black Sulphur Creek, Fawn Creek, Hunter Creek, Willow Creek, West Fork Parachute Creek, Parachute Creek, Piceance Creek, and Dry Fork Piceance Creek. Protection of these important streams is important to protect values associated with fisheries, botanical resources, and municipal water quality.

Eligible Wild and Scenic Rivers in Utah are:

White River – The White River includes eligible segments for wild and scenic classification with the outstandingly remarkable values of scenery, fish, wildlife habitat, recreational resources, and historic resources. This remarkable river features a deep canyon often visited by canoeists and rafters. Importantly, it contains habitat for endangered fish.

¹⁷³ The ROD for the Designation of ACECs for the Roan RMPA and EIS implemented a WMA for Parachute Creek. This management tool was implemented to protect important watershed values in Parachute Creek from looming threats like natural gas development. *See* ROD (2008), at 6.

¹⁷⁴ BLM 2008. Proposed Resource Management Plan and Final Environmental Impact Statement for the Rawlins Field Office, at 3-98.

Evacuation Creek –This eligible recreational river includes historic values that are outstandingly remarkable. Evacuation Creek flows through a high, remote stretch of the Book Cliffs.

Bitter Creek –This eligible scenic river includes the outstandingly remarkable values for fish, wildlife habitat, cultural resources, historic resources, and recreational resources. It creates the heart of a remarkable canyon where coyotes, elk, bear, and deer still roam unimpeded. This area is also home to historic resources, relicts of both Native American and European-based cultures.

Nine Mile Creek – Nine Mile Creek has formed the world-class Nine Mile Canyon, an area extremely rich in cultural resources. In fact, the BLM refers to this area as the “world’s longest art gallery” because of its high number of rock art sites. This eligible recreational and scenic river includes outstandingly remarkable values of scenery and cultural resources.

Range Creek – Range Creek is an area rich in cultural resources and remarkable wildlife habitat. This area was recently introduced to the public when a private ranch was transferred to public ownership. This eligible river includes the outstandingly remarkable values of cultural resources, scenery, historic resources, and wildlife.

Rock Creek – This eligible river includes the outstandingly remarkable values of cultural resources, recreation resources, scenery, historic resources, and wildlife. It ultimately flows into the Green River in the deep Desolation Canyon. Rock Creek is a superb wild area high in the Book Cliffs.

E. Aquatic species

Federal law also requires the BLM to protect aquatic species and their habitats. These requirements extend to migration, breeding, foraging and other activities. Roundtail chubs, flannelmouth suckers, and bluehead suckers are found in watersheds that will be affected by oil shale and tar sands development. These species, which reside in large, slow-moving rivers as well as smaller tributary streams, “have experienced dramatic reductions in their range in western Wyoming since 1965, and may need immediate conservation attention.”¹⁷⁵ In Wyoming, the bluehead sucker, flannelmouth sucker, and roundtail chub are BLM Sensitive fishes. In the Upper Colorado Basin, the roundtail chub has been extirpated from 45% of its historical range, bluehead suckers occupy about 45% of their historical range, and the flannelmouth sucker occupies about 50% of its historic range.¹⁷⁶ All three of these species are on the BLM Sensitive Species list, and merit special conservation attention.

The FPEIS identifies three primary ways aquatic species would be impacted: (1) direct disturbance, (2) sedimentation, and (3) changes in water quantity and water quality. These impacts, the FPEIS makes clear, could occur during both construction and throughout oil shale and tar sands operations. Despite the aforementioned mandate that the BLM develop strategies to protect sensitive species, the description of aquatic resources is vague and BLM presents little information about species distribution. Cumulative impacts are not sufficiently discussed, and

¹⁷⁵ Wheeler, p. 54.

¹⁷⁶ Bezzerides and Bestgen 2002.

without such information, the mitigation measures are perfunctory. The PEIS must adequately address impacts to aquatic species.

Reduced water volume in the Colorado River system will have direct and indirect impacts on the water quality and ecological health of aquatic and riparian systems. Contaminants that are washed into the rivers from oil and tar sands development will flow downstream. Depleted water volumes will reduce the amount of water available for diluting pollutants and carrying them downstream. Higher levels of pollutants will directly impact the ability of aquatic and riparian organisms to sustain themselves and increase the level of stress on the system dynamics.

Reduced water flows will also impact the ability of streams and rivers to remove excess nitrogen caused by human activities. Timing, distribution and volumes of water in a watershed directly impact the ability and level of de-nitrification and nutrient cycling that defines the overall health of the aquatic ecosystems.

Based upon prior expert comments by John Woodling,¹⁷⁷ the PEIS should:

1. Include fish distribution data on the flannelmouth sucker and the mountain sucker, two BLM species of concern and Colorado species of concern in the White River and Piceance Creek.
2. Adequately describe ambient aquatic resources in rivers downstream of oil shale areas in Colorado. Specifically, the PEIS should include fish distribution data on federally and state listed fish species, BLM species of concern, and Colorado species of concern in the White River, Colorado River and Yampa River. As noted earlier in these comments, these species include the four federally listed species, three species of concern to the BLM and one Colorado species of concern.
3. Adequately describe impacts of water depletion on aquatic species, including whether depletions might trigger Section 7 consultations.¹⁷⁸
4. Identify monitoring that could be used to develop mitigation measures necessary to lessen impacts to water quality and aquatic species.
5. Identify mitigation measures that could reduce water quality and related impacts to aquatic species.
6. Evaluate the potential impacts of high sediment loads to native fish in river reaches downstream of land that may be developed.
7. Evaluate cumulative impacts to water quality. Water depletions may increase total dissolved salt loads, raise water temperature, and increase selenium levels. Together, these impacts may be far reaching, and could extend to downstream environments.
8. Identify cumulative impacts resulting from the combination of oil shale and tar sands and other development activities.

¹⁷⁷John Woodling, Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008. (on file with the BLM)

¹⁷⁸ 16 U.S.C. §§ 1531 et seq. Section 7 of the Endangered Species Act directs all Federal agencies to use their existing authorities to conserve threatened and endangered species and, in consultation with the US Fish and Wildlife Service, to ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat. Section 7 applies to management of Federal lands as well as other Federal actions that may affect listed species, such as Federal approval of private activities through the issuance of Federal permits, licenses, or other actions.

9. Evaluate the potential impacts from human population growth associated with oil shale and tar sands development, including increased nutrient loads resulting from increased domestic wastewater treatment plant effluent.
10. Identify and evaluate key regulations and agreements that will influence oil shale and tar sands development. For example, the seven-state agreement limiting salt loading to the Colorado River by upstream states, as well as other water quality standards that will likely be impacted (e.g., selenium standard; temperature standards).

F. Wildlife impacts

Of the many defining characteristics of western landscapes, none is more important than wildlife and their associated habitats. Colorado's Piceance Basin is home to the largest migratory mule herd in the country. Oil shale and tar sands lands are also home to the Greater sage-grouse, a species that is "warranted but precluded" from listing under the ESA. These and other species are important not simply for their value in healthy ecosystems, but for healthy and diverse economies.

A September 2008 report by BBC Research & Consulting prepared for the Colorado Division of Wildlife concluded that 2007 direct annual expenditures in Colorado from hunting and fishing alone were approximately \$1.1 billion.¹⁷⁹ Secondary impacts of the dollars re-spent within the economy in 2007 are estimated to be \$767 million, for a total economic impact of more than \$1.8 billion. The same study found wildlife watching yields an additional total economic impact of \$1.2 billion annually.¹⁸⁰ Wildlife plays an equally important role in Utah and Wyoming.

For these and other reasons, the BLM must ensure that resident and transient wildlife are protected from oil shale and tar sands development. Based on the BLM's analysis in the FEIS, we are highly concerned that the BLM can meet this mandate.

Federal law directs the BLM to protect and enhance the diversity of all native wildlife on public lands. FLPMA requires management plans protect ecological and other values.¹⁸¹ NEPA, in turn, requires the BLM to fulfill its trustee obligation for future generations, assure productive surroundings, avoid environmental degradation, preserve important natural aspects of our national heritage, and enhance the quality of renewable resources.¹⁸²

Moreover, substantive BLM wildlife policy is established within the Special Status Species Manual (6840) and the Wildlife and Fisheries Management Manual (6500) on BLM lands. The objectives of the Special Status Species policy are twofold: 1) To conserve and/or recover ESA-listed species and the ecosystems on which they depend so that ESA protections are no longer needed for these species; 2) To initiate proactive conservation measures that reduce or eliminate threats to BLM sensitive species to minimize the likelihood of and need for listing these species

¹⁷⁹ BBC Research & Consulting, "The Economic Impacts of Hunting, Fishing and Wildlife Watching in Colorado". Final Report. September 28, 2008, at 1. Main report web page: <http://wildlife.state.co.us/About/Reports/EconomicImpacts/> (last accessed May 11, 2011); report-specific web page: <http://wildlife.state.co.us/NR/rdonlyres/777626FF-9E01-49D7-98EF-0B087AFD4832/0/08DOWEconomicImpactReport.pdf> (last accessed on May 11, 2011)

¹⁸⁰ *Id.* at 2.

¹⁸¹ 43 U.S.C. § 1701(a)(7)-(8).

¹⁸² 42 U.S.C. § 4331(b)(1)-(6)

under the ESA. The second objective is of particular use in this case as it provides the agency with the ability to meaningfully characterize the risk posed by development to wildlife species.

The Wildlife and Fisheries Management policy provides clear, measurable criteria to the BLM as well: “It is BLM policy to manage habitat with emphasis on ecosystems *to ensure self-sustaining populations and a natural abundance and diversity of wildlife, fish, and plant resources on the public lands.*”¹⁸³ In order to accomplish this policy’s goal to ensure self-sustaining populations and a natural abundance and diversity of wildlife, section 6500 states that the BLM will, among other things, “ensure *full consideration* of the wildlife, fish, and special status species in land use plans and other BLM activities.”¹⁸⁴ In addition, it will “ensure that all activity plans (HMPs, AMPs, etc.) include *site specific objectives* for wildlife fish, and special status species and the actions necessary to achieve those objectives.” The purpose of these policies is to provide guidance to the agency in the conservation of the species, habitat and ecosystems found on BLM lands. The wildlife policies clearly apply to this PEIS.

Given the scale and scope of development being contemplated under this PEIS and the significant risk posed to wildlife, habitat and ecosystems by that development, it is imperative that the BLM fulfill its wildlife policy obligations with the utmost diligence. Agency policy provides the BLM with measurable conservation objectives that should be incorporated into all aspects of land use planning and implementation (e.g., as a means of evaluating program and project impacts), and as a standard for implementing key program features, such as mitigation and adaptive management plans.

As discussed above, one of the primary drivers for undertaking this programmatic assessment is to understand the impacts over a broad landscape. A landscape level analysis is a critical component of any NEPA analysis, even if the agency later conducts site-specific analyses. Protecting the biological diversity of wildlife can only be addressed appropriately at the planning level as habitat fragmentation, connectivity, and other factors affecting biological diversity are inherently landscape-level considerations. Relegating such analyses to future decisions on individual leases would contravene BLM’s mandates under both NEPA and FLPMA.

The FPEIS presumes most oil shale and tar sands projects will disturb 100% of the leased surface. As stated by the National Wildlife Federation (NWF) in their comments on the 2008 draft PEIS:

In other words, these projects will completely eliminate the value of those lands as wildlife habitat. In the arid environs where oil shale and tar sands development is being proposed, “reclamation to functional systems similar to that found pre-disturbance will take in excess of 50 years (Baker 2006).” Therefore, habitats disturbed by oil shale and tar sands development would be unavailable for decades even after reclamation has been initiated.¹⁸⁵

¹⁸³ § 6500.06 (emphasis added).

¹⁸⁴ *Id.*

¹⁸⁵ National Wildlife Federation (NWF), Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008, at 6 (footnotes omitted). (on file with the BLM)

Given that the FPEIS amended 12 RMPs, 10 of which contained no oil shale provisions at that time, this PEIS should describe existing environmental conditions and impacts so that the public and decision makers can evaluate the potential ecological costs from commercial development of oil shale and tar sands.

As William Alldredge notes in his comments on the 2008 draft PEIS,

Landscapes influenced by those RMPs have experienced considerable change from a variety of anthropogenic actions, chief among which is gas and oil development (see USDI, BLM 2004, 2006, 2007a, 2007b, 2007c). My experience in these areas is that crucial wildlife habitats are even more crucial today and thus in need of greater protection if impacts are to be minimized or mitigated. This is especially true for big game winter ranges, transition ranges and migration corridors that overlap areas designated for potential leasing.¹⁸⁶

Allredge, a professional wildlife ecologist, states that the BLM “must explain why protected areas and protective measures set forth in previous NEPA processes would be overridden by the deficient analysis in the Oil Shale Tar Sands PEIS.”¹⁸⁷ The deficiencies Allredge identified in the draft PEIS were not remedied in the FPEIS. The BLM must correct and expand its analysis in the PEIS.

While there are great uncertainties about the potential impacts of commercial leasing on wildlife and their associated habitat, some of what is known is stunning. In 2008, BLM identified at least 735,000 acres of mule deer winter habitat, 649,700 acres of elk winter habitat, and 501,503 acres of identified sage-grouse habitat as at risk.¹⁸⁸ As discussed earlier in these comments, sage-grouse populations have declined precipitously over their entire range. Declines have been estimated at over 50% in occupied area and up to 80% decline in bird abundance, with complete extirpation in several states. As stated by NWF in their comments on the draft PEIS:

Scientific data has shown that even a minimal level of development within 3-5 km of a sage-grouse lek negatively influences breeding activity. In fact, recent information from a doctoral dissertation on the impacts of oil and gas development to Greater sage-grouse on the Pinedale Anticline in Wyoming revealed that, as development increased, lek activity declined up to 100%. Holloran (2005). Based on these findings, both Holloran (2005) and Connelly *et al.* (2000) recommend implementing at least a 5 km buffer around active sage-grouse leks.¹⁸⁹

BLM found that other species would be impacted, including:

1. Midget Faded Rattlesnake: The midget faded rattlesnake is believed to be rare throughout its range, which includes northwest Colorado, northeast Utah, and southwest Wyoming and along the lower Green River and Bitter Creek valleys.

¹⁸⁶ A. William Alldredge, Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008, at 2-3. (on file with the BLM)

¹⁸⁷ *Id.*

¹⁸⁸ FPEIS, Table 6.1.2-4, at 6-77.

¹⁸⁹ NWF, Comments on 2008 Oil Shale and Tar Sands DPEIS, at 9. (on file with the BLM)

2. White-Tailed Prairie Dog: White-tailed prairie dogs have declined to 8% of their native range in North America, and the survival of remaining populations is threatened.
3. Mountain Plover: Mountain plovers are often found closely associated with prairie dog colonies of all species. The USFWS is currently reviewing the species for listing as a Threatened Species under ESA.
4. Swift Fox: The swift fox was determined to be “warranted but precluded” for listing under the ESA by the USFWS in 1995.¹⁹⁰ The swift fox is listed as a Species of Special Concern by the Wyoming Game and Fish Department.
5. Burrowing Owl: Nationwide, the burrowing owl is a species on the decline. As of 1997, over half of the agencies across North America tracking burrowing owl population trends reported declining populations, while none reported increasing populations.
6. Wyoming Pocket Gopher: The Wyoming pocket gopher was recently denied protection under the ESA. Nevertheless, protecting this species remains of paramount concern.

Other species of concern that could potentially be impacted by oil shale and tar sands development include the pygmy rabbit, ferruginous hawk, sage sparrow, sage thrasher, Preble’s shrew, dwarf shrew, and Great basin gopher snake. The mitigation measures identified in the FPEIS are inadequate. The steps identified are not sufficient either in their detail or to match the broad impacts that will likely result from oil shale and tar sands development. Narrowly-focused site-specific analyses cannot substitute for a proper cumulative impacts analysis in the PEIS. The PEIS must provide a reasonable basis for identifying and implementing mitigation measures that address landscape levels impacts. As stated by NWF in their comments on the draft PEIS:

BLM traditionally has relied seasonal restrictions such as limiting human access to winter ranges from mid-November to the end of April. *See* 2008 DPEIS at 4-106. However, limiting the construction activities associated with oil shale and tar sands projects to the summer months provides no protection for big game. When the animals return to the winter range in November, they will find their habitat has been hauled away, is covered with waste shale, or is devoid of vegetation.¹⁹¹

The use of Best Management Practices (BMPs) to reduce surface occupancy is similarly limited and illogical when applied to projects already having 100% surface occupancy. It is likewise not credible to suggest, as the BLM did in the FPEIS, that oil shale or tar sands projects with 100% surface occupancy can be successfully mitigated. We therefore recommend that big game crucial ranges (both winter and parturition) and migration corridors, as well as other wildlife habitats of high sensitivity such as mountain plover and raptor nesting concentration areas, not be leased for oil shale and tar sands development. If BLM chooses not to implement this recommendation and instead chooses to offer some of these lands for lease, a NSO stipulation should attach to the lease so that surface disturbing activities, roads, or other related facilities are not allowed on the surface of these habitats.

¹⁹⁰ 60 Fed. Reg. 31663 (June 12, 1995)

¹⁹¹ NWF, Comments on 2008 Oil Shale and Tar Sands DPEIS, at 7-8. (on file with the BLM)

G. Endangered species

Endangered, threatened and candidate species are discussed throughout these comments. However, due to the importance of the issue and the vital importance of the BLM complying with the ESA, a separate section is needed.

The FPEIS clearly did not comply with the ESA. The ESA was enacted, in part, to provide a “means whereby the ecosystems upon which endangered species and threatened species depend may be conserved . . . [and] to provide a program for the conservation of such endangered species and threatened species...”¹⁹² As interpreted by the Supreme Court, “[t]he plain intent of Congress in enacting [the ESA] was to halt and reverse the trend toward species extinction, whatever the cost.”¹⁹³ Reflecting “a conscious decision by Congress to give endangered species priority over the ‘primary missions’ of federal agencies,” the ESA serves as an important check on agencies’ actions.¹⁹⁴

Further, Instruction Memorandum (IM) 97-118, which governs BLM Special Status Species management, requires that actions authorized, funded, or carried out by the BLM do not contribute to species becoming listed as a candidate species, or for candidate species becoming listed as threatened or endangered. Accordingly, it is vital that the agency identify BLM sensitive species early in the NEPA process in order to prevent species from becoming endangered.

To ensure federal agencies fulfill the substantive purposes of the ESA, the statute requires they engage in consultation with the USFWS to “insure that any action authorized, funded, or carried out by such agency ... is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the adverse modification of habitat of such species ... determined ... to be critical”¹⁹⁵

The BLM failed to consult with the USFWS to consider the effects of the RMP amendments on listed species and/or their critical habitat. As provided in the FPEIS and RMP amendments, numerous threatened and endangered species, as well as those proposed for listing, exist in the areas being opened to oil shale and tar sands development. These species include, but are not limited to,¹⁹⁶

1. Razorback sucker
2. Colorado pikeminnow
3. Mexican spotted owl
4. Southwestern willow flycatcher
5. Canada lynx

Some species, including the Clay-reed mustard, Dudley-bluffs bladderpod, Dudley Bluff twinpod and shrubby-reed mustard, are found on shale derived soils and, as a result, are “more

¹⁹² 16 U.S.C. § 1531(b).

¹⁹³ *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 175 (1978).

¹⁹⁴ *Id.* at 185.

¹⁹⁵ 16 U.S.C. § 1536(a)(2) (“section 7 consultation”).

¹⁹⁶ FPEIS, at 4-111.

likely to occur in potential development areas.”¹⁹⁷ Additionally, as discussed above, the greater sage-grouse will be especially adversely impacted by oil shale and tar sands development, as the required infrastructure for the industry will cause fragmented habitation and affect migration and brooding habits.¹⁹⁸

In addition to the BLM failing to consult with the USFWS, the USFWS in their comments on the draft PEIS identified a number of steps the BLM must take to protect critical habitat for threatened, endangered, and candidate species. (The agency also disagreed with the BLM’s preferred alternative, arguing that Alternative C should have instead been chosen.) As the BLM reviews the FPEIS and takes a fresh look at the RMPs, the BLM must both consult with USFWS and examine closely their concerns with any plan that would open substantial amounts of lands to oil shale and tar sands development.

Finally, the USFWS stated “Alternative B suggests a commitment to oil shale and tar sands development that is too large to be sustainable and may threaten the existence of a number of species.” The BLM must take seriously this cautionary note.

H. Endemic wildflowers

Several wildflowers have been protected under the ESA specifically because of the threat of commercial development of oil shale. The BLM must analyze the impacts of oil shale and tar sands development on endemic wildflowers. A thorough analysis of direct, indirect, and cumulative effects of potential oil shale and tar sands development is essential before determining which areas should be available for leasing. The BLM must take a “hard look” at the potential impacts of each alternative to special status plant species, and ensure that the agency is not contributing to the need to list any species, not undermining any existing recovery plans or Conservation Agreements, not sanctioning the adverse modification of designated critical habitat, or permitting leasing in areas where oil shale or tar sands development could jeopardize the future existence of any species.

Rather than simply listing which oil shale or tar sands areas each special status species may occur within, the BLM should work with the Natural Heritage Programs to identify what proportion of the known occurrences of each species would be made available for leasing under each alternative, and should also disclose what proportion of the high-quality occurrences could be offered for lease. This type of landscape analysis is precisely why the PEIS must fully consider impacts from a new program before it is authorized. Deferring analysis until leases are issued or projects are approved results in a piecemeal approach where the BLM may not understand until it is too late that the best recovery habitat for an imperiled species has already been sacrificed.

The PEIS should accurately reflect the life history needs of special status plant species, including, but not limited to:

1. *Astragalus coltonii* var. *moabensis*, which lives in pinyon/juniper and mountain brush

¹⁹⁷ FPEIS, at 4-111.

¹⁹⁸ FPEIS, at 4-78 to 4-80.

communities 4400-6900 ft¹⁹⁹

2. *Cirsium ownbeyi*, which is found in both Sweetwater and Uintah Counties
3. *Penstemon debilis*, which is endemic to the areas under consideration for oil shale development
4. *Sclerocactus wetlandicus* and *Sclerocactus brevispinus*

Most if, not all, of the occurrences of these latter two species are within areas that the BLM proposes to open to oil shale and tar sands leasing, and this decision could constitute jeopardy. In September 2007, the USFWS ruled *Sclerocactus brevispinus* warrants uplisting to “Endangered” status. The finding made no mention of the additional threat of tar sands or oil shale, yet based on conventional oil and gas drilling alone the USFWS stated, “The species cannot tolerate the cumulative effects from existing and proposed energy projects, especially due to the extent of roads within *S. brevispinus* habitat.”²⁰⁰ BLM must ensure that leasing does not jeopardize these special status plant species.

BLM must also protect oil shale endemics like *Penstemon grahamii*. On May 10, 2006, Kathleen Clarke submitted to the USFWS official comments on the proposal to protect *Penstemon grahamii* under the ESA. In her letter, Clarke committed that the FPEIS would incorporate conservation measures for *Penstemon*, including making the proposed critical habitat areas for *Penstemon grahamii* off-limits to oil shale and tar sands leasing:

The BLM will develop the necessary conservation measures to protect this and other species from the future potential impacts of oil shale and tar sands development. This will be accomplished through the recently initiated Programmatic Environmental Impact Statement (PEIS) for the Oil Shale/Tar Sands Commercial Leasing Program and concurrent development of the associated regulatory program. Required conservation measures for *P. grahamii* and other species will be generated through the PEIS process and will be applied to oil shale and tar sands development projects. While we cannot describe what the specific conservation measures will be, because they are yet to be developed, they will incorporate effective conservation measures for *P. grahamii* and other species.²⁰¹

Despite the BLM's past assurances that it would develop necessary conservation measures, the FPEIS failed to adequately protect *Penstemon* critical habitat.

The PEIS should reconsider leasing the former *Penstemon* critical habitat proposal. BLM should evaluate conflicts between leasing and habitat critical to the recovery of *Penstemon grahamii* or other species, and consider what changes in land use allocation or stipulations may be necessary to conserve this species or any of the other oil shale endemic species. Taking these actions for *Penstemon grahamii* is especially critical because this species currently has no special status. The BLM must take a close look at indirect and cumulative impacts to these oil shale endemic species as well.

¹⁹⁹ NatureServe Explorer: An Online Encyclopedia of Life, <http://www.natureserve.org/explorer/> (last accessed April 19, 2011).

²⁰⁰ 72 Fed. Reg. 53217 (Sept. 18, 2007).

²⁰¹ *Id.* at 5-6.

BLM must also consider how climate change would further imperil rare plant species in the region. Many of the rare plants that will be affected by oil shale and tar sands development are edaphic endemics – species tied to very specific substrates, many of them only found growing on oil shale. These species may be particularly hard-pressed to respond to climate change because the soils they rely on may be restricted to very narrow elevational and/or latitudinal bands that do not allow for refugia from warmer, drier conditions. These plants are literally tied down to oil shale soils, and cannot march up a mountain or move north in response to climate change without leaving behind the soils they require. In facilitating the oil shale and tar sands industry, the BLM is dealing these endemics a double blow – fragmenting and degrading their habitat, and contributing even more greenhouse gases (both through oil shale and tar sands mining, and through meeting the tremendous energy needs that would have to power extraction) which may speed species decline due to drought stress.

The Intergovernmental Panel on Climate Change (IPCC) has come to consensus on several factors relevant to the potential threat of climate change to endemic species, including:

1. With global average temperature changes of 2°C above pre-industrial levels, many terrestrial, freshwater and marine species (particularly endemics across the globe) are at a far greater risk of extinction than in the recent geological past (medium confidence).²⁰²
2. Warming and drying trends are likely to induce substantial species-range shifts, and imply a need for migration rates that will exceed the capacity of many endemic species.²⁰³
3. The likely synergistic impacts of climate change and land-use change on endemic species have been widely confirmed.²⁰⁴

The BLM should use the PEIS to take a hard look at the indirect and cumulative impacts that oil shale and tar sands development would have on at-risk species like these. In addition to considering an alternative that avoids disturbance of rare plant populations, the BLM must consider an alternative protecting rare Colorado plant species with Best Management Practices (BMPs). The attached report, “Recommended Best Management Practices for Plants of Concern,” details rare plant BMPs to help BLM ensure that these important resources remain unimpacted by oil shale.²⁰⁵

I. Climate change

An important flaw in the FPEIS is the BLM’s decision to not fully evaluate the effects of climate change. BLM has a legal duty to address the impacts of climate change both from land management actions and to the resource area in the plan revision. This review must correct this flaw.

Climate change has been intensely studied by the world’s scientists, and broad consensus exists around its causes, magnitude, and effects. In February 2007, the IPCC declared, “[w]arming of

²⁰² Fischlin et al., 213 (2007).

²⁰³ *Id.* at 226.

²⁰⁴ *Id.* at 241 (citing Hannah et al., 2002a; Hughes, 2003; Leemans and Eickhout, 2004; Thomas et al., 2004a; Lovejoy and Hannah, 2005; Hare, 2006; Malcolm et al., 2006; Warren, 2006).

²⁰⁵ Attachment 6.

the climate system is unequivocal,” and it is “very likely” that most of the warming since the middle of the 20th century is the result of human pollutants. Climate change is a global phenomenon with well-documented and serious local impacts. Those impacts affect the both ecosystems and the welfare of citizens not only around the world, but in the United States and the nation’s Western states in particular.

Oil shale and tar sands leasing, development and use poses serious climate threats. According to a report by Dr. Adam Brandt, Dr. Jeremy Boak, and Dr. Alan Burnham,²⁰⁶ “without mitigation or technology improvements, full-fuel-cycle carbon dioxide (CO₂) emissions from oil shale derived liquid fuels are likely to be 25-75% higher than those from conventional liquid fuels.” Dr. Brandt is a professor at Stanford University. Dr. Boak runs the Center for Oil Shale Technology and Research, an industry funded research center at the Colorado School of Mines. Dr. Burnham is the Chief Technology Officer with AMSO, one of the RD&D lessees.

As these three scientists note, emissions of CO₂ from oil shale derived fuels come from three stages: retorting of shale, upgrading and refining of raw shale oil, and combustion of the finished transportation fuels.²⁰⁷ As they make clear, “emissions from these stages represent approximately 25-40%, 5-15%, and 50-65% of total fuel-cycle emissions, respectively, [with] the most uncertain source of emissions is the retorting stage, due to variation in emissions with shale quality and retorting technology used.” Brandt, Boak, and Burnham conclude that “the primary opportunity for reducing CO₂ emissions from oil shale retorting lies in the substitution of low- or zero-carbon energy sources for high carbon sources.” That means, “given the potential scale of emissions, it is clear that mitigation of CO₂ emissions from oil shale development will be needed to comply with any future CO₂ regulation.”

In recent years, industry has made the claim that it will be able to mitigate the impacts of climate change by using natural gas and rather than coal-fired power plants to power oil shale extraction. At least one company is researching the feasibility of down-hole burning of natural gas. The idea of using natural gas as part of the development cycle makes sense. While estimates vary, roughly 1/3 of the product produced on an oil shale lease would be natural gas.

For this reason, a close examination of using natural gas for extraction purposes is necessary. First, to produce 2,400 MW, a very efficient combined cycle gas power plant would require approximately 135 billion cubic feet of natural gas,²⁰⁸ or about 10% of Colorado’s gas production. According to the FPEIS, the BLM projects a 100,000 barrel per day oil shale operation would require all of the electricity from a 1,200 Megawatt (MW) power plant.²⁰⁹ This size power plant would generate enough electricity each year to serve 1.2 million homes. To produce 1,550,000 barrels per day from oil shale alone, as the BLM projected is feasible, would

²⁰⁶ Adam Brandt, Jeremy Boak, Alan Burnham, “Carbon Dioxide Emissions from Oil Shale Derived Liquid Fuels”, Attachment 7.

²⁰⁷ *Id.*

²⁰⁸ There is roughly 1000 Btu per cubic foot of gas. A 2400 MW combined cycle power plant would generate about 18 million MWh per year at an 85% capacity factor. The heat rate might be 7.5 MMBtu/MWh, implying 135 billion cubic feet of gas per year.

²⁰⁹ Bureau of Land Management, *Oil Shale and Tar Sands Resource Management Plan Amendments to Address Land Use Allocations in Colorado, Utah, and Wyoming and Programmatic Environmental Impact Statement*, 2008, at 4-14.

require all of the power from approximately 18,000 MW coal plants. (As a point of reference, the largest aluminum smelter in the world is being developed in the United Arab Emirates. It will require a 2,000 MW plant.²¹⁰)

Developing roughly 18,000 MW of electricity from natural gas would require an enormous amount of gas. As a further point of reference, the Tennessee Valley Authority's new 880 MW natural gas plant is expected to cost approximately \$820 million and consume 160 million cubic feet of natural gas a day.²¹¹

In addition to evaluating the natural gas requirements associated with oil shale and tar sands development, the BLM must also evaluate the climate impacts of natural gas. An April 2011 report by Dr. Robert Howarth of Cornell University raises serious concerns about claims that natural gas will supply clean, less climate-impactful energy.²¹² This report concludes that natural gas obtained through fracking yields more global warming per unit of energy than coal – 20 percent more, and possibly up to twice as much.

The report states that due to the fracking process, methane and other gases are released. These gases, Howarth and his colleagues conclude, flow back up the well. As the BLM is aware, methane is an extremely potent greenhouse gas, and the fracking of gas formations, as some of the RD&D lessees have stated they will do, could increase oil shale's climate impacts.

One final issue the BLM should analyze is the greenhouse gas implications of AMSO's downhole burning process.²¹³ While little technical detail has been publicly provided about this process, at least one person – James Bartis with the Rand Corporation – believes the greenhouse gas emissions could be lower than generating electricity from coal-fired power plants.²¹⁴ Whether Bartis' supposition is accurate must be tested as part of the BLM's analysis in the PEIS. What we currently do not know is whether burning natural gas underground can release any greenhouse gas constituents, including but not limited to methane.

i. Legal and policy basis for the BLM evaluating climate change

BLM's mandate to evaluate the impacts of its land use decisions on climate change and to take action is clear. In 2007, the Supreme Court issued a decision that recognized the severity of the climate change crisis, and the EPA's obligation to confront the problem. The Court noted "the enormity of the potential consequences associated with man-made climate change,"²¹⁵ and the contribution of carbon dioxide emissions to global warming.²¹⁶ The Supreme Court concluded,

²¹⁰ <http://www.zawya.com/projects/project.cfm/pid120207062258> (last accessed on December 13, 2010).

²¹¹ TVA Announces Preferred Location for Northeast Tenn. Combined-Cycle Gas Plant, August 7, 2009, http://www.tva.gov/news/releases/julsep09/ne_tenn_cc.htm (last accessed on December 6, 2010); Greenville Sun, "Big Natural Built Near Rogersville," August 6, 2009, <http://greenvillesun.com/story/305065> (last accessed on December 6, 2010).

²¹² Robert W. Howarth, Renee Santoro, and Anthony Ingraffea, "Methane and the Greenhouse-Gas Footprint of Natural Gas from Shale Formations", April 2011. (<http://thehill.com/images/stories/blogs/energy/howarth.pdf>) last accessed on April 26, 2011.

²¹³ <http://www.amso.net/Our-Concept/Our-Process.aspx> (last accessed May 1, 2011).

²¹⁴ James T. Bartis, "Oil Shale Development in the United States: Prospects and Policy Issues," 2005, at 45.

²¹⁵ *Id.* at 1458.

²¹⁶ *Id.* at 1457-58.

“[t]he harms associated with climate change are serious and well recognized,”²¹⁷ and that the federal government has a responsibility to take action to reduce it, even if such action may not completely reverse global warming.²¹⁸

In connecting climate change with an agency’s NEPA responsibilities, the U.S. Court of Appeals for the Ninth Circuit has stated that, as with any relevant information, an agency must take a “hard look” at the effects of climate change in its EIS.²¹⁹ This requirement flows in part out of the cumulative effects analysis requirements of NEPA.²²⁰ Accordingly, the analysis is one of considering “the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions,” including the impacts of climate change.²²¹ BLM is not exempt from this responsibility.

Indeed, Interior Secretary Salazar understands the great importance of Interior agencies analyzing the impacts of agency decisions on our climate. Secretarial Order (S.O.) No. 3289 unequivocally mandates that all Department of the Interior agencies “analyze potential climate change impacts when undertaking long-range planning exercises, setting priorities for scientific research and investigations, developing multi-year management plans, and making major decisions regarding potential use of resources under the Department’s purview.”²²² This PEIS and related RMP revisions fall squarely under this guidance and BLM must assess impacts from the proposed actions that may directly, indirectly, or cumulatively result in exacerbating climate change within this document.

Further, NEPA regulations require that NEPA documents address not only the direct effects of federal proposals, but also “reasonably foreseeable” indirect effects. These are defined as:

Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.”²²³

BLM is required to take a hard look at direct, indirect, and cumulative impacts to and from climate change in the planning area in the RMP.

FLPMA likewise provides relevant guidance. In enacting FLPMA, Congress enacted a policy that “the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values....”²²⁴ Further, FLPMA directs BLM to manage the lands under its jurisdiction in such a

²¹⁷ *Massachusetts v. EPA*, 127 S. Ct. 1438, 1455 (2007).

²¹⁸ *Id.* at 1458.

²¹⁹ *Ctr. for Biological Diversity v. Nat’l Hwy. Traffic Safety Admin.*, 538 F.3d 1172, 1214-15 (9th Cir. 2008).

²²⁰ *Id.* at 1215 (citing *Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt.*, 387 F.3d 989, 994 (9th Cir. 2004)).

²²¹ *Id.* (quoting 40 C.F.R. §1508.7).

²²² S.O. 3289, incorporating S.O. 3226.

²²³ 40 C.F.R. § 1508.8(b) (emphasis added).

²²⁴ 43 U.S.C. at § 1701(a)(8).

manner that will “best meet the present and future needs of the American people;” “provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions;” and “take[] into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish....”²²⁵ In addition, the statute requires BLM to “minimize adverse impacts on the natural, environmental, scientific, cultural, and other resources and values (including fish and wildlife habitat) of the public lands involved.”²²⁶

Finally, recent guidance from CEQ must be incorporated into this review. Executive Order 13514, “Federal Leadership in Environmental, Energy, and Economic Performance,” seeks to establish an integrated strategy towards sustainability in the federal government. Section 8(i) of the Order requires each federal agency “evaluate agency climate-change risks and vulnerabilities to manage the effects of climate change on the agency’s operations and mission in both the short term and long term.”²²⁷ A core element of CEQ guidance to implement this Order is to “identify measures to incorporate climate change-related considerations into existing agency planning processes, including the development of measurable goals and performance metrics to guide adaptation efforts and assess whether efforts are achieving desired outcomes.”²²⁸ The PEIS provides such an opportunity.

In addressing climate impacts, BLM must craft long-term management prescriptions without permanent impairment and unnecessary or undue degradation to the resources in the face of climate change. S.O. 3289 states that “[t]he realities of climate change require us to change how we manage the land, water, fish and wildlife, and cultural heritage and tribal lands and resources we oversee.”

ii. Overview of climate impacts in the West

As Environmental Defense Fund and Western Resource Advocates discussed in their 2010 report, “Protecting the Lifeline of the West: How Climate and Clean Energy Policies Can Safeguard Water,”

Climate change is already impacts western water resources. Scientists have measured long-term downward trends of snowpack in western coastal states and shifts toward earlier spring runoff in mountainous river basins across the region. If climate change is not addressed, future changes will greatly exacerbate the West’s water supply challenge....In the Colorado River Basin, climate change issues could not be more pressing. The river supplies water to over 30 million people and 1.4 million acres of farmland....Today, water demands exceed supplies in the basin; any further reduction in available water will directly impact current users – farmers, cities, and industry. And in a

²²⁵ *Id.* § 1702(c).

²²⁶ *Id.* § 1732(d)(2)(a).

²²⁷ Executive Order 13514, October 9, 2009. 74 Fed. Reg. 52117, 52118.

²²⁸ Council on Environmental Quality, “Implementing Climate Change Adaptation Planning in Accordance with Executive Order 13514, March 4, 2011, at 17-18.

recent assessment, 46 of 49 global circulation model simulations projected a more arid southwestern U.S. in future years, with the droughts on the past becoming the norm.²²⁹

Around 2050, the timeframe that the BLM predicted industry could be developing large-scale commercial operations, 23 of 24 global circulation models project runoff of the upper Colorado River will decrease 5-20%.²³⁰ Among other impacts, a drier climate will further challenge water providers' ability to meet projected demands. Oil shale and tar sands development would not only contribute to climate change, but, as discussed above in the section on water availability, would compete for the same dwindling resource.

As Western Resource Advocates *et al.* explained in their comments on the draft PEIS, there are five ways in which public land resources are already being adversely affected by climate change.²³¹

1. The West is getting hotter

The American West has heated up even more than the world as a whole. The West has also experienced more frequent and severe heat waves, with the number of extremely hot days increasing by up to four days per decade since 1950.

2. The West is getting drier

In the arid and semi-arid West, global warming is already having serious consequences for the region's scarce water supplies, particularly the snow that makes up most of the region's precipitation and, when melted, provides 70% of its water. Already, decreases in snowpack, less snowfall, earlier snow melt, more winter rain events, increased peak winter flows, and reduced summer flows have been documented.

3. Climate change is disrupting ecosystems

The IPCC also concluded that "recent warming is already strongly affecting" ecosystems and wildlife. Forests across the West have suffered as warming has extended the range of some damaging insects, such as bark beetles. Glaciers are melting across the West. The warming of the West is also disrupting the natural timing of seasons and leading to loss of wildlife.

4. Climate change is affecting wildlife

Greenhouse gas emissions are also having direct and indirect impacts on wildlife species, including numerous listed species. The IPCC has reported that 30% of animal and plant species could be at an increased risk of extinction if global warming continues unabated.²³²

²²⁹ Environmental Defense Fund and Western Resource Advocates, "Protecting the Lifeline of the West: How Climate and Clean Energy Policies Can Safeguard Water," 2010, at i-ii.
<http://www.westernresourceadvocates.org/water/lifeline/lifeline.pdf> (last accessed on May 6, 2011)

²³⁰ *Id.* at 5.

²³¹ Western Resource Advocates *et. al.*, Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008. (on file with the BLM)

²³² IPCC, 2007: Summary for Policymakers. In: Climate Change 2007: Fourth Assessment Report, Synthesis Report, available at http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

5. Warmer temperatures affect business, recreation, and tourism

In the first few years of the 21st century, western farmers and ranchers have suffered significantly from the combination of above-normal heat and drought. Across the country, four of the five top years for crop loss claims due to drought have been since 2000. Warming temperatures and other manifestations of a changing climate are already diminishing fishing and hunting opportunities in the West.

J. Air resources

Already, the Uintah Basin in Utah and areas around Rifle, Colorado, are suffering from extremely poor air quality from ongoing oil and gas development. So too is Pinedale, Wyoming and parts of the Red Desert. Based on what the BLM identified in the FPEIS, and based on new data that has been gathered since that time, oil shale and tar sands development would likely further degrade air quality.

In their comments on the draft PEIS, the EPA and NPS raised serious concerns about air quality. The EPA stated “oil shale and tar sands development processes may have significant, adverse impacts to air quality, in particular by increasing levels of ozone and nitrogen deposition and by impairing visibility on a regional level.”²³³ The NPS noted that eight units

have a very high potential for being adversely affected by cross-boundary or direct impacts from exploration and development activities...: Arches, Black Canyon of the Gunnison, Canyonlands and Capitol Reef National Parks; Colorado, Dinosaur and Fossil Butte National Monuments; and Glen Canyon Recreation Area. Numerous additional park units in the western United States could be adversely impacted by regional air and water impacts likely to be generated from large scale, industrial activities associated with oil shale and tar sands development.²³⁴

In addition, monitors in Utah’s Uintah Basin have shown that concentrations of both PM_{2.5} and ozone are above the current NAAQS. EPA and the Ute Indian Tribe recently started monitoring ozone at four locations: Myton, White Rocks, Ouray, and Red Wash. Last winter, ozone levels reached a high 8-hour value of .137 ppm during inversion conditions, nearly twice the federal health standard. At the same time, Utah’s Division of Air Quality wintertime monitoring studies for 2007, 2008, and 2009 showed that PM_{2.5} concentrations in the Basin are above the standard and can be as high as that seen along the Wasatch Front.

These concerns were not adequately addressed in the FPEIS. In fact, the BLM noted only that: “Since all activities either conducted or approved through use authorizations by the BLM must comply with all applicable local, state, Tribal, and federal air quality laws, statutes, regulations, standards, and implementation plans, it is unlikely that future oil shale development would cause significant adverse air quality impacts.”²³⁵ As demonstrated above, one does not need to look further than oil and gas development in Colorado, Utah and Wyoming to know that contemporary industrial fossil fuel development activities are already wreaking havoc on air quality.

²³³ EPA, Comments on 2008 Oil Shale and Tar Sands DPEIS, at 2.

²³⁴ NPS, Comments on 2008 Oil Shale and Tar Sands DPEIS, at 2.

²³⁵ FPEIS at 4-53.

For several reasons, this approach – neglecting to address air quality impacts based on the assertion that air quality permitting will ensure that no significant adverse impacts will occur – fails to comply with the relevant law. NEPA requires that agencies consider and disclose to the public the direct, indirect and cumulative impacts of their actions.²³⁶ Moreover, BLM is required to assess and report on the cumulative impacts of expected emissions on the National Ambient Air Quality Standards (NAAQS), prevention of significant deterioration (PSD) increments, and air quality related values (AQRVs). BLM must identify alternatives or other mitigation measures sufficient to prevent expected impacts, including air quality violations. Likewise, under the Clean Air Act (CAA),²³⁷ RMPs must manage actions on public lands to meet the air quality standards prescribed by Federal, State, and local laws, which includes improving air quality in non-attainment areas. FLPMA further mandates “[i]n the development and revision of land use plans, the Secretary shall... (8) provide for compliance with applicable pollution control laws, including State and Federal air, water, noise, or other pollution standards or implementation plans....”²³⁸ Taken together, under this regulatory framework, the BLM must conduct a full-scale quantitative analysis of the air quality impacts in both the study area and all affected areas. Otherwise, it is impossible to quantitatively show that production contemplated under the PEIS and as provided in the RMP amendments will ensure attainment with all applicable standards.

Thus, to meet its substantive duties, BLM may not simply defer to state or federal regulations to demonstrate that the NAAQS and PSD increments for pollutants under the CAA will be protected. This is because of the following:

1. NEPA requires BLM to undertake a careful examination of the direct, indirect and cumulative environmental impacts of its proposed actions.
2. Utah has not had a network of air quality monitors in the areas relevant to this action sufficient to determine compliance with NAAQS. Moreover, historically, the relevant area that monitors ozone—Dinosaur National Monument—has done so largely in the summer. Recent air quality analysis in and around oil and gas development fields show that ozone and PM_{2.5} concentrations exceed NAAQS in the winter, when the nearby ozone monitor has been off line.
3. States, including Utah, have not yet submitted State Implementation Plan (SIP) revisions to the EPA pursuant to Section 110 of the CAA to ensure attainment of the ozone and PM_{2.5}—particulate matter less than 2.5 microns in diameter—NAAQS, meaning that no analysis or finding has been made showing that current state air quality rules are sufficient to ensure compliance with these NAAQS.
4. Utah’s Regional Haze SIP has not been approved by EPA. This further means that no analysis or finding has been made to show that state air quality rules are sufficient to guarantee compliance with the CAA’s goal of improving visibility in affected Class I areas.
5. The State of Utah permitting requirements do not apply to stationary sources that emit five tons per year or fewer of any criteria pollutant²³⁹ and only require an analysis of ambient air quality impacts if a source releases more than 40 tons of nitrogen oxides, 5

²³⁶ 42 U.S.C. § 4332(2); 40 C.F.R. §§ 1508.7, 1508.8; 1508.25(c).

²³⁷ 42 U.S.C. § 7401-7671

²³⁸ 43 U.S.C. § 1712(c)(8); *see also* 43 CFR § 2920.7(b)(3) (requiring the same for land use authorizations).

²³⁹ *See* Utah Administrative Code R307-401-9

tons of fugitive particulate matter less than 10 microns in diameter (PM₁₀), and 15 tons of non-fugitive PM₁₀.²⁴⁰ Furthermore, State of Utah permitting requirements do not actually require any analysis of impacts to ozone or to PM_{2.5}.

6. Clean Air Act regulations provide that a facility will not be regulated as a major source of hazardous air pollutants unless it emits 25 tons per year or more of any combination of hazardous air pollutants.
7. The State of Utah is failing to permit stationary oil and gas production facilities in accordance with PSD requirements under the CAA and EPA guidance. Namely, the State of Utah is not appropriately identifying stationary sources consistent with the regulatory definition of a stationary source, which is any “building, structure, facility, or installation,” including “all of the pollutant emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control).”²⁴¹ The EPA recently reaffirmed the need for States to appropriately define oil and gas sources consistent with this definition.²⁴² Unfortunately, the State of Utah is not complying with this EPA guidance and is, as a result, failing to permit oil and gas stationary sources as dictated by the Clean Air Act.
8. The State of Utah does not limit emissions related to vehicle tailpipes or fugitive dust or particulate matter to ensure compliance with the NAAQS.
9. The State of Utah does not otherwise address the cumulative impacts of oil and gas development to air quality. Although the State has a PSD permitting program, this program only applies to single stationary sources that “consume increment” and does not address emissions from older stationary sources or from oil and gas development in the aggregate on a regional level.

Colorado is facing similar challenges. While the FPEIS explicitly excludes from oil shale leasing designated wilderness areas, WSAs, lands within the National Lands Conservation System (NLCS) like National Monuments, National Conservation Areas, Wild and Scenic Rivers, and National Historic and Scenic Trails, indirect impacts from commercial scale oil shale are still likely to impact these areas.

For example, PSD Class 1 Areas in Western Colorado, like the Maroon Bells-Snowmass Wilderness Area and the Flat Tops Wilderness Area, may already be experiencing air quality deterioration as a result of increased oil and gas activities on the West Slope. As discussed above, further deterioration of air quality in these airsheds contravenes federal law. The FPEIS raises this issue, but fails to analyze it. Colorado National Monument and Dinosaur National Monument are both Colorado Category 1 Areas. Though not as stringently regulated as PSD Class 1 Areas, these areas may experience deteriorating visibility, nitrogen and sulfur deposition, changes in water chemistry, as well as impacts to vegetation and human health. These impacts should be understood and documented before the BLM undertakes revision of numerous RMPs opens the door to extensive oil shale development.

²⁴⁰ See Utah Administrative Code R307-410-4

²⁴¹ See 40 CFR §§ 51.166(b)(5) and (b)(6).

²⁴² See Memo from Gina McCarthy, Asst. EPA Administrator to Regional Administrators, “Withdrawal of Source Determinations for Oil and Gas Industries” (September 22, 2009), available at <http://www.epa.gov/region07/air/nsr/nsrmemos/oilgaswithdrawal.pdf>.

Additionally, BLM recently completed or is currently undertaking revision of numerous Resource Management Plans in northwest Colorado. The resource management plans, without exception, anticipate increased oil and gas development. In some cases the BLM is anticipating oil and gas development to increase by orders of magnitude over what currently exists. Any effort by BLM to amend RMPs in Colorado will necessitate an updated air quality analysis that considers potential impacts of anticipated oil and gas development along with anticipated oil shale development.

Given what we know about the energy needs of this industry and the likely sources of generation for that energy, it is irresponsible for the BLM to pave the way for more than 350,000 acres of oil shale development in western Colorado without an adequate air quality analysis. Such activity may require a dozen or more large new power plants burning coal or natural gas. The fuel stock for those powerplants may also come from northwest Colorado. Piling impacts on impacts makes for a complicated analysis, but is necessary to give the public full and fair warning about the impacts we will likely have to bear. That disclosure and analysis is also required by the law.

Due to the concerns of federal agencies and realities on the ground, and consistent with FLPMA and NEPA, BLM must not defer air quality analyses until specific oil shale and tar sands development projects are proposed. Such a deferral, as the BLM did in the FPEIS, violates both NEPA and FLPMA – and without such an analysis in the PEIS, the BLM would not be able to determine how any activities authorized under RMP amendments would affect air quality. The BLM would likewise not be able to ensure that development will prevent significant deterioration of air quality, as required by the CAA.

FLPMA requires the BLM to consider the relative value of the various resources, and clean air is increasingly becoming (along with undeveloped landscapes) a most valued, yet dwindling, resource. Oil shale and tar sands development activities directly contribute to air pollution in several ways, all of which should be addressed in the PEIS. Under NEPA, the BLM must conduct a comprehensive quantitative analysis of air quality impacts and evaluate the potential impacts of air pollution from commercial-scale oil shale and tar sands development on human health and the environment.

Because of oil and gas drilling and other activities in the study area, the BLM and industry are not starting with a clean slate. There are ongoing air quality concerns. Particulate matter concentrations are high as are ozone concentrations. Visibility in several Class I Areas in each state is already impacted. The final EAs for the five oil shale RD&D test sites in Colorado concluded there will be significant adverse effects on visibility at the Flat Tops Wilderness Area Class I area. Several RMPs in Utah have identified visibility impacts from oil and gas development in several Class I areas, including Canyonlands National Park and Capitol Reef National Park. In Wyoming, there are serious concerns that visibility in the Bridger Wilderness Area and other nearby Class I areas as a result of oil and gas development in the Pinedale Anticline and Jonah Fields.

Part of the challenge industry faces in trying to develop oil shale and tar sands is that the increments are already consumed. As Megan Williams noted in her comments on the draft PEIS,

“the near-field modeling performed for the draft EGL [now AMSO] oil shale RD&D EA showed that the EGL project alone would directly cause violations of the 24-hour average Class II PM₁₀ and SO₂ increments.”²⁴³ The PEIS should consider whether development planned for the existing RD&D leases could preclude any additional oil shale development.

Williams further notes there are a number of other steps the BLM must take to comply with all applicable laws and regulations:

1. The BLM must acknowledge and address the potential enormous impacts that would result from the electricity requirements of commercial scale oil shale and tar sands development;
2. The BLM must determine whether commercial-scale oil shale and tar sands development, along with all other ongoing development in the study area, will cause significant deterioration of air quality or impact visibility;
3. The BLM must disclose the magnitude of emissions authorized under each alternative it evaluates and perform a full-scale dispersion modeling analysis to evaluate the potential air quality impacts from a commercial-scale oil shale and tar sands leasing program; and
4. The BLM must include adequate plans to protect air quality in the affected areas as part of the RMP amendments and a PEIS.
5. The BLM must address the current NAAQS for nitrogen dioxide. On February 9, 2010, the EPA finalized revisions to the nitrogen dioxide NAAQS, supplementing the current annual standard of 53 ppb with a 1-hour standard of 100 ppb.²⁴⁴ These NAAQS became effective on April 12, 2010.
6. The BLM must ensure the protection of the air quality related values in any affected Class I areas.
7. The BLM must ensure protection of Class I and Class II PSD increments.
8. The BLM must inventory likely fugitive dust emissions differentiated for PM₁₀ and PM_{2.5} for motor vehicle use in and around the planning area. It must also consider the tailpipe emissions of these activities. In this context, BLM must consider the cumulative impacts of these activities together with the potential impacts associated with the proposed action and its alternatives.

Relative to Utah, BLM must:

1. Adopt a PM_{2.5} and ozone baseline for purposes of modeling that is reflective of the actual data collected in the area.
2. Show that the proposed leasing decision will not lead to further exceedances of NAAQS
3. Address the impacts of secondary PM_{2.5} formation
4. Fully analyze and assess the direct, indirect, and cumulative impacts of energy development on PM_{2.5} and ozone concentrations, and ensure that steps are taken to mitigate such impacts

These steps are also applicable to this PEIS.

²⁴³ Megan Williams, Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008, at 9. (on file with the BLM)

²⁴⁴ See Primary National Ambient Air Quality Standards for Nitrogen Dioxide, Final Rule, 75 Fed. Reg. 6474-6537 (February 9, 2010).

K. Socio-economic impacts

Over the past 30 years, western economies have shifted from largely extractive industries to more diversified economies based on recreation, tourism, knowledge-based industries, and the professional and service sector. A 2004 study examining the impact of public lands on economic well-being in 11 western states found that only 3% of western counties could be classified as resource-extraction dependent.²⁴⁵ There is a vast and growing body of research that indicates that the environmental amenities provided by public lands are an important economic driver in the rural West. Given the changing nature of these economies, prioritizing oil shale and tar sands development at the expense of non-extractive economic drivers may harm the economy of the region in the long run by depleting the natural amenities currently responsible for the economic growth of western communities.

It is especially important to consider these demographic and economic shifts given the location where oil shale and tar sands development is being proposed. Since the 1982 oil shale bust, northwest Colorado has successfully transitioned from an economy dependent on extraction of natural resources to one that relies more heavily on the protection of the natural amenities. This area has developed a thriving retirement community, and has begun to market itself as a destination for outdoor recreation. In fact, many rural communities in the Rocky Mountain region are benefiting from the increase in demand for outdoor recreation, especially activities on federal public lands. The President's America Great Outdoors Initiative recognizes the social, economic and spiritual values of our public lands for recreation,²⁴⁶ so in analyzing the socio-economic impacts of oil shale and tar sands development, the PEIS must recognize these benefits.

The proposed oil shale and tar sands development threatens these economic drivers. It is imperative that the relationship between protected public lands in the area and the local economy be given a more thorough comprehensive examination across the three-state region. As rural communities diversify their economies, the framework for making public land management decisions must also evolve. Management plans for public lands need to account for all aspects of the economic and social systems of these communities, including investment and retirement income, recreation, tourism, and entrepreneurial businesses attracted to scenic locations, when evaluating alternatives. Management plans must also consider the increasing importance of industries and economic sectors that rely on these public lands, but not necessarily on the extraction of natural resources. As the population of the entire country grows, the presence of undeveloped lands becomes increasingly important because these lands strengthen western rural economies by meeting growing needs for clean air and water, wildlife habitat, and recreation opportunities.

In evaluating the socio-economic value of our public lands, we recommend that the BLM use a total economic value approach that includes the estimation of non-market values for the planning area. BLM recently affirmed its commitment to this approach in IM 2010-061, which explicitly

²⁴⁵ R. Rasker, B. Alexander, J. van den Noort and R. Carter. 2004. The Sonoran Institute, Public Lands Conservation and Economic Well-Being. Tucson AZ: The Sonoran Institute.

http://sonoran.org/index.php?option=com_docman&task=cat_view&gid=152&Itemid=74.

²⁴⁶ <http://americasgreatoutdoors.gov/>

directs managers to evaluate non-market values in RMP analyses. The total economic value analysis should include the full range of non-market values, including use values – such as recreation – as well as non-use values such as existence value (the benefit one gains just knowing wild, public lands are protected), option values (the benefit of knowing that one can visit BLM lands for recreation) and bequest values (the benefit gained from knowing that these lands are protected for future generations).

The BLM should analyze the benefits to the local communities from management which ensures that the area’s scenic landscapes are protected, such as through special designations, and that the important economic role that protected public lands play in the local economy is continued and enhanced.

FLPMA specifically incorporates such non-market resources as “the long-term needs of future generations” for recreation and “natural scenic, scientific and historical values” into the BLM’s multiple use mandate.²⁴⁷ FLPMA further defines multiple use to require the agency to encompass non-market values into management, directing the BLM to achieve:

harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.²⁴⁸

The BLM must also address community infrastructure needs. A 2008 report by BBC Consulting evaluating the economic impacts of oil shale development (coupled with oil and gas development) highlights the challenge and needs communities could face.²⁴⁹ The report, which was prepared for the Associated Governments of Northwest Colorado, offer a number of startling conclusions. Two in particular bear attention.

First, concurrent oil/gas and large-scale oil shale development will cause existing towns to reach capacity. New towns will have to be built. The report also notes baseline population projections already strain most municipalities. Second, even with payments made to the cities and counties, growth-related capital costs are projected to exceed energy revenues by \$1.3 billion. The report suggests some of the revenues loss could be made up from state grants, but given the state’s budget challenges and budget projections, that assumption is highly questionable.

In their comments on the on the draft PEIS, Club 20, a group representing the 20 counties in western Colorado, noted that based on these economic considerations, “the federal government must encourage industry to make appropriate up-front investments in the infrastructure of locally-impacted communities.”²⁵⁰ Club 20 further noted, “we are concerned about the socio-economic impacts to the local communities. As the PEIS anticipates, “rapid increases in

²⁴⁷ 43 U.S.C. § 1702(c).

²⁴⁸ 43 U.S.C. § 1702(c).

²⁴⁹ Northwest Colorado Socioeconomic Analysis and Forecasts, April 2008. http://agnc.org/reports/08-socioeconomic/agnc_final_mail_report_4-07-08.pdf (last accessed April 27, 2011).

²⁵⁰ Club 20, Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008, at 4. (on file with the BLM)

population immigration in parts of each region of influence could impact quality of life, in particular requiring a transition from traditional rural, to more urban lifestyles, and potentially cause large social disruption impacts.”

Specifically, as Club 20 noted, “with the increasing natural gas development activity in northwestern Colorado, we are already experiencing:

1. housing shortages,
2. dramatic increases in retail and housing prices,
3. overwhelming demands on the community’s social and physical infrastructure (schools, police and fire services, social services, water and sewer), and
4. a lack of available workforce to sustain each community’s traditional Main Street economy.”

The analysis of the socio-economic impacts must be thorough and accurate in order to responsibly manage the public lands.

L. Cultural and paleontological resources

Most, if not all historical, archeological, cultural and paleontological resources (hereinafter, “cultural resources”) are strictly non-renewable. Once marred or destroyed, they are forever lost to future generations. Such fragility demands utmost care and humility from BLM managers and planners. Each RMP the BLM amends through the PEIS should reflect and require a conservative approach to managing these priceless and irreplaceable resources.

Federal laws, regulations and executive orders require the BLM to protect properties of cultural and religious significance. FLPMA specifies the BLM must protect cultural resources,²⁵¹ while the National Historic Preservation Act of 1966 (NHPA)²⁵² provides for enhanced consideration of potential impacts to these resources through a cooperative federal-state program. NHPA compliance includes assessing the effects of management actions on historic and cultural resources listed or eligible for listing to the National Register of Historic Places.²⁵³ Other governing laws include, but are not limited to, the Antiquities Act of 1906,²⁵⁴ the Archaeological Resources Protection Act (ARPA),²⁵⁵ and the Native American Graves Protection and Repatriation Act (NAGPRA).²⁵⁶ BLM’s decisions regarding cultural resource management are also governed by NEPA. The BLM must adhere to these and other laws when amending and implementing each RMP, and must provide evidence of cultural resource consideration as part of the PEIS prepared during the RMP revision process.²⁵⁷

These responsibilities were reaffirmed by Executive Order 13287 (March 3, 2003): “[The BLM must ensure] the management of historic properties in its ownership is conducted in a manner that promotes the long-term preservation and use of those properties as Federal assets” It is within this broad context that the BLM must carefully consider federal management actions

²⁵¹ 43 U.S.C. §§ 1701(a)(8), 1702(c).

²⁵² 16 U.S.C. §§ 470 to 470x-6.

²⁵³ *Id.* at § 470f.

²⁵⁴ *Id.* at §§ 431-33.

²⁵⁵ *Id.* at §§ 470aa-mm.

²⁵⁶ 25 U.S.C. §§ 3001-13.

²⁵⁷ *See* BLM Manual MS-8100.08.A.1.b.(3).

regarding oil shale and tar sands and the affects of such decisions on archaeological and historic resources of significance.

While the BLM's multiple use mandate requires land managers to consider the value of cultural resources in their decision-making process, these resources are frequently given short shrift in this calculus. Their value is not easily measured, and as a result they are sacrificed in pursuit of more obviously economically profitable resources.

RMPs serve as the principle guide for the BLM's management of cultural resources.²⁵⁸ As noted above, the BLM's multiple use mandate requires managers to balance resource use and resource preservation. BLM Manual 8100 provides that land use plans should take into account the effects other land and resource uses may have on cultural resources. The Manual notes that the need for additional information should be evaluated, responsibilities assigned, and schedules established at the outset of the planning process.²⁵⁹ In other words, not only must the BLM examine the effects of other land and resource uses on cultural resources, it must evaluate whether or not it possesses sufficient information to assess these potential resource conflicts. If the agency lacks enough information to make informed decisions, it must collect data according to a plan and schedule established at the outset of the planning process. The BLM should clearly spell out the process the agency will follow in order to comply with the procedures outlined by Manual 8100.²⁶⁰

Manual 8120 also makes clear that the BLM can prevent unauthorized use of cultural properties through a variety of measures, including administrative protection measures.²⁶¹ The Manual specifically notes that the BLM's protective measures may include "withdrawal, closure to public access and off-road vehicles, special designations," etc.²⁶² The PEIS should identify areas where cultural sites are at risk, and, because the PEIS would amend RMPs, should employ one or more of these administrative measures to protect these resources. The areas designated should be of sufficient size to allow viable protection of the resources; designation of just the site itself may not allow for effective management. More specifically, the BLM should consider closing culturally-sensitive areas to oil shale and tar sands leasing.

The RMP amendments through the PEIS commit the agency to a particular course of action and thus need to be fully considered. First, Congress' charge to the BLM was to assess the impacts resulting from oil shale and tar sands development. As Jerry Spangler noted in his comments on the draft PEIS, there are significant cultural resources in the areas under consideration for oil shale and tar sands development.²⁶³ Any BLM decision to defer identifying the direct, indirect and cumulative impacts of oil shale and tar sands development under a later date contravenes Congress' charge to evaluate the impacts.

²⁵⁸ See BLM Manual MS-8100.08.A.1.a

²⁵⁹ *Id.* at MS-8100.08.A.1.b.(2).

²⁶⁰ *Id.* at MS-8100.08.A.1.b.(2)

²⁶¹ *Id.* at MS-8120.32.A

²⁶² See *id.* at MS-8120.32.A

²⁶³ Jerry Spangler, Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008, at 9. (on file with the BLM)

Second, the BLM's intent in amending the RMPs is to facilitate commercial leasing. As Spangler comments, "identifying lands for potential oil shale and tar sands leasing without critical analysis of the environmental suitability of those lands for leasing puts the cart before the horse."²⁶⁴ It also contravenes NHPA. The Interior Board of Land Appeals has repeatedly rejected the BLM's position that assessing impacts to cultural resource at a later date was compliant. The IBLA emphasized NHPA compliance must be completed at each phase of a federal action.²⁶⁵

Most importantly, Congress' stated intent in EPAct was that commercial development of oil shale and tar sands should "be conducted in an environmentally-sound manner using management practices that will minimize potential effects." Opening up 2 million acres to commercial development fails Congress' test.

BLM must provide adequate baseline information on paleontological resources. For example, Wyoming's Washakie Basin area includes "most prospective" lands proposed for oil shale leasing. However, the Basin also includes the Adobe Town member of the Washakie formation, a paleontological resource of worldwide importance. The Wasatchian-Bridgerian interface found here is one of only two exposures of this time sequence known in the Rockies. The other exposure is in Utah.

BLM must identify and analyze these and other cultural resources in the PEIS.

M. Master leasing plans

The BLM must consider recommendations, closures, special stipulations, and best management practices in existing and proposed Master Leasing Plans (MLPs). MLPs are intended to provide local field offices with an opportunity to analyze impacts of leasing and likely development in greater detail than at the RMP stage. MLPs give local field offices an opportunity to analyze key issues such as protection of air quality, watersheds, wilderness, wildlife, and nearby land uses while planning for development. They allow field offices the opportunity to identify mitigation measures for leasing and development that protect the environment. In short, these MLPs give field offices the opportunity to ensure development occurs with sensitivity to other important resources.

Several MLPs have been approved and will be prepared by BLM in Colorado, including Dinosaur Lowlands, Shale Ridge, Eastern Book Cliffs/Piceance Basin, and Adobe Town. These MLPs are in various stages of consideration, nonetheless these proposals ought to be considered in BLM's current oil shale EIS to the extent that they overlap with areas open to oil shale development, and BLM should avoid making any irreversible commitments of resources concerning oil shale leasing and development within the MLP areas until the MLPs are finalized. Mitigation measures proposed in these MLPs ought to be incorporated into BLM's oil shale analysis and, ultimately, into BLM's final decision.

Please see Attachments 8 - 11 for a further discussion of MLP recommendations.

²⁶⁴ *Id.*

²⁶⁵ IBLA 2004-124, in *SUWA v. UT* 055.

N. Additional conservation areas in Colorado

In addition to the ACEC and wilderness areas discussed above, the BLM should also protect Potential Conservation Areas from oil shale development. Colorado Natural Heritage Program Potential Conservation Areas (PCAs) are delineated by scientists to help land managers identify critical areas that provide habitat and ecological processes necessary for the continued existence of species and natural communities. Potential Conservation Areas should be protected entirely from oil shale development.

PCAs that must be protected include: 4,026 acres of the Conn Creek PCA, 49,724 acres of the Piceance Creek PCA, 1,611 acres of the Parachute Creek PCA, 45,821 acres of the Dudley Bluffs PCA, 947 acres of the Clear Creek PCA, 507 acres of the Cathedral Bluffs PCA, 4,315 acres of the Calamity Ridge PCA, 1226 acres of the East Fork Parachute Creek PCA, 254 acres of the Yellow Creek PCA, 689 acres of the Upper Big Duck Creek PCA, 1033 acres of the Trapper Creek PCA, 59,142 acres of the Skinner Ridge PCA, 2,064 acres of the Northwater PCA, 658 acres of the Dry Fork Piceance Creek PCA, and 891 acres of the Upper Cow Creek PCA.

Similarly, historic trails should be protected from oil shale development with larger buffers. Lands within 0.25 mile of Historic Trails are ineligible for oil shale leasing under the FPEIS and RMP amendments. This distance is an inadequate buffer to prevent degradation of the setting of the trails, which contributes significantly to their historical importance. In Colorado, the Old Spanish National Historic Trail crosses areas open for oil shale leasing. In the context of visual resources, BLM defines foreground-middleground as 0 to 5 miles, and in this area, management activities can be seen in detail. There should be at least one alternative that provides adequate protection to prevent the degradation of the settings of these important historical resources.

O. Recreational areas in Wyoming

As the BLM stated in the FPEIS, “oil shale development activities are largely incompatible with recreational land use (e.g., hiking, biking, fishing, hunting, bird watching, OHV use, and camping).”²⁶⁶ We strongly agree with this conclusion. In the PEIS, the BLM must thoroughly assess the impacts on the following areas of high recreational value that fall within potentially leased oil shale areas in Wyoming. We believe oil shale leasing in these areas should be precluded:

1. Little Mountain area, including Greater Red Creek ACEC, Red Creek WSA, and Sugarloaf Basin SMA – These areas were established under the Green River RMP and constitute an outstanding big game hunting resource. According to the Wyoming Game and Fish Department, the elk hunt in this area is the single most sought-after tag in the entire state. Oil shale activities would be certain to drive away elk and destroy the recreational quality of this area.

Regarding Little Mountain, this area is located southwest of Rock Springs, Wyoming. It is generally bordered by the State of Colorado on the south, Wyoming Route 430 on the

²⁶⁶ FPEIS, at 4-20.

east, Flaming Gorge Reservoir on the west, and the “railroad checkerboard” lands on the north. (See Attachment 12).

This area has become of tremendous interest and concern to the public, especially hunting and fishing communities. As BLM knows, there is a working group in place that includes various non-governmental organizations, BLM, the Wyoming Game and Fish Department and others, which is seeking to find management guidance and direction for this area that protects its important resource values. The governor of Wyoming has been active in these efforts, and at his request, the BLM has refrained from oil and gas leasing in this area while potential management direction is explored and put in place as a component of the revised Rock Springs RMP. A similar approach should be utilized when evaluating oil shale development. BLM should not pre-determine the outcome of the Rock Springs RMP revision, which has only just been initiated, by prescribing that this area be available for oil shale leasing in this programmatic environmental impact statement.

The important resource values of the Little Mountain area are undeniable. The Little Mountain area is a hunting, fishing, and outdoor recreation paradise. The area is recognized nationally as one of the West's top mule deer hunting spots, and is famed for its trophy elk and its genetically pure Colorado River cutthroat trout, which can be found in Red, Sage, and Currant Creeks. Pronghorn, moose, raptors, songbirds, and other animals, also attract hunters and wildlife viewers. The Wyoming Game and Fish Department has designated much of the greater Little Mountain area as a key non-game area because of the important habitat it provides for a number of sensitive species including greater sage-grouse, ferruginous hawk, pygmy rabbit, and the Wyoming pocket gopher. It also provides important habitat for the rare midget faded rattlesnake. The Little Mountain area contains a WSA (the Red Creek Badland) and one federally designated area of critical environmental concern (Greater Red Creek). The Little Mountain area's watersheds are highly sensitive, but trout populations have increased since 1990, as a wide range of groups has provided more than \$2 million for habitat restoration projects.

2. Adobe Town State Very Rare or Uncommon Area – As discussed above, the scenic and wilderness qualities in this area and its viewshed need to be protected from oil shale leasing in order to maintain the scenic and wilderness qualities in this area. Oil shale leasing should be precluded from this area in order to maintain FLPMA-required consistency with the state designation preventing non-coal surface mining. Portions of this area also now fall within the Adobe Town Dispersed Recreation Use Area designated under the Rawlins RMP.
3. Adobe Town Dispersed Recreation Use Area (DRUA) – The Adobe Town DRUA was established under the Rawlins RMP, and includes not only the Very Rare or Uncommon area, but also portions of the Kinney Rim North and South citizens' proposed wilderness areas, the western Powder Rim, and the Prehistoric Rim area to the east of Adobe Town.²⁶⁷ The DRUA is of high value for dispersed and primitive recreation, including

²⁶⁷ Record of Decision and Approved Resource Management Plan for Public Lands Administered by the Bureau of Land Management Rawlins Field Office, BLM, 2008, at Appendix 37, *and see* Maps 2-17 and 2-58.

hiking, wildlife viewing, hunting, and camping. It should be excluded from oil shale leasing.

4. Kinney Rim North and Kinney Rim South citizens' proposed wilderness areas – These lands provide a roadless, primitive/semi-primitive recreation experience, and represent an increasingly rare large tract of public land in the Red Desert that is free of industrial development. Parts of these now fall within the Adobe Town Dispersed Recreation Use Area designated under the Rawlins RMP.
5. The Flaming Gorge National Recreation Area – This area lays entirely within the area proposed for oil shale leasing in Wyoming. In the FPEIS, National Recreation Areas are not specifically listed as units of the National Landscape Conservation System that will be excluded from oil shale leasing.²⁶⁸ However, all of this NRA as well as its viewshed should be excluded from oil shale leasing consideration in order to preserve the scenic and recreational qualities found here.
6. Jack Morrow Hills planning area – This is an area highly important for both dispersed recreation and elk hunting. It contains the Boars Tusk and White Mountains Petroglyph Site, both of which are culturally important to Native American tribes. In addition, an archaeological site in the northwest corner of this area is an ACEC and its setting needs to be protected as well. The “most prospective” oil shale area in Wyoming includes portions of the Jack Morrow Hills planning area, a subset of the Rock Springs Field Office set aside from the Green River RMP in the 1990s for special planning due to its outstanding wildlife resources and strong public interest.

Because oil shale development includes 100% use of the lease land, and represents one of the most major types of visual intrusions possible on BLM lands, leasing should not allow any surface disturbance on lands of Visual Resource Management Class I, II, or III lands. The objectives for Class I and II lands are to “preserve” and “retain” the “existing character of the land, while Class III lands are managed to “partially retain the existing character of the land.”²⁶⁹ Oil shale development cannot possibly meet these objectives. Based on the definitions for these lands, only the objectives for VRM Class IV, which “provide for management activities which require major modification of the existing character of the landscape” and permit a level of change that is “high,” are compatible with oil shale development.²⁷⁰ In order to maintain conformity with local RMPs pursuant to FLPMA, the BLM should therefore allow oil shale leasing and development on VRM Class IV lands only.

V. Other Considerations

A. Lack of a comprehensive regulatory framework

The BLM must recognize that current federal and state rules do not adequately regulate oil shale and tar sands operations and therefore must identify and address the significant adverse environmental impacts will occur as a result of this regulatory failure. In its previous

²⁶⁸ FPEIS, at 1-10.

²⁶⁹ BLM Manual 8431 – Visual Resource Contrast Rating, Appendix 2.

²⁷⁰ *See id.*

examination of its oil shale and tar sands leasing decision, the BLM relied on statutes and regulations designed to protect the environment to argue that few, if any, significant adverse impacts on, for example, air, water and wildlife habitat. However, the BLM is mistaken to assume that these regulatory schemes will avoid the considerable environmental damage that will result from oil shale and tar sands operations on federal lands.

i. Air quality

For example, as stated above, as implemented, the Clean Air Act is ill-equipped to protect air quality from oil shale and tar sands operations. This is due, in part, to:

1. very poor air quality in areas characterized by substantial energy development activities,
2. a lack of regulatory monitors in rural areas,
3. the refusal to designate rural areas as non-attainment a failure to recognize wintertime pollution from energy exploration and development,
4. the lack of EPA-approved SIPs relating to NAAQS, as well as regional haze,
5. failure to acknowledge and regulate fugitive dust pollution, and
6. perhaps most importantly, a failure to identify stationary sources consistent with the regulatory definition of a stationary source for the purposes of determining whether it is a major source of air pollution,²⁷¹ or, alternatively, the CAA's failure to regulate many disparate minor sources of air pollution that cumulatively have significant adverse impacts on air quality.

ii. Solid and hazardous waste

Similarly, our nation's other premier environmental law contain regulatory holes that will mean that oil shale and tar sands operations will have significant adverse impacts. As the BLM is well aware, mining wastes are not adequately regulated under the Resource Conservation and Recovery Act (RCRA). Mining wastes include waste generated during the extraction, beneficiation, and processing of minerals. Most extraction and beneficiation wastes from hardrock mining (the mining of metallic ores and phosphate rock) and 20 specific mineral processing wastes are categorized by EPA as "special wastes" and have been exempted by the Mining Waste Exclusion from federal hazardous waste regulations under Subtitle C of RCRA. Similarly, wastes generated during the exploration, development, and production of crude oil, natural gas, and geothermal energy are also exempt from federal hazardous waste regulations under Subtitle C.

Specifically, EPA has determined that oil shale generated by above ground retorting or heating of oil shale operations is not considered a "Bevill" waste excluded from the pertinent regulations under RCRA Subtitle C. However, the agency also found that this process is unlikely to express a hazardous waste characteristic, and so is not likely to be a hazardous waste. EPA has not made relevant determinations relative to tar sands.

²⁷¹ *see* 40 CFR §§ 51.166(b)(5) and (b)(6) (defining source to include any "building, structure, facility, or installation," including "all of the pollutant emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons) under common control").

Importantly, although it determined that mining wastes are exempt from Subtitle C, EPA estimates that approximately seventy percent of mining wastes have hazardous characteristics.²⁷² Moreover, because the EPA remained concerned that Bevill-exempt wastes (or special wastes) could cause actual or potential harm, the EPA developed a plan to create a special regulation for Bevill-exempt industrial wastes under state and regional waste planning authority pursuant to Subtitle D of RCRA. Although the EPA decided decades ago to develop a special waste management program for Bevill-exempt wastes, it has not yet done so.²⁷³

Finally, in affected states such as Utah, mining wastes are not regulated under RCRA at all. Utah statute exempts mining wastes from even being designated as solid waste. Utah's Solid and Hazardous Waste Act states that "[s]olid waste' does not include . . . "drilling muds, produced waters, and other wastes associated with the exploration, development, or production of oil, gas, or geothermal energy" or "solid wastes from the extraction, beneficiation, and processing of ores and minerals." Utah Code Ann. §19-6-102 (18)(b)(ii) & (iv). Although these provisions conflict directly with federal law, Utah agencies have followed it religiously to exempt all mining waste from RCRA permitting.

In sum, waste from oil shale and tar sands operations will not be adequately regulated – if it is regulated at all. This means that, as a result of BLM's leasing decision, enormous piles of untreated and unconstrained wastes will be created in the affected areas, jeopardizing public health and air and water quality, as well as wildlife and recreation. The BLM must consider these likely impacts as it assesses its current proposed decision and alternatives to that decision.

iii. Water quality

A key mechanism for minimizing the environmental impacts of a development activity on water quality is the stormwater permitting process. Here again, the implementation of existing regulations fail to safeguard water quality from the impacts of oil shale and tar sands development.

For the present purposes, EPA's stormwater permitting program is based on the categorization of an activity according to its Standard Industrial Classification (SIC). Particular stormwater permits are required for particular SIC groups. Oil shale and tar sands development fall under Major Group 13, which covers various aspects of oil and gas extraction.

²⁷² Regulatory Determination for Wastes from the Extraction and Beneficiation of Ores and Minerals, 51 Fed. Reg. 24,496, 24,498 (July 3, 1986) (codified at 40 C.F.R. pt. 261) (detailing potential hazardous characteristics); *see also* U.S. ENVTL. PROT. AGENCY, RISKS POSED BY BEVILL WASTES 2 n.2 (1997), *available at* <http://www.epa.gov/osw/hazard/tsd/ldr/mine/risks.pdf>

²⁷³ *See* Regulatory Determination for Wastes from the Extraction and Beneficiation of Ores and Minerals, 51 Fed. Reg. at 24,496 ("The Administration will work with Congress to develop expanded Subtitle D authority (i.e., Federal oversight and enforcement) to support an effective State-implemented program for mining waste."); *see also* Barringer, *supra* note 32, at 155 (describing how RCRA still exempts many wastes from regulation); OFFICE OF INSPECTOR GEN., U.S. ENVTL. PROT. AGENCY, EPA CAN DO MORE TO HELP MINIMIZE HARDROCK MINING LIABILITIES 16 (1997), *available at* <http://www.epa.gov/oig/reports/1997/7100223.pdf> ("EPA has recognized for some years that it needed a more coordinated approach to effectively deal with hardrock mining issues. However, EPA has yet to develop it.").

For several reasons, this classification is inappropriate. First, retort development of oil shale and tar sands has impacts akin to hardrock or coal mining rather than oil and gas development. This is because retort development involves the stockpiling of over and interburden, as well as processed ores. These giant waste piles, whether deposited in dumps or the mine, as well as the resulting leachate, will have impacts on ground and surface waters similar to those of hardrock or coal mining, rather than oil and gas development.

Moreover, Congress has largely exempted oil and gas extraction construction and operation activities from the stormwater permitting program. However, a discharge from oil and gas activities is only exempt if it is not contaminated by contact with or has not come into contact with, any overburden, raw material, intermediate products, finished product, byproduct or waste products located on the site of such operations.²⁷⁴ Water carrying sediment is contaminated water. Yet, under 122.26(c)(1)(iii), even where a discharge from oil and gas extraction construction and operations is contaminated, the discharger need not apply for an individual stormwater discharge permit.

The same is not true for mining activity. As provided in regulations, “The operator of an existing or new discharge composed entirely of storm water from a mining operation is not required to submit a permit application unless the discharge has come into contact with, any overburden, raw material, intermediate products, finished product, byproduct or waste products located on the site of such operations.”²⁷⁵ This provision underscores that stormwater discharges from oil shale and tar sands construction and operations will not be adequately regulated as individual permits will not be required for contaminated runoff.

In sum, stormwater runoff from oil shale and tar sands operations will not be adequately regulated. This means that, as a result of BLM leasing decisions, contaminated water from enormous piles of untreated and unconstrained wastes will flow offsite, jeopardizing ground and surface water, as well as public health, wildlife and recreation. The BLM must consider these likely impacts as it assesses its current proposed decision and alternatives to that decision.

B. Energy return on investment

While not the central focus on this review, the PEIS presents the only current opportunity for the BLM to evaluate the energy quality of oil shale and tar sands. The best way to assess the energy quality is to conduct an energy return on investment analysis. Developing oil shale and tar sands would require a considerable amount of direct energy inputs, as well as water, capital, and material inputs.

An analysis of the Energy Return on Investment (EROI) of oil shale conducted by Dr. Cutler Cleveland, a Professor of Geography and Environment at Boston University, concluded that based on the most reliable studies, the EROI for oil shale falls between 1:1 and 2:1 when internal energy is counted as a cost.²⁷⁶ (Internal energy includes the energy released by the oil shale

²⁷⁴ 40 CFR § 122.26(a)(2) and (e)(8).

²⁷⁵ 40 CFR § 122.26(c)(1)(iv).

²⁷⁶ Cutler J. Cleveland and Peter O’Connor, “An Assessment of the Energy Return on Investment (EROI) of Oil Shale,” June 2010. <http://www.westernresourceadvocates.org/land/oseroi.php> (last accessed on April 29, 2011).

during production that is then used to power that operation – e.g., natural gas co-produced during extraction that is used as part of the processing.)

The EROI for oil shale is considerably less than the EROI for conventional crude, both at the wellhead and at the refined fuel stages of processing. According to Cleveland, even under marginal conditions, such as smaller and deeper wells fields, loss of artesian pressure, etc, conventional crude oil still generates a significantly larger energy surplus than oil shale – approximately 20:1.²⁷⁷

The low EROI for oil shale is not surprising. The kerogen in oil shale is a solid organic material that has not been subject to the temperature, pressure and other geologic conditions required to convert it to liquid form. In effect, humans have to supply the additional energy required to “upgrade” the oil shale resource to the functional equivalent of conventional crude oil. This extra effort carries a large energy penalty, producing a much lower EROI for oil shale.

Before expending public resources to support any future commercial development of either oil shale or tar sands, the BLM must further evaluate the EROI of both deposits. Doing so would serve the public’s understanding of the opportunity and costs of oil shale and tar sands. Notably, though, tar sands in Utah and Alberta, while sharing the same name and common traits, are vastly different deposits. Accordingly, in order the properly present the EROI of tar sands, the BLM will need to conduct additional research.

C. Health Impacts Assessment

Consistent with the CEQ’s mitigation guidance, an important issue connected to the issuance of the PEIS and (potential) initiation of commercial leasing is conducting a human health impacts assessment. CEQ’s mitigation guidance (discussed above) specifies that human health and safety are integral to mitigation planning and monitoring.²⁷⁸

Protecting human health is a pillar of NEPA, as one of the fundamental purposes of NEPA is “to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man.”²⁷⁹ The BLM must sufficiently consider the degree to which the proposed action affects public health. The PEIS should include a comprehensive discussion, both qualitative and quantitative, of the threats, the known health risks of those threats, and the populations at risk.

The best way to undertake this evaluation is to develop a formal methodology to evaluate all health issues and, in turn, develop potential mitigations. We therefore request that prior to issuing any commercial leases, the BLM undertake a Health Impact Assessment (HIA), which is a systematic, comprehensive methodology for assessing human health impacts. A HIA looks at all the possible health effects from a decision, including contaminants and air pollutants, as well as water contamination, accidents and injuries, alcoholism and substance abuse, mental health impacts, and more. Not only is this approach used by U.S. and international health agencies, but

²⁷⁷ *Id.*

²⁷⁸ 76 Fed. Reg. 3849 (February 22, 2011).

²⁷⁹ 42 USC § 4321.

it is used by the oil and gas industry itself in overseas operations. A comparable approach should also be undertaken for oil shale and tar sands development.

To be clear, a HIA would take far longer to implement than the timeframe the BLM specified for completing the PEIS and issuing a ROD. Further, without viable technologies to evaluate, it would be difficult to properly undertake a HIA. We do not want the BLM to delay the PEIS until the completion of a HIA. Rather, we want the BLM to commit to a HIA in future NEPA analyses, and to link that commitment to mitigation measures the agency might define and adopt.

The BLM should consult agencies with all relevant health expertise (such as local, regional, or state health agencies) in developing the PEIS and developing a HIA. Scientific research considering current health risks created in Canada by tar sands operations could provide an appropriate point of comparison regarding the potential public health implications for U.S. development.

Attachments:

1. Natural Resources Defense Council, Oil Shale and Tar Sands Geospatial Analysis, June 2010
2. Center for Native Ecosystems ACEC nomination (includes map), March 2007
3. Eric Molvar, Biodiversity Conservation Alliance, white paper on Greater sage-grouse, May 2011
4. SV Wiig (BLM), June 13, 2006, email; Erik Molvar notes from conversation with Wiig
5. Wyoming State Geological Survey 25/25 threshold analysis maps
6. Colorado Rare Plant Conservation Initiative, "Recommended Best Management Practices for Plants of Concern," April 2009
7. Brandt, Boak and Burnham, "Carbon Dioxide Emissions from Oil shale Derived Fuels," draft, 2009.
8. Adobe Town MLP recommendation (includes mineral ownership map)
9. Dinosaur Lowlands MLP recommendation (includes mineral ownership map)
10. Eastern Book Cliffs Piceance Basin MLP recommendation (includes mineral ownership map)
11. Shale Ridges and Canyons, Colorado MLP recommendation (includes mineral ownership map)
12. Little Mountain, WY map
13. Wyoming proposed wilderness (GIS datasets)

**Biodiversity Conservation Alliance ~ Center for Biological Diversity
Colorado Environmental Coalition ~ EcoFlight ~ Defenders of Wildlife
Natural Resources Defense Council ~ National Wildlife Federation
The Sierra Club ~ Southern Utah Wilderness Alliance
Western Resource Advocates ~ The Wilderness Society
Wilderness Workshop ~ Wyoming Outdoor Council**

May 13, 2011

BLM Oil Shale and Tar Sands Resources Leasing Programmatic EIS
Argonne National Laboratory
9700 South Cass Avenue
Argonne, IL 60439

VIA EMAIL

Re: Scoping Comments on Oil Shale and Tar Sands Resources Programmatic EIS

Dear Reviewers:

Thank you for this opportunity to comment on the scope of issues to be considered in the Bureau of Land Management's (BLM) oil shale and tar sands Programmatic Environmental Impact Statement (PEIS). We represent individuals who live in close proximity to the areas identified for oil shale and tar sands leasing, and many others who are concerned about the fate of their public lands.

Based on the BLM's analysis to date, it is clear that commercial development of oil shale and tar sands would irreparably harm local lives and livelihoods. Development would also compromise a wide range of environmental values, including clean air, clean water, climate, recreation, water supply, and wildlife habitat. For these reasons, we strongly applaud the BLM's decision to take a fresh look at the 2008 Final Oil Shale and Tar Sands Programmatic Environmental Impact Statement (FPEIS) and Resource Management Plan (RMP) amendments, and to consider alternatives not previously evaluated. We strongly encourage the BLM to fold into its analysis a realistic assessment of industry's ability to commercially-develop oil shale and tar sands, and the tradeoffs our country will need to make should we pursue these water- and energy-intensive, high-carbon fuels.

Since the BLM issued its FPEIS and RMP amendments in late 2008, industry's oil shale and tar sands research and development efforts have continued to lag. As the current oil shale research, development and demonstration (RD&D) lessees quarterly reports to the BLM make clear, industry is years away from knowing whether their technologies will be commercially viable, not to mention whether they would pursue commercial development. By extension, the BLM is years away from being able to quantify with any real certainty the economic, social and environmental

impacts of commercial oil shale development. The same holds true for tar sands. Nevertheless, by prematurely amending 12 RMPs, as the BLM did following the issuance of the FPEIS, the BLM sent the message that oil shale and tar sands can be developed and that the impacts can be appropriately mitigated. The BLM's analysis, however, does not support that conclusion.

More specifically, the BLM opened roughly 2 million acres of public land to oil shale and tar sands development despite the fact that the agency, by its own admission, relied on a handful of theoretical development scenarios, and then projected the combined impacts over 2 million acres. Since that time, the BLM has learned very little new information about the state of technologies, the impacts of such technologies, and how commercial development would align with other land uses. There thus remains sufficient reason to warrant the BLM proceeding slowly.

As the BLM proceeds with its review, the BLM should not use this PEIS as a means to simply reaffirm its prior decisions. As Secretary Salazar and Director Abbey noted when announcing the start of this review, there are many unknowns, and it is incumbent on the BLM to make sound land use decisions that protect our western heritage. Sound land use decisions bring together sound science with good public policy.

The Obama Administration is committed to sound science. One of the failures of the FPEIS is that it cast aside science and the concerns of federal agencies – specifically, the United State Fish and Wildlife Service, the National Park Service and the Environmental Protection Agency (EPA) – in a drive to achieve political ends. Accordingly, the FPEIS is anathema to the intent and purpose of the National Environmental Policy Act (NEPA).¹ NEPA's primary intent is to protect and enhance the environment. As the Supreme Court has stated, NEPA represents a "broad national commitment to protecting and promoting environmental quality."² Using analyses such as the FPEIS to approve a massive but uncertain development scheme violates Congressional intent. As stated in NEPA's preamble:

The purposes of this chapter are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; [and] to enrich the understanding of the ecological systems and natural resources important to the Nation[.]³

As we discuss in these comments, through this review, the BLM has an opportunity to correct the many problems in the FPEIS and restore reason to the federal oil shale and tar sands policy. In undertaking this review, it is imperative that the BLM examine the full suite of issues associated with commercial development. That includes examining the science and identifying what the agency knows and does not know, and basing land use decisions on that knowledge, not on the hope that one day issues will be solved.

One example where the BLM can correct deficiencies in the FPEIS is in the adoption of enforceable mitigation measures. Another area is taking a broad look at full suite of cumulative

¹ 42 U.S.C. §§ 4321-4370f.

² See *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 348 (1989) (citing 42 U.S.C. § 4331).

³ 42 U.S.C. § 4321.

and connected actions. For example, by segmenting the power production needs associated with commercial development out of the FPEIS, the BLM failed to analyze all connected actions. Those needs and corresponding impacts to air, water and climate must be considered in this review.

Another issue the BLM must analyze concerns the value of oil shale and tar sands as energy sources. As the Obama Administration seeks to balance competing energy sources and develop clean energy solutions, it is imperative that the BLM evaluate the quality of these energy sources. For instance, in 2008, the BLM failed to adequately consider the climate impacts of oil shale development. Thanks to Dr. Adam Brandt at Stanford University, the BLM now has good data it can use in its evaluation. This evaluation is essential if the BLM is to support the President's clean energy standard. Similarly, since 2008, based on research conducted by Dr. Cutler Cleveland at Boston University, we now have good data regarding oil shale's poor energy return.

Taken together, we have independent confirmation that oil shale would provide high levels of greenhouse gasses, while provide a minor return on energy. When coupled with oil shale's high water demands – a concern that Secretary Salazar often identifies – oil shale's threats raise serious questions about the wisdom (not to mention the commercial feasibility) of pursuing these dirty fuels. Tar sands present similar challenges. These and other data points must be thoroughly evaluated in the review.

During this review, it is likewise imperative that the BLM work with the EPA and the Council on Environmental Quality to evaluate how pursuing commercial development of oil shale and tar sands squares with the administration's climate and energy goals. This PEIS review provides the only comprehensive evaluation the BLM has committed to undertaking. Only through a thorough interagency review can we be assured that the PEIS will analyze the full suite of the environmental impacts and be assured that NEPA's primary mandate to protect and enhance the environment can be met. Accordingly, it is absolutely necessary that the BLM take a broad view and engage other federal agencies charged with both developing climate and energy policy, and protecting the environment.

As the BLM takes a fresh look at the FPEIS, the agency must evaluate whether it has sufficient information to amend RMPs to allow for large-scale commercial development. The 2005 Energy Policy Act (EPAct) mandated a fundamentally flawed approach to oil shale and tar sands development – namely, placing research and commercial development on parallel paths. Research must precede commercial development, and opening 2 million plus acres to a type of development that remains experimental undermines sound land management policy. It is also germane that a considerable amount of private land and minerals is available to the oil industry without BLM involvement. Accordingly, should BLM open any public lands to commercial development, the agency must open minimal acreage. If research later proves that the environmental, cultural, social and other impacts are minimal and manageable, the agency can always open additional lands to leasing. But, opening vast acres to leasing, as was done under the FPEIS, without being able to adequately predict and analyze the full suite of impacts and develop enforceable mitigation measures belies sound land management.

As we discuss in our comments, we believe that in addition to the alternatives the BLM identified in the *Federal Register* notice, the agency should also evaluate:

1. Citizen proposed wilderness areas
2. Limiting development to deposits that yield 25 gallons/ton or more and are 25 feet thick or more.

Building a new energy economy is central to the long-term economic, social and environmental health of our nation. We need to focus our resources on supporting energy efficiency and clean, renewable energy sources that are known to protect the environment and are economically sound. Oil shale and tar sands run counter to these goals.

Respectfully submitted,

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Biodiversity Conservation Alliance

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Elise Jones, Executive Director
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Bruce Gordon, Founder and President
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Bruce Pendery, Staff Attorney
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Detailed Scoping Comments on Oil Shale and Tar Sands PEIS

Because of the length of our comments, following is an outline to help guide the reader.

- I. Overview – BLM has an opportunity to restore order the federal oil shale and tar sands policy
- II. The legal framework for the PEIS
 - A. The National Environmental Policy Act
 - B. Cumulative and connected impacts
 - C. Overview of actions and impacts the BLM must analyze in the PEIS
 - D. Mitigating environmental impacts
 - E. Federal Land Policy Management Act
- III. Alternatives the BLM should evaluate
 - A. Wilderness
 - i. BLM must inventory for wilderness character and protect wilderness characteristics
 - ii. The BLM must protect lands with wilderness characteristics
 - iii. Colorado proposed wilderness and wilderness-quality lands should be protected from oil shale development
 - iv. Utah proposed wilderness areas that should be protected from oil shale and tar sands development
 - a. Dirty Devil and Fiddler Butte
 - b. White Canyon/Fort Knocker Canyon
 - c. Bitter Creek
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 - e. Lower Bitter Creek
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 - i. Colorado ACECs that should be protected from oil shale development
 - ii. Potential ACECs in Colorado that should be declared off-limits from oil shale development
 - iii. Potential ACECs in Utah that should be declared off-limits from oil shale and tar sands development
 - iv. Wyoming ACECs and potential ACECs that should be protected from oil shale development
 - C. Adobe Town Very Rare or Uncommon Area – The entire area should be excluded from leasing

- i. Adobe Town: Historical, prehistorical, and archaeological values
 - ii. Adobe Town: Geological values
 - iii. Adobe Town: Wildlife values
 - iv. Adobe Town: Scenic values
 - v. Adobe Town: Recreation
- D. Greater Sage-Grouse
- E. Alternative C from the FPEIS -- BLM's reason for rejecting Alternative C was flawed
- F. Lands with deposits 25 gallons/ton or more and 25 feet thick or greater

IV. Additional considerations for the PEIS review

- A. The PEIS must evaluate and consider the environmental baseline of the area
- B. Water Availability – How much water development might require and what's at stake
- C. Water quality
- D. Wild and Scenic Rivers
- E. Aquatic species
- F. Wildlife impacts
- G. Endangered species
- H. Endemic wildflowers
- I. Climate change
 - i. Legal and policy basis for the BLM evaluating climate change
 - ii. Overview of climate impacts in the West
- J. Air resources
- K. Socio-economic impacts
- L. Cultural and paleontological resources
- M. Master leasing plans
- N. Additional conservation areas in Colorado
- O. Recreational areas in Wyoming

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- A. Lack of a comprehensive regulatory framework
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 - ii. Solid and hazardous waste
 - iii. Water quality
- B. Energy return on investment
- C. Health Impacts Assessment

I. Overview – BLM has an opportunity to restore order the federal oil shale and tar sands policy

Section 369 of the Energy Policy Act of 2005 (EPA) directed the BLM to “develop the information necessary to complete a programmatic environmental impact statement for a commercial leasing program for oil shale and tar sands resources on public lands, with an emphasis on the most geologically prospective lands within each of the States of Colorado, Utah,

and Wyoming.”⁴ While the BLM identified significant impacts in 2008 Final Oil Shale and Tar Sands Programmatic Environmental Impact Statement (FPEIS) from commercial development, the agency lacked the information necessary to fulfill Congress’ mandate that the FPEIS support a commercial leasing program. As the FPEIS specifically provides:

The BLM originally intended the PEIS to support the amendment of land use plans to allocate areas open to commercial leasing and development of oil shale and tar sands, as well as to support the issuance of such leases. However, in consultation with the cooperating agencies, it was determined that the analysis to support immediate leasing decisions would require making speculative assumptions regarding potential, unproven technologies, and, consequently, the decision to offer specific parcels for lease was dropped from consideration in the PEIS.⁵

The BLM was correct in identifying the FPEIS’ limitations and in limiting the reach of the FPEIS. Nevertheless, despite these key limitations inherent in the FPEIS, the BLM used that analysis to amend 12 RMPs to open more than 2 million acres of federal public land to application for commercial leasing. That step was deeply flawed. That is why this review is of vital importance. Only by reviewing past analyses and decisions can the BLM restore order to the federal oil shale process. That means, as Secretary Salazar has often noted, the BLM must focus on RD&D – to get good, current, independently-verifiable data to support land use decisions before large tracts of public land are committed to development. Land use decisions made without the benefit of research will continue to suffer from the same fundamental flaws the BLM encountered when it issued the FPEIS.

Interior agencies raised concern with the BLM’s initial review. In its April 17, 2008, letter to the BLM, the National Park Service’s (NPS) Regional Director, Michael Snyder, recommend the BLM “postpone the programmatic environmental impact analysis until the recently approved Research, Development and Demonstration projects bring to light results that can be applied to large scale development.”⁶ As the BLM noted in the FPEIS, “the BLM’s analysis did not contain enough information on the specific environmental, cultural, and socioeconomic effects of such development.”⁷ The BLM instead used comparable data from other “surface disturbing mineral development activities.”⁸ While there are strong comparisons to make between strip mining and some oil shale and tar sands technologies, a full and accurate comparison cannot and should not be made. Nevertheless, the BLM opted to open more than 2 million acres of federal lands for application for commercial leasing.

The central problem the BLM faces in reviewing the FPEIS is that since none of the RD&D lessees have a proven and demonstrated extraction technology, adequate and appropriate analysis of the environmental and socio-economic impacts of oil shale development is problematic at best. While there has been a great deal of speculation about the state of research and the

⁴ Public Law 109-58.

⁵ FPEIS, at ES-3 (emphasis added).

⁶ National Park Service, Comments on 2008 Oil Shale and Tar Sands DPEIS, April 2008, at 4. (on file with the BLM)

⁷ FPEIS, at 1-3.

⁸ FPEIS, at 1-3.

promising results industry claims it is achieving, a review of the quarterly reports RD&D lessees submit to the BLM prove that no new data regarding the commercial viability of technologies and their associated impacts has yet been generated.

Accordingly, the BLM should revoke its prior decision to open lands for oil shale and tar sands development until it secures environmental analyses based on contemporary data, not the 1980 Congressional Office of Technology Assessment (OTA) study and other mineral extraction activities. (The only notable exception would be the lands associated with the RD&D round one preference right lease areas.) If research later proves that the environmental, cultural, social and other impacts are minimal and manageable, the agency can always open additional lands to leasing following a new NEPA analysis. As we noted in our cover letter, opening public land without being able to adequately evaluate the full suite of impacts and develop enforceable mitigation measures undermines the intent and spirit of Federal Land Policy and Management Act (FLPMA)⁹ and sound land management practices.

II. The legal framework for the PEIS

As discussed below, the FPEIS does not meet the intent and spirit of NEPA. It likewise does not meet FLPMA's multiple use mandate. The PEIS must correct these deficiencies.

A. The National Environmental Policy Act

The National Environmental Policy Act¹⁰ (NEPA) requires federal agencies to prepare a detailed statement on the environmental impacts of a proposed "major federal action" and all of the reasonable alternatives thereto before authorizing any such action.¹¹ An agency proposal for major federal action exists for NEPA purposes "at that the stage . . . when an agency subject to [NEPA] has a goal and is actively preparing to make a decision on one or more alternative means of accomplishing that goal and the effects can be meaningfully evaluated."¹² NEPA's purpose is to promote efforts "which will prevent or eliminate damage to the environment",¹³ to inform the public of environmental consequences,¹⁴ and to "help public officials . . . take actions that protect, restore, and enhance the environment."¹⁵

Under NEPA, the PEIS must analyze "connected", "cumulative", and "similar" actions and three types of impacts.¹⁶ Connected actions are those which are "closely related," including those that "[c]annot or will not proceed unless other actions are taken", or those that "[a]re interdependent parts of a larger action and depend on the larger action for their justification."¹⁷ Cumulative actions are those that "have cumulatively significant impacts and should therefore be discussed in the same impact statement."¹⁸ Similar actions include those that have "common timing or

⁹ 43 U.S.C. §§ 1701 – 1785.

¹⁰ 42 U.S.C. §§ 4321-4370f.

¹¹ *Id.* at § 4332(2)(C).

¹² 40 C.F.R. § 1508.23.

¹³ 42 U.S.C. § 4321.

¹⁴ 40 C.F.R. § 1500.1(b).

¹⁵ *Id.* at § 1500.1(c).

¹⁶ *Id.* at §§ 1508.25, 1508.7, 1508.8.

¹⁷ *Id.* at § 1508.25(a)(1).

¹⁸ *Id.* at § 1508.25(a)(2).

geography.”¹⁹ In order to assess “significance,” NEPA requires consideration of “[w]hether the action is related to other actions with individually insignificant but cumulatively significant impacts.”²⁰

The three types of impacts to be studied in an environmental impact statement are those that are “direct,” “indirect,” and “cumulative.”²¹ Direct effects are those that “are caused by the action and occur at the same time and place.”²² Indirect effects are those “which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.”²³ A project’s “cumulative impact,” is

the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.²⁴

While the FPEIS uses the term “cumulative impacts” it does not identify such impacts. Instead, the FPEIS defers its analysis of the cumulative impacts of developing oil shale and tar sands to future analyses to be conducted on a lease-by-lease basis. This approach is inconsistent with NEPA.

B. Cumulative and connected impacts

One of the most glaring gaps in the FPEIS concerns identification of connected actions; a second is the BLM’s thin analysis of cumulative impacts. As discussed above, identifying and evaluating the cumulative and connected impacts arising from a federal action is a central component of NEPA. The BLM is required to consider not only the single proposed action – amending RMPs to designate lands available for leasing – but also connected actions (actions which are closely related) and cumulative actions (actions, which when viewed with other proposed actions, have cumulatively significant impacts).²⁵ Closely related actions include any reasonably foreseeable oil shale and tar sands project that would not occur “but for” authorization provided in the RMP.

Cumulative and connected impacts assessments help assure that FLPMA’s requirements regarding no degradation to the environment are met. Courts have held that there are situations where an agency must consider several related actions in a single NEPA document. The U.S. Court of Appeals for the Fifth Circuit held that in a cumulative impact analysis, an agency should consider “(1) past and present actions without regard to whether they themselves triggered NEPA responsibilities and (2) future actions that are ‘reasonably foreseeable,’ even if

¹⁹ *Id.* at § 1508.25(a)(3).

²⁰ *Id.* at § 1508.27(b)(7).

²¹ *Id.* at § 1508.25(c); *see also id.* at §§ 1508.7, 1508.8.

²² *Id.* at § 1508.8(a).

²³ *Id.* at § 1508.8(b).

²⁴ *Id.* at § 1508.7. *See also* *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1379 (9th Cir. 1998) (stating that with respect to a cumulative impacts analysis, an agency must provide “some quantified or detailed information” because “[w]ithout such information, neither courts nor the public . . . can be assured that the [agency] provided the hard look that it is required to provide.”).

²⁵ 40 C.F.R. § 1508.25

they are not yet proposals and may never trigger NEPA-review requirements.²⁶ The court noted that the applicable law “does not limit the inquiry to the cumulative impacts that can be expected from proposed projects; rather, the inquiry also extends to the effects that can be anticipated from “reasonably foreseeable future actions.”²⁷

Similarly, the U.S. Court of Appeals for the Ninth Circuit has specifically required analysis of activities on both public and private land, since both may impact federal resources; the court also found cumulative impacts analysis insufficient where it did not include foreseeable projects in the same geographical region.²⁸ Identifying these impacts is vital to the decision-making process as the “primary purpose” of the PEIS is to “insure that the policies and goals defined in [NEPA] are infused into the ongoing programs and actions of the Federal Government.”²⁹

A landscape level analysis of proposed commercial oil shale and tar sands development must likewise evaluate the distribution of resources and supporting facilities across the affected states. This analysis is a critical component of any NEPA analysis, even if site-specific analyses are deferred until authorization of specific projects. As the U.S. Court of Appeals for the Second Circuit has held that analyzing the overall environmental risks involved in transporting oil from off-shore leases was appropriate and necessary in a PEIS, although specific analysis of individual pipeline locations could be deferred.³⁰

C. Overview of actions and impacts the BLM must analyze in the PEIS

Once commercial development projects are planned, it is reasonably foreseeable that additional energy infrastructure and refining projects will be developed. The increased infrastructure and the clustering of projects to access and service the oil shale and tar sands leasing areas is likely to have a cumulatively significant effect on the resources in the area. Support facilities such as coal-fired electric power plants or other electricity sources must be analyzed for their impacts upon the lands, communities, and resources.

Mainline and branch power lines will be needed to run oil shale facilities. However, likely corridors and their impacts are not identified in the FPEIS, but were instead deferred to project-level NEPA analyses. Nor too were the likely emissions of greenhouse gases from these power plants or their contributions to global warming. Similarly, oil shale and tar sands development would require substantial new construction of regional and feeder pipelines and expansion of existing refineries to transport and process the kerogen and bitumen. These connected systems and their impacts were not analyzed in the FPEIS.

Other impacts and actions that should be addressed in a cumulative fashion include, but are not limited to:

1. road construction,
2. activities leading to soil and vegetation disturbance,

²⁶ See, *Fritiofson v. Alexander*, 772 F.2d 1225, 1245 (5th Cir. 1985).

²⁷ *Id.* at 1243

²⁸ See, *Natural Resources Defense Council v. U.S. Forest Service*, 421 F.3d 797, 815-16 (9th Cir. 2005); *Muckleshoot Indian Tribe v. U.S. Forest Service*, 177 F.3d 800 (9th Cir. 1999).

²⁹ 40 C.F.R. § 1502.1

³⁰ *County of Suffolk v. Secretary of Interior*, 562 F.2d 1368, 1376-1377 (2nd Cir. 1977) (It was “essential to consider and weigh the environmental aspects of transportation, as well as of exploration and production.”).

3. activities leading to changed habitat structure,
4. activities leading to habitat fragmentation, and
5. activities causing air or water pollution.

Similarly, given that cumulative actions are actions that, incrementally, have significant impacts, even if the individual impacts are minor, the BLM should broaden the scope of the FPEIS to include analysis of the cumulative effects of other actions and projects already approved under each RMP. First among many are oil and gas development.

We appreciate the enormous challenge Congress created when it directed the BLM to undertake a programmatic assessment of oil shale and tar sands development. Due to the paucity of information regarding the technologies to be used and the scale of development, the cumulative impacts are difficult to define. The BLM cedes this point in the FPEIS: “Analysis of the cumulative effects in this PEIS will be qualitative to reflect the limited and highly speculative character of the information available, and the limited nature of the decision to be made on the basis of this PEIS.”³¹ As BLM notes numerous times throughout the FPEIS, it is virtually impossible to identify with any certainty the scope of environmental, social and economic impacts that will result from oil shale development. Clearly, what the agency has not done is comply with applicable rules for dealing with situations in which necessary information is incomplete or unavailable.³²

Instead, the BLM’s opt-out is to note that there will be subsequent project-specific NEPA analyses. While that may be the agency’s intent, the FPEIS nevertheless amends existing RMPs, and the subsequent NEPA analyses the BLM will be driven by lease applications and thus will not necessarily address landscape level actions and associated impacts. Instead, there is ample precedent that the agency’s subsequent NEPA analysis for individual projects will be limited and will rely on this FPEIS to justify placement of projects in proximity to designated leasing areas. This approach contravenes NEPA and thus raises critical questions regarding BLM’s legal basis for amending the RMPs. As the courts have found, an insufficient cumulative or connected impact analysis of actions within a larger region will render NEPA analysis insufficient.³³

Accordingly, as the BLM undertakes this PEIS, it must remedy this deficiency to foster informed public participation in the RMP revision and informed decision-making by BLM.

D. Mitigating environmental impacts

At the most fundamental level, NEPA is intended to help public officials make decisions that are based on an understanding of environmental consequences, and to take actions that protect, restore, and enhance the environment.³⁴ Federal agencies are required, to the fullest extent possible, use all practicable means consistent with the requirements of NEPA to “restore and enhance the quality of the human environment and avoid or minimize any possible adverse

³¹ FPEIS, at 6-135.

³² See 40 C.F.R. § 1502.22.

³³ See, e.g., *Kern*, 284 F.3d at 1078.

³⁴ See 40 C.F.R. § 1500.1(b).

effects of their actions upon the quality of the human environment.”³⁵ A key element in meeting this mandate is developing and implementing mitigation measures.

Council on Environmental Quality (CEQ) regulations define mitigation as:

1. Avoiding the impact altogether by not taking a certain action or parts of an action.
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
5. Compensating for the impact by replacing or providing substitute resources or environments.³⁶

Effective mitigation starts at the beginning of the NEPA process, not at the end, and must be included as an integral part of the alternatives development and analysis process.

In addition to these long-standing regulations, in January 2011, CEQ issued new mitigation guidance.³⁷ The guidance stresses the importance of mitigation in the alternatives analysis, in project design, and in other contexts. This guidance clearly provides that mitigation measures be “explicitly described as ongoing commitments and should specify measurable performance standards and adequate mechanisms for implementation, monitoring, and reporting.”³⁸ A key element of determining mitigation effectiveness is establishing baseline resource conditions.

In general, the guidance directs agencies to:

1. commit to mitigation in decision documents when they have based environmental analysis upon such mitigation;
2. monitor the implementation and effectiveness of mitigation commitments;
3. make information on mitigation monitoring available to the public; and
4. remedy ineffective mitigation when the Federal action is not yet complete.

The mitigation measures identified in the FPEIS do not meet these standards. First, the measures identified are generic, speculative, and lack any assurance that if implemented will avoid, minimize, rectify, reduce, eliminate or compensate for impacts associated with oil shale or tar sands development. Instead the FPEIS states what the lessees might be required to do, but does not link mitigation measures with specific steps that should be taken in specific resource areas or over a larger landscape. Second, the FPEIS does not link cumulative impacts with mitigation measures.

These shortcomings must be remedied in the PEIS.

³⁵ *Id.* at 1500.2(f).

³⁶ 40 C.F.R. § 1508.20.

³⁷ 76 Fed. Reg. 3843 (January 21, 2011).

³⁸ *Id.*

E. Federal Land Policy Management Act

Any policies toward the leasing and development of oil shale and tar sands on federal public lands managed by the BLM must also comply with relevant aspects of FLPMA.³⁹ Congress enacted FLPMA “to provide guidance and a comprehensive statement of congressional policies concerning the management of the public lands”⁴⁰ FLPMA establishes a policy of “multiple use” management pursuant to which BLM must “recognize competing values,” which is to be done by “using the Act’s procedures in a dynamic, evolving manner to accommodate these competing demands.”⁴¹

FLPMA directs the BLM to manage public lands for multiple uses and sustained yield.⁴² The Secretary is required to “use and observe the principles of multiple use and sustained yield” in developing and revising land use plans.⁴³ “Multiple use” is defined as managing the lands so that the various resources (“recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values”) “are utilized in the combination that will best meet the present and future needs” of the public⁴⁴; “sustained yield” is defined as managing to maintain regular renewable resource outputs in perpetuity.⁴⁵

Congress also directed the BLM to conduct inventories of the public lands and to incorporate those inventories into management decisions.⁴⁶ The BLM is thus required to “take any action necessary to prevent unnecessary or undue degradation of the lands.”⁴⁷ RMPs, in turn, must “provide for compliance with applicable State and Federal air, water noise, or other pollution standards or implementation plans”⁴⁸ Implementing regulations specifically require that BLM ensure compliance with federal and state air quality standards.⁴⁹

These provisions are applicable to all resource uses and decisions affecting BLM lands.⁵⁰ It serves as foundation for all analyses in the PEIS and activities undertaken pursuant to RMPs.

III. Alternatives the BLM should evaluate

The FPEIS clearly provides commercial oil shale and tar sands development activities will directly displace other land uses from development areas.⁵¹ Development of these deposits is thus incompatible with other public land uses. The sheer amount of land BLM opened to commercial development promised extraordinary displacement of existing uses and public land values.

³⁹ 43 U.S.C. §§ 1701-1785.

⁴⁰ *Rocky Mtn. Oil & Gas Ass’n v. Watt*, 696 F.2d 734, 737 (10th Cir. 1982).

⁴¹ *Id.* at 738; *see also* 43 U.S.C. §§ 1701 - 1702(c).

⁴² 43 U.S.C. § 1732(a).

⁴³ *Id.* at 1712(c)(1).

⁴⁴ *Id.* at 1702(c).

⁴⁵ *Id.* at 1702(h); *see also* *Pub. Lands Council v. Babbitt*, 529 U.S. 728, 738 (2000) (discussing standards); *Pennaco Energy, Inc. v. U.S. Dept. of Interior*, 377 F.3d 1147, 1151 (10th Cir. 2004) (discussing standards).

⁴⁶ 43 U.S.C. §§ 1711(a) (inventories), 1712 (resource management planning).

⁴⁷ *Id.* at § 1732(b).

⁴⁸ *Id.* at § 1712(c).

⁴⁹ *See* 43 C.F.R. §§ 2920.7(b), 3162.5-1.

⁵⁰ 43 U.S.C. § 1732(b).

⁵¹ FPEIS at 4-17.

Displaced uses of public land that will result from this huge allocation of public resources to a single use include: recreation, mining, hunting, oil and gas production, livestock grazing, wild horse and burro herd management, communication sites, and ROW corridors. The most geologically prospective lands also overlap with important wildlife and plant habitat, lands with wilderness character, areas of critical environmental concern, other important ecological resources, unique geologic features, irreplaceable paleontological and cultural resources, as well as important watersheds and riparian areas. This time around, the BLM must protect other values and uses.

The following discussion sets out several environmental issues that the BLM should address in the PEIS in order to comply with current legal interpretation of agency responsibilities for preparation of a PEIS under NEPA. Further, protecting these resources and the resources discussed in subsequent sections represents good environmental stewardship.

In the PEIS, the BLM should evaluate the following alternatives:

- No leasing in wilderness, including citizen proposed wilderness
- No leasing in all designated and proposed areas of critical environmental concern
- No leasing in the Adobe Town Very Rare or Uncommon Area
- No leasing in sage-grouse core areas and other priority habitats
- Alternative C from the FPEIS
- Limiting development to deposits that yield 25 gallons/ton or more and are 25 feet thick

The BLM should also include Alternative A (“No Action Alternative”) from the FPEIS in this review.

A. Wilderness⁵²

The oil shale and tar sands Notice of Intent to Prepare a PEIS (NOI) provides that one of the alternatives the BLM shall review is “(1) All areas that the BLM has identified or may identify as a result of inventories conducted during this planning process, as lands containing wilderness characteristics.”⁵³ The NOI further provides “Lands that the BLM identifies as having wilderness characteristics will be considered during this planning initiative, as described above, and consistent with Secretarial Order No. 3310, dated Dec. 22, 2010, and BLM Manuals 6301 and 6302.”⁵⁴ As discussed below, the congressional funding limitation for fiscal year 2011 limiting implementation of S.O. 3310 does not relieve the BLM from either considering wilderness as part of this PEIS, or relieve the BLM from fulfilling its statutory obligations to inventory and manage federal lands for wilderness characteristics.

i. BLM must inventory for wilderness character and protect wilderness characteristics

The lands the BLM analyzed for commercial leasing in the FPEIS include lands with wilderness characteristics. Some of these lands are included in BLM inventories and would be protected from oil shale and tar sands development in the FPEIS; others are identified in citizen

⁵² In support of this discussion, please see Attachment 1, NRDC maps.

⁵³ 76 Fed. Reg. 21003, 21004 (April 14, 2011)

⁵⁴ *Id.*

inventories, and could be subject to commercial development. The BLM must inventory the resources of these public lands,⁵⁵ and in the land use planning process, including revisions of RMPs, take into account the inventory and determine which multiple uses are best suited to which portions of the planning area.⁵⁶ BLM's obligation to protect these wilderness quality lands is a foundation of FLPMA and sound land use planning.

FLPMA requires the BLM to maintain a current inventory of its resources and to regularly update that inventory. FLPMA directs that BLM to

prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values (including, but not limited to, outdoor recreation and scenic values). . . . This inventory shall be kept current so as to reflect changes in conditions and to identify new and emerging resource and other values. The preparation and maintenance of such inventory or the identification of such areas shall not, of itself, change or prevent change of the management or use of public lands.⁵⁷

This requirement stands despite the 2003 Norton-Leavitt settlement that rescinded the Wilderness Inventory Handbook, and the recent funding limitation Congress imposed prohibiting the BLM from implementing S.O. 3310 for fiscal year 2011. As the U.S. Court of Appeals for the Ninth Circuit recently held, wilderness characteristics are one of the resources of the public lands that the BLM must inventory under FLPMA, as confirmed by federal courts. As the Court stated,

wilderness characteristics are among the “resource and other values” of the public lands to be inventoried under § 1711. BLM's land use plans, which provide for the management of these resources and values, are, again, to “rely, to the extent it is available, on the inventory of the public lands, their resources, and other values.” 43 U.S.C. § 1712(c)(4).⁵⁸

In addition, the Ninth Circuit stated that it did not need to consider the legality of the 2003 Norton-Leavitt settlement, acknowledging that: “Wilderness values are among the resources which the BLM can manage under 43 U.S.C. §§ 1712 and 1732.”⁵⁹ In other words, BLM has ongoing obligations to fulfill FLPMA's mandate to inventory and manage the resources of the public lands.

In addition to the agency's legal obligations to inventory lands with wilderness characteristics, the BLM must make decisions regarding how to balance the management of resources on public lands, including wilderness-quality lands. Once the BLM identifies lands with wilderness characteristics, the agency should apply management to preserve those qualities under FLPMA and the Land Use Planning Handbook, notwithstanding the status of S.O. 3310.

⁵⁵ 43 U.S.C. § 1711

⁵⁶ 43 U.S.C. § 1712

⁵⁷ 42 U.S.C. § 1711(a)

⁵⁸ *Or. Natural Desert Ass'n v. BLM*, 531 F.3d 1114, 1119 (9th Cir. 2008).

⁵⁹ *Id.* at 1132.

ii. The BLM must protect lands with wilderness characteristics

In both Alternatives B and C of the FPEIS, the BLM excluded from commercial leasing all wilderness areas, wilderness study areas and other areas that are part of the National Landscape Conservation System (NLCS).⁶⁰ As the BLM explained, “certain lands within the oil shale and tar sands resource areas are excluded from commercial leasing on the basis of existing laws, regulations, Executive Orders (E.O.s), administrative land use plan designations as noted below, or withdrawals.”⁶¹ The NLCS lands include National Monuments, National Conservation Areas, Wild and Scenic Rivers, and National Historic and Scenic Trails.⁶²

We strongly support the BLM’s decision in the FPEIS to exclude these areas from commercial leasing. In addition, the BLM should exclude citizen proposed wilderness areas from commercial leasing.

In addition to the following details about Colorado and Utah, please see the section below titled “Recreational Areas in Wyoming.”

iii. Colorado proposed wilderness and wilderness-quality lands should be protected from oil shale development

BLM must consider protecting from oil shale development areas with wilderness character, including those outside of Wilderness Study Areas (WSA). Though we do not have a complete list of areas within the geologically prospective study area with wilderness character, all such areas should be protected from oil shale development. There was very little discussion about lands with wilderness character in the FPEIS, but, as discussed above, BLM does have a statutory obligation to maintain an active and updated inventory of wilderness quality lands and consider protecting those areas in management decisions.

A 2000 wilderness inventory undertaken for the Roan Plateau Planning Area, for example, found 19,322 acres of wilderness quality lands.⁶³ (That entire landscape has been included in federal wilderness legislation.) In a decision that has been challenged and remains unresolved, the BLM decided not to manage these areas to protect the wilderness character. Importantly, not all of the land inventoried in 2000 overlaps with the area opened to oil shale development in 2008, but 10,389 acres in the East Fork of Parachute Creek met the criteria for a WSA⁶⁴ and it was opened to oil shale development in the 2008 Plan. Because areas with wilderness character like the East Fork of Parachute Creek retain such a wealth of visual, botanical, wildlife, and ecological values, oil shale should be excluded from these areas. To the extent that the BLM does not have an up-to-date inventory of lands with wilderness character for any of the impacted Colorado field offices, the agency must undertake such an inventory and consider protecting existing wilderness characteristics by disallowing development of oil shale.

⁶⁰ FPEIS, at ES-7 (oil shale) and ES-8 (tar sands).

⁶¹ FPEIS, at 1-9.

⁶² FPEIS, at 2-24.

⁶³ Roan FEIS (2006), at 3-113.

⁶⁴ Roan Plateau RMPA (2002), at 20.

In addition, Colorado State Wildlife Areas should be protected from oil shale development. Six Colorado State Wildlife Areas (SWAs) abut BLM lands or overlap with BLM managed subsurface resources opened for oil shale development in 2008. These areas include: the Shell Oil SWA – hunting lease, and the Yellow Creek Unit, the Square S Summer Range Unit, the Square S Ranch Unit, the Little Hills Unit, and the North Ridge Unit of the Piceance SWA. These areas provide important habitat for wildlife as well as recreational opportunities and an economic draw for local communities. These areas must be protected from both direct and indirect impacts associated with oil shale development.

Finally, BLM should protect core and linkage areas within Heart of the West Wildland Network Design from oil shale development.⁶⁵ The Heart of the West conservation plan is a science- and GIS-based blueprint for sustainable development in the Wyoming Basins Ecoregion spanning southeast Idaho, southwest Wyoming, northwest Colorado and northeast Utah. BLM should develop an alternative that prevents oil shale and tar sands leasing and development in core areas and corridors identified through this rigorous science-base modeling.

iv. Utah proposed wilderness areas that should be protected from oil shale and tar sands development

The following discussion concerns areas proposed for wilderness protection in Utah. These areas should be protected from oil shale and tar sands development.

a. Dirty Devil and Fiddler Butte

The Dirty Devil and Fiddler Butte Citizen Proposed Wilderness (CPW) contain an abundance of archeological resources. Studies by the NPS and the BLM in this area have suggested that this region contains an average density of twenty-four archeological sites per square mile. This means that in the Dirty Devil region alone there are likely hundreds and hundreds of rock shelters, campsites, lithic scatters, stone tool quarries, and petroglyph sites.

The Dirty Devil CPW wilderness is home to antelope, bighorn sheep, and at least nine species of plants and animals identified as “sensitive” by the BLM. It is a landscape of narrow redrock canyons surrounded by vast slickrock bowls and cliffs. Plateaus above the canyons provide important habitat for plants and animals. This area was also frequented by outlaws; Butch Cassidy and the Wild Bunch were the most famous of the lawbreakers to hang out here. The Dirty Devil has served as the setting for many Western novels, including one by Zane Grey.

The Fiddler Butte area possesses some of the most spectacular scenery in the United States. This area, along with the Dirty Devil River CPW, would be totally inappropriate for tar sands development.

The BLM agrees that the majority of the relevant Dirty Devil and Fiddler Butte CPWs contain wilderness characteristics. The relevant resource management plan even manages portions of this area to preserve those wilderness characteristics.

⁶⁵ http://www.voiceforthewild.org/Heart_of_the_West/HeartoftheWestPlan.pdf (last accessed May 11, 2011)

b. White Canyon/Fort Knocker Canyon⁶⁶

Each year nearly 100,000 visitors explore Natural Bridges National Monument, searching for the solitude, beauty, and silence that are unique to the Colorado Plateau. Few of these visitors realize that the 7,600-acre national monument is surrounded by thousands of acres of BLM wild lands including the drainages of White Canyon.

White Canyon has carved a maze of canyons deep into the Cedar Mesa Sandstone layer. These canyons are among the world's foremost displays of erosion sculpting, and the upper part of White Canyon was included within Natural Bridges National Monument in recognition of this distinction. The sinuous canyons on the BLM lands alternately narrow down into cool, dark, armspan-width slots and then widen again into coves littered with 40-ton house-sized rocks and pocket forests of cottonwood, ponderosa, and fir.

The canyon walls are honeycombed with alcoves, arches, windows, hanging gardens, and grottoes; the canyon floors are riddled with potholes. In places, natural spring water forms deep pools, and occasional rainstorms bring torrents of floodwater raging through the boulder gardens and thundering over pour-offs in spectacular waterfalls. Well over 100 miles of narrow, winding canyons in the White Canyon proposed wilderness complex (including White Canyon, Fort Knocker Canyon and Tuwa Canyon) form a network so labyrinthine that outstanding solitude is assured. Fort Knocker Canyon winds through sandstone bench lands surrounded by thousand-foot high mesas and buttes, and feeds into the lower reaches of White Canyon before it flows into the Colorado River arm of Lake Powell. This remote area is becoming internationally recognized for its dark night skies, offering some of the best stargazing in the world.

White Canyon's intermittently flowing water is an attraction for wildlife, and surely attracted the Ancestral Puebloans to the area, as remnants of their culture, ranging from scattered stone-working sites to impressive cliff dwellings, are located throughout the proposed wilderness.

The Glen Canyon/San Juan River area contains significant cultural resources.

The cultural resources found within the jurisdiction of the [Monticello Field Office] constitute some of the most aesthetically appealing and scientifically significant resources anywhere on the Colorado Plateau. The more than 26,000 documented archaeological sites in the area, the majority on BLM-administered lands, constitute the most significant concentration of cultural resources in the state of Utah. The extraordinary number and density of sites (cf. DEIS 1-4) makes the region among the most significant concentrations of archaeological sites anywhere in the western United States.⁶⁷

⁶⁶ See Utah Wilderness Inventory, at 94 (1999) (describing Fort Knocker Canyon).
<http://www.access.gpo.gov/blm/utah/pdf/se94.pdf>. (last accessed May 11, 2010)

⁶⁷ Colorado Plateau Archaeological Alliance Comments re: Monticello DEIS/DRMP at 3 (submitted Jan. 31, 2008).

A more recent report prepared by the Colorado Plateau Archaeological Alliance entitled “Farming and Foraging on the Southwestern Frontier,” further details the significant cultural resources found within the proposed mater leasing plan for this area.⁶⁸

c. Bitter Creek⁶⁹

The Bitter Creek proposed wilderness unit straddles the Colorado/Utah state lines high in the remote Eastern Book Cliffs. The area contains spectacular scenic vistas and offers sublime opportunities for solitude. Deep canyons cut through the pale Mesa Verde sandstone, and crenellated ridges buttress the sky. Within the unit, elevations range from 6,000 to 8,000 feet, and canyon slopes rise 600 to 800 feet. Bitter Creek and Rat Hole Canyon, two major drainages, wind through the area, each extending a number of side canyons like fingers into the surrounding mesas.

Vital riparian zones support box-elders and aspens, willows, sedges, and various reptile and amphibian species along the waterways in the canyon bottoms. Many wet meadow areas punctuate the folded landscape and support communities of grasses and wildflowers, insects and birds. At lower elevations, bench- and ridge-top vegetation consists of sagebrush, rabbitbrush, greasewood, and a variety of grasses. Above 7,400 feet, the drainages are dominated by pinyon-juniper woodlands on south facing slopes, and by Douglas-firs and quaking aspens on the northern aspects. Peregrine falcons and golden eagles nest in the cliffs and hunt in the river drainages, deer and elk forage along the mesa tops and in the canyons, and black bears roam the broken terrain.

With its convoluted topography, screening vegetation, and wide variety of plant and animal species, the Bitter Creek Addition provides outstanding opportunities not only for solitude, but also for primitive and unconfined recreation. Hunting, fishing, camping, hiking, photography, and wildlife viewing are all popular in the area. Backpacking and horseback riding opportunities abound in the area's many and extensive scenic side canyons.

In addition to the inspiring scenery and vital habitat, a number of pictograph and petroglyph sites, as well as historic homesteads, grace the area, lending it archaeological and historical significance. Queen Chipeta, wife of Ute Chief Ouray, was intelligent, talented, and hard working, a model of constancy and courage during a desperate time. She acted as a messenger of goodwill between Indians and Whites, meeting with President McKinley and performing many acts of kindness and sacrifice, and thus earning her place among tribal leaders. Her eponymous canyon traverses the heart of the Bitter Creek Wilderness in Utah and provides access to many side canyons. Her legend informs the rich cultural heritage of the area.

⁶⁸ A copy of “Farming and Foraging on the Southwestern Frontier” is available online at <https://research.wsulibs.wsu.edu:8443/dspace/handle/2376/2643>.

⁶⁹ In its 1999 Utah Wilderness Inventory, BLM determined that the so-called “Cripple Cowboy” wilderness inventory area had wilderness characteristics, <http://www.access.gpo.gov/blm/utah/pdf/ne142.pdf>, a determination BLM confirmed in the Vernal RMP – along with acknowledging for the first time that the citizen’s “Bitter Creek” unit have wilderness characteristics. Vernal PRMP/FEIS at 3-45 to -47. *See generally* http://www.blm.gov/ut/st/en/fo/vernal/planning/supplemental_rmp/background_documents.html. The citizen’s proposed “Bitter Creek” unit includes both the Cripple Cowboy and Bitter Creek units.

In addition to documenting wilderness characteristics, Utah BLM found the Bitter Creek and Bitter Creek-P.R. Springs area to meet relevance and importance criteria for designation as an area of critical environmental concern (ACEC) based on these same values, stating:

Relevance Criteria: The area has relevance due to the existence of an old growth forest, significant cultural and historic resources, important watershed, and critical ecosystem for wildlife and migratory birds.

Importance Criteria: The relevant values described above have substantial significance due to qualities that make it fragile, sensitive, rare, irreplaceable, exemplary, and unique. The ancient pinyon forest is over 1,200 years old, and includes the Utah champion pinyon, which is irreplaceable. Within the unit is the ancestral home of the Northern Ute Tribe when they were relocated from Colorado in the late 1800s. Many features, including graves, are within the potential ACEC, but specific locations are not known. Also in the potential ACEC is the most extensive wetland in the multi-state Book Cliffs. It exists because of a uniquely perched water table. This wetland and surrounding watershed is unique as a critical ecosystem for migratory birds and a wide variety of wildlife.⁷⁰

d. Dragon Canyon

The Dragon Canyon proposed wilderness unit consists of several large canyons that run south to north to Evacuation Creek. These include Davis, Side, Atchee, and Dragon Canyons in Utah, and Little Whiskey Creek in Colorado.

In this area, vital riparian zones support box elders and aspens, willows, sedges, and various reptile and amphibian species along the waterways in the canyon bottoms. Many wet meadow areas punctuate the folded landscape and support communities of grasses and wildflowers, insects and birds. At lower elevations, bench- and ridge-top vegetation consists of sagebrush, rabbitbrush, greasewood, and a variety of grasses. Above 7,400 feet, the drainages are dominated by pinyon-juniper woodlands on south facing slopes, and by Douglas-firs and quaking aspens on the northern aspects. Peregrine falcons and golden eagles nest in the cliffs and hunt in the river drainages; deer and elk forage along the mesa tops and in the canyons; and black bears roam the broken terrain. Other wildlife species include Townsend's big-eared bat, dwarf shrew, ringtail cat, Lewis' woodpecker, and ferruginous hawk and black bear fall concentration area. Expanding upon the important watershed values in Utah, the area provides protection for Whiskey Creek, Little Whiskey Creek, Tent Creek, Davis Creek, and West Evacuation Creek.

Significant cultural resources are found within the broader area. According to the Colorado Office of Archaeology and Historic Preservation there are forty-three registered sites with the Colorado portion of the Dragon Canyon unit alone. The type and significance of these sights is not available to the public. It is likely that the Utah portion of the Dragon Canyon unit also contains a similarly-high density of archaeological sites.

Superior visual resources exist in the area. These values are also significant, relevant and important given the threats these and similar values face in the broader landscape. The Utah

⁷⁰ Vernal RMP Draft RMP at G-4 to -5.

BLM found the Utah portions of the Dragon/Atchee/Davis Canyon area to have relevant “Scenic, cultural resources and natural systems.”⁷¹ Within the broader context of the Piceance Basin and the threats to the area these values are of substantial significance and must be protected.

e. Lower Bitter Creek

The Lower Bitter Creek proposed wilderness unit is dominated by Lower Bitter Creek itself, with its rich riparian corridor and intermittent stream that runs northwest to southeast through the center of the unit. Several deep washes enter Bitter Creek as it passes through this unit. In addition, some portions of the unit are desert landscape with sparse vegetation, while other locations support thick pinyon and juniper forests intermixed with sagebrush parks. The unit also has several prominent unnamed rock buttes that present striking features in the landscape.

Bitter Creek and its drainage provide excellent wildlife habitat for many State sensitive species including ferruginous hawk, burrowing owl, sage grouse, bald eagle, dwarf shrew, ringtail cat, black-footed ferret, as well as big game species such as mule deer and elk. Occasionally, a cougar or a bobcat can be seen. This unit may also be home to the Graham Beardtongue (penstemon *Grahamii*), a state sensitive plant species. A short day hike to several of the buttes provides unsurpassed views of this unique geologic region.

In 2007, the Vernal Field Office determined that 11,417 acres of the proposed Lower Bitter Creek wilderness unit contain wilderness characteristics.

f. Sunday School Canyon

The Sunday School Canyon proposed wilderness unit is adjacent to the northern boundary of the Winter Ridge WSA and is bounded topographically by Wood Canyon on the south, Buck Canyon to the north, the Willow Creek drainage on the west, and Seep Ridge to the east. Beyond adopting the name of its most prominent feature, the unit encompasses the entire Sunday School Canyon drainage. Upper portions of this canyon system are broad, shallow, and park-like. The canyon becomes increasingly entrenched as one proceeds down through its multiple layers of exposed geology. During wetter periods, the area is drained by an intermittent stream that runs through this canyon.

Pinyon and juniper forests that dominate the higher elevations within the unit become less prominent in lower areas. Other vegetation, including sagebrush, cactus, yucca, rabbitbrush, and native grasses are interspersed throughout the unit. The transition from lower desert to higher forested areas is important to wildlife and primitive recreation opportunities.

Wildlife viewing opportunities abound, as the unit is critical deer and elk winter habitat. In addition, on a hike up a canyon or along a ridge, a visitor may observe wild horses galloping through the landscape, or raptors circling for prey or soaring on thermals. The unit also contains either substantial, high-value, or substantial habitat for certain species of special concern, including: the state threatened ferruginous hawk, bald eagle, the burrowing owl, big free-tailed bat, sage grouse, Lewis’ Woodpecker, ringtail cat, dwarf shrew, short-eared owl, Townsend’s big-eared bat, and Utah Milk Snake. Special status plant species within the unit include the federally threatened Uinta Basin Hookless cactus, the Graham’s beardtongue (an ESA

⁷¹ Vernal RMP DEIS, at G-7.

candidate), and the Barneby's columbine, the Caespitose Cats-eye, the Grass Goldenweed, and Garrett's beardtongue.

The varied topography, wildlife, scenic vistas, and vegetation combine to create an overwhelmingly natural landscape with outstanding opportunities for solitude and a primitive, unconfined type of recreation. The unit offers incredible sight-seeing, with dramatic views of several prominent geological features including Big Pack Mountain, the Uinta Mountains, the Willow Creek drainage, the southern portions of Seep Ridge, and Bates Knolls. In addition, the potential for cultural sites exists along Willow Creek and its side drainages, as well as along Seep Ridge.

g. Seep Canyon

The Seep Canyon proposed wilderness unit is comprised of sandstone rimrocks, towering cliffs, broken slopes, broad valleys, and endless ridge lines. Besides Seep Canyon and Seep Ridge, other predominant canyons and ridges include Park Canyon, Park Ridge, Crooked Canyon, and many other side canyons and nameless draws and ridge lines. The several canyon systems drain north toward Sweet Water Canyon. The scenery created by this topographic feature is both stunning and intricate, and more distant views of the prominent buttes within the Lower Bitter Creek proposed wilderness unit, and McCook Ridge are spectacular.

Dense pinyon and juniper forests that dominate the landscape are interspersed with sagebrush, grasses, oakbrush, cacti, yucca, and other species. Isolated stands of aspen and Douglas fir are also present within the unit.

The Seep Canyon wilderness unit is important habitat for elk, deer, and several other wildlife species; cougar and golden eagles are also present. In addition, the area overlaps lands subject to a long-term black bear study by Brigham Young University and sponsored by the Utah Division of Wildlife Resources. The area contains habitat for the federal and state threatened Mexican spotted owl, the federal and state endangered willow flycatcher, and the state threatened Ferruginous Hawk. The area also provides critical habitat for the northern goshawk, and ringtail cat. It is also high value habitat for the bald eagle, burrowing owl, Lewis' woodpecker, Williamson's sapsucker, Townsend's big-eared bat, and the Utah milk snake.

h. Turtle Canyon, Desbrough, and Desolation Canyon

All three of these units are found in the western Book Cliffs and West Tavaputs Plateau. They are remarkable areas, rich with wildlife habitat, soaring escarpments, and delicate ecology. The BLM agrees that these areas contain wilderness characteristics. Oil shale or tar sands development in any of these areas would destroy the primitive character of this area. These three units help form possibly the largest unprotected roadless areas in the contiguous United States.

i. Sids Mountain

The Sids Mountain citizen wilderness proposal area encompasses a large portion of the remarkable San Rafael Swell. This large geologic uplift is a maze of canyons, cliffs, shrubland, and arroyos. It is home to the largest population of desert bighorn sheep in Utah.

v. Wyoming proposed wilderness areas that should be protected from oil shale and tar sands development

The following areas are proposed for wilderness protection in Wyoming. These areas should be protected from oil shale and tar sands development: Adobe Town, Kinney Rim North, Kinney Rim South, Red Creek Badlands, Devils Playground, Buffalo Hump, and Sand Dunes, including citizens' proposed additions to existing WSAs. These lands are identified on GIS datasets included as Attachment 13.

B. Areas of Critical Environmental Concern (ACEC)⁷²

FLPMA defines ACECs as “areas within public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life or safety from natural hazards.”⁷³ Under FLPMA, BLM is obligated to “give priority to the designation and protection of areas of critical environmental concern [ACEC].”⁷⁴

For potential ACECs, management prescriptions are to be “fully developed” in the RMP.⁷⁵ ACECs also include Research Natural Areas (RNAs), established for their significant biological and physical features, including plant or animal species or geological, soil or water features. RNAs have “ecological or other natural history values of scientific interest” and are managed for research and educational purposes. Outstanding Natural Areas (ONAs) are another type of ACEC, established to preserve scenic values and natural wonders. ONAs contain unusual natural characteristics and are managed primarily for educational and recreational purposes.

In the FPEIS, BLM opened all ACECs to application for commercial leasing, except for lands where mineral development is not currently allowed. This commitment to protect only a portion of ACECs is insufficient. While all ACECs are designated to protect different and unique values, commercial-scale oil shale and tar sands development would undermine the values for which these ACECs were designated.

As the FPEIS identified, oil shale and tar sands country includes important ACECs. We therefore strongly support the BLM's decision to revisit its decision in the FPEIS to limit protection of these public lands to only those areas currently closed to mineral development.

In addition to the following details about Colorado and Utah, please see the section below titled “Recreational Areas in Wyoming.”

i. Colorado ACECs that should be protected from oil shale development

East Fork Parachute Creek – The Area was designated as an ACEC for visual, wildlife, fisheries, botanical and ecological values.⁷⁶ East Fork Parachute Creek is a biologically

⁷² In support of this discussion, please see Attachment 1, NRDC maps.

⁷³ 43 U.S.C. § 1702(a).

⁷⁴ 43 U.S.C. § 1712(c)(3).

⁷⁵ Manual 1613, Section .22 (Develop Management Prescriptions for Potential ACECs).

⁷⁶ Roan Plateau Plan Amendment (2002), at 20.

significant tributary to the Colorado River.⁷⁷ Any oil shale development in this area will likely have significant impacts on the important values for which this ACEC was designated.

The Creek provides year-round habitat for Colorado River Cutthroat Trout (CRCT), the only native trout in the Colorado River basin. The CRCT has been designated a “special status species” by the BLM and is classified as a “sensitive species” by Regions 2 and 4 of the US Forest Service, and the states of Colorado, Utah, New Mexico and Wyoming.⁷⁸

East Fork Parachute Creek is also identified as one of the five areas containing conservation populations by the *Conservation Agreement and Strategy for Colorado River Cutthroat Trout in the States of Colorado, Utah, and Wyoming*.⁷⁹ These populations also meet the BLM’s own criteria for a conservation population.⁸⁰ The Conservation Agreement gives highest priority for management and protection to streams identified as containing conservation populations. Populations of CRCT in East Fork Parachute Creek are at least 90% genetically pure.⁸¹ The BLM considers the entire watershed to be important to the long-term functionality of vital ecosystem processes that maintain upland and stream habitats important to these fishes.⁸² Also, the BLM declared, “these streams are regionally and nationally important producers of native, genetically pure and naturally reproducing Colorado River cutthroat trout,” going on to proclaim that these streams should be given the “highest priority for management and protection.”⁸³

The importance of these trout populations is clear. This area must be protected from oil shale development in order to ensure the subspecies continues reproducing and recruiting. Oil shale development will likely result in increased sedimentation, reductions in water quantity and quality, ground water flow alteration, and increased likelihood of water contamination with toxic byproducts. These impacts will add stresses to CRCT populations and, in so doing, may undermine one of the values this ACEC was designated to protect.

Other values for which this ACEC was designated include scenery as well as unique and rare plant communities. Of special note is a 200-foot canyon waterfall. The BLM has described the waterfall as a “national park quality scenic attraction.” The ROD for the Designation of ACECs for the Roan RMPA and EIS designated the lower stretches of the East Fork of Parachute Creek as a VRM 1.⁸⁴

A rare community of Mancos columbine, and a BLM “sensitive plant,” Eastwood’s monkeyflower, are also present in the unique hanging gardens in this ACEC. Also found are

⁷⁷ ROD Designating ACECs for the Roan Plateau RMPA and EIS (2008), at 5.

⁷⁸ *Conservation Status of Colorado River Cutthroat Trout*, USDA Forest Service (1996), at 1; Available at: http://www.fs.fed.us/rm/pubs_rm/rm_gtr282.pdf.

⁷⁹ Available at: <http://www.USFWS.gov/mountain-prairie/species/fish/crct/CRCT/>.

⁸⁰ A conservation population is defined as: “A reproducing and recruiting population of native cutthroat trout that is managed to preserve the historical genome and/or unique genetic, ecological, and/or behavioral characteristics within a specific population and within geographic units.” See Roan Plateau Planning Area Proposed Plan/Final EIS, pp. 3-114.

⁸¹ Roan Plateau Plan Amendment (2002), at 20.

⁸² *Id.*

⁸³ *Id.*

⁸⁴ ROD (2008), at A-8.

several plant communities such as the Colorado blue spruce/red osier dogwood, the boxelder, narrowleaf cottonwood, red osier dogwood community, and the Indian ricegrass shale barrens community. These communities are considered rare globally and in Colorado.

There are also a few imperiled plants in this ACEC that may be particularly susceptible to oil shale development. Utah fescue, for example, is a perennial grass and an oil shale endemic species found within East Fork Parachute Creek ACEC. Hanging garden sullivantia is found in this area. Southwest stickleaf, a BLM sensitive species, is an oil shale endemic that frequently occurs in the area. The Roan Plateau Final EIS makes it clear that this ACEC “contains a diversity of rare or uncommon riparian plant communities and BLM sensitive plant species.”⁸⁵ The EIS goes on to say: “the rare plants and plant communities found in this drainage are of excellent condition and abundance and are vulnerable to adverse change.”⁸⁶

Trapper/Northwater Creek ACEC – This area was designated for wildlife, fisheries, botanical and ecological values, and all values therein should be protected. Trapper and Northwater Creeks are tributaries to the Colorado River, and the creeks provide year-round habitat for CRCT. This ACEC is a critical conservation area for the CRCT. Three of the five conservation populations of CRCT that exist atop the plateau are found within this ACEC. Included in these are “core conservation populations,” identified by a genetic purity of 99% or higher.⁸⁷

The BLM considers the entire watershed vital to the long-term functionality of ecosystem processes that maintain upland and stream habitats important to these fishes.⁸⁸ The BLM also said, “These streams are regionally and nationally important producers of native, genetically pure and naturally reproducing Colorado River cutthroat trout.”⁸⁹ The nearly pure genetic populations of CRCT that exist in this area are irreplaceable, and should be protected from any habitat degradation that may accompany development of oil shale in the area.

Botanical and ecological values sought to be protected in this ACEC include hanging garden sullivantia and Utah fescue. Combining known occurrences of hanging garden sullivantia in the Trapper/Northwater Creek ACEC with known occurrences in the East Fork Parachute Creek ACEC accounts for 62% of total known occurrences.⁹⁰ Utah fescue is a perennial grass and an oil shale endemic. The Indian ricegrass shale barrens community can also be found in this ACEC. This community is found in only three other Western Colorado counties.⁹¹

The important CRCT populations as well as rare plant communities and species in this ACEC, should be protected. Opening this area to oil shale development may undermine protection of these values and undermine stated BLM management priorities.

⁸⁵ Roan Plateau FEIS (2006), at 3-116.

⁸⁶ *Id.*

⁸⁷ *Id.* at 3-116.

⁸⁸ Roan Plateau Plan Amd. (2002), at 27.

⁸⁹ Roan Plateau FEIS (2006), at 3-116.

⁹⁰ *Id.* at 3-117.

⁹¹ *Id.*

The Duck Creek, Ryan Gulch, Dudley Bluffs ACECs – These areas are located within the White River Field Office in the northern portion of the Piceance. These ACECs provide habitat for several federally and state-listed threatened plant species and candidate species.⁹² Federally threatened, endangered, proposed, and candidate species include the Dudley Bluffs bladderpod, the Piceance twinpod, the Ute-lady’s tresses orchid, the Graham beardtongue, and the White River beardtongue.

Along with important and imperiled plant species, these ACECs also retain unique and irreplaceable cultural resources.⁹³ Among cultural resources of note is a Wickiup Village in and around the Duck Creek ACEC.⁹⁴ This village is listed on the National Register of Historic Places and is one of the cultural resources that should remain unharmed by oil shale development. Other cultural resources in these ACECs identified by the cultural resource interpretation program undertaken by the White River Field Office should also be preserved.

ii. Potential ACEC’s in Colorado that should be declared off-limits from oil shale development

The FPEIS provides “potential ACECs that are currently under consideration for designation as part of ongoing land use planning efforts would be available for application for commercial leasing in the future.”⁹⁵ Given the critical nature of environmental values at risk in these ACECs and the BLM’s admission that oil shale development is incompatible with other uses, this decision is extremely troubling. At the very least BLM should defer a final decision on availability for oil shale leasing until a final determination has been made about ACEC designation in the RMP process.

Snake John Subcomplex of the Coyote Basin Complex – Portions of the Snake John Subcomplex that occur in the White River Field Office were nominated by the Center for Native Ecosystems (CNE) in 2007 due to recent mapping of white-tailed prairie dogs.⁹⁶ This area and this habitat should be protected from oil shale development.

The Snake John Subcomplex is also important habitat for the endangered black-footed ferret. The black-footed ferret is one of the most endangered mammals in North America. Ferrets historically occupied more than 100 million acres of western grasslands, from the Rocky Mountains eastward throughout the Great Plains, but are now reduced to a handful of reintroduction sites in the wild. Healthy ferret populations require very large prairie dog complexes. Dramatic prairie dog declines have taken a brutal toll on the ferret. Prairie dogs make up 90% of the ferret’s diet.

The Coyote Basin complex is thought to have been among the most robust white-tailed prairie dog colonies in Colorado historically. Reintroduced black-footed ferrets currently occupy the Wolf Creek complex in Colorado, the Coyote Basin complex in Utah and Colorado, and the Snake John complex in Utah. These complexes constitute the most important habitat for white-

⁹² DPEIS at 3-125.

⁹³ *Id.*

⁹⁴ White River Field Office RMP Amd. (2007), at 4-69.

⁹⁵ FPEIS, at 4-21.

⁹⁶ Attachment 2.

tailed prairie dogs and black-footed ferrets in Colorado and Utah, and are within the portions of the white-tailed prairie dog's range in Utah and Colorado that are expected to see the most substantial increases in oil and gas development over the next 20 years. These areas were also opened to oil shale development through the FPIES and RMPs. In areas where energy development overlaps occupied white-tailed prairie dog habitats, the resulting habitat loss and fragmentation will have negative effects on individuals and populations, including mortality, noise disturbance, and habitat loss and fragmentation. There is a threshold level at which point habitat loss and fragmentation will threaten local white-tailed prairie dog populations and reduce prairie dog abundance to a level that is too low to provide an adequate prey base for black-footed ferrets.

In addition to being a federally listed endangered species, black-footed ferrets are a Colorado Division of Wildlife Endangered Species and a Comprehensive Wildlife Conservation Strategy Science Forum Species of Most Concern. The fact that the endangered black-footed ferret is dependent on healthy populations of white-tailed prairie dog warrants special management of the habitat that these species rely upon to protect them from oil shale development.

Dudley Bluffs bladderpod and twinpod habitat outside of existing ACECs – There are occurrences of Dudley Bluffs bladderpod and Dudley Bluffs twinpod outside of existing ACECs. These areas were nominated as ACECs by the CNE in 2007.⁹⁷ In that nomination, CNE recommended 300-foot buffers protecting all known occurrences of these plants to ensure ongoing function of ecosystem processes. USFWS's 1993 recovery plan and the agency's 2008 5-Year Review of the Dudley Bluffs bladderpod and Dudley Bluffs twinpod listed oil shale development as "the primary threat to both species..."⁹⁸ The Review called oil shale development an "imminent" threat.⁹⁹ BLM's own analysis lists threats to these plants associated with oil shale development:

...direct injury and mortality of individuals, soil and seed bank disturbance and removal, vegetation clearing, habitat fragmentation, dispersal blockage, alteration of topography, changes in drainage patterns, erosion, sedimentation from runoff, oil and contamination spills, fugitive dust, increased human access and human collection, spread of invasive plant species, air pollution, and loss of pollinator habitat.¹⁰⁰

In the USFWS's 5-year Review the agency estimated that 36% of known occupied habitat for both the bladderpod and the twinpod is not protected by ACEC designation and that "[p]ermanent protective land management designations are necessary on all, or nearly all, occupied BLM land in order to fully achieve recovery."¹⁰¹ In other words, protection of occupied Dudley Bluffs bladderpod and twinpod habitat in areas proposed for ACEC designation are necessary to ensure recovery of these listed species. These areas should be unavailable for oil shale development.

⁹⁷ *Id.*

⁹⁸ See <http://www.USFWS.gov/mountain-prairie/species/plants/dudleybluffs/Final5YearReview.pdf>, at 12.

⁹⁹ *Id.*

¹⁰⁰ Bureau of Land Management-White River Field Office. 2007. Piceance Development Project Assessment and Decision Record CO-110-2005-219-EA. 316 pp. See also, <http://www.USFWS.gov/mountain-prairie/species/plants/dudleybluffs/Final5YearReview.pdf>, at 13.

¹⁰¹ See <http://www.USFWS.gov/mountain-prairie/species/plants/dudleybluffs/Final5YearReview.pdf>, at 5.

Graham's Penstemon habitat outside the Raven Ridge ACEC – In 2007 CNE petitioned for expansion of the existing Raven Ridge ACEC to include a USFWS designated critical habitat unit for Graham's penstemon. The petition included half-mile buffers around all known Graham's penstemon occurrences per recommendation of Dr. Vince Tepedino of the Logan Bee Lab. Half-mile buffers are necessary to protect Graham's penstemon pollinators. Again, these areas should be closed to oil shale development.

Narrow-stem gilia habitat outside the existing Lower Greasewood ACEC – In 2007 CNE petitioned for expansion of the existing Lower Greasewood ACEC to include known additional occurrences of narrow-stemmed gilia. Known occurrences should be protected from oil shale development with 300-foot buffers.

Narrowleaf evening primrose habitat outside existing ACECs – In 2007 CNE petitioned for ACEC designation of two known narrowleaf evening primrose occurrences near existing and proposed ACECs in the White River Field Office. The petition also recommended a 300-foot buffer around known occurrences. These proposed ACECs should be protected from oil shale development.

White-tailed prairie dog complexes – In addition to BLM-surface portions of the Snake John Subcomplex of the Coyote Basin Complex, in 2007 CNE also nominated for ACEC designation all other BLM-surface portions of white-tailed prairie dog complexes constituting 5000 acres or more (including both historically and currently occupied acreage) within the White River Field Office.

iii. Potential ACECs in Utah that should be declared off-limits from oil shale and tar sands development

The following potential ACECs in Utah that the BLM identified in Table 3.1.1-10 of the FPEIS should also be protected from oil shale and tar sands development:

Bitter Creek and Bitter Creek/PR Springs – This 147,425-acre potential ACEC is located high in the remote Book Cliffs of eastern Utah. The Vernal RMP considered this ACEC in order to protect “old-growth pinyon pine, cultural resources, historical features, and watersheds.”¹⁰² All of these relevant values would be severely impacted by oil shale or tar sands development.

Nine Mile Canyon – Nine Mile Canyon is often referred to as the world's longest art gallery for good reason. This stunning area is replete with cultural resources. Few areas have a higher concentration of known cultural resources in such a limited place.

This potential ACEC is split between the Price and Vernal field offices. The Price RMP considered an ACEC up to 49,000 acres in size.¹⁰³ The Vernal RMP considered an ACEC that

¹⁰² Vernal Proposed RMP and Final EIS at 4-428.

¹⁰³ Price Proposed RMP and Final EIS at 2-116.

would have included 81,168 acres.¹⁰⁴ The BLM identified this area because of its world-class archeological treasures. It includes “Fremont, Ute, and Archaic rock art and structures.”¹⁰⁵

Although both the Price and Vernal RMPs designated an ACEC that would protect some of the resources of this area the designated ACEC is smaller than potential ACECs for this area that were considered in both plans.

Main Canyon – Main Canyon is a large, potential ACEC that was considered in the Vernal RMP. This potential ACEC covers 100,915 acres. Sitting in the heart of the remote Book Cliffs region, the Main Canyon ACEC is home to crucial habitat for deer and elk.¹⁰⁶ It also contains sites of the historical Northern Ute migration route.

Dirty Devil/North Wash – This large potential ACEC covers some of the most spectacular scenery on the Colorado Plateau. The Richfield RMP considered a potential ACEC that would have designated 205,300 acres of land for the protection of such values as scenery, cultural resources, paleontological resources, wildlife, and special status species.¹⁰⁷ The Mexican spotted owl is among the sensitive species that make their homes in this potential ACEC.¹⁰⁸

White River – The Vernal RMP included a potential ACEC of 47,130 acres surrounding the deep canyon of the White River. This potential ACEC would have protected “unique geologic formations with spectacular vistas and the high-value river riparian ecosystem.”¹⁰⁹ The White River “provides critical habitat for the endangered Colorado pikeminnow, as well as habitat for other threatened, endangered, and sensitive species, including the razorback sucker, flannel mouth sucker, roundtail chub, Yellow-billed Cuckoo, Peregrine Falcon, and Bald Eagle.”¹¹⁰

Coyote Basin-Kennedy Wash, Coyote Basin-Coyote Basin, Coyote Basin-Myton Bench, and Coyote Basin-Snake John – This complex of potential ACECs in the Vernal Field Office would provide protection for a myriad of sensitive species. Those special species that use this area include the pronghorn, bobolink, ferruginous hawk, peregrine falcon, sage grouse, long-billed curlew, grasshopper sparrow, short-eared owl, big free-tailed bat, black-footed ferret, ringtail cat, and dwarf shrew.¹¹¹

Four Mile Wash – This 50,280-acre potential ACEC is located along the Green River, just north of Desolation Canyon. It includes “high-value scenery, riparian ecosystems, and special status fish species” as resources worthy of protection.¹¹² This potential ACEC includes amazing examples of more recent rock art. For example, visitors to this area can find representations of railroad trains drawn by Utes.

¹⁰⁴ Vernal Proposed RMP and Final EIS at 4-434.

¹⁰⁵ *Id.*

¹⁰⁶ *Id.* at 4-435.

¹⁰⁷ Richfield Proposed RMP and Final EIS at 2-121.

¹⁰⁸ *Id.*

¹⁰⁹ Vernal Proposed RMP and Final EIS at 4-433.

¹¹⁰ *Id.*

¹¹¹ *Id.* at 4-430.

¹¹² *Id.*

Sids Mountain Potential ACEC – The Sids Mountain potential ACEC was identified by the BLM as containing outstanding scenery with a large diversity of landforms and colors. “Landforms include rounded domes, high truncated buttes, and vertical cliffs dissected by deep canyons. The change in form and elevation is highly visible.” The BLM also stated that “[v]ivid colors range from light buff and brown sandstones to the light gray-green vegetation on the mesas and in the canyons.”

iv. Wyoming ACECs and potential ACECs that should be protected from oil shale development

The following ACECs in Wyoming established under the Green River Resource Management Plan should be protected from oil shale development: Cedar Canyon ACEC (approximately 2,550 acres); Greater Red Creek ACEC (approximately 131,890 acres - originally Red Creek ACEC, expanded from 55,880 acres to include relevant and important values in the Currant Creek and Sage Creek Drainages); Greater Sand Dunes ACEC (approximately 38,650 acres); Natural Corrals ACEC (approximately 1,276 acres); Oregon Buttes ACEC (approximately 3,450 acres); Pine Springs ACEC (approximately 6,030 acres, expanded from 90 acres to include adjacent relevant and important values); White Mountain Petroglyphs ACEC (approximately 20 acres); South Pass ACEC (approximately 53,780 acres); Special Status (Candidate) Plants ACEC (approximately 900 acres); and Steamboat Mountain ACEC (approximately 43,270 acres).

In addition, the following potential ACECs should also be excluded from oil shale leasing: sage-grouse potential ACECs in the South Pass and Salt Wells areas as identified in the Sage-Grouse Plan Amendment process and others that may be identified in the Pinedale Field Office; the Monument Valley Management Area as identified in the Green River RMP; and the Powder Rim the migration corridor for the Grand Teton pronghorn herd, extending southward from Trapper’s Point to Seedskaadee National Wildlife Refuge. In addition, Seedskaadee NWR itself should be excluded from oil shale leasing.

C. Adobe Town Very Rare or Uncommon Area – The entire area should be excluded from leasing

This PEIS presents an important opportunity to protect the Adobe Town Very Rare or Uncommon Area. The State of Wyoming’s 2008 designation of the Adobe Town area as Very Rare or Uncommon under the state Environmental Quality Act should provide the BLM with the legal basis for protecting this entire area. In the FPEIS, only lands designated as WSA within Adobe Town were protected from commercial development. With Very Rare or Uncommon designation being finalized in 2008, the BLM now has a strong basis for protecting this area’s environmental and cultural resources.

Adobe Town has been called the crown jewel of the Red Desert – encompassing irreplaceable ecological, geological, historical and recreation values. At 180,910 acres, Adobe Town is Wyoming’s largest and most spectacular desert wilderness. Stretching 26 miles north to south and 19 miles east to west, this area is one of the last places in Wyoming where visitors can take in views of pristine landscape that stretch from horizon to horizon. The landscape ranges from banded badlands to mazes of arches, pinnacles, and spires, offering spectacular scenic vistas and important wildlife habitat.

Adobe Town was designated as s Very Rare or Uncommon due to its geological, fossil, scenic, wildlife, and cultural/historical values. Non-coal surface mining (which would include oil shale) is expressly prohibited in Very Rare or Uncommon areas, except in cases where surface mining would not detract from such qualities. Because scenic qualities are part of the designation, there is no possibility that an exemption for oil shale mining could be issued.

In its formal designation of this area, Wyoming’s Environmental Quality Council stated, “The designation protects the area from non surface coal mining only. The designation would prevent surface mining for oil shale and uranium, as well as gravel pit mining.”¹¹³ While part of the Very Rare or Uncommon area is a Wilderness Study Area (WSA), which cannot be made available for oil shale leasing under the FPEIS, the remainder is outside the WSA. All of Adobe Town as a state of Wyoming Very Rare and Uncommon area, not just the WSA, should be protected from oil shale development. Further, Adobe Town geological formations, abundant fossil resources, historical and prehistoric sites and features, rare and sensitive (including crucial) wildlife habitats, and scenic values are comparable to existing national park units, and thus are of national value. Left unprotected, these treasures are at risk of elimination.

The Adobe Town area should be managed on a landscape level, through a variety of management designations. By managing this area as a whole, the BLM can better protect its important and varied values. This concept is supported by the recently released *America’s Great Outdoors* report, which recommends the agency incorporate landscape-scale conservation and restoration as a priority in BLM resource management plans and programs.¹¹⁴

i. Adobe Town: Historical, prehistorical, and archaeological values

Adobe Town has a number of historical, prehistorical and archaeological values that meet the criteria for Very Rare or Uncommon designation. It is mentioned prominently in the journals of the Geological Exploration of the 40th Parallel (circa 1869), and was used as a hideout for fresh horses by Butch Cassidy and his gang during the Tipton train robbery of 1900. The area has a high density of archaeological sites dating back 12,000 years, and is still used as an important religious site by Native Americans today.

Adobe Town is mentioned prominently in the Report of the Geological Exploration of the 40th Parallel, a federal document authored by eminent geologist Clarence King in 1869. This area was identified by King as the most superlative geological landscape found along the survey route. King described the general landscapes as follows:

From twelve to fourteen miles southwest of the head of Bitter Creek are seen exposures of the soft green clays, marls, and whitish-gray ands of which the upper beds of the Bridger group are made. Passing eastward of Pine Bluffs [known today as Pine Butte], the country is covered with more or less drifting sand, which forms noticeable trains of dunes. The sand suddenly gives way to the soft Bridger

¹¹³ Final Order at 18. Available online at <http://deq.state.wy.us/eqc/orders/Rare%20or%20Uncommon%20Closed%20Cases/07-1101%20Adobe%20Town/Adobe%20Final.pdf> (last accessed April 20, 2011).

¹¹⁴ <http://americasgreatoutdoors.gov/report/>

beds which are intricately eroded into branching ravines [Adobe Town and Skull Rims]. This bad-land country extends southeastward to the mouth of a dry valley [Sand Creek] north of Cherokee Ridge [Powder Rim/Cherokee Rim], and from that point a chain of bluff escarpments extends northeasterly for twelve or fourteen miles.¹¹⁵

In addition to the historical noteworthiness of the Geological Exploration, Adobe Town is also unusually rich in archaeological sites. According to BLM,

Significant archaeological resources are found throughout the [Adobe Town] WSA, representing continuous occupation from Paleo Indian through late Prehistoric periods, that is, for the past 12,000 years. The cultural site density of the WSA is estimated to be 30 surface sites per square mile, which is unusually high.¹¹⁶

ii. Adobe Town: Geological values

Adobe Town is a geological masterpiece, dominated by outcroppings of the Washakie formation, a deep bed of volcanic ash deposited 50 million years ago during the Yellowstone eruptions as airborne ash and fluvial desposits of ash interbedded with reddish sandstone that forms rimrock. In 1981, BLM described the geology of the rims as follows:

They are composed of green, gray, and red tuffaceous and arkosic sandstone and minor beds of green shale, light-gray and green tuff, gray siltstone and conglomerate. The exposed beds have created the colorful landscape the Adobe Town Area is known for.¹¹⁷

These are the epitome of fragile lands, with highly erodible soils (both the tuffaceous sandstone and the stabilized sand dunes mantled with a fragile veneer of vegetation) and the towers, arches, and balanced rocks which would easily be toppled by mechanical disturbance.

Above the rims, unique geological features include desert pavement and stabilized sand dunes. The rims have been whittled by erosion into spires and pinnacles, solifluction caves (known locally as ‘mud caves’) large enough to walk through, natural arches, lone towers, groups of castellated pillars, window rocks, grottoes, buttes, caprocks, mushrooms, hat rocks, and eroded badlands banded with pink, red, and purple tones. According to BLM, “Skull Creek Rim, in the core of the area recommended for wilderness, contains some of the most unique and extensive badlands formations in Wyoming.”¹¹⁸ BLM described the effect of this surreal landscape as follows:

¹¹⁵ King, Clarence. 1870. Report of the Geological Exploration of the Fortieth Parallel. Washington, DC: Government Printing Office.

¹¹⁶ BLM 1991. Wyoming statewide wilderness study report: Wilderness Study Area specific recommendations. Cheyenne: BLM Wyoming State Office.

¹¹⁷ BLM 1981. Overland Planning Unit, URA Step III (Present Situation), .48 Wilderness Resources. Rawlins: BLM.

¹¹⁸ BLM 1991, at 184.

Many of the spires take on strange life-like forms – stone sentinals (sic) frozen in time standing guard over their silent desert domain. Walking amidst groups of these strange spires gives one the eerie feeling of being watched – by beings who have witnessed the evolution of Adobe Town for millennia.¹¹⁹

In addition, the paleontological resources of Adobe Town are among the finest deposits of Eocene mammals and reptiles in the world. According to BLM, “The Adobe Town area is known as one of the three most valuable sites in North America for certain types of mammalian fossils.”¹²⁰ BLM further noted,

The WSA is nationally known for the educational and scientific study of paleontological resources. Fossil remains of mammals are numerous and widely distributed throughout the area. Two notable mammalian fossils found in the area are the Uintathere and Titanother. The Uintathere was a large mammal about the size and configuration of an African rhinoceros. The species of Titanother found in the WSA was a tapir-like mammal, about 40 inches in height. This area has been identified as one of the premiere sites in North America for paleontological resources.¹²¹

iii. Adobe Town: Wildlife values

Adobe Town also has a host of sensitive wildlife habitats that are crucial or vital to meeting the very rare or uncommon designation criteria. These habitats include nest sites, sage-grouse lek sites, prairie dog colonies, and big game crucial winter ranges. The cliffs and pillars found throughout Adobe Town provide ideal nesting habitat for raptors, offering numerous nesting platforms out of the reach of ground-based nest predators. Raptor nest sites, sage-grouse lek sites, and big game crucial winter ranges are exceptionally sensitive to, among other things, development, as temporary disturbances can lead to nest failure or displacement of big game onto marginal ranges where they may not be able to survive.

The white-tailed prairie dog is a BLM Sensitive Species and also is recognized as a Sensitive Species by the Wyoming Game and Fish Department. There is a small white-tailed prairie dog colony observed at T 14N R97W sec. 12, SE ¼, which has been active at least between 2001 and 2006; white-tailed prairie dogs were also observed in Section 13 NW ¼ of the same township in 2006. Active white-tailed prairie dog colonies also occur in Horseshoe Bend south of the Haystacks.¹²²

There are a number of known golden eagle nest sites, including two nest sites along the western end of The Haystacks (T16N R97W Sec. 10 NE ¼ and T16N R97W Sec. 15 SW ¼), one along Haystack Wash as it leaves the rimrock area (T16N R96W Sec. 30 NW ¼), and one on the lower rim (T15N R96W Sec. 18 NW ¼). In the Rawlins Field Office, two golden eagle nests occur in the southern end of the WSA, with additional nests known from the Willow Creek Rim in the

¹¹⁹ BLM 1981, at 4.

¹²⁰ BLM 1991, at 187.

¹²¹ BLM 1991, at 188.

¹²² BLM 2003. Draft Environmental Impact Statement, Desolation Flats Natural Gas Field Development Project. Rawlins Field Office, Figure 3-1, at I-7.

eastern proposed expansion unit and on outcrops to the west of Sand Creek in the southeastern part of the area.

The greater sage-grouse is a BLM Sensitive Species and also is listed as a Sensitive Species by the Wyoming Game and Fish Department. (Sage-grouse are discussed in further detail below.) There are three known sage-grouse leks – one in the southeastern proposed expansion, another north of the WSA and south of The Haystacks, and a third in the northeastern lobe of the WSA. Sage-grouse leks are the hub of nesting activity, and typically most of the hens bred at a lek nest within 3 miles of the lek site. Thus, the area around each lek also constitutes important nesting habitat.

There is a desert elk herd, known to the Wyoming Game and Fish Department as the Petition Herd, which is one of the few true desert elk herds in North America, spending the entire year in the Red Desert. This elk herd is therefore very rare. Its activities are centered on the Powder Rim.

Known prairie falcon nest sites within the proposed Very Rare or Uncommon area include one at T16N R95W Sec. 19 NW ¼; two near Manuel Gap (T16N R97W Sec. 27 SW ¼ and T16N R97W Sec. 28 SW ¼); and T15N R96W Sec. 19 NE ¼.¹²³ Prairie falcons with fledgling young were observed roosting on a pinnacle just off the Skull Creek Rim at T13N R97W during the early summer of both 2005 and 2006. Prairie falcons with fledgling young were also sighted at T15N R97W Section 19 SW ¼ on July 9, 2006. A known prairie falcon nest also was recorded by BLM on the bluffs above Willow Creek in the eastern proposed expansion.

Several other raptors are on the BLM and Wyoming Game and Fish Department Sensitive Species Lists. The burrowing owl, which is a prairie dog obligate species that nests in burrows of prairie dog towns, has one known nest location in the southwestern corner of the WSA. The ferruginous hawk, the largest hawk in Wyoming, has nest sites confirmed by BLM two miles south of Manuel Gap and in the southeastern proposed expansion.

Due to the rugged and inaccessible nature of much of Adobe Town, no thorough and systematic inventory of nesting raptors has ever been performed. For instance, there are several known nest sites of ferruginous hawks active in recent years which are not in the BLM's database, even in accessible areas. An occupied and active ferruginous hawk nest was observed by Erik Molvar and Joel Sartore on the eroded walls far below East Fork Point at T14N R96W Section 8 SWSE on May 4, 2004. In addition, an active and occupied ferruginous hawk nest was documented in the Haystacks at T17N R96W Section 33 SWSE by Liz Howell, and separately by Erik Molvar, during summer of 2005. The same nest was found to be active again in 2006 by Erik Molvar.

The mountain plover is recognized as a BLM Sensitive Species and as a Sensitive Species by the Wyoming Game and Fish Department. Until recently, it was listed as Threatened under the Endangered Species Act (ESA). The Horseshoe Bend area south of The Haystacks contains vital

¹²³ BLM 2001. Decision Record/FONSI/Environmental Assessment, Veritas Haystacks Geophysical Project. Rock Springs Field Office.

mountain plover nesting habitat with a number of confirmed plover sightings.¹²⁴ Mountain plovers have also been sighted atop the Adobe Town Rim at T15N R98W Section 25 NE ¼, and at the southern edge of the Adobe Town Rim.

The Great Basin gopher snake is listed as a BLM Sensitive Species. This species has been photographed along the Adobe Town Rim at T15N R97W Section 19, NW ¼.

The Haystacks is identified by the Wyoming Game and Fish Department as crucial mule deer winter habitat. There is also a substantial amount of pronghorn crucial winter range south of Horseshoe Bend along the branches of Haystack Creek. In addition, portions of the area on the north slope of the Powder Rim are mule deer crucial winter range.¹²⁵

iv. Adobe Town: Scenic values

The scenic values of Adobe Town are the most impressive of any desert landscape in Wyoming. It has long attracted the attention of writers and authors. In the 2006-2007 edition of *Wilderness* magazine, writer Allen Best characterizes Adobe Town as “a giant museum of geological curiosities.” In 2004, Kerry Brophy wrote of Adobe Town in *Wyoming Wildlife* magazine as “about as lonesome and lovely a place as you’re likely to find”. Adobe Town is also featured in the guidebook *Wild Wyoming*, which characterized the area as “a landscape worthy of National Park status.” World-renowned author Annie Proulx described Adobe Town as “The maze of badland formations, mesas, and buttes combine with brilliantly colored rock strata to create spectacular canyonland scenery.”

More recently, Adobe Town has become a mecca for photographers, and photographs have been included in calendars, coffee table books such as *Wind River Wilderness*. A scenic photograph of Adobe Town appeared in the July 2005 issue of *National Geographic*. Internationally known nature photographer Tom Mangelson noted, “Adobe Town is truly one of the crown jewels of the West, one of the signature Red Desert landscapes that cannot be allowed to fall under the blade of the bulldozer.”¹²⁶ Photographer Ron Marquart described Adobe Town as follows: “Its landscape is comparable to Bryce Canyon, Canyonlands and Badlands National Parks, and represents the most intricate, outstanding badlands topography in the U.S.” Adobe Town was also featured in the new book of photography published by Laguna Wilderness Press, *Wyoming’s Red Desert: A Photographic Journey*.

These scenic values are also important economic values. Both must be protected.

v. Adobe Town: Recreation

Currently, the Adobe Town area is used primarily for recreation. Hikers and photographers concentrate efforts along the Adobe Town Rim, in The Haystacks, and atop the Skull Creek Rim. The unit is an excellent rockhounding area, with moss agates and other semiprecious stones to be found, especially atop the Adobe Town Rim. The flats along the eastern end of the unit are a well-known trophy antelope hunting area, and The Haystacks, Adobe Town Rim, and Powder

¹²⁴ BLM 2003. Draft Environmental Impact Statement, Desolation Flats Natural Gas Field Development Project. Rawlins Field Office. Figure 3-2, p. I-10

¹²⁵ BLM 2005. Environmental Assessment for the Cherokee West 3D Seismic Project. Rawlins Field Office.

¹²⁶ *Protect Adobe Town, today*, Rawlins Daily Times, January 19, 2006, p. 7

Rim are also known mule deer hunting areas. Due to the tangled web of gas field roads to the east of Adobe Town, most visitors approach from the north and west.

D. Greater Sage-Grouse

We strongly support the BLM's decision to include a more thorough review of the greater sage-grouse in the PEIS. Notably, while the BLM is taking comments on the scope of this review, the agency is also taking comments on the proposed TransWest Express Line transmission project. That project, like oil shale and tar sands development, will force the agency to ensure its decisions and development activities that follow can protect this important species. Should the BLM not protect this species and its numbers continue to decline, all energy development in the three-state region, including important renewable energy projects, will be seriously compromised.

As the BLM is acutely aware, listing under the ESA is not hypothetical. Since the FPEIS was issued in 2008, the USFWS ruled the sage-grouse is "warranted but precluded" under the ESA. As the agency cautions, "Evidence suggests that habitat fragmentation and destruction across much of the species' range has contributed to significant population declines over the past century. If current trends persist, many local populations may disappear in the next several decades, with the remaining fragmented population vulnerable to extinction."¹²⁷ The USFWS determined that southwestern and central Wyoming and northwestern Colorado are strongholds for sage-grouse, with some of the highest estimated densities of males anywhere in the remaining range of the species. The USFWS also identified this high-density sagebrush area as one of the highest priorities for conservation consideration as it comprises one of two remaining areas of contiguous range essential for the long-term persistence of the species."¹²⁸

The BLM recognizes the challenge. As the BLM correctly stated in the FPEIS, "[G]reater sage-grouse have experienced long-term declines because of degradation and loss of important sagebrush steppe and grassland habitat."¹²⁹ In addition, as the BLM clearly states, "the decline in greater sage-grouse populations is believed to be the result of a number of factors, including oil and gas wells and their associated infrastructure, traffic, power lines, urbanization, recreation, predators, and a decline in the quality and quantity of sagebrush habitat."¹³⁰

That is why the BLM flagged sage-grouse and oil shale in Instruction Memorandum 2010-071.¹³¹ The precarious nature of the species survival and the nexus to energy development is also why former Wyoming Governor Dave Freudenthal proactively designated core protection areas. It is also why in 2007, the Center for Native Ecosystems petitioned for ACEC designation all known sage-grouse lek sites within the White River Field Office plus four-mile buffers around each site. As provided in the IM, and consistent with Wyoming's strategy and CNE's petition, one way of to achieve these goals is to establish No Surface Occupancy (NSO).

¹²⁷ <http://www.fws.gov/mountain-prairie/species/birds/sagegrouse/> (last accessed April 27, 2011)

¹²⁸ 75 Fed. Reg. 13910, 13950 (March 23, 2010).

¹²⁹ FPEIS, at 3-148.

¹³⁰ FPEIS, at 3-149.

¹³¹ IM 2010-071 provides: Screen new oil shale lease applications to identify whether the proposed leasing area includes priority habitat. If so, alert the applicant as early as possible that, pending NEPA analysis, the application may be delayed or denied or that lease stipulations and project conditions of approval may be imposed that designate avoidance areas or include No Surface Occupancy restrictions, for example.

As noted above, oil and gas development has negatively impacted sage-grouse populations. Because oil shale and tar sands would be concurrent with oil and gas and other uses, the PEIS must consider the cumulative impacts of the proposed action in combination with these uses.

i. Additional details about the sage-grouse

The sage-grouse is a reasonably good umbrella species for many types of sagebrush obligate wildlife, from pronghorns and pygmy rabbits to BLM Sensitive songbirds.¹³² The maintenance of high-quality sagebrush steppe habitats, particularly nesting and wintering habitats, is necessary to maintain viable sage-grouse populations. That's why large sage-grouse Core Areas like South Pass and the Kinney Rim/Vermillion have been proposed for protection from future oil and gas leasing under the BLM's Wyoming sage-grouse plan amendment.

To ensure viable sage-grouse populations, it is important to consider nesting, brood-rearing, and winter habitats. Holloran and Anderson found that 64% of sage-grouse females nested within 5 km of a lek.¹³³ Connelly proposed comprehensive guidelines regarding the management of sage-grouse, focused around the conservation of breeding/nesting habitat, late summer brood-rearing habitat, and wintering habitat.¹³⁴

In western Wyoming, Lyon found that sage-grouse moved an average of 1.1 km from the nest site for early brood-rearing, and late brood-rearing habitats averaged 4.8 km distant from the early brood-rearing areas.¹³⁵ In Bates Hole, Holloran found that early brood rearing habitats are typified by decreased sagebrush cover and height and increased forb abundance, and movement to riparian sites occurred as uplands became desiccated.¹³⁶ In addition, as Erik Molvar, a Wyoming-based wildlife biologist and a signor to these comment explains in Attachment 3, "the availability of forage with a high nutritional content is an important factor determining brood success. Broods require forbs, insects and cover for growth, concealment and shade (Autenreith 1985)." Additionally, Molvar explains, "Mesic meadows and surface waters are focal points of sage-grouse activity during certain times of year. Mesic sites associated with springs, seeps, and streams are critical for sage-grouse on a year-long basis, and assume even greater importance as brood rearing habitat (Autenreith et al. 1982)."

As for winter habitats, non-migratory sage-grouse winter on their nesting and brood-rearing habitats, while migratory populations may travel some distance to winter on traditional wintering areas. A western Wyoming study determined sage-grouse traveled at least 35 km to separate

¹³² Mezquiza et al

¹³³ Holloran, M.J., and S.H. Anderson. 2005. Spatial distribution of greater sage-grouse nests in relatively contiguous sagebrush habitats. *Condor* 107:742-752.

¹³⁴ Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. *Wildl. Soc. Bull.* 28:967-985.

¹³⁵ Lyon, A.G. 2000. The potential effects of natural gas development on sage-grouse (*Centrocercus urophasianus*) near Pinedale, Wyoming. M.S. Thesis, Univ. of Wyoming, 121 pp.

¹³⁶ Holloran, M.J. 1999. Sage-grouse (*Centrocercus urophasianus*) seasonal habitat use near Casper, Wyoming. M.S. Thesis, Univ. of Wyoming, 130 pp.

wintering grounds.¹³⁷ In Colorado's North Park, Beck found that grouse migrated 5-20 km away from breeding areas during winter.¹³⁸

Additionally, researchers appear to be unanimous in their recommendations that sage-grouse winter habitat be protected from disturbance. According to Beck and Braun, "Areas of winter concentrations of sage-grouse need to be documented and afforded maximum protection."¹³⁹ Lyon recommended that sage-grouse wintering habitats be placed off-limits to oil and gas development.¹⁴⁰ Thus, in the oil shale and tar sands planning areas, the BLM needs to rapidly identify sage-grouse winter concentration areas and place the areas off-limits to surface disturbance. Since oil shale development would remove all shrubs, development clearly falls into the category of activities that should be prohibited by the BLM.

Another issue that warrants attention is vegetation treatments. Because the sage-grouse is dependent on sagebrush, sagebrush treatments are likely to have major impacts on sage-grouse population viability. The PEIS should evaluate the cumulative effects that oil shale and tar sands development would have when combined with past and current vegetation treatment programs. The PEIS should also consider the reduction and/or elimination of vegetation treatment projects. Call and Maser asserted that the spraying of sage-grouse nesting habitats is deleterious because it reduces nest cover from avian predators and suppresses forbs that are important in the sage-grouse diet.¹⁴¹

In the PEIS the BLM must also evaluate the effects of industrial activities on sage-grouse populations. Strip mining for coal has been shown to impact sage-grouse populations through major local decreases in recruitment.¹⁴² Because oil shale development either involves strip mining directly, or in the case of in situ methods a level of habitat destruction roughly equivalent to strip mining, areas near sage-grouse leks should be avoided. Road development can also lead to lek abandonment.¹⁴³ In western Wyoming, Lyon found that for sage-grouse leks within 3 km of oil and gas developments experienced reduced brood survivorship.

When evaluating these and other impacts, oil and gas development provides a good starting point for the BLM's analysis. As Molvar explains, over the past 10 years, oil and gas development has posed perhaps the greatest threat to sage-grouse viability in the region. Over 8% of the total range of sage-grouse has already been impacted by oil and gas development; in addition, the Wyoming Basin and Colorado Plateau ecoregions are among those areas that have the greatest proportion of land under lease (and therefore at risk for future industrialization). In a study near

¹³⁷ Berry, J.D., and R.L. Eng. 1985. Interseasonal movements and fidelity to seasonal use areas by female sage-grouse. *J. Wildl. Manage.* 49:237-240.

¹³⁸ Beck, T.D.I. 1977. Sage-grouse flock characteristics and habitat selection in winter. *J. Wildl. Manag.* 41:18-26.

¹³⁹ Beck, T.D.I., and C.E. Braun. 1980. The strutting ground count: Variation, traditionalism, and management needs. *Proc. Ann. Conf. West. Assn. Fish and Wildl. Agencies* 60:558-566, at 564.

¹⁴⁰ Lyon, A.G. 2000. The potential effects of natural gas development on sage-grouse (*Centrocercus urophasianus*) near Pinedale, Wyoming. M.S. Thesis, Univ. of Wyoming, 121 pp.

¹⁴¹ Call, M.W., and C. Maser. 1985. Wildlife habitat in managed rangelands--The Great Basin of southeastern Oregon: Sage-grouse. USDA Gen. Tech. Rept. PNW-187, 29 pp.

¹⁴² Braun, C.E. 1986. Changes in sage-grouse lek counts with advent of surface coal mining. *Proc. Issues and Technology in the Management of Impacted Western Wildlife*, Thorne Ecol. Inst. 2:227-231.

¹⁴³ *Id.*

Pinedale, Wyoming sage-grouse from disturbed leks where gas development occurred within 3 km of the lek site showed lower nesting rates (and hence lower reproduction), traveled farther to nest, and selected greater shrub cover than grouse from undisturbed leks.¹⁴⁴ Oil shale development, while having a much greater intensity of development – 100% landscape destruction rather than the 3-5% of a typical oil and gas field – also involves heavy vehicle traffic, human activity at the site of production, and networks of roads and potentially pipelines to support it.

Current BLM nest buffers for oil and gas of ¼ mile for NSO and 2 miles for seasonal stipulations are grossly inadequate to maintain sage-grouse viability in the planning area. The lek buffer must be based not only on maintaining the lek but also the nesting habitat that surrounds the lek. In addition, seasonal prohibitions that prohibit only construction activities near leks are pointless: If roads or wells are built near leks during the off-season, the resulting regular vehicle traffic will have major negative impacts when the sage-grouse are present, effectively circumventing any mitigative value of delaying construction activities.

We therefore recommend that the PEIS and RMP amendments include a 3-mile NSO and no surface disturbance/vegetation treatment buffer at minimum (5 miles would be preferable) for sage-grouse leks, winter habitat, and other vital sage-grouse habitats.

In addition to these comments, Erik Molvar's comments in Attachment 3 are included as part of these general comments and are incorporated herein. Among other things, those comments detail scientific justifications for our positions, as well as provide bases for additional use restrictions necessary to protect the sage-grouse.

E. Alternative C from the FPEIS -- BLM's reason for rejecting Alternative C was flawed

We strongly support BLM's decision to evaluate Alternative C from the FPEIS. The primary difference between Alternative C and the preferred alternative is that Alternative C "exclude[s] lands that are identified as requiring special management or resource protection in existing land use plans."¹⁴⁵

Alternative C would have opened more than 830,000 acres of land for allocation for commercial oil shale leasing and approximately 229,000 acres of tar sands land in Utah. Unlike the preferred alternative which establishes oil shale and tar sands as primary uses of federal land, Alternative C seeks to balance competing needs, goals and interests.

For example, Alternative C also sought to exclude commercial leasing from all ACECs. As noted above, the preferred alternative only limited commercial development to ACECs that are currently closed to mineral development. The USGS shared this concern. As the agency stated in their comments to the BLM on the draft PEIS, "the final PEIS would be enhanced if further justification for the preferred Alternative B as compared to Alternative C could be provided as

¹⁴⁴ Lyon, A.G. 2000. The potential effects of natural gas development on sage-grouse (*Centrocercus urophasianus*) near Pinedale, Wyoming. M.S. Thesis, Univ. of Wyoming, 121 pp.

¹⁴⁵ FPEIS, at ES-6.

explicitly as possible given the potential for much greater impacts on areas of critical environmental concern in Alternative B.”¹⁴⁶

Alternative C also seeks protect important habitat. Notably, the USFWS, in their comments to the BLM, expressed support for this alternative, as the preferred alternative would likely negatively impact species, including endangered species.

Finally, Alternative C also seeks to lessen the broad air quality impacts that both the EPA and National Park Service conclude would arise as a result of the preferred alternative. While we disagree with opening any oil shale and tar sands lands absent independent reviews of commercially-viable technologies, we recognize the importance of Alternative C’s additional protections. Those protections are, fundamentally, necessary to protecting special lands and to meeting FLPMA’s multiple use mandate. The protections afforded by the preferred alternative are insufficient.

In rejecting Alternative C, the BLM’s rationale as expressed in the November 2008 Record of Decision reflects a fundamental misunderstanding of the Section 369 of EPAct. Section 369(d)(1) provides the BLM shall conduct a programmatic EIS “with an emphasis of the most geologically prospective lands within each of the State of Colorado, Utah and Wyoming.” The BLM concluded that through this provision, Congress charged the BLM with opening the most amount of land possible.¹⁴⁷ That interpretation is inaccurate.

Congress directed the BLM to focus its PEIS on the “most geologically available lands.” Nowhere in the Act does did Congress direct the BLM to open to application for commercial leasing all “geologically available lands.” After all, as the BLM correctly appropriately concluded in the FPEIS,

a significant portion of the land within the most geologically prospective oil shale areas is already undergoing mineral development, particularly for the development of oil and gas resources. Commercial development, using any technology under consideration in this PEIS, is largely incompatible with other mineral development activities and would likely preclude these other activities while oil shale development and production are ongoing.¹⁴⁸

To conclude, as the BLM did in the ROD, that Congress prioritized oil shale (or tar sands) development over oil and gas development and all other uses of public land is not supported by either the facts or national policies. After all, in EPAct, Congress did not amend FLPMA’s multiple use mandate.

The BLM’s reasoning in must be remedied in the PEIS and subsequent ROD.

¹⁴⁶ USGS, Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008, at 1. (on file with the BLM)

¹⁴⁷ See generally ROD at 16-23.

¹⁴⁸ FPEIS, at 4-18.

F. Lands with deposits 25 gallons/ton or more and 25 feet thick or greater

In Colorado and Utah, the most geologically prospective deposits are “those deposits that yield 25 gallons of shale per ton of rocks (gal/ton) or more and are 25 ft. thick or greater.”¹⁴⁹ In Wyoming, the standard is 15/15. The BLM’s determination to alter for Wyoming the definition of “geologically prospective” highlights how poor the deposits are in that state. It also raises serious questions regarding how the agency defines “geologically prospective.” As the agency stated in the FPEIS, in Wyoming “the oil shale resource is not as of high quality as it is in Colorado and Utah.”¹⁵⁰

The BLM cites EPO Act as the basis for opening resource-poor oil shale deposits in Wyoming to commercial application. EPO Act provides the BLM “shall complete a programmatic environmental impact statement for a commercial leasing program for oil shale and tar sands resources on public lands, with an emphasis on the most geologically prospective lands within each of the States of Colorado, Utah, and Wyoming.”¹⁵¹ In requiring the BLM to evaluate “the most geologically prospective lands” in each state, EPO Act does not in turn require the BLM to open resource-poor lands to application for commercial development. That is a construct the BLM developed to meet a policy goal of opening the largest acreage for commercial development.

Additionally, because the BLM uses different standards for different states, the agency must define what “geologically prospective” means. Congress did not define it, and nor did the BLM in the FPEIS. The closest the BLM comes to define “geologically prospective” is found in footnote C to Table C-1 in the FPEIS.¹⁵² In that footnote, the BLM states that “geologically prospective” was defined by different parties over a period of 28 years. For Wyoming, the BLM relies on Wiig. Notably, though, in a 2006 email, Wiig, a BLM employee, argues that “oil shale zones with an average quality less than 20 gal/ton are not considered likely to be developed.”¹⁵³ Wiig goes on to state that 90% of the oil shale resources in Wyoming are less than 20 gal/ton.¹⁵⁴

It is unclear from the FPEIS and response to comments whether the BLM included an economic component in defining “geologically prospective.” What is clear is that in concluding that in Wyoming’s 15/15 standard is “geologically prospective,” the BLM discounts the economic viability of this standard.

Further, in October 2008, Scott Quillinan of the Wyoming State Geological Survey (WSGS) prepared a spatial analysis of oil shale deposits that met the 25/25 threshold. This analysis was based on data contained in the USGS Open-File Report 2008-1152, titled “Fischer assays of oil-shale drill cores and rotary cuttings from the greater Green River Basin, Southwestern Wyoming.” The WSGS analysis shows a substantial acreage of Wyoming lands meet the 25/25 threshold. (See Attachment 5.) Thus, it is completely unnecessary to lower the threshold for oil

¹⁴⁹ FPEIS, at 1-6.

¹⁵⁰ FPEIS, at 1-6.

¹⁵¹ EPO Act Sec. 369(d)(1).

¹⁵² FPEIS, at C-18.

¹⁵³ See Attachment 4.

¹⁵⁴ *Id.*

shale leasing in Wyoming. The lack of a consistent standard across the three-state region suggests the BLM is acting arbitrarily and capriciously.

Further, NEPA requires federal agencies to develop a full range of alternatives. The fact that the BLM altered the definition of “geologically prospective” instead of analyzing 25/25 across the three raises questions about compliance with NEPA. Accordingly, we request that the BLM include an alternative that excludes from commercial application lands that do not meet the 25/25 threshold in all three states.

In adopting a different standard for Wyoming, the BLM is suggesting that there are geologically prospective lands in the state. That suggestion and conclusion raises the false pretense that oil shale development can or should be pursued on Wyoming lands below the 25/25 threshold. The BLM was right in making deposits unavailable for leasing in Colorado and Utah that were less than 25/25, but wrong to lower the standard in Wyoming. By adopting the 25/25 standard for all three states, the BLM can provide collateral protections from ill-considered oil shale projects for lands with wilderness characteristics, key sage-grouse habitats, and big game crucial ranges and migration corridors in Wyoming which are underlain by uneconomic oil shale deposits.

IV. Additional considerations for the PEIS review

As part of the review of alternatives, the BLM should also examine the following.

A. The PEIS must evaluate and consider the environmental baseline of the area

The BLM lands that are eyed for oil shale and tar sands development are currently hosting an oil and gas boom. They are the foundation of diversified economies. These fossil fuel development activities are widespread, and are impacting local economies and the environment in a number of ways. While there will be dips in the pace of development, the BLM is forecasting that conventional energy will continue on these lands for generations.

Establishment of baseline conditions is a requirement of NEPA. In Half Moon Bay Fisherman’s Marketing Ass’n v. Carlucci, the Ninth Circuit states that “without establishing . . . baseline conditions . . . there is simply no way to determine what effect [an action] will have on the environment, and consequently, no way to comply with NEPA.”¹⁵⁵ The court further held that “[t]he concept of a baseline against which to compare predictions of the effects of the proposed action and reasonable alternatives is critical to the NEPA process.”

The court’s reasoning aligns with CEQ’s recent guidance to federal agencies regarding appropriate mitigation measures. As CEQ noted, “Completing environmental data collection and analyses prior to project implementation provides an understanding of the baseline conditions for each potentially affected resource for reference when determining whether the predicted efficacy of mitigation commitments is being achieved.”¹⁵⁶

In the PEIS and for years to follow, it remains imperative that the BLM study and produce analyses quantifying and qualifying the site-specific environmental baseline conditions. The USGS review that Secretary Salazar initiated to evaluate and establish baseline water quality

¹⁵⁵ 857 F.2d 505, 510 (9th Cir. 1988).

¹⁵⁶ 76 Fed. Reg. 3850.

conditions in Colorado's Piceance Basin is a critical piece of establishing baseline conditions. BLM, however, needs to go further and evaluate water quality conditions on all lands the BLM might open for commercial oil shale and tar sands leasing, as well water quality in downstream reaches of the Green, Colorado, and Yampa Rivers inhabited by the Endangered Colorado pikeminnow, razorback sucker, bonytail, and/or humpback chub. Further, the PEIS baseline monitoring should include information on air quality (both near communities and in nearby Class 1 airsheds under the Clean Air Act), water quality, water availability, wilderness values, wildlife habitat, and existing federal land uses.

Only by establishing a baseline will we have a scientifically-defensible means to determine the net impacts of oil shale and tar sands development and the cumulative impacts of all energy development activities. Moreover, the BLM in the PEIS should establish that any leasing program for oil shale and tar sands would require new site-specific environmental baseline measurements.

B. Water Availability – How much water development might require and what's at stake

Water is the West's most valuable and sought-after natural resource, as our arid environment is largely defined by the absence of water. In Colorado and Utah, in particular, water is becoming an increasingly scarce resource, and will be largely if not completely spoken for by 2050, the timeline the BLM projects industry could develop large-scale operations. Any discussion and evaluation of water availability and water consumption projections for oil shale and tar sands – no matter how great or little – must be viewed in the context of states' water availability projections.

In Colorado, the December 2010 Statewide Water Supply Initiative (SWSI) projected that by 2050, after taking into account conservation, statewide municipal and industrial (M&I) demand will increase 55-83% over 2008 baseline demand.¹⁵⁷ M&I does not include water for oil shale or thermoelectric power production, so any water for oil shale, including water for electricity/energy production, will come in addition to statewide M&I demands. To meet these demands – demands that are principally driven by an increasing population – the state projects that large quantities of water currently used for agriculture will be diverted to M&I uses. Meeting these increased M&I water demands alone will prove challenging. How Colorado would meet these obligations should large-scale oil shale development come to fruition is daunting.

If one thinks water is tight in Colorado, Utah, the nation's second driest state, presents even greater challenges. As the state concluded in its recent 10 year energy study,

Limited quantities of water may be available for new energy development. Most areas of the state are closed to new surface- and ground-water appropriations (especially new consumptive appropriations) and those that are still open are primarily for ground water in relatively small quantities. What little may be currently available will undoubtedly decline over the next decade. Water currently used at other facilities or by other water

¹⁵⁷ Statewide Water Supply Initiative (SWSI), Final 2010 M&I Water Use Projections, Table 3-3, "M&I Forecast by River Basin." At 3-11. <http://cwcbweblink.state.co.us/weblink/0/doc/144800/Electronic.aspx?searchid=c1469548-e589-49df-a54f-6b03612a38e3> (last accessed May 2, 2011).

users may be purchased for use in energy development in the future....Given Utah's population growth and projected economic growth over the next decade, the possibility of increased drought, and with limited new water resources available, water consumption of energy resources should be given careful consideration....As an arid state, an energy portfolio that encourages low water-use technologies should be considered.¹⁵⁸

Since the release of the FPEIS in 2008, companies pursuing oil shale development have claimed that they are reducing the amount of water that would be needed to produce shale. None of these claims appears to be supported by independently-verifiable data. Claims made to the media, on websites, and in power point presentations have consistently been devoid of facts or data.

Since the 2008 PEIS was released, two public reports have been released which reinforce the BLM's conclusions in the FPEIS that substantial quantities of water will be needed. These public reports stand in contrast to industry's claims. In 2009, Western Resource Advocates, one of the signors to these comments, issued "Water on the Rocks: Oil Shale and Water Rights in Colorado."¹⁵⁹ As "Water on the Rocks" detailed, water districts and companies seeking to develop shale hold substantial water rights that could be used for commercial development. On the Colorado River and White River in Colorado, these parties own or have right to 11,366 cfs and 1,623,422 af of water. To put these volumes in context, the Denver-metro area, with a population of approximately 2 million, uses roughly 225,000 af of water per year. Utilizing a portion of these rights would still dwarf Denver's annual use.

Logically, if industry were able to reduce their water consumption needs, then companies and districts would be willing to part with large portions of their existing rights. After all, according to proponents' logic, they do not need this much water. Yet, as evidenced by the ongoing Yellow Jacket and Conoco-Philips water court diligence litigations, the parties are fighting to maintain their holdings. Following issuance of the FPEIS, Shell Oil, which owns or has rights to 893.43 cfs and another 147,750 af, sought to increase their water rights.

The October 2010 Governmental Accountability Office (GAO) report on oil shale and water raises a number of related concerns.¹⁶⁰ That report, "Energy-Water Nexus: A Better and Coordinated Understanding of Water Resources Could Help Mitigate the Impacts of Potential Oil Shale Development," concluded that oil shale would likely require 4-to-5 barrels of water for every barrel of oil produced from shale.¹⁶¹ That conclusion aligns with the FPEIS' conclusions.

Moreover the GAO offered this important cautionary note:

Water is likely to be available for the initial development of an oil shale industry, but the size of an industry in Colorado or Utah may eventually be limited by water availability. Water limitations may arise from increases in water demand from municipal and

¹⁵⁸ "Energy Initiatives and Imperatives: Utah's 10-Year Strategic Energy Plan," March 2011, at 25. <http://www.energy.utah.gov/index.htm> (last accessed May 6, 2011).

¹⁵⁹ <http://www.westernresourceadvocates.org/land/wotrreport/index.php> (last accessed on May 6, 2011).

¹⁶⁰ GAO, "Energy-Water Nexus: A Better and Coordinated Understanding of Water Resources Could Help Mitigate the Impacts of Potential Oil Shale Development". October 2010.

¹⁶¹ *Id.* The GAO concluded the range of water-to-oil is 1:1 to 20:1. The report further stated 4-5 barrels of water to oil was a good working figure.

industrial users, the potential of reduced water supplies from a warming climate, fulfilling obligations under interstate water compacts, and the need to provide additional water to protect threatened and endangered fishes.¹⁶²

The GAO also offered the following:

The unproven nature of oil shale technologies and choices in how to generate the power necessary to develop this resource cast a shadow of uncertainty over how much water is needed to sustain a commercially viable oil shale industry....These nascent efforts do not adequately define current baseline conditions for water resources in the Piceance and Uintah Basins, nor have they begun to model the important interaction of groundwater and surface water in the region.¹⁶³

As discussed above, any water for oil shale or tar sands must be viewed in the context of competing water needs. The GAO reaffirms what many have been saying – water is the critical issue for developing oil shale, but major questions remain. Oil shale and tar sands development would have broad impacts on water availability (and quality), but there are a number of unanswered questions that we must answer before considering commercial development. Oil shale’s impacts would be felt throughout Colorado and Utah as these states seek divide up a dwindling resource. How we balance existing obligations and resource limitations against growing state-wide water needs remains a mystery, but it is an issue we need to solve before considering commercial development.

In Colorado, the challenge in meeting projected water needs, even without oil shale, is how to meet demand and ensure long-term water supplies for agriculture. In the FPEIS, the BLM concluded that large-scale development would result in the further drying up of agriculture – and that the shift of water from agricultural to oil shale would fundamentally transform western communities to industrial-based communities. (In addition to evaluating this issue in the context of water, it should also be evaluated in the socio-economic section.)

Among the impacts the PEIS must analyze is the potential magnitude of converting water from agricultural uses to industrial uses. Large-scale oil shale and tar sands production likely will shift hundreds of thousands of acre-feet from agricultural use, resulting in the dry-up of hundreds of thousands of acres of agricultural lands. This conversion of water must also be connected analytically to the potential impacts of soil erosion, sediment loading in streams, and other environmental resource issues.

Similarly, the PEIS must look closely at existing agreement to protected endangered fish in Colorado and Utah. As Dan Luecke stated in his comments on the 2008 draft PEIS, “If the Colorado River’s endangered fish are ever to be restored it will be in the upper basin. Oil shale and tar sands development, were it to occur on even a modest scale, would seriously undermine the past successes and future potential of recovery efforts. The most important basins for the native fish are the very ones on which BLM leasing alternatives have painted bulls-eyes. For all

¹⁶² *Id.*

¹⁶³ *Id.* at 44-45.

practical purposes, the oil shale/tar sands Draft PEIS fails to address this issue in any serious way.”¹⁶⁴

As Luecke explained,

The agreement, the Upper Colorado River Endangered Fish Recovery Implementation Program (RIP), established as its central feature the working assumption that the native fish could be recovered while, at the same time the states of Colorado, Utah, and Wyoming developed water to which they were entitled under the Colorado River Compact and the Upper Colorado River Compact. The parties to the agreement structured it in such a way as to accommodate both environmental and water development concerns. This accommodation provides ESA coverage for water depletions in exchange for support of water and habitat related improvement activities designed to restore the native fish populations to self-sustaining levels.¹⁶⁵

This program, including related water needs, must be duly evaluated in the PEIS.

Perhaps the biggest challenge for the upper basin states is how to meet projected water needs without resulting in a call on the Colorado River. Under the terms of the 1922 Colorado River Compact, the four Upper Basin states (Colorado, New Mexico, Utah, and Wyoming) were thought to be entitled to consume 7.5 million af of basin water annually. Based on this assumption, in 1948 the Upper Basin states apportioned use of their share; under that agreement, Colorado was given 51.75%, Utah 23%, Wyoming 14%, and New Mexico 11.25%. A huge uncertainty that states are evaluating is how much water may be available under the Compact.

It is now generally believed that the Upper Basin’s share is less than 7.5 million af. How much less and how oil shale and tar sands development would affect obligations under the Compact remain highly unclear. The BLM must evaluate these issues in the PEIS.

In evaluating water for oil shale development, a cautionary note is needed. The aforementioned SWSI study included water for oil shale. The underlying study conducted by AMEC concluded that oil shale in a three-basin region would require, on the upper end, up to 120,000 af annually. AMEC’s conclusions are notable for a few reasons. First, they relied on industry providing unverifiable data regarding how much water they might need. In all cases, none of the data is based on proven technologies. Second, the oil shale-to-water ratios only considered water in the three basin region. Water for electricity production and upgrading would be used outside of these three basins and thus are not included in the 120,000 af figure. Third, the AMEC report stated, “If electricity is generated by coal-fired thermal generation within the study area, rather than combined cycle gas turbines, total water use for the *high* scenario would increase by approximately 170,000 af/year.” If further provided “If byproduct water from in situ production is not used to satisfy process needs, total water use for the *high* scenario will increase by an additional 60,000 af/year.”

¹⁶⁴ Dan Luecke, Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008, at 1-2. (on file with the BLM)

¹⁶⁵ *Id.*

So, as the BLM reevaluates how much water might be need as part of commercial production, we strongly recommend that the BLM separate fact from wishful thinking. Taking this step is important in meeting NEPA’s “hard look” requirement.

C. Water quality

Water quality remains a primary concern to both surface water and groundwater. As the GAO noted in its October 2010 oil shale report, “oil shale development could have significant impacts on the quality and quantity of water resources.” Tar sands development would pose similar risks. Both retort and in-situ development would risk water quality degradation.

When these resources are mined and retorted, some of that water is “produced” and can be released into adjacent watercourses. The produced water may be filled with chemicals and organic materials that can significantly degrade water quality in the region. Mining operations, such as those proposed for both oil shale and tar sands in Utah, would leave large piles of spent shale or tar sands, which could leach remaining hydrocarbons, salts, trace metals, or other minerals into surface and groundwater supplies.

As the BLM recognizes in the FPEIS, salinity in the Colorado basin is a huge issue.¹⁶⁶ Processed water is already looming as an expensive issue even without oil shale and tar sands development. Michael Vandenberg of the Utah Geological Survey notes “saline water disposal is the single most pressing issue with regard to increasing petroleum and natural gas production in the Uinta Basin of Utah.” These concerns would be a potentially limiting factor in commercial development of oil shale and tar sands.

In oil shale retorting, for example, two kinds of “processed” water are generated: water already in the ground, and water that is “liberated” from the rock when it is heated to release the oil locked in the rock. Each poses its own water quality problems and challenges. Water that is generated when the shale rock is heated generally contains phenols, hydrogen sulfide and other organics. Hydrogen sulfide is an extremely hazardous gas that can cause breathing problems and can affect the central nervous system¹⁶⁷.

As with so much about oil shale and tar sands, there are unanswered questions about how produced water will be treated: Stored indefinitely in lined ponds? Treated and released back into rivers? Left to leach into aquifers? Plans submitted to the BLM proposed storing and trucking this retort water to some off-site treatment or disposal facility.¹⁶⁸ Whether that can be done safely remains to be seen.

A report by David Atkins, a hydrologist from Watershed Environmental LLC in Colorado who submitted comments for the BLM environmental assessment of the OSEC’s oil shale RD&D lease, says the companies have simply not done an adequate water quality analysis to be given

¹⁶⁶ FPEIS, at 3-63.

¹⁶⁷ http://www.osha.gov/OshDoc/data_Hurricane_Facts/hydrogen_sulfide_fact.pdf

¹⁶⁸ Oil Shale Research, Development and Demonstration Project, White River Mine, Uintah County, Utah Environmental Assessment, April 2007, at 32

http://www.blm.gov/pgdata/etc/medialib/blm/ut/vernal_fo/planning/white_river_oil_shale.Par.44590.File.dat/OSEC%20Oil%20Shale%20Final%20EA%20EA%20UT%20-%2020080%20-%202006%20-%20280.pdf,

permission to proceed. Atkins says it is highly unlikely that energy companies would be able to prevent contaminants from oil shale retorting and mining from reaching groundwater. “If all the spent shale generated is determined to leach hazardous substances, according to the [Environmental Assessment], the entire 38-acre dump would be encapsulated to eliminate infiltration and leaching,” Atkins’ report states.¹⁶⁹

In situ oil shale development could pose its own problems. Shell Oil, one of the RD&D lessees, is working to develop a freeze wall to protect groundwater. Whether this technology is viable, not to mention protective of groundwater at a commercial scale, remains unknown. Others, such as Chevron and AMSO, are looking to develop shale below the groundwater zone. What is unclear, among other things, is whether their fracking and down-hole heating technologies would create fissures that would result in pathways being created. If so, and their RD&D analysis remains unclear, groundwater could be contaminated.

In addition, there are no guarantees that the freeze walls for in situ operations will be maintained in perpetuity. The BLM must therefore evaluate in the PEIS the impact of the freeze walls thawing and releasing the constituents into the ground. Will, for instance, groundwater then flow through strata produced for oil shale? What would be the environmental impacts of hydrocarbons and heavy metals, for instance, mixing with groundwater? After all, the primary purpose of utilizing a freeze wall is to create and maintain that physical separation.

Tar sands development – both in situ and retort processing – presents its own challenges. For in situ tar sands extraction, the process of injecting high pressure steam or a combination of high pressure steam and chemicals into relatively porous tar sands layers poses significant challenges for neighboring groundwater resources. Because the steam increases the viscosity of the bitumen, residual steam under intense pressure would mobilize organic compounds from the tar sands deposits and contaminate neighboring groundwater aquifers with residual petrochemicals and salts. This tendency to contaminate groundwater resources beyond the bounds of the tar sands deposit is especially problematic when chemical-laced steam is used because the chemicals are designed to bond to residual petrochemicals at the molecular level.

Experimental retort processing in Utah is poised to enter into commercial production using chemical separation techniques for removing the bitumen from the tar sands deposits. Beyond the significant land use impacts resulting from what essentially amounts to strip mining of the tar sands, industry is experimenting with the use of terpene compounds to separate the bitumen from the sands, and intends to deposit the waste stream of this process back into the mine pit without treatment. This dumping poses a significant threat to groundwater resources in the area for two reasons. First, the terpene compounds themselves are toxic to the environment and will migrate, along with excess salts, into local aquifers. Second, the terpene compounds bond with the petrochemicals from the tar sands and the process does not completely remove the molecules from the waste stream. As a result, the highly toxic terpene-petrochemical molecules will migrate offsite contaminating area aquifers.

¹⁶⁹ David Atkins, Comments on Environmental Assessment for OSEC’s RD&D lease. October 16, 2006. (on file with the BLM)

Elevated levels of Total Dissolved Solids (TDS) resulting from oil shale production also pose a threat to Endangered fishes. In the context of surface mining and retorting for oil shale, Pimintel and Bulkley¹⁷⁰ reported that for juvenile fishes, Colorado squawfish preferred TDS 560-1150 mg/l and avoided >4,400 mg/l; humpback chub preferred 1000-2500 mg/l and avoided >5100 mg/l; bonytail preferred preferred 4100-4700 mg/l and avoided < 560mg/l and >6600 mg/l. Tested at 12°C; TDS tolerances may have been higher if tested at a warmer temperature. These researchers stated,

Nevertheless, problems could arise for fish in localized situations where saline oil-shale-processing waters enter tributaries of the main river system. Fox et al ...found that TDS concentrations of oil-shale-process waters ranged from 1,750 to 24,500 mg/liter and averaged 6,800 mg/liter. Tributaries polluted with such high TDS concentrations may be avoided by these species resulting in a loss of habitat.¹⁷¹

For these reasons, we strongly applaud DOI's decision to direct USGS to undertake an analysis of baseline water resource conditions. As the BLM noted when launching this initiative, through this analysis, the BLM will improve its "understanding of groundwater and surface water systems that could be affected by commercial-scale oil shale development." Only with this data, however, will the BLM be able to develop effective mitigation measures. This review should include all oil shale and tar sands areas that the BLM is considering opening through RMP revisions. Given the ongoing oil and gas development activities in oil shale and tar sands country, this analysis and development of appropriate mitigation measures is doubly important.

In the PEIS, the BLM should identify what it knows and does not know, including the state of technologies and likely impacts on water quality. Only then can the public be assured that the document reflects a hard look at the resource and potential demands commercial development of oil shale and tar sands would place on human health and the environment.

In addition to the water quality concerns identified in this section, please also see "Aquatic Species" found later in these comments.

D. Wild and Scenic Rivers

BLM must protect all areas eligible for Wild and Scenic designation from oil shale and tar sands development.

In Colorado, BLM examined the eligibility of streams and stream segments for Wild and Scenic River status in 2002. The eligibility report showed portions of East Fork Parachute Creek, East Middle Fork Parachute Creek, Trapper Creek, and Northwater Creek are all eligible for Wild and Scenic River status.¹⁷² These streams are all "free-flowing" and contain outstandingly, remarkable values – unique, rare, or exemplary botanical/ecological, scenic features or fishery values that are significant on a regional or national scale. These river segments hold many and

¹⁷⁰ Pimintel, R., and R.V. Bulkley. 1983. Concentrations of total dissolved solids preferred or avoided by Endangered Colorado River fishes. *Trans. Am. Fish. Soc.* 112:595-600.

¹⁷¹ *Id* at p. 599.

¹⁷² Roan FEIS (2006), at 3-121.

various important values and should not be open to commercial oil shale development. These areas, along with all watersheds eligible for Wild and Scenic designation, should be protected from development.

In addition, many other watersheds deserve protection. Some of these areas may have special designations, such as the Parachute Creek Watershed Management Area and portions of Trapper and Northwater Creeks designated as an ACEC.¹⁷³ Other undesignated watersheds also deserve protection. For example, portions of Trapper and Northwater Creeks are not included in the Trapper/Northwater Creek ACEC deserve protection from oil shale development. In fact, it is the critical high reaches of these watersheds that were excluded from ACEC designation. Obviously, industrial development higher up in these watersheds has the potential to impact downstream values, including the values for which the ACEC was designated. At risk, in this case, would be nearly all of the Northwater Creek and a significant portion of the Trapper Creek populations of CRCT. In Wyoming, the BLM determined that Skull Creek is among the watercourses found to be eligible for Wild and Scenic River designation.¹⁷⁴

Potential impacts are serious. Sediment caused by surface disturbing activities may choke aquatic insects and trout eggs. In the event of a spill or a mining mishap, toxic effluent may do the same. In this drainage, downstream habitat is the best CRCT habitat. Below the confluence of Trapper and Northwater Creeks this drainage attains the volume and depth necessary to maintain suitable CRCT habitat. Allowing oil shale development, or any surface disturbing development, in the upstream portion of the Northwater drainage poses an unnecessary risk to CRCT populations lower in the watershed. In order to protect this sensitive resource, oil shale development be prohibited in the entire drainage. Importantly, we are not asking for expansion of the current ACEC boundary. We are simply asking the BLM to eliminate the entire watershed from availability for future oil shale development to protect “critical” environmental values at risk.

Other watersheds where oil shale development should not be allowed include: Clear Creek, Spring Creek, Corral Gulch, Ryan Gulch, Black Sulphur Creek, Fawn Creek, Hunter Creek, Willow Creek, West Fork Parachute Creek, Parachute Creek, Piceance Creek, and Dry Fork Piceance Creek. Protection of these important streams is important to protect values associated with fisheries, botanical resources, and municipal water quality.

Eligible Wild and Scenic Rivers in Utah are:

White River – The White River includes eligible segments for wild and scenic classification with the outstandingly remarkable values of scenery, fish, wildlife habitat, recreational resources, and historic resources. This remarkable river features a deep canyon often visited by canoeists and rafters. Importantly, it contains habitat for endangered fish.

¹⁷³ The ROD for the Designation of ACECs for the Roan RMPA and EIS implemented a WMA for Parachute Creek. This management tool was implemented to protect important watershed values in Parachute Creek from looming threats like natural gas development. *See* ROD (2008), at 6.

¹⁷⁴ BLM 2008. Proposed Resource Management Plan and Final Environmental Impact Statement for the Rawlins Field Office, at 3-98.

Evacuation Creek –This eligible recreational river includes historic values that are outstandingly remarkable. Evacuation Creek flows through a high, remote stretch of the Book Cliffs.

Bitter Creek –This eligible scenic river includes the outstandingly remarkable values for fish, wildlife habitat, cultural resources, historic resources, and recreational resources. It creates the heart of a remarkable canyon where coyotes, elk, bear, and deer still roam unimpeded. This area is also home to historic resources, relicts of both Native American and European-based cultures.

Nine Mile Creek – Nine Mile Creek has formed the world-class Nine Mile Canyon, an area extremely rich in cultural resources. In fact, the BLM refers to this area as the “world’s longest art gallery” because of its high number of rock art sites. This eligible recreational and scenic river includes outstandingly remarkable values of scenery and cultural resources.

Range Creek – Range Creek is an area rich in cultural resources and remarkable wildlife habitat. This area was recently introduced to the public when a private ranch was transferred to public ownership. This eligible river includes the outstandingly remarkable values of cultural resources, scenery, historic resources, and wildlife.

Rock Creek – This eligible river includes the outstandingly remarkable values of cultural resources, recreation resources, scenery, historic resources, and wildlife. It ultimately flows into the Green River in the deep Desolation Canyon. Rock Creek is a superb wild area high in the Book Cliffs.

E. Aquatic species

Federal law also requires the BLM to protect aquatic species and their habitats. These requirements extend to migration, breeding, foraging and other activities. Roundtail chubs, flannelmouth suckers, and bluehead suckers are found in watersheds that will be affected by oil shale and tar sands development. These species, which reside in large, slow-moving rivers as well as smaller tributary streams, “have experienced dramatic reductions in their range in western Wyoming since 1965, and may need immediate conservation attention.”¹⁷⁵ In Wyoming, the bluehead sucker, flannelmouth sucker, and roundtail chub are BLM Sensitive fishes. In the Upper Colorado Basin, the roundtail chub has been extirpated from 45% of its historical range, bluehead suckers occupy about 45% of their historical range, and the flannelmouth sucker occupies about 50% of its historic range.¹⁷⁶ All three of these species are on the BLM Sensitive Species list, and merit special conservation attention.

The FPEIS identifies three primary ways aquatic species would be impacted: (1) direct disturbance, (2) sedimentation, and (3) changes in water quantity and water quality. These impacts, the FPEIS makes clear, could occur during both construction and throughout oil shale and tar sands operations. Despite the aforementioned mandate that the BLM develop strategies to protect sensitive species, the description of aquatic resources is vague and BLM presents little information about species distribution. Cumulative impacts are not sufficiently discussed, and

¹⁷⁵ Wheeler, p. 54.

¹⁷⁶ Bezzerides and Bestgen 2002.

without such information, the mitigation measures are perfunctory. The PEIS must adequately address impacts to aquatic species.

Reduced water volume in the Colorado River system will have direct and indirect impacts on the water quality and ecological health of aquatic and riparian systems. Contaminants that are washed into the rivers from oil and tar sands development will flow downstream. Depleted water volumes will reduce the amount of water available for diluting pollutants and carrying them downstream. Higher levels of pollutants will directly impact the ability of aquatic and riparian organisms to sustain themselves and increase the level of stress on the system dynamics.

Reduced water flows will also impact the ability of streams and rivers to remove excess nitrogen caused by human activities. Timing, distribution and volumes of water in a watershed directly impact the ability and level of de-nitrification and nutrient cycling that defines the overall health of the aquatic ecosystems.

Based upon prior expert comments by John Woodling,¹⁷⁷ the PEIS should:

1. Include fish distribution data on the flannelmouth sucker and the mountain sucker, two BLM species of concern and Colorado species of concern in the White River and Piceance Creek.
2. Adequately describe ambient aquatic resources in rivers downstream of oil shale areas in Colorado. Specifically, the PEIS should include fish distribution data on federally and state listed fish species, BLM species of concern, and Colorado species of concern in the White River, Colorado River and Yampa River. As noted earlier in these comments, these species include the four federally listed species, three species of concern to the BLM and one Colorado species of concern.
3. Adequately describe impacts of water depletion on aquatic species, including whether depletions might trigger Section 7 consultations.¹⁷⁸
4. Identify monitoring that could be used to develop mitigation measures necessary to lessen impacts to water quality and aquatic species.
5. Identify mitigation measures that could reduce water quality and related impacts to aquatic species.
6. Evaluate the potential impacts of high sediment loads to native fish in river reaches downstream of land that may be developed.
7. Evaluate cumulative impacts to water quality. Water depletions may increase total dissolved salt loads, raise water temperature, and increase selenium levels. Together, these impacts may be far reaching, and could extend to downstream environments.
8. Identify cumulative impacts resulting from the combination of oil shale and tar sands and other development activities.

¹⁷⁷John Woodling, Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008. (on file with the BLM)

¹⁷⁸ 16 U.S.C. §§ 1531 et seq. Section 7 of the Endangered Species Act directs all Federal agencies to use their existing authorities to conserve threatened and endangered species and, in consultation with the US Fish and Wildlife Service, to ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat. Section 7 applies to management of Federal lands as well as other Federal actions that may affect listed species, such as Federal approval of private activities through the issuance of Federal permits, licenses, or other actions.

9. Evaluate the potential impacts from human population growth associated with oil shale and tar sands development, including increased nutrient loads resulting from increased domestic wastewater treatment plant effluent.
10. Identify and evaluate key regulations and agreements that will influence oil shale and tar sands development. For example, the seven-state agreement limiting salt loading to the Colorado River by upstream states, as well as other water quality standards that will likely be impacted (e.g., selenium standard; temperature standards).

F. Wildlife impacts

Of the many defining characteristics of western landscapes, none is more important than wildlife and their associated habitats. Colorado's Piceance Basin is home to the largest migratory mule herd in the country. Oil shale and tar sands lands are also home to the Greater sage-grouse, a species that is "warranted but precluded" from listing under the ESA. These and other species are important not simply for their value in healthy ecosystems, but for healthy and diverse economies.

A September 2008 report by BBC Research & Consulting prepared for the Colorado Division of Wildlife concluded that 2007 direct annual expenditures in Colorado from hunting and fishing alone were approximately \$1.1 billion.¹⁷⁹ Secondary impacts of the dollars re-spent within the economy in 2007 are estimated to be \$767 million, for a total economic impact of more than \$1.8 billion. The same study found wildlife watching yields an additional total economic impact of \$1.2 billion annually.¹⁸⁰ Wildlife plays an equally important role in Utah and Wyoming.

For these and other reasons, the BLM must ensure that resident and transient wildlife are protected from oil shale and tar sands development. Based on the BLM's analysis in the FEIS, we are highly concerned that the BLM can meet this mandate.

Federal law directs the BLM to protect and enhance the diversity of all native wildlife on public lands. FLPMA requires management plans protect ecological and other values.¹⁸¹ NEPA, in turn, requires the BLM to fulfill its trustee obligation for future generations, assure productive surroundings, avoid environmental degradation, preserve important natural aspects of our national heritage, and enhance the quality of renewable resources.¹⁸²

Moreover, substantive BLM wildlife policy is established within the Special Status Species Manual (6840) and the Wildlife and Fisheries Management Manual (6500) on BLM lands. The objectives of the Special Status Species policy are twofold: 1) To conserve and/or recover ESA-listed species and the ecosystems on which they depend so that ESA protections are no longer needed for these species; 2) To initiate proactive conservation measures that reduce or eliminate threats to BLM sensitive species to minimize the likelihood of and need for listing these species

¹⁷⁹ BBC Research & Consulting, "The Economic Impacts of Hunting, Fishing and Wildlife Watching in Colorado". Final Report. September 28, 2008, at 1. Main report web page: <http://wildlife.state.co.us/About/Reports/EconomicImpacts/> (last accessed May 11, 2011); report-specific web page: <http://wildlife.state.co.us/NR/rdonlyres/777626FF-9E01-49D7-98EF-0B087AFD4832/0/08DOWEconomicImpactReport.pdf> (last accessed on May 11, 2011)

¹⁸⁰ *Id.* at 2.

¹⁸¹ 43 U.S.C. § 1701(a)(7)-(8).

¹⁸² 42 U.S.C. § 4331(b)(1)-(6)

under the ESA. The second objective is of particular use in this case as it provides the agency with the ability to meaningfully characterize the risk posed by development to wildlife species.

The Wildlife and Fisheries Management policy provides clear, measurable criteria to the BLM as well: “It is BLM policy to manage habitat with emphasis on ecosystems *to ensure self-sustaining populations and a natural abundance and diversity of wildlife, fish, and plant resources on the public lands.*”¹⁸³ In order to accomplish this policy’s goal to ensure self-sustaining populations and a natural abundance and diversity of wildlife, section 6500 states that the BLM will, among other things, “ensure *full consideration* of the wildlife, fish, and special status species in land use plans and other BLM activities.”¹⁸⁴ In addition, it will “ensure that all activity plans (HMPs, AMPs, etc.) include *site specific objectives* for wildlife fish, and special status species and the actions necessary to achieve those objectives.” The purpose of these policies is to provide guidance to the agency in the conservation of the species, habitat and ecosystems found on BLM lands. The wildlife policies clearly apply to this PEIS.

Given the scale and scope of development being contemplated under this PEIS and the significant risk posed to wildlife, habitat and ecosystems by that development, it is imperative that the BLM fulfill its wildlife policy obligations with the utmost diligence. Agency policy provides the BLM with measurable conservation objectives that should be incorporated into all aspects of land use planning and implementation (e.g., as a means of evaluating program and project impacts), and as a standard for implementing key program features, such as mitigation and adaptive management plans.

As discussed above, one of the primary drivers for undertaking this programmatic assessment is to understand the impacts over a broad landscape. A landscape level analysis is a critical component of any NEPA analysis, even if the agency later conducts site-specific analyses. Protecting the biological diversity of wildlife can only be addressed appropriately at the planning level as habitat fragmentation, connectivity, and other factors affecting biological diversity are inherently landscape-level considerations. Relegating such analyses to future decisions on individual leases would contravene BLM’s mandates under both NEPA and FLPMA.

The FPEIS presumes most oil shale and tar sands projects will disturb 100% of the leased surface. As stated by the National Wildlife Federation (NWF) in their comments on the 2008 draft PEIS:

In other words, these projects will completely eliminate the value of those lands as wildlife habitat. In the arid environs where oil shale and tar sands development is being proposed, “reclamation to functional systems similar to that found pre-disturbance will take in excess of 50 years (Baker 2006).” Therefore, habitats disturbed by oil shale and tar sands development would be unavailable for decades even after reclamation has been initiated.¹⁸⁵

¹⁸³ § 6500.06 (emphasis added).

¹⁸⁴ *Id.*

¹⁸⁵ National Wildlife Federation (NWF), Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008, at 6 (footnotes omitted). (on file with the BLM)

Given that the FPEIS amended 12 RMPs, 10 of which contained no oil shale provisions at that time, this PEIS should describe existing environmental conditions and impacts so that the public and decision makers can evaluate the potential ecological costs from commercial development of oil shale and tar sands.

As William Alldredge notes in his comments on the 2008 draft PEIS,

Landscapes influenced by those RMPs have experienced considerable change from a variety of anthropogenic actions, chief among which is gas and oil development (see USDI, BLM 2004, 2006, 2007a, 2007b, 2007c). My experience in these areas is that crucial wildlife habitats are even more crucial today and thus in need of greater protection if impacts are to be minimized or mitigated. This is especially true for big game winter ranges, transition ranges and migration corridors that overlap areas designated for potential leasing.¹⁸⁶

Allredge, a professional wildlife ecologist, states that the BLM “must explain why protected areas and protective measures set forth in previous NEPA processes would be overridden by the deficient analysis in the Oil Shale Tar Sands PEIS.”¹⁸⁷ The deficiencies Allredge identified in the draft PEIS were not remedied in the FPEIS. The BLM must correct and expand its analysis in the PEIS.

While there are great uncertainties about the potential impacts of commercial leasing on wildlife and their associated habitat, some of what is known is stunning. In 2008, BLM identified at least 735,000 acres of mule deer winter habitat, 649,700 acres of elk winter habitat, and 501,503 acres of identified sage-grouse habitat as at risk.¹⁸⁸ As discussed earlier in these comments, sage-grouse populations have declined precipitously over their entire range. Declines have been estimated at over 50% in occupied area and up to 80% decline in bird abundance, with complete extirpation in several states. As stated by NWF in their comments on the draft PEIS:

Scientific data has shown that even a minimal level of development within 3-5 km of a sage-grouse lek negatively influences breeding activity. In fact, recent information from a doctoral dissertation on the impacts of oil and gas development to Greater sage-grouse on the Pinedale Anticline in Wyoming revealed that, as development increased, lek activity declined up to 100%. Holloran (2005). Based on these findings, both Holloran (2005) and Connelly *et al.* (2000) recommend implementing at least a 5 km buffer around active sage-grouse leks.¹⁸⁹

BLM found that other species would be impacted, including:

1. Midget Faded Rattlesnake: The midget faded rattlesnake is believed to be rare throughout its range, which includes northwest Colorado, northeast Utah, and southwest Wyoming and along the lower Green River and Bitter Creek valleys.

¹⁸⁶ A. William Alldredge, Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008, at 2-3. (on file with the BLM)

¹⁸⁷ *Id.*

¹⁸⁸ FPEIS, Table 6.1.2-4, at 6-77.

¹⁸⁹ NWF, Comments on 2008 Oil Shale and Tar Sands DPEIS, at 9. (on file with the BLM)

2. White-Tailed Prairie Dog: White-tailed prairie dogs have declined to 8% of their native range in North America, and the survival of remaining populations is threatened.
3. Mountain Plover: Mountain plovers are often found closely associated with prairie dog colonies of all species. The USFWS is currently reviewing the species for listing as a Threatened Species under ESA.
4. Swift Fox: The swift fox was determined to be “warranted but precluded” for listing under the ESA by the USFWS in 1995.¹⁹⁰ The swift fox is listed as a Species of Special Concern by the Wyoming Game and Fish Department.
5. Burrowing Owl: Nationwide, the burrowing owl is a species on the decline. As of 1997, over half of the agencies across North America tracking burrowing owl population trends reported declining populations, while none reported increasing populations.
6. Wyoming Pocket Gopher: The Wyoming pocket gopher was recently denied protection under the ESA. Nevertheless, protecting this species remains of paramount concern.

Other species of concern that could potentially be impacted by oil shale and tar sands development include the pygmy rabbit, ferruginous hawk, sage sparrow, sage thrasher, Preble’s shrew, dwarf shrew, and Great basin gopher snake. The mitigation measures identified in the FPEIS are inadequate. The steps identified are not sufficient either in their detail or to match the broad impacts that will likely result from oil shale and tar sands development. Narrowly-focused site-specific analyses cannot substitute for a proper cumulative impacts analysis in the PEIS. The PEIS must provide a reasonable basis for identifying and implementing mitigation measures that address landscape levels impacts. As stated by NWF in their comments on the draft PEIS:

BLM traditionally has relied seasonal restrictions such as limiting human access to winter ranges from mid-November to the end of April. *See* 2008 DPEIS at 4-106. However, limiting the construction activities associated with oil shale and tar sands projects to the summer months provides no protection for big game. When the animals return to the winter range in November, they will find their habitat has been hauled away, is covered with waste shale, or is devoid of vegetation.¹⁹¹

The use of Best Management Practices (BMPs) to reduce surface occupancy is similarly limited and illogical when applied to projects already having 100% surface occupancy. It is likewise not credible to suggest, as the BLM did in the FPEIS, that oil shale or tar sands projects with 100% surface occupancy can be successfully mitigated. We therefore recommend that big game crucial ranges (both winter and parturition) and migration corridors, as well as other wildlife habitats of high sensitivity such as mountain plover and raptor nesting concentration areas, not be leased for oil shale and tar sands development. If BLM chooses not to implement this recommendation and instead chooses to offer some of these lands for lease, a NSO stipulation should attach to the lease so that surface disturbing activities, roads, or other related facilities are not allowed on the surface of these habitats.

¹⁹⁰ 60 Fed. Reg. 31663 (June 12, 1995)

¹⁹¹ NWF, Comments on 2008 Oil Shale and Tar Sands DPEIS, at 7-8. (on file with the BLM)

G. Endangered species

Endangered, threatened and candidate species are discussed throughout these comments. However, due to the importance of the issue and the vital importance of the BLM complying with the ESA, a separate section is needed.

The FPEIS clearly did not comply with the ESA. The ESA was enacted, in part, to provide a “means whereby the ecosystems upon which endangered species and threatened species depend may be conserved . . . [and] to provide a program for the conservation of such endangered species and threatened species...”¹⁹² As interpreted by the Supreme Court, “[t]he plain intent of Congress in enacting [the ESA] was to halt and reverse the trend toward species extinction, whatever the cost.”¹⁹³ Reflecting “a conscious decision by Congress to give endangered species priority over the ‘primary missions’ of federal agencies,” the ESA serves as an important check on agencies’ actions.¹⁹⁴

Further, Instruction Memorandum (IM) 97-118, which governs BLM Special Status Species management, requires that actions authorized, funded, or carried out by the BLM do not contribute to species becoming listed as a candidate species, or for candidate species becoming listed as threatened or endangered. Accordingly, it is vital that the agency identify BLM sensitive species early in the NEPA process in order to prevent species from becoming endangered.

To ensure federal agencies fulfill the substantive purposes of the ESA, the statute requires they engage in consultation with the USFWS to “insure that any action authorized, funded, or carried out by such agency ... is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the adverse modification of habitat of such species ... determined ... to be critical”¹⁹⁵

The BLM failed to consult with the USFWS to consider the effects of the RMP amendments on listed species and/or their critical habitat. As provided in the FPEIS and RMP amendments, numerous threatened and endangered species, as well as those proposed for listing, exist in the areas being opened to oil shale and tar sands development. These species include, but are not limited to,¹⁹⁶

1. Razorback sucker
2. Colorado pikeminnow
3. Mexican spotted owl
4. Southwestern willow flycatcher
5. Canada lynx

Some species, including the Clay-reed mustard, Dudley-bluffs bladderpod, Dudley Bluff twinpod and shrubby-reed mustard, are found on shale derived soils and, as a result, are “more

¹⁹² 16 U.S.C. § 1531(b).

¹⁹³ *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 175 (1978).

¹⁹⁴ *Id.* at 185.

¹⁹⁵ 16 U.S.C. § 1536(a)(2) (“section 7 consultation”).

¹⁹⁶ FPEIS, at 4-111.

likely to occur in potential development areas.”¹⁹⁷ Additionally, as discussed above, the greater sage-grouse will be especially adversely impacted by oil shale and tar sands development, as the required infrastructure for the industry will cause fragmented habitation and affect migration and brooding habits.¹⁹⁸

In addition to the BLM failing to consult with the USFWS, the USFWS in their comments on the draft PEIS identified a number of steps the BLM must take to protect critical habitat for threatened, endangered, and candidate species. (The agency also disagreed with the BLM’s preferred alternative, arguing that Alternative C should have instead been chosen.) As the BLM reviews the FPEIS and takes a fresh look at the RMPs, the BLM must both consult with USFWS and examine closely their concerns with any plan that would open substantial amounts of lands to oil shale and tar sands development.

Finally, the USFWS stated “Alternative B suggests a commitment to oil shale and tar sands development that is too large to be sustainable and may threaten the existence of a number of species.” The BLM must take seriously this cautionary note.

H. Endemic wildflowers

Several wildflowers have been protected under the ESA specifically because of the threat of commercial development of oil shale. The BLM must analyze the impacts of oil shale and tar sands development on endemic wildflowers. A thorough analysis of direct, indirect, and cumulative effects of potential oil shale and tar sands development is essential before determining which areas should be available for leasing. The BLM must take a “hard look” at the potential impacts of each alternative to special status plant species, and ensure that the agency is not contributing to the need to list any species, not undermining any existing recovery plans or Conservation Agreements, not sanctioning the adverse modification of designated critical habitat, or permitting leasing in areas where oil shale or tar sands development could jeopardize the future existence of any species.

Rather than simply listing which oil shale or tar sands areas each special status species may occur within, the BLM should work with the Natural Heritage Programs to identify what proportion of the known occurrences of each species would be made available for leasing under each alternative, and should also disclose what proportion of the high-quality occurrences could be offered for lease. This type of landscape analysis is precisely why the PEIS must fully consider impacts from a new program before it is authorized. Deferring analysis until leases are issued or projects are approved results in a piecemeal approach where the BLM may not understand until it is too late that the best recovery habitat for an imperiled species has already been sacrificed.

The PEIS should accurately reflect the life history needs of special status plant species, including, but not limited to:

1. *Astragalus coltonii* var. *moabensis*, which lives in pinyon/juniper and mountain brush

¹⁹⁷ FPEIS, at 4-111.

¹⁹⁸ FPEIS, at 4-78 to 4-80.

communities 4400-6900 ft¹⁹⁹

2. *Cirsium ownbeyi*, which is found in both Sweetwater and Uintah Counties
3. *Penstemon debilis*, which is endemic to the areas under consideration for oil shale development
4. *Sclerocactus wetlandicus* and *Sclerocactus brevispinus*

Most if, not all, of the occurrences of these latter two species are within areas that the BLM proposes to open to oil shale and tar sands leasing, and this decision could constitute jeopardy. In September 2007, the USFWS ruled *Sclerocactus brevispinus* warrants uplisting to “Endangered” status. The finding made no mention of the additional threat of tar sands or oil shale, yet based on conventional oil and gas drilling alone the USFWS stated, “The species cannot tolerate the cumulative effects from existing and proposed energy projects, especially due to the extent of roads within *S. brevispinus* habitat.”²⁰⁰ BLM must ensure that leasing does not jeopardize these special status plant species.

BLM must also protect oil shale endemics like *Penstemon grahamii*. On May 10, 2006, Kathleen Clarke submitted to the USFWS official comments on the proposal to protect *Penstemon grahamii* under the ESA. In her letter, Clarke committed that the FPEIS would incorporate conservation measures for *Penstemon*, including making the proposed critical habitat areas for *Penstemon grahamii* off-limits to oil shale and tar sands leasing:

The BLM will develop the necessary conservation measures to protect this and other species from the future potential impacts of oil shale and tar sands development. This will be accomplished through the recently initiated Programmatic Environmental Impact Statement (PEIS) for the Oil Shale/Tar Sands Commercial Leasing Program and concurrent development of the associated regulatory program. Required conservation measures for *P. grahamii* and other species will be generated through the PEIS process and will be applied to oil shale and tar sands development projects. While we cannot describe what the specific conservation measures will be, because they are yet to be developed, they will incorporate effective conservation measures for *P. grahamii* and other species.²⁰¹

Despite the BLM's past assurances that it would develop necessary conservation measures, the FPEIS failed to adequately protect *Penstemon* critical habitat.

The PEIS should reconsider leasing the former *Penstemon* critical habitat proposal. BLM should evaluate conflicts between leasing and habitat critical to the recovery of *Penstemon grahamii* or other species, and consider what changes in land use allocation or stipulations may be necessary to conserve this species or any of the other oil shale endemic species. Taking these actions for *Penstemon grahamii* is especially critical because this species currently has no special status. The BLM must take a close look at indirect and cumulative impacts to these oil shale endemic species as well.

¹⁹⁹ NatureServe Explorer: An Online Encyclopedia of Life, <http://www.natureserve.org/explorer/> (last accessed April 19, 2011).

²⁰⁰ 72 Fed. Reg. 53217 (Sept. 18, 2007).

²⁰¹ *Id.* at 5-6.

BLM must also consider how climate change would further imperil rare plant species in the region. Many of the rare plants that will be affected by oil shale and tar sands development are edaphic endemics – species tied to very specific substrates, many of them only found growing on oil shale. These species may be particularly hard-pressed to respond to climate change because the soils they rely on may be restricted to very narrow elevational and/or latitudinal bands that do not allow for refugia from warmer, drier conditions. These plants are literally tied down to oil shale soils, and cannot march up a mountain or move north in response to climate change without leaving behind the soils they require. In facilitating the oil shale and tar sands industry, the BLM is dealing these endemics a double blow – fragmenting and degrading their habitat, and contributing even more greenhouse gases (both through oil shale and tar sands mining, and through meeting the tremendous energy needs that would have to power extraction) which may speed species decline due to drought stress.

The Intergovernmental Panel on Climate Change (IPCC) has come to consensus on several factors relevant to the potential threat of climate change to endemic species, including:

1. With global average temperature changes of 2°C above pre-industrial levels, many terrestrial, freshwater and marine species (particularly endemics across the globe) are at a far greater risk of extinction than in the recent geological past (medium confidence).²⁰²
2. Warming and drying trends are likely to induce substantial species-range shifts, and imply a need for migration rates that will exceed the capacity of many endemic species.²⁰³
3. The likely synergistic impacts of climate change and land-use change on endemic species have been widely confirmed.²⁰⁴

The BLM should use the PEIS to take a hard look at the indirect and cumulative impacts that oil shale and tar sands development would have on at-risk species like these. In addition to considering an alternative that avoids disturbance of rare plant populations, the BLM must consider an alternative protecting rare Colorado plant species with Best Management Practices (BMPs). The attached report, “Recommended Best Management Practices for Plants of Concern,” details rare plant BMPs to help BLM ensure that these important resources remain unimpacted by oil shale.²⁰⁵

I. Climate change

An important flaw in the FPEIS is the BLM’s decision to not fully evaluate the effects of climate change. BLM has a legal duty to address the impacts of climate change both from land management actions and to the resource area in the plan revision. This review must correct this flaw.

Climate change has been intensely studied by the world’s scientists, and broad consensus exists around its causes, magnitude, and effects. In February 2007, the IPCC declared, “[w]arming of

²⁰² Fischlin et al., 213 (2007).

²⁰³ *Id.* at 226.

²⁰⁴ *Id.* at 241 (citing Hannah et al., 2002a; Hughes, 2003; Leemans and Eickhout, 2004; Thomas et al., 2004a; Lovejoy and Hannah, 2005; Hare, 2006; Malcolm et al., 2006; Warren, 2006).

²⁰⁵ Attachment 6.

the climate system is unequivocal,” and it is “very likely” that most of the warming since the middle of the 20th century is the result of human pollutants. Climate change is a global phenomenon with well-documented and serious local impacts. Those impacts affect the both ecosystems and the welfare of citizens not only around the world, but in the United States and the nation’s Western states in particular.

Oil shale and tar sands leasing, development and use poses serious climate threats. According to a report by Dr. Adam Brandt, Dr. Jeremy Boak, and Dr. Alan Burnham,²⁰⁶ “without mitigation or technology improvements, full-fuel-cycle carbon dioxide (CO₂) emissions from oil shale derived liquid fuels are likely to be 25-75% higher than those from conventional liquid fuels.” Dr. Brandt is a professor at Stanford University. Dr. Boak runs the Center for Oil Shale Technology and Research, an industry funded research center at the Colorado School of Mines. Dr. Burnham is the Chief Technology Officer with AMSO, one of the RD&D lessees.

As these three scientists note, emissions of CO₂ from oil shale derived fuels come from three stages: retorting of shale, upgrading and refining of raw shale oil, and combustion of the finished transportation fuels.²⁰⁷ As they make clear, “emissions from these stages represent approximately 25-40%, 5-15%, and 50-65% of total fuel-cycle emissions, respectively, [with] the most uncertain source of emissions is the retorting stage, due to variation in emissions with shale quality and retorting technology used.” Brandt, Boak, and Burnham conclude that “the primary opportunity for reducing CO₂ emissions from oil shale retorting lies in the substitution of low- or zero-carbon energy sources for high carbon sources.” That means, “given the potential scale of emissions, it is clear that mitigation of CO₂ emissions from oil shale development will be needed to comply with any future CO₂ regulation.”

In recent years, industry has made the claim that it will be able to mitigate the impacts of climate change by using natural gas and rather than coal-fired power plants to power oil shale extraction. At least one company is researching the feasibility of down-hole burning of natural gas. The idea of using natural gas as part of the development cycle makes sense. While estimates vary, roughly 1/3 of the product produced on an oil shale lease would be natural gas.

For this reason, a close examination of using natural gas for extraction purposes is necessary. First, to produce 2,400 MW, a very efficient combined cycle gas power plant would require approximately 135 billion cubic feet of natural gas,²⁰⁸ or about 10% of Colorado’s gas production. According to the FPEIS, the BLM projects a 100,000 barrel per day oil shale operation would require all of the electricity from a 1,200 Megawatt (MW) power plant.²⁰⁹ This size power plant would generate enough electricity each year to serve 1.2 million homes. To produce 1,550,000 barrels per day from oil shale alone, as the BLM projected is feasible, would

²⁰⁶ Adam Brandt, Jeremy Boak, Alan Burnham, “Carbon Dioxide Emissions from Oil Shale Derived Liquid Fuels”, Attachment 7.

²⁰⁷ *Id.*

²⁰⁸ There is roughly 1000 Btu per cubic foot of gas. A 2400 MW combined cycle power plant would generate about 18 million MWh per year at an 85% capacity factor. The heat rate might be 7.5 MMBtu/MWh, implying 135 billion cubic feet of gas per year.

²⁰⁹ Bureau of Land Management, *Oil Shale and Tar Sands Resource Management Plan Amendments to Address Land Use Allocations in Colorado, Utah, and Wyoming and Programmatic Environmental Impact Statement*, 2008, at 4-14.

require all of the power from approximately 18,000 MW coal plants. (As a point of reference, the largest aluminum smelter in the world is being developed in the United Arab Emirates. It will require a 2,000 MW plant.²¹⁰)

Developing roughly 18,000 MW of electricity from natural gas would require an enormous amount of gas. As a further point of reference, the Tennessee Valley Authority's new 880 MW natural gas plant is expected to cost approximately \$820 million and consume 160 million cubic feet of natural gas a day.²¹¹

In addition to evaluating the natural gas requirements associated with oil shale and tar sands development, the BLM must also evaluate the climate impacts of natural gas. An April 2011 report by Dr. Robert Howarth of Cornell University raises serious concerns about claims that natural gas will supply clean, less climate-impactful energy.²¹² This report concludes that natural gas obtained through fracking yields more global warming per unit of energy than coal – 20 percent more, and possibly up to twice as much.

The report states that due to the fracking process, methane and other gases are released. These gases, Howarth and his colleagues conclude, flow back up the well. As the BLM is aware, methane is an extremely potent greenhouse gas, and the fracking of gas formations, as some of the RD&D lessees have stated they will do, could increase oil shale's climate impacts.

One final issue the BLM should analyze is the greenhouse gas implications of AMSO's downhole burning process.²¹³ While little technical detail has been publicly provided about this process, at least one person – James Bartis with the Rand Corporation – believes the greenhouse gas emissions could be lower than generating electricity from coal-fired power plants.²¹⁴ Whether Bartis' supposition is accurate must be tested as part of the BLM's analysis in the PEIS. What we currently do not know is whether burning natural gas underground can release any greenhouse gas constituents, including but not limited to methane.

i. Legal and policy basis for the BLM evaluating climate change

BLM's mandate to evaluate the impacts of its land use decisions on climate change and to take action is clear. In 2007, the Supreme Court issued a decision that recognized the severity of the climate change crisis, and the EPA's obligation to confront the problem. The Court noted "the enormity of the potential consequences associated with man-made climate change,"²¹⁵ and the contribution of carbon dioxide emissions to global warming.²¹⁶ The Supreme Court concluded,

²¹⁰ <http://www.zawya.com/projects/project.cfm/pid120207062258> (last accessed on December 13, 2010).

²¹¹ TVA Announces Preferred Location for Northeast Tenn. Combined-Cycle Gas Plant, August 7, 2009, http://www.tva.gov/news/releases/julsep09/ne_tenn_cc.htm (last accessed on December 6, 2010); Greenville Sun, "Big Natural Built Near Rogersville," August 6, 2009, <http://greenvillesun.com/story/305065> (last accessed on December 6, 2010).

²¹² Robert W. Howarth, Renee Santoro, and Anthony Ingraffea, "Methane and the Greenhouse-Gas Footprint of Natural Gas from Shale Formations", April 2011. (<http://thehill.com/images/stories/blogs/energy/howarth.pdf>) last accessed on April 26, 2011.

²¹³ <http://www.amso.net/Our-Concept/Our-Process.aspx> (last accessed May 1, 2011).

²¹⁴ James T. Bartis, "Oil Shale Development in the United States: Prospects and Policy Issues," 2005, at 45.

²¹⁵ *Id.* at 1458.

²¹⁶ *Id.* at 1457-58.

“[t]he harms associated with climate change are serious and well recognized,”²¹⁷ and that the federal government has a responsibility to take action to reduce it, even if such action may not completely reverse global warming.²¹⁸

In connecting climate change with an agency’s NEPA responsibilities, the U.S. Court of Appeals for the Ninth Circuit has stated that, as with any relevant information, an agency must take a “hard look” at the effects of climate change in its EIS.²¹⁹ This requirement flows in part out of the cumulative effects analysis requirements of NEPA.²²⁰ Accordingly, the analysis is one of considering “the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions,” including the impacts of climate change.²²¹ BLM is not exempt from this responsibility.

Indeed, Interior Secretary Salazar understands the great importance of Interior agencies analyzing the impacts of agency decisions on our climate. Secretarial Order (S.O.) No. 3289 unequivocally mandates that all Department of the Interior agencies “analyze potential climate change impacts when undertaking long-range planning exercises, setting priorities for scientific research and investigations, developing multi-year management plans, and making major decisions regarding potential use of resources under the Department’s purview.”²²² This PEIS and related RMP revisions fall squarely under this guidance and BLM must assess impacts from the proposed actions that may directly, indirectly, or cumulatively result in exacerbating climate change within this document.

Further, NEPA regulations require that NEPA documents address not only the direct effects of federal proposals, but also “reasonably foreseeable” indirect effects. These are defined as:

Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.”²²³

BLM is required to take a hard look at direct, indirect, and cumulative impacts to and from climate change in the planning area in the RMP.

FLPMA likewise provides relevant guidance. In enacting FLPMA, Congress enacted a policy that “the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values....”²²⁴ Further, FLPMA directs BLM to manage the lands under its jurisdiction in such a

²¹⁷ *Massachusetts v. EPA*, 127 S. Ct. 1438, 1455 (2007).

²¹⁸ *Id.* at 1458.

²¹⁹ *Ctr. for Biological Diversity v. Nat’l Hwy. Traffic Safety Admin.*, 538 F.3d 1172, 1214-15 (9th Cir. 2008).

²²⁰ *Id.* at 1215 (citing *Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt.*, 387 F.3d 989, 994 (9th Cir. 2004)).

²²¹ *Id.* (quoting 40 C.F.R. §1508.7).

²²² S.O. 3289, incorporating S.O. 3226.

²²³ 40 C.F.R. § 1508.8(b) (emphasis added).

²²⁴ 43 U.S.C. at § 1701(a)(8).

manner that will “best meet the present and future needs of the American people;” “provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions;” and “take[] into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish....”²²⁵ In addition, the statute requires BLM to “minimize adverse impacts on the natural, environmental, scientific, cultural, and other resources and values (including fish and wildlife habitat) of the public lands involved.”²²⁶

Finally, recent guidance from CEQ must be incorporated into this review. Executive Order 13514, “Federal Leadership in Environmental, Energy, and Economic Performance,” seeks to establish an integrated strategy towards sustainability in the federal government. Section 8(i) of the Order requires each federal agency “evaluate agency climate-change risks and vulnerabilities to manage the effects of climate change on the agency’s operations and mission in both the short term and long term.”²²⁷ A core element of CEQ guidance to implement this Order is to “identify measures to incorporate climate change-related considerations into existing agency planning processes, including the development of measurable goals and performance metrics to guide adaptation efforts and assess whether efforts are achieving desired outcomes.”²²⁸ The PEIS provides such an opportunity.

In addressing climate impacts, BLM must craft long-term management prescriptions without permanent impairment and unnecessary or undue degradation to the resources in the face of climate change. S.O. 3289 states that “[t]he realities of climate change require us to change how we manage the land, water, fish and wildlife, and cultural heritage and tribal lands and resources we oversee.”

ii. Overview of climate impacts in the West

As Environmental Defense Fund and Western Resource Advocates discussed in their 2010 report, “Protecting the Lifeline of the West: How Climate and Clean Energy Policies Can Safeguard Water,”

Climate change is already impacts western water resources. Scientists have measured long-term downward trends of snowpack in western coastal states and shifts toward earlier spring runoff in mountainous river basins across the region. If climate change is not addressed, future changes will greatly exacerbate the West’s water supply challenge....In the Colorado River Basin, climate change issues could not be more pressing. The river supplies water to over 30 million people and 1.4 million acres of farmland....Today, water demands exceed supplies in the basin; any further reduction in available water will directly impact current users – farmers, cities, and industry. And in a

²²⁵ *Id.* § 1702(c).

²²⁶ *Id.* § 1732(d)(2)(a).

²²⁷ Executive Order 13514, October 9, 2009. 74 Fed. Reg. 52117, 52118.

²²⁸ Council on Environmental Quality, “Implementing Climate Change Adaptation Planning in Accordance with Executive Order 13514, March 4, 2011, at 17-18.

recent assessment, 46 of 49 global circulation model simulations projected a more arid southwestern U.S. in future years, with the droughts on the past becoming the norm.²²⁹

Around 2050, the timeframe that the BLM predicted industry could be developing large-scale commercial operations, 23 of 24 global circulation models project runoff of the upper Colorado River will decrease 5-20%.²³⁰ Among other impacts, a drier climate will further challenge water providers' ability to meet projected demands. Oil shale and tar sands development would not only contribute to climate change, but, as discussed above in the section on water availability, would compete for the same dwindling resource.

As Western Resource Advocates *et al.* explained in their comments on the draft PEIS, there are five ways in which public land resources are already being adversely affected by climate change.²³¹

1. The West is getting hotter

The American West has heated up even more than the world as a whole. The West has also experienced more frequent and severe heat waves, with the number of extremely hot days increasing by up to four days per decade since 1950.

2. The West is getting drier

In the arid and semi-arid West, global warming is already having serious consequences for the region's scarce water supplies, particularly the snow that makes up most of the region's precipitation and, when melted, provides 70% of its water. Already, decreases in snowpack, less snowfall, earlier snow melt, more winter rain events, increased peak winter flows, and reduced summer flows have been documented.

3. Climate change is disrupting ecosystems

The IPCC also concluded that "recent warming is already strongly affecting" ecosystems and wildlife. Forests across the West have suffered as warming has extended the range of some damaging insects, such as bark beetles. Glaciers are melting across the West. The warming of the West is also disrupting the natural timing of seasons and leading to loss of wildlife.

4. Climate change is affecting wildlife

Greenhouse gas emissions are also having direct and indirect impacts on wildlife species, including numerous listed species. The IPCC has reported that 30% of animal and plant species could be at an increased risk of extinction if global warming continues unabated.²³²

²²⁹ Environmental Defense Fund and Western Resource Advocates, "Protecting the Lifeline of the West: How Climate and Clean Energy Policies Can Safeguard Water," 2010, at i-ii.
<http://www.westernresourceadvocates.org/water/lifeline/lifeline.pdf> (last accessed on May 6, 2011)

²³⁰ *Id.* at 5.

²³¹ Western Resource Advocates *et al.*, Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008. (on file with the BLM)

²³² IPCC, 2007: Summary for Policymakers. In: Climate Change 2007: Fourth Assessment Report, Synthesis Report, available at http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

5. Warmer temperatures affect business, recreation, and tourism

In the first few years of the 21st century, western farmers and ranchers have suffered significantly from the combination of above-normal heat and drought. Across the country, four of the five top years for crop loss claims due to drought have been since 2000. Warming temperatures and other manifestations of a changing climate are already diminishing fishing and hunting opportunities in the West.

J. Air resources

Already, the Uintah Basin in Utah and areas around Rifle, Colorado, are suffering from extremely poor air quality from ongoing oil and gas development. So too is Pinedale, Wyoming and parts of the Red Desert. Based on what the BLM identified in the FPEIS, and based on new data that has been gathered since that time, oil shale and tar sands development would likely further degrade air quality.

In their comments on the draft PEIS, the EPA and NPS raised serious concerns about air quality. The EPA stated “oil shale and tar sands development processes may have significant, adverse impacts to air quality, in particular by increasing levels of ozone and nitrogen deposition and by impairing visibility on a regional level.”²³³ The NPS noted that eight units

have a very high potential for being adversely affected by cross-boundary or direct impacts from exploration and development activities...: Arches, Black Canyon of the Gunnison, Canyonlands and Capitol Reef National Parks; Colorado, Dinosaur and Fossil Butte National Monuments; and Glen Canyon Recreation Area. Numerous additional park units in the western United States could be adversely impacted by regional air and water impacts likely to be generated from large scale, industrial activities associated with oil shale and tar sands development.²³⁴

In addition, monitors in Utah’s Uintah Basin have shown that concentrations of both PM_{2.5} and ozone are above the current NAAQS. EPA and the Ute Indian Tribe recently started monitoring ozone at four locations: Myton, White Rocks, Ouray, and Red Wash. Last winter, ozone levels reached a high 8-hour value of .137 ppm during inversion conditions, nearly twice the federal health standard. At the same time, Utah’s Division of Air Quality wintertime monitoring studies for 2007, 2008, and 2009 showed that PM_{2.5} concentrations in the Basin are above the standard and can be as high as that seen along the Wasatch Front.

These concerns were not adequately addressed in the FPEIS. In fact, the BLM noted only that: “Since all activities either conducted or approved through use authorizations by the BLM must comply with all applicable local, state, Tribal, and federal air quality laws, statutes, regulations, standards, and implementation plans, it is unlikely that future oil shale development would cause significant adverse air quality impacts.”²³⁵ As demonstrated above, one does not need to look further than oil and gas development in Colorado, Utah and Wyoming to know that contemporary industrial fossil fuel development activities are already wreaking havoc on air quality.

²³³ EPA, Comments on 2008 Oil Shale and Tar Sands DPEIS, at 2.

²³⁴ NPS, Comments on 2008 Oil Shale and Tar Sands DPEIS, at 2.

²³⁵ FPEIS at 4-53.

For several reasons, this approach – neglecting to address air quality impacts based on the assertion that air quality permitting will ensure that no significant adverse impacts will occur – fails to comply with the relevant law. NEPA requires that agencies consider and disclose to the public the direct, indirect and cumulative impacts of their actions.²³⁶ Moreover, BLM is required to assess and report on the cumulative impacts of expected emissions on the National Ambient Air Quality Standards (NAAQS), prevention of significant deterioration (PSD) increments, and air quality related values (AQRVs). BLM must identify alternatives or other mitigation measures sufficient to prevent expected impacts, including air quality violations. Likewise, under the Clean Air Act (CAA),²³⁷ RMPs must manage actions on public lands to meet the air quality standards prescribed by Federal, State, and local laws, which includes improving air quality in non-attainment areas. FLPMA further mandates “[i]n the development and revision of land use plans, the Secretary shall... (8) provide for compliance with applicable pollution control laws, including State and Federal air, water, noise, or other pollution standards or implementation plans....”²³⁸ Taken together, under this regulatory framework, the BLM must conduct a full-scale quantitative analysis of the air quality impacts in both the study area and all affected areas. Otherwise, it is impossible to quantitatively show that production contemplated under the PEIS and as provided in the RMP amendments will ensure attainment with all applicable standards.

Thus, to meet its substantive duties, BLM may not simply defer to state or federal regulations to demonstrate that the NAAQS and PSD increments for pollutants under the CAA will be protected. This is because of the following:

1. NEPA requires BLM to undertake a careful examination of the direct, indirect and cumulative environmental impacts of its proposed actions.
2. Utah has not had a network of air quality monitors in the areas relevant to this action sufficient to determine compliance with NAAQS. Moreover, historically, the relevant area that monitors ozone—Dinosaur National Monument—has done so largely in the summer. Recent air quality analysis in and around oil and gas development fields show that ozone and PM_{2.5} concentrations exceed NAAQS in the winter, when the nearby ozone monitor has been off line.
3. States, including Utah, have not yet submitted State Implementation Plan (SIP) revisions to the EPA pursuant to Section 110 of the CAA to ensure attainment of the ozone and PM_{2.5}—particulate matter less than 2.5 microns in diameter—NAAQS, meaning that no analysis or finding has been made showing that current state air quality rules are sufficient to ensure compliance with these NAAQS.
4. Utah’s Regional Haze SIP has not been approved by EPA. This further means that no analysis or finding has been made to show that state air quality rules are sufficient to guarantee compliance with the CAA’s goal of improving visibility in affected Class I areas.
5. The State of Utah permitting requirements do not apply to stationary sources that emit five tons per year or fewer of any criteria pollutant²³⁹ and only require an analysis of ambient air quality impacts if a source releases more than 40 tons of nitrogen oxides, 5

²³⁶ 42 U.S.C. § 4332(2); 40 C.F.R. §§ 1508.7, 1508.8; 1508.25(c).

²³⁷ 42 U.S.C. § 7401-7671

²³⁸ 43 U.S.C. § 1712(c)(8); *see also* 43 CFR § 2920.7(b)(3) (requiring the same for land use authorizations).

²³⁹ *See* Utah Administrative Code R307-401-9

tons of fugitive particulate matter less than 10 microns in diameter (PM₁₀), and 15 tons of non-fugitive PM₁₀.²⁴⁰ Furthermore, State of Utah permitting requirements do not actually require any analysis of impacts to ozone or to PM_{2.5}.

6. Clean Air Act regulations provide that a facility will not be regulated as a major source of hazardous air pollutants unless it emits 25 tons per year or more of any combination of hazardous air pollutants.
7. The State of Utah is failing to permit stationary oil and gas production facilities in accordance with PSD requirements under the CAA and EPA guidance. Namely, the State of Utah is not appropriately identifying stationary sources consistent with the regulatory definition of a stationary source, which is any “building, structure, facility, or installation,” including “all of the pollutant emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control).”²⁴¹ The EPA recently reaffirmed the need for States to appropriately define oil and gas sources consistent with this definition.²⁴² Unfortunately, the State of Utah is not complying with this EPA guidance and is, as a result, failing to permit oil and gas stationary sources as dictated by the Clean Air Act.
8. The State of Utah does not limit emissions related to vehicle tailpipes or fugitive dust or particulate matter to ensure compliance with the NAAQS.
9. The State of Utah does not otherwise address the cumulative impacts of oil and gas development to air quality. Although the State has a PSD permitting program, this program only applies to single stationary sources that “consume increment” and does not address emissions from older stationary sources or from oil and gas development in the aggregate on a regional level.

Colorado is facing similar challenges. While the FPEIS explicitly excludes from oil shale leasing designated wilderness areas, WSAs, lands within the National Lands Conservation System (NLCS) like National Monuments, National Conservation Areas, Wild and Scenic Rivers, and National Historic and Scenic Trails, indirect impacts from commercial scale oil shale are still likely to impact these areas.

For example, PSD Class 1 Areas in Western Colorado, like the Maroon Bells-Snowmass Wilderness Area and the Flat Tops Wilderness Area, may already be experiencing air quality deterioration as a result of increased oil and gas activities on the West Slope. As discussed above, further deterioration of air quality in these airsheds contravenes federal law. The FPEIS raises this issue, but fails to analyze it. Colorado National Monument and Dinosaur National Monument are both Colorado Category 1 Areas. Though not as stringently regulated as PSD Class 1 Areas, these areas may experience deteriorating visibility, nitrogen and sulfur deposition, changes in water chemistry, as well as impacts to vegetation and human health. These impacts should be understood and documented before the BLM undertakes revision of numerous RMPs opens the door to extensive oil shale development.

²⁴⁰ See Utah Administrative Code R307-410-4

²⁴¹ See 40 CFR §§ 51.166(b)(5) and (b)(6).

²⁴² See Memo from Gina McCarthy, Asst. EPA Administrator to Regional Administrators, “Withdrawal of Source Determinations for Oil and Gas Industries” (September 22, 2009), available at <http://www.epa.gov/region07/air/nsr/nsrmemos/oilgaswithdrawal.pdf>.

Additionally, BLM recently completed or is currently undertaking revision of numerous Resource Management Plans in northwest Colorado. The resource management plans, without exception, anticipate increased oil and gas development. In some cases the BLM is anticipating oil and gas development to increase by orders of magnitude over what currently exists. Any effort by BLM to amend RMPs in Colorado will necessitate an updated air quality analysis that considers potential impacts of anticipated oil and gas development along with anticipated oil shale development.

Given what we know about the energy needs of this industry and the likely sources of generation for that energy, it is irresponsible for the BLM to pave the way for more than 350,000 acres of oil shale development in western Colorado without an adequate air quality analysis. Such activity may require a dozen or more large new power plants burning coal or natural gas. The fuel stock for those powerplants may also come from northwest Colorado. Piling impacts on impacts makes for a complicated analysis, but is necessary to give the public full and fair warning about the impacts we will likely have to bear. That disclosure and analysis is also required by the law.

Due to the concerns of federal agencies and realities on the ground, and consistent with FLPMA and NEPA, BLM must not defer air quality analyses until specific oil shale and tar sands development projects are proposed. Such a deferral, as the BLM did in the FPEIS, violates both NEPA and FLPMA – and without such an analysis in the PEIS, the BLM would not be able to determine how any activities authorized under RMP amendments would affect air quality. The BLM would likewise not be able to ensure that development will prevent significant deterioration of air quality, as required by the CAA.

FLPMA requires the BLM to consider the relative value of the various resources, and clean air is increasingly becoming (along with undeveloped landscapes) a most valued, yet dwindling, resource. Oil shale and tar sands development activities directly contribute to air pollution in several ways, all of which should be addressed in the PEIS. Under NEPA, the BLM must conduct a comprehensive quantitative analysis of air quality impacts and evaluate the potential impacts of air pollution from commercial-scale oil shale and tar sands development on human health and the environment.

Because of oil and gas drilling and other activities in the study area, the BLM and industry are not starting with a clean slate. There are ongoing air quality concerns. Particulate matter concentrations are high as are ozone concentrations. Visibility in several Class I Areas in each state is already impacted. The final EAs for the five oil shale RD&D test sites in Colorado concluded there will be significant adverse effects on visibility at the Flat Tops Wilderness Area Class I area. Several RMPs in Utah have identified visibility impacts from oil and gas development in several Class I areas, including Canyonlands National Park and Capitol Reef National Park. In Wyoming, there are serious concerns that visibility in the Bridger Wilderness Area and other nearby Class I areas as a result of oil and gas development in the Pinedale Anticline and Jonah Fields.

Part of the challenge industry faces in trying to develop oil shale and tar sands is that the increments are already consumed. As Megan Williams noted in her comments on the draft PEIS,

“the near-field modeling performed for the draft EGL [now AMSO] oil shale RD&D EA showed that the EGL project alone would directly cause violations of the 24-hour average Class II PM₁₀ and SO₂ increments.”²⁴³ The PEIS should consider whether development planned for the existing RD&D leases could preclude any additional oil shale development.

Williams further notes there are a number of other steps the BLM must take to comply with all applicable laws and regulations:

1. The BLM must acknowledge and address the potential enormous impacts that would result from the electricity requirements of commercial scale oil shale and tar sands development;
2. The BLM must determine whether commercial-scale oil shale and tar sands development, along with all other ongoing development in the study area, will cause significant deterioration of air quality or impact visibility;
3. The BLM must disclose the magnitude of emissions authorized under each alternative it evaluates and perform a full-scale dispersion modeling analysis to evaluate the potential air quality impacts from a commercial-scale oil shale and tar sands leasing program; and
4. The BLM must include adequate plans to protect air quality in the affected areas as part of the RMP amendments and a PEIS.
5. The BLM must address the current NAAQS for nitrogen dioxide. On February 9, 2010, the EPA finalized revisions to the nitrogen dioxide NAAQS, supplementing the current annual standard of 53 ppb with a 1-hour standard of 100 ppb.²⁴⁴ These NAAQS became effective on April 12, 2010.
6. The BLM must ensure the protection of the air quality related values in any affected Class I areas.
7. The BLM must ensure protection of Class I and Class II PSD increments.
8. The BLM must inventory likely fugitive dust emissions differentiated for PM₁₀ and PM_{2.5} for motor vehicle use in and around the planning area. It must also consider the tailpipe emissions of these activities. In this context, BLM must consider the cumulative impacts of these activities together with the potential impacts associated with the proposed action and its alternatives.

Relative to Utah, BLM must:

1. Adopt a PM_{2.5} and ozone baseline for purposes of modeling that is reflective of the actual data collected in the area.
2. Show that the proposed leasing decision will not lead to further exceedances of NAAQS
3. Address the impacts of secondary PM_{2.5} formation
4. Fully analyze and assess the direct, indirect, and cumulative impacts of energy development on PM_{2.5} and ozone concentrations, and ensure that steps are taken to mitigate such impacts

These steps are also applicable to this PEIS.

²⁴³ Megan Williams, Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008, at 9. (on file with the BLM)

²⁴⁴ See Primary National Ambient Air Quality Standards for Nitrogen Dioxide, Final Rule, 75 Fed. Reg. 6474-6537 (February 9, 2010).

K. Socio-economic impacts

Over the past 30 years, western economies have shifted from largely extractive industries to more diversified economies based on recreation, tourism, knowledge-based industries, and the professional and service sector. A 2004 study examining the impact of public lands on economic well-being in 11 western states found that only 3% of western counties could be classified as resource-extraction dependent.²⁴⁵ There is a vast and growing body of research that indicates that the environmental amenities provided by public lands are an important economic driver in the rural West. Given the changing nature of these economies, prioritizing oil shale and tar sands development at the expense of non-extractive economic drivers may harm the economy of the region in the long run by depleting the natural amenities currently responsible for the economic growth of western communities.

It is especially important to consider these demographic and economic shifts given the location where oil shale and tar sands development is being proposed. Since the 1982 oil shale bust, northwest Colorado has successfully transitioned from an economy dependent on extraction of natural resources to one that relies more heavily on the protection of the natural amenities. This area has developed a thriving retirement community, and has begun to market itself as a destination for outdoor recreation. In fact, many rural communities in the Rocky Mountain region are benefiting from the increase in demand for outdoor recreation, especially activities on federal public lands. The President's America Great Outdoors Initiative recognizes the social, economic and spiritual values of our public lands for recreation,²⁴⁶ so in analyzing the socio-economic impacts of oil shale and tar sands development, the PEIS must recognize these benefits.

The proposed oil shale and tar sands development threatens these economic drivers. It is imperative that the relationship between protected public lands in the area and the local economy be given a more thorough comprehensive examination across the three-state region. As rural communities diversify their economies, the framework for making public land management decisions must also evolve. Management plans for public lands need to account for all aspects of the economic and social systems of these communities, including investment and retirement income, recreation, tourism, and entrepreneurial businesses attracted to scenic locations, when evaluating alternatives. Management plans must also consider the increasing importance of industries and economic sectors that rely on these public lands, but not necessarily on the extraction of natural resources. As the population of the entire country grows, the presence of undeveloped lands becomes increasingly important because these lands strengthen western rural economies by meeting growing needs for clean air and water, wildlife habitat, and recreation opportunities.

In evaluating the socio-economic value of our public lands, we recommend that the BLM use a total economic value approach that includes the estimation of non-market values for the planning area. BLM recently affirmed its commitment to this approach in IM 2010-061, which explicitly

²⁴⁵ R. Rasker, B. Alexander, J. van den Noort and R. Carter. 2004. The Sonoran Institute, Public Lands Conservation and Economic Well-Being. Tucson AZ: The Sonoran Institute.

http://sonoran.org/index.php?option=com_docman&task=cat_view&gid=152&Itemid=74.

²⁴⁶ <http://americasgreatoutdoors.gov/>

directs managers to evaluate non-market values in RMP analyses. The total economic value analysis should include the full range of non-market values, including use values – such as recreation – as well as non-use values such as existence value (the benefit one gains just knowing wild, public lands are protected), option values (the benefit of knowing that one can visit BLM lands for recreation) and bequest values (the benefit gained from knowing that these lands are protected for future generations).

The BLM should analyze the benefits to the local communities from management which ensures that the area’s scenic landscapes are protected, such as through special designations, and that the important economic role that protected public lands play in the local economy is continued and enhanced.

FLPMA specifically incorporates such non-market resources as “the long-term needs of future generations” for recreation and “natural scenic, scientific and historical values” into the BLM’s multiple use mandate.²⁴⁷ FLPMA further defines multiple use to require the agency to encompass non-market values into management, directing the BLM to achieve:

harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.²⁴⁸

The BLM must also address community infrastructure needs. A 2008 report by BBC Consulting evaluating the economic impacts of oil shale development (coupled with oil and gas development) highlights the challenge and needs communities could face.²⁴⁹ The report, which was prepared for the Associated Governments of Northwest Colorado, offer a number of startling conclusions. Two in particular bear attention.

First, concurrent oil/gas and large-scale oil shale development will cause existing towns to reach capacity. New towns will have to be built. The report also notes baseline population projections already strain most municipalities. Second, even with payments made to the cities and counties, growth-related capital costs are projected to exceed energy revenues by \$1.3 billion. The report suggests some of the revenues loss could be made up from state grants, but given the state’s budget challenges and budget projections, that assumption is highly questionable.

In their comments on the on the draft PEIS, Club 20, a group representing the 20 counties in western Colorado, noted that based on these economic considerations, “the federal government must encourage industry to make appropriate up-front investments in the infrastructure of locally-impacted communities.”²⁵⁰ Club 20 further noted, “we are concerned about the socio-economic impacts to the local communities. As the PEIS anticipates, “rapid increases in

²⁴⁷ 43 U.S.C. § 1702(c).

²⁴⁸ 43 U.S.C. § 1702(c).

²⁴⁹ Northwest Colorado Socioeconomic Analysis and Forecasts, April 2008. http://agnc.org/reports/08-socioeconomic/agnc_final_mail_report_4-07-08.pdf (last accessed April 27, 2011).

²⁵⁰ Club 20, Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008, at 4. (on file with the BLM)

population immigration in parts of each region of influence could impact quality of life, in particular requiring a transition from traditional rural, to more urban lifestyles, and potentially cause large social disruption impacts.”

Specifically, as Club 20 noted, “with the increasing natural gas development activity in northwestern Colorado, we are already experiencing:

1. housing shortages,
2. dramatic increases in retail and housing prices,
3. overwhelming demands on the community’s social and physical infrastructure (schools, police and fire services, social services, water and sewer), and
4. a lack of available workforce to sustain each community’s traditional Main Street economy.”

The analysis of the socio-economic impacts must be thorough and accurate in order to responsibly manage the public lands.

L. Cultural and paleontological resources

Most, if not all historical, archeological, cultural and paleontological resources (hereinafter, “cultural resources”) are strictly non-renewable. Once marred or destroyed, they are forever lost to future generations. Such fragility demands utmost care and humility from BLM managers and planners. Each RMP the BLM amends through the PEIS should reflect and require a conservative approach to managing these priceless and irreplaceable resources.

Federal laws, regulations and executive orders require the BLM to protect properties of cultural and religious significance. FLPMA specifies the BLM must protect cultural resources,²⁵¹ while the National Historic Preservation Act of 1966 (NHPA)²⁵² provides for enhanced consideration of potential impacts to these resources through a cooperative federal-state program. NHPA compliance includes assessing the effects of management actions on historic and cultural resources listed or eligible for listing to the National Register of Historic Places.²⁵³ Other governing laws include, but are not limited to, the Antiquities Act of 1906,²⁵⁴ the Archaeological Resources Protection Act (ARPA),²⁵⁵ and the Native American Graves Protection and Repatriation Act (NAGPRA).²⁵⁶ BLM’s decisions regarding cultural resource management are also governed by NEPA. The BLM must adhere to these and other laws when amending and implementing each RMP, and must provide evidence of cultural resource consideration as part of the PEIS prepared during the RMP revision process.²⁵⁷

These responsibilities were reaffirmed by Executive Order 13287 (March 3, 2003): “[The BLM must ensure] the management of historic properties in its ownership is conducted in a manner that promotes the long-term preservation and use of those properties as Federal assets” It is within this broad context that the BLM must carefully consider federal management actions

²⁵¹ 43 U.S.C. §§ 1701(a)(8), 1702(c).

²⁵² 16 U.S.C. §§ 470 to 470x-6.

²⁵³ *Id.* at § 470f.

²⁵⁴ *Id.* at §§ 431-33.

²⁵⁵ *Id.* at §§ 470aa-mm.

²⁵⁶ 25 U.S.C. §§ 3001-13.

²⁵⁷ *See* BLM Manual MS-8100.08.A.1.b.(3).

regarding oil shale and tar sands and the affects of such decisions on archaeological and historic resources of significance.

While the BLM's multiple use mandate requires land managers to consider the value of cultural resources in their decision-making process, these resources are frequently given short shrift in this calculus. Their value is not easily measured, and as a result they are sacrificed in pursuit of more obviously economically profitable resources.

RMPs serve as the principle guide for the BLM's management of cultural resources.²⁵⁸ As noted above, the BLM's multiple use mandate requires managers to balance resource use and resource preservation. BLM Manual 8100 provides that land use plans should take into account the effects other land and resource uses may have on cultural resources. The Manual notes that the need for additional information should be evaluated, responsibilities assigned, and schedules established at the outset of the planning process.²⁵⁹ In other words, not only must the BLM examine the effects of other land and resource uses on cultural resources, it must evaluate whether or not it possesses sufficient information to assess these potential resource conflicts. If the agency lacks enough information to make informed decisions, it must collect data according to a plan and schedule established at the outset of the planning process. The BLM should clearly spell out the process the agency will follow in order to comply with the procedures outlined by Manual 8100.²⁶⁰

Manual 8120 also makes clear that the BLM can prevent unauthorized use of cultural properties through a variety of measures, including administrative protection measures.²⁶¹ The Manual specifically notes that the BLM's protective measures may include "withdrawal, closure to public access and off-road vehicles, special designations," etc.²⁶² The PEIS should identify areas where cultural sites are at risk, and, because the PEIS would amend RMPs, should employ one or more of these administrative measures to protect these resources. The areas designated should be of sufficient size to allow viable protection of the resources; designation of just the site itself may not allow for effective management. More specifically, the BLM should consider closing culturally-sensitive areas to oil shale and tar sands leasing.

The RMP amendments through the PEIS commit the agency to a particular course of action and thus need to be fully considered. First, Congress' charge to the BLM was to assess the impacts resulting from oil shale and tar sands development. As Jerry Spangler noted in his comments on the draft PEIS, there are significant cultural resources in the areas under consideration for oil shale and tar sands development.²⁶³ Any BLM decision to defer identifying the direct, indirect and cumulative impacts of oil shale and tar sands development under a later date contravenes Congress' charge to evaluate the impacts.

²⁵⁸ See BLM Manual MS-8100.08.A.1.a

²⁵⁹ *Id.* at MS-8100.08.A.1.b.(2).

²⁶⁰ *Id.* at MS-8100.08.A.1.b.(2)

²⁶¹ *Id.* at MS-8120.32.A

²⁶² See *id.* at MS-8120.32.A

²⁶³ Jerry Spangler, Comments on 2008 Oil Shale and Tar Sands DPEIS, March 2008, at 9. (on file with the BLM)

Second, the BLM's intent in amending the RMPs is to facilitate commercial leasing. As Spangler comments, "identifying lands for potential oil shale and tar sands leasing without critical analysis of the environmental suitability of those lands for leasing puts the cart before the horse."²⁶⁴ It also contravenes NHPA. The Interior Board of Land Appeals has repeatedly rejected the BLM's position that assessing impacts to cultural resource at a later date was compliant. The IBLA emphasized NHPA compliance must be completed at each phase of a federal action.²⁶⁵

Most importantly, Congress' stated intent in EPAct was that commercial development of oil shale and tar sands should "be conducted in an environmentally-sound manner using management practices that will minimize potential effects." Opening up 2 million acres to commercial development fails Congress' test.

BLM must provide adequate baseline information on paleontological resources. For example, Wyoming's Washakie Basin area includes "most prospective" lands proposed for oil shale leasing. However, the Basin also includes the Adobe Town member of the Washakie formation, a paleontological resource of worldwide importance. The Wasatchian-Bridgerian interface found here is one of only two exposures of this time sequence known in the Rockies. The other exposure is in Utah.

BLM must identify and analyze these and other cultural resources in the PEIS.

M. Master leasing plans

The BLM must consider recommendations, closures, special stipulations, and best management practices in existing and proposed Master Leasing Plans (MLPs). MLPs are intended to provide local field offices with an opportunity to analyze impacts of leasing and likely development in greater detail than at the RMP stage. MLPs give local field offices an opportunity to analyze key issues such as protection of air quality, watersheds, wilderness, wildlife, and nearby land uses while planning for development. They allow field offices the opportunity to identify mitigation measures for leasing and development that protect the environment. In short, these MLPs give field offices the opportunity to ensure development occurs with sensitivity to other important resources.

Several MLPs have been approved and will be prepared by BLM in Colorado, including Dinosaur Lowlands, Shale Ridge, Eastern Book Cliffs/Piceance Basin, and Adobe Town. These MLPs are in various stages of consideration, nonetheless these proposals ought to be considered in BLM's current oil shale EIS to the extent that they overlap with areas open to oil shale development, and BLM should avoid making any irreversible commitments of resources concerning oil shale leasing and development within the MLP areas until the MLPs are finalized. Mitigation measures proposed in these MLPs ought to be incorporated into BLM's oil shale analysis and, ultimately, into BLM's final decision.

Please see Attachments 8 - 11 for a further discussion of MLP recommendations.

²⁶⁴ *Id.*

²⁶⁵ IBLA 2004-124, in *SUWA v. UT* 055.

N. Additional conservation areas in Colorado

In addition to the ACEC and wilderness areas discussed above, the BLM should also protect Potential Conservation Areas from oil shale development. Colorado Natural Heritage Program Potential Conservation Areas (PCAs) are delineated by scientists to help land managers identify critical areas that provide habitat and ecological processes necessary for the continued existence of species and natural communities. Potential Conservation Areas should be protected entirely from oil shale development.

PCAs that must be protected include: 4,026 acres of the Conn Creek PCA, 49,724 acres of the Piceance Creek PCA, 1,611 acres of the Parachute Creek PCA, 45,821 acres of the Dudley Bluffs PCA, 947 acres of the Clear Creek PCA, 507 acres of the Cathedral Bluffs PCA, 4,315 acres of the Calamity Ridge PCA, 1226 acres of the East Fork Parachute Creek PCA, 254 acres of the Yellow Creek PCA, 689 acres of the Upper Big Duck Creek PCA, 1033 acres of the Trapper Creek PCA, 59,142 acres of the Skinner Ridge PCA, 2,064 acres of the Northwater PCA, 658 acres of the Dry Fork Piceance Creek PCA, and 891 acres of the Upper Cow Creek PCA.

Similarly, historic trails should be protected from oil shale development with larger buffers. Lands within 0.25 mile of Historic Trails are ineligible for oil shale leasing under the FPEIS and RMP amendments. This distance is an inadequate buffer to prevent degradation of the setting of the trails, which contributes significantly to their historical importance. In Colorado, the Old Spanish National Historic Trail crosses areas open for oil shale leasing. In the context of visual resources, BLM defines foreground-middleground as 0 to 5 miles, and in this area, management activities can be seen in detail. There should be at least one alternative that provides adequate protection to prevent the degradation of the settings of these important historical resources.

O. Recreational areas in Wyoming

As the BLM stated in the FPEIS, “oil shale development activities are largely incompatible with recreational land use (e.g., hiking, biking, fishing, hunting, bird watching, OHV use, and camping).”²⁶⁶ We strongly agree with this conclusion. In the PEIS, the BLM must thoroughly assess the impacts on the following areas of high recreational value that fall within potentially leased oil shale areas in Wyoming. We believe oil shale leasing in these areas should be precluded:

1. Little Mountain area, including Greater Red Creek ACEC, Red Creek WSA, and Sugarloaf Basin SMA – These areas were established under the Green River RMP and constitute an outstanding big game hunting resource. According to the Wyoming Game and Fish Department, the elk hunt in this area is the single most sought-after tag in the entire state. Oil shale activities would be certain to drive away elk and destroy the recreational quality of this area.

Regarding Little Mountain, this area is located southwest of Rock Springs, Wyoming. It is generally bordered by the State of Colorado on the south, Wyoming Route 430 on the

²⁶⁶ FPEIS, at 4-20.

east, Flaming Gorge Reservoir on the west, and the “railroad checkerboard” lands on the north. (See Attachment 12).

This area has become of tremendous interest and concern to the public, especially hunting and fishing communities. As BLM knows, there is a working group in place that includes various non-governmental organizations, BLM, the Wyoming Game and Fish Department and others, which is seeking to find management guidance and direction for this area that protects its important resource values. The governor of Wyoming has been active in these efforts, and at his request, the BLM has refrained from oil and gas leasing in this area while potential management direction is explored and put in place as a component of the revised Rock Springs RMP. A similar approach should be utilized when evaluating oil shale development. BLM should not pre-determine the outcome of the Rock Springs RMP revision, which has only just been initiated, by prescribing that this area be available for oil shale leasing in this programmatic environmental impact statement.

The important resource values of the Little Mountain area are undeniable. The Little Mountain area is a hunting, fishing, and outdoor recreation paradise. The area is recognized nationally as one of the West's top mule deer hunting spots, and is famed for its trophy elk and its genetically pure Colorado River cutthroat trout, which can be found in Red, Sage, and Currant Creeks. Pronghorn, moose, raptors, songbirds, and other animals, also attract hunters and wildlife viewers. The Wyoming Game and Fish Department has designated much of the greater Little Mountain area as a key non-game area because of the important habitat it provides for a number of sensitive species including greater sage-grouse, ferruginous hawk, pygmy rabbit, and the Wyoming pocket gopher. It also provides important habitat for the rare midget faded rattlesnake. The Little Mountain area contains a WSA (the Red Creek Badland) and one federally designated area of critical environmental concern (Greater Red Creek). The Little Mountain area's watersheds are highly sensitive, but trout populations have increased since 1990, as a wide range of groups has provided more than \$2 million for habitat restoration projects.

2. Adobe Town State Very Rare or Uncommon Area – As discussed above, the scenic and wilderness qualities in this area and its viewshed need to be protected from oil shale leasing in order to maintain the scenic and wilderness qualities in this area. Oil shale leasing should be precluded from this area in order to maintain FLPMA-required consistency with the state designation preventing non-coal surface mining. Portions of this area also now fall within the Adobe Town Dispersed Recreation Use Area designated under the Rawlins RMP.
3. Adobe Town Dispersed Recreation Use Area (DRUA) – The Adobe Town DRUA was established under the Rawlins RMP, and includes not only the Very Rare or Uncommon area, but also portions of the Kinney Rim North and South citizens' proposed wilderness areas, the western Powder Rim, and the Prehistoric Rim area to the east of Adobe Town.²⁶⁷ The DRUA is of high value for dispersed and primitive recreation, including

²⁶⁷ Record of Decision and Approved Resource Management Plan for Public Lands Administered by the Bureau of Land Management Rawlins Field Office, BLM, 2008, at Appendix 37, *and see* Maps 2-17 and 2-58.

hiking, wildlife viewing, hunting, and camping. It should be excluded from oil shale leasing.

4. Kinney Rim North and Kinney Rim South citizens' proposed wilderness areas – These lands provide a roadless, primitive/semi-primitive recreation experience, and represent an increasingly rare large tract of public land in the Red Desert that is free of industrial development. Parts of these now fall within the Adobe Town Dispersed Recreation Use Area designated under the Rawlins RMP.
5. The Flaming Gorge National Recreation Area – This area lays entirely within the area proposed for oil shale leasing in Wyoming. In the FPEIS, National Recreation Areas are not specifically listed as units of the National Landscape Conservation System that will be excluded from oil shale leasing.²⁶⁸ However, all of this NRA as well as its viewshed should be excluded from oil shale leasing consideration in order to preserve the scenic and recreational qualities found here.
6. Jack Morrow Hills planning area – This is an area highly important for both dispersed recreation and elk hunting. It contains the Boars Tusk and White Mountains Petroglyph Site, both of which are culturally important to Native American tribes. In addition, an archaeological site in the northwest corner of this area is an ACEC and its setting needs to be protected as well. The “most prospective” oil shale area in Wyoming includes portions of the Jack Morrow Hills planning area, a subset of the Rock Springs Field Office set aside from the Green River RMP in the 1990s for special planning due to its outstanding wildlife resources and strong public interest.

Because oil shale development includes 100% use of the lease land, and represents one of the most major types of visual intrusions possible on BLM lands, leasing should not allow any surface disturbance on lands of Visual Resource Management Class I, II, or III lands. The objectives for Class I and II lands are to “preserve” and “retain” the “existing character of the land, while Class III lands are managed to “partially retain the existing character of the land.”²⁶⁹ Oil shale development cannot possibly meet these objectives. Based on the definitions for these lands, only the objectives for VRM Class IV, which “provide for management activities which require major modification of the existing character of the landscape” and permit a level of change that is “high,” are compatible with oil shale development.²⁷⁰ In order to maintain conformity with local RMPs pursuant to FLPMA, the BLM should therefore allow oil shale leasing and development on VRM Class IV lands only.

V. Other Considerations

A. Lack of a comprehensive regulatory framework

The BLM must recognize that current federal and state rules do not adequately regulate oil shale and tar sands operations and therefore must identify and address the significant adverse environmental impacts will occur as a result of this regulatory failure. In its previous

²⁶⁸ FPEIS, at 1-10.

²⁶⁹ BLM Manual 8431 – Visual Resource Contrast Rating, Appendix 2.

²⁷⁰ *See id.*

examination of its oil shale and tar sands leasing decision, the BLM relied on statutes and regulations designed to protect the environment to argue that few, if any, significant adverse impacts on, for example, air, water and wildlife habitat. However, the BLM is mistaken to assume that these regulatory schemes will avoid the considerable environmental damage that will result from oil shale and tar sands operations on federal lands.

i. Air quality

For example, as stated above, as implemented, the Clean Air Act is ill-equipped to protect air quality from oil shale and tar sands operations. This is due, in part, to:

1. very poor air quality in areas characterized by substantial energy development activities,
2. a lack of regulatory monitors in rural areas,
3. the refusal to designate rural areas as non-attainment a failure to recognize wintertime pollution from energy exploration and development,
4. the lack of EPA-approved SIPs relating to NAAQS, as well as regional haze,
5. failure to acknowledge and regulate fugitive dust pollution, and
6. perhaps most importantly, a failure to identify stationary sources consistent with the regulatory definition of a stationary source for the purposes of determining whether it is a major source of air pollution,²⁷¹ or, alternatively, the CAA's failure to regulate many disparate minor sources of air pollution that cumulatively have significant adverse impacts on air quality.

ii. Solid and hazardous waste

Similarly, our nation's other premier environmental law contain regulatory holes that will mean that oil shale and tar sands operations will have significant adverse impacts. As the BLM is well aware, mining wastes are not adequately regulated under the Resource Conservation and Recovery Act (RCRA). Mining wastes include waste generated during the extraction, beneficiation, and processing of minerals. Most extraction and beneficiation wastes from hardrock mining (the mining of metallic ores and phosphate rock) and 20 specific mineral processing wastes are categorized by EPA as "special wastes" and have been exempted by the Mining Waste Exclusion from federal hazardous waste regulations under Subtitle C of RCRA. Similarly, wastes generated during the exploration, development, and production of crude oil, natural gas, and geothermal energy are also exempt from federal hazardous waste regulations under Subtitle C.

Specifically, EPA has determined that oil shale generated by above ground retorting or heating of oil shale operations is not considered a "Bevill" waste excluded from the pertinent regulations under RCRA Subtitle C. However, the agency also found that this process is unlikely to express a hazardous waste characteristic, and so is not likely to be a hazardous waste. EPA has not made relevant determinations relative to tar sands.

²⁷¹ *see* 40 CFR §§ 51.166(b)(5) and (b)(6) (defining source to include any "building, structure, facility, or installation," including "all of the pollutant emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons) under common control").

Importantly, although it determined that mining wastes are exempt from Subtitle C, EPA estimates that approximately seventy percent of mining wastes have hazardous characteristics.²⁷² Moreover, because the EPA remained concerned that Bevill-exempt wastes (or special wastes) could cause actual or potential harm, the EPA developed a plan to create a special regulation for Bevill-exempt industrial wastes under state and regional waste planning authority pursuant to Subtitle D of RCRA. Although the EPA decided decades ago to develop a special waste management program for Bevill-exempt wastes, it has not yet done so.²⁷³

Finally, in affected states such as Utah, mining wastes are not regulated under RCRA at all. Utah statute exempts mining wastes from even being designated as solid waste. Utah's Solid and Hazardous Waste Act states that "[s]olid waste' does not include . . . 'drilling muds, produced waters, and other wastes associated with the exploration, development, or production of oil, gas, or geothermal energy' or 'solid wastes from the extraction, beneficiation, and processing of ores and minerals.'" Utah Code Ann. §19-6-102 (18)(b)(ii) & (iv). Although these provisions conflict directly with federal law, Utah agencies have followed it religiously to exempt all mining waste from RCRA permitting.

In sum, waste from oil shale and tar sands operations will not be adequately regulated – if it is regulated at all. This means that, as a result of BLM's leasing decision, enormous piles of untreated and unconstrained wastes will be created in the affected areas, jeopardizing public health and air and water quality, as well as wildlife and recreation. The BLM must consider these likely impacts as it assesses its current proposed decision and alternatives to that decision.

iii. Water quality

A key mechanism for minimizing the environmental impacts of a development activity on water quality is the stormwater permitting process. Here again, the implementation of existing regulations fail to safeguard water quality from the impacts of oil shale and tar sands development.

For the present purposes, EPA's stormwater permitting program is based on the categorization of an activity according to its Standard Industrial Classification (SIC). Particular stormwater permits are required for particular SIC groups. Oil shale and tar sands development fall under Major Group 13, which covers various aspects of oil and gas extraction.

²⁷² Regulatory Determination for Wastes from the Extraction and Beneficiation of Ores and Minerals, 51 Fed. Reg. 24,496, 24,498 (July 3, 1986) (codified at 40 C.F.R. pt. 261) (detailing potential hazardous characteristics); *see also* U.S. ENVTL. PROT. AGENCY, RISKS POSED BY BEVILL WASTES 2 n.2 (1997), *available at* <http://www.epa.gov/osw/hazard/tsd/ldr/mine/risks.pdf>

²⁷³ *See* Regulatory Determination for Wastes from the Extraction and Beneficiation of Ores and Minerals, 51 Fed. Reg. at 24,496 ("The Administration will work with Congress to develop expanded Subtitle D authority (i.e., Federal oversight and enforcement) to support an effective State-implemented program for mining waste."); *see also* Barringer, *supra* note 32, at 155 (describing how RCRA still exempts many wastes from regulation); OFFICE OF INSPECTOR GEN., U.S. ENVTL. PROT. AGENCY, EPA CAN DO MORE TO HELP MINIMIZE HARDROCK MINING LIABILITIES 16 (1997), *available at* <http://www.epa.gov/oig/reports/1997/7100223.pdf> ("EPA has recognized for some years that it needed a more coordinated approach to effectively deal with hardrock mining issues. However, EPA has yet to develop it.").

For several reasons, this classification is inappropriate. First, retort development of oil shale and tar sands has impacts akin to hardrock or coal mining rather than oil and gas development. This is because retort development involves the stockpiling of over and interburden, as well as processed ores. These giant waste piles, whether deposited in dumps or the mine, as well as the resulting leachate, will have impacts on ground and surface waters similar to those of hardrock or coal mining, rather than oil and gas development.

Moreover, Congress has largely exempted oil and gas extraction construction and operation activities from the stormwater permitting program. However, a discharge from oil and gas activities is only exempt if it is not contaminated by contact with or has not come into contact with, any overburden, raw material, intermediate products, finished product, byproduct or waste products located on the site of such operations.²⁷⁴ Water carrying sediment is contaminated water. Yet, under 122.26(c)(1)(iii), even where a discharge from oil and gas extraction construction and operations is contaminated, the discharger need not apply for an individual stormwater discharge permit.

The same is not true for mining activity. As provided in regulations, “The operator of an existing or new discharge composed entirely of storm water from a mining operation is not required to submit a permit application unless the discharge has come into contact with, any overburden, raw material, intermediate products, finished product, byproduct or waste products located on the site of such operations.”²⁷⁵ This provision underscores that stormwater discharges from oil shale and tar sands construction and operations will not be adequately regulated as individual permits will not be required for contaminated runoff.

In sum, stormwater runoff from oil shale and tar sands operations will not be adequately regulated. This means that, as a result of BLM leasing decisions, contaminated water from enormous piles of untreated and unconstrained wastes will flow offsite, jeopardizing ground and surface water, as well as public health, wildlife and recreation. The BLM must consider these likely impacts as it assesses its current proposed decision and alternatives to that decision.

B. Energy return on investment

While not the central focus on this review, the PEIS presents the only current opportunity for the BLM to evaluate the energy quality of oil shale and tar sands. The best way to assess the energy quality is to conduct an energy return on investment analysis. Developing oil shale and tar sands would require a considerable amount of direct energy inputs, as well as water, capital, and material inputs.

An analysis of the Energy Return on Investment (EROI) of oil shale conducted by Dr. Cutler Cleveland, a Professor of Geography and Environment at Boston University, concluded that based on the most reliable studies, the EROI for oil shale falls between 1:1 and 2:1 when internal energy is counted as a cost.²⁷⁶ (Internal energy includes the energy released by the oil shale

²⁷⁴ 40 CFR § 122.26(a)(2) and (e)(8).

²⁷⁵ 40 CFR § 122.26(c)(1)(iv).

²⁷⁶ Cutler J. Cleveland and Peter O’Connor, “An Assessment of the Energy Return on Investment (EROI) of Oil Shale,” June 2010. <http://www.westernresourceadvocates.org/land/oseroi.php> (last accessed on April 29, 2011).

during production that is then used to power that operation – e.g., natural gas co-produced during extraction that is used as part of the processing.)

The EROI for oil shale is considerably less than the EROI for conventional crude, both at the wellhead and at the refined fuel stages of processing. According to Cleveland, even under marginal conditions, such as smaller and deeper wells fields, loss of artesian pressure, etc, conventional crude oil still generates a significantly larger energy surplus than oil shale – approximately 20:1.²⁷⁷

The low EROI for oil shale is not surprising. The kerogen in oil shale is a solid organic material that has not been subject to the temperature, pressure and other geologic conditions required to convert it to liquid form. In effect, humans have to supply the additional energy required to “upgrade” the oil shale resource to the functional equivalent of conventional crude oil. This extra effort carries a large energy penalty, producing a much lower EROI for oil shale.

Before expending public resources to support any future commercial development of either oil shale or tar sands, the BLM must further evaluate the EROI of both deposits. Doing so would serve the public’s understanding of the opportunity and costs of oil shale and tar sands. Notably, though, tar sands in Utah and Alberta, while sharing the same name and common traits, are vastly different deposits. Accordingly, in order the properly present the EROI of tar sands, the BLM will need to conduct additional research.

C. Health Impacts Assessment

Consistent with the CEQ’s mitigation guidance, an important issue connected to the issuance of the PEIS and (potential) initiation of commercial leasing is conducting a human health impacts assessment. CEQ’s mitigation guidance (discussed above) specifies that human health and safety are integral to mitigation planning and monitoring.²⁷⁸

Protecting human health is a pillar of NEPA, as one of the fundamental purposes of NEPA is “to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man.”²⁷⁹ The BLM must sufficiently consider the degree to which the proposed action affects public health. The PEIS should include a comprehensive discussion, both qualitative and quantitative, of the threats, the known health risks of those threats, and the populations at risk.

The best way to undertake this evaluation is to develop a formal methodology to evaluate all health issues and, in turn, develop potential mitigations. We therefore request that prior to issuing any commercial leases, the BLM undertake a Health Impact Assessment (HIA), which is a systematic, comprehensive methodology for assessing human health impacts. A HIA looks at all the possible health effects from a decision, including contaminants and air pollutants, as well as water contamination, accidents and injuries, alcoholism and substance abuse, mental health impacts, and more. Not only is this approach used by U.S. and international health agencies, but

²⁷⁷ *Id.*

²⁷⁸ 76 Fed. Reg. 3849 (February 22, 2011).

²⁷⁹ 42 USC § 4321.

it is used by the oil and gas industry itself in overseas operations. A comparable approach should also be undertaken for oil shale and tar sands development.

To be clear, a HIA would take far longer to implement than the timeframe the BLM specified for completing the PEIS and issuing a ROD. Further, without viable technologies to evaluate, it would be difficult to properly undertake a HIA. We do not want the BLM to delay the PEIS until the completion of a HIA. Rather, we want the BLM to commit to a HIA in future NEPA analyses, and to link that commitment to mitigation measures the agency might define and adopt.

The BLM should consult agencies with all relevant health expertise (such as local, regional, or state health agencies) in developing the PEIS and developing a HIA. Scientific research considering current health risks created in Canada by tar sands operations could provide an appropriate point of comparison regarding the potential public health implications for U.S. development.

Attachments:

1. Natural Resources Defense Council, Oil Shale and Tar Sands Geospatial Analysis, June 2010
2. Center for Native Ecosystems ACEC nomination (includes map), March 2007
3. Eric Molvar, Biodiversity Conservation Alliance, white paper on Greater sage-grouse, May 2011
4. SV Wiig (BLM), June 13, 2006, email; Erik Molvar notes from conversation with Wiig
5. Wyoming State Geological Survey 25/25 threshold analysis maps
6. Colorado Rare Plant Conservation Initiative, "Recommended Best Management Practices for Plants of Concern," April 2009
7. Brandt, Boak and Burnham, "Carbon Dioxide Emissions from Oil shale Derived Fuels," draft, 2009.
8. Adobe Town MLP recommendation (includes mineral ownership map)
9. Dinosaur Lowlands MLP recommendation (includes mineral ownership map)
10. Eastern Book Cliffs Piceance Basin MLP recommendation (includes mineral ownership map)
11. Shale Ridges and Canyons, Colorado MLP recommendation (includes mineral ownership map)
12. Little Mountain, WY map
13. Wyoming proposed wilderness (GIS datasets)

CENTER FOR BIOLOGICAL DIVERSITY
GRAND CANYON TRUST
LIVING RIVERS/COLORADO RIVERKEEPER

May 4, 2012
Draft OSTTS PEIS
Argonne National Laboratory
9700 S. Cass Ave
EVS/240
Argonne, IL 60439
Via e-mail

Re: Bureau of Land Management (BLM) Oil Shale and Tar Sands (OSTS) Draft
Programmatic Environmental Impact Statement (PEIS) for Colorado, Wyoming, Utah
(tri-state area).

Responsible Officials:

Thank you for the opportunity to provide comments for the Draft OSTTS PEIS; these comments, submitted by Center for Biological Diversity, Grand Canyon Trust and Living Rivers/Colorado Riverkeeper, supplement attached comments submitted by sixteen conservation groups dated April 27, 2012, which we incorporate by reference here. These supplementary comments specifically addressing cumulative impacts to water resources, air quality, climate, conservation of public lands, and conservation of threatened and endangered species. Our organizations are opposed to new or continued oil shale and tar sands development, leasing, or research on public lands. Commitments of public lands or resources to such greenhouse gas intensive energy development are incompatible with an energy or public lands policy to reduce greenhouse gas emissions on the timeframe that scientists tell us is absolutely necessary; such commitments also threaten Upper Basin water quality, water quantity, imperiled species and biological diversity, recreational, agricultural and other values.

1. Alternatives

We appreciate the work of BLM and Argonne Labs in the development of the OSTTS PEIS, however we do not fully support any of the proposed alternatives offered. It is our opinion that any study to develop unconventional oil reserves in the Colorado River Basin remains presumptuous as stated in our scoping comments of May 16, 2011. No alternative has been presented that would provide unequivocal protection of water and air resources and biological diversity in the Colorado River watershed; therefore the DPEIS as presented is incomplete and needs additional review.

If the 2005 Energy Policy Act is designed to provide energy security for the nation, it conversely creates water insecurity for the Colorado River Basin. Simply stated, water is the fundamental resource allowing any prosperity to exist in the arid Southwest and development of water

intensive energy resources such as OSTs will threaten water security for millions of downstream users.

The cumulative loading of excessive greenhouse gases and dust into the atmosphere is already causing the annual snowpack of the Colorado River System to melt faster in the spring, creating runoff that will not be absorbed into mountain watersheds. Water moving too quickly through the system prevents groundwater absorption and prevents critical aquifers from recharging.

Attempts to improve critical wildlife habitat in the Colorado River Basin are failing and especially for aquatic species. For example, the cooperative agreement for the Endangered Fish Recovery Program has been extended primarily because the original objectives have not been met, and the established goals are weakening administratively over time.

In the Lower Basin of the Colorado River, two pieces of protective legislation have been introduced by Representative Raul Grijalva (D-AZ): 1) The Lower Colorado River Protection Act, and 2) The Grand Canyon Watershed Protection Act. It is important that decision makers and federal agencies understand that fossil and nuclear fuel development in the Upper Basin of the Colorado River, as detailed in the 2005 Energy Policy Act, would nullify the intent of this proposed legislation, if it is ever passed, and harm the drinking water supply of 25 million downstream users.

In the Upper Basin, downstream water users came together with citizens of Moab, Utah to effect cleanup of the massive Atlas uranium mill tailings pile on the banks of the Colorado River. If watershed protection legislation had been implemented decades ago, for the entire Colorado River System, taxpayers would not be saddled with paying to clean up toxic waste dumps sited in the river floodplain. Sane energy policy would include protecting and securing the water resources of the Colorado River System in perpetuity.

2. Water Resources

The Colorado River Basin no longer has surplus water. According to recent science compiled by the Department of Interior: 1) the Colorado River Compact is over-allocated by 2 million acre feet; 2) the demand for Colorado River water presently exceeds the natural supply; 3) the annual supply in the last 50 years has decreased one million acre-feet, and; 4) the decline in the annual flow is expected to further reduce another one million acre-feet by 2060. Excluded from these studies is the annual loss of 750,000 acre-feet due to sublimation of the Rocky Mountain snowpack caused by fugitive dust derived from human activity and increasing aridity from anthropogenic climate change.

According to the GAO report on oil shale development in the tri-state area, the amount of water necessary to fully develop this reserve is equivalent to 30 to 40 years of the entire Colorado River supply. Since water supply and demand is clearly imbalanced in the basin, all proposed OSTs development can only be speculative. Oil corporations may deliver clever messaging to the public about the ample resource awaiting full exploitation, but there is not enough water in the system to practically begin that development in the next decade. Also, there is no guarantee that existing water resources will not be further degraded by current development activity.

The Uintah Basin watershed in Utah contains two types of aquifers, shallow and deep. Deep aquifers would be completely exhausted by proposed strip mining and processing operations in

the region. Eventually, to continue mining, developers would have to procure water from the mainstems; the White, Green and Colorado Rivers. These water sources are currently over-allocated to downstream users.

In a strip mining scenario in the Uintah Basin, shallow aquifers, comprised of alluvium, would be transformed into piles of rubble and dust. Cloudbursts would mobilize toxins from residual chemical solvents used in processing, and stored in surface waste pits, and send them downstream toward the mainstems. The Colorado River via Westwater Creek is the closest mainstem to the PR Springs Special Tar Sands District. The mouth of Westwater Creek is home to a population of humpback chub in Westwater Canyon. Desolation Canyon on the Green River is prime spawning habitat for the Colorado Pike minnow. Labyrinth and Stillwater Canyons on the Green are prime nursery habitat for all the endangered fish species of the Colorado River.

In regard to oil shale development, for mining and surface retorting, water is needed for dust control during materials distraction, crushing, and transport; for cooling and reclaiming spent shale; for upgrading raw shale oil; and for various plant utilities associated with power production and environmental control (Bartis et al. 2005). The U.S. Water Resources Council estimates that oil shale development will increase annual consumptive water use in the Upper Colorado Region by about 150,000 acre-feet per year for each million barrels per day of production (Bartis et al. 2005). While the in situ process reduces a number of these water requirements, the facilities will still need considerable volumes for oil/natural gas extraction, postextraction cooling, products upgrading and refining, environmental control systems and power production (Bartis et al. 2005). Likewise, tar sands production also relies on large amounts of water (Dyer et al. 2008). It takes approximately 2-4.5 barrels of water to extract and upgrade one barrel of oil from a tar sands mine (Dyer et al. 2008). This is important because at the same time production of fuel from oil shale and tar sands in the U.S. will depend on large amounts of water, the greenhouse gas emissions from the project will contribute to the global warming which dangerously threatens the water supply.

In a recent article published in *Science*, researchers found that an increase in atmospheric greenhouse gases has contributed to a “coming crisis in water supply for the western United States” (Barnett 2008). The research found that between 1950 and 1999, a shift in the character of mountain precipitation occurred, with more winter precipitation falling as rain instead of snow, earlier snow melt, and associated changes in river flow (Barnett 2008). The variants among the “most important metrics of the western and the average January through March temperatures in the mountainous regions of the western U.S. (Barnett 2008). Using several climate models and comparing the results, the researchers found that “warmer temperatures accompany” decreases in snow pack and precipitation and the timing of runoff, impacting river flow and water levels (Barnett 2008). These researchers concluded with high confidence that up to 60 percent of the “climate related trends of river flow, winter air temperature and snow pack between 1950-1999” are human-induced (Barnett 2008). This, the researchers wrote, is “not good news for those living in the western United States.” (Barnett 2008).

The impact greenhouse gas emissions and global warming is having on the western United States’ water resources is a critical consideration that the BLM must analyze in its final EIS. Likewise, it must analyze how the changes in the water systems in the project area will affect plants and animals that will be impacted by the project. Many species will be detrimentally

affected not only by the direct impact of water usage by oil shale and tar sands facilities, but also by the cumulative impact the facilities will have on global warming and the resulting adverse effect on the river flow and water levels. The DPEIS must also analyze how the project's direct impact on species from impacts like habitat destruction may act in a cumulative and synergistic way with impacts to species from global warming.

3. Air Quality

We emphatically endorse the comments of our colleagues, Western Resource Advocates et al regarding air quality issues in attached document. Specifically, more time should be taken to adequately study cumulative air impacts establishing baseline information for existing impacts from industrial development in the region covered by the OSTs PEIS and from the reasonably foreseeable development scenario proposed as required by NEPA.

In Utah, air quality monitoring in the heavily developed Uintah Basin over the past two winters revealed some of the nation's highest ozone measurements, even outpacing San Bernardino County in Los Angeles. Emissions from Uintah and Duchesne counties' 15,000 oil and gas wells are suspect. The problem is being investigated in a 5.5 million dollar study conducted by the state, NOAA, EPA, the University of Colorado, BLM, the Energy Dynamics Lab, Uintah Impact Mitigation Special Service District and the Western Energy Alliance. Preliminary results and conclusions are scheduled for release in July 2012, however due to the lack of snow on the ground this winter which contributes to ozone formation; data gathered in winter 2012 will not reflect conditions present during snowy years.

Air quality data used for analysis in the OSTs PEIS, if obtained from industry sources, should be verified by BLM, EPA, NOAA or some entity without financial interests in development scenarios.

Fugitive emissions from oil and gas development infrastructure including pipelines, compressor stations, wells, storage tanks and transport trucks is a major source of methane, Volatile Organic Chemicals and Hazardous Air Pollutants, all of which is unmonitored and unmeasured. The DPEIS must assess and acknowledge impacts from fugitive emissions. The EPA has used FLIR video cameras to reveal the presence of these otherwise "invisible" sources. For example see www.youtube.com/watch?v=N2cHGx0Q1qM&feature=relmfu

For a comprehensive database on known chemicals used in the oil and gas development industry and their effects on human health please see www.endocrinedisruption.com . The population of the Uintah Basin is at 30,000 residents, and any heavily concentrated oil/gas development scenario such as proposed in the OSTs PEIS, which augments existing impacts, should assess possible effects on human health.

a. The DPEIS Must Assess Carbon Dioxide Emissions

Carbon dioxide is one of the most important greenhouse gases and tends to stay in the atmosphere for centuries (Archer 2005). The IPCC found that emission rates of carbon dioxide have grown by 80 percent from 1970 to 2004 and that the 2005 atmospheric concentration of carbon dioxide at 379 parts per million greatly exceeded the natural range over the last 650,000

years (Bernstein et al. 2007). The rise of carbon dioxide emissions in the air is commensurate with the rise of global temperatures.

Scientists have described the atmospheric carbon dioxide ceiling that must not be exceeded in order to avoid a dangerous rise in temperatures. Previously, scientists have described this “ceiling” as approximately 450 parts per million (ppm) of carbon dioxide, and have warned that this may need to be adjusted downwards (Hansen 2006, Hansen 2006a,b). Recently, Dr. James Hansen has stated that the limit will need to be revised downward to 350 ppm (McKibben 2007). We are already well past that ceiling at 383 ppm (McKibben 2007).

It is possible to slow and then reverse the increase in carbon dioxide emissions concentrations by slashing anthropogenic emissions, improving land use, and utilizing alternative energy sources. See, e.g. Hansen 2006, Hansen et al. 2006a,b; Hansen and Sato 2004. However, the necessary measures have not yet been implemented, and carbon dioxide emissions have continued to increase by 2 percent per year since 2000 (Hansen 2006; Hansen et al. 2006a,b). If this growth continues, the 35 percent increase in carbon dioxide emission between 2000 and 2015 will make it impossible to get below even the previously identified ceiling of 450 ppm (Hansen 2006; Hansen et al. 2006a,b).

b. The DPEIS Must Assess Methane Emissions

Methane is the most important of the non-CO₂ pollutants, with a global warming potential 21 times greater than carbon dioxide, and an atmospheric lifetime of 12 years (Forster and Ramaswamy 2007). Methane constitutes approximately 20% of the anthropogenic greenhouse effect globally, the largest contribution of the non-CO₂ gases. As a precursor to tropospheric ozone, methane emissions have an even more powerful impact on climate. In the Arctic, which is already struggling in the face of global warming, this impact is strongest in winter months, which can result in an acceleration of the onset of spring melt (Shindell 2007). Tropospheric ozone, unlike other greenhouse gases, absorbs both infrared radiation and shortwave radiation (visible light). Thus, tropospheric ozone is a particularly powerful greenhouse gas over highly reflective surfaces like the Arctic, because it traps shortwave radiation both as it enters the Earth’s atmosphere from the sun and when it is reflected back out again by snow and ice. Reducing global methane emissions will reduce ozone concentrations in the sensitive Arctic and elsewhere.

c. The DPEIS Must Assess Black Carbon or Soot Emissions

Black carbon, or soot, consists of particles or aerosols released through the inefficient burning of fossil fuels, biofuels, and biomass (Quinn et al. 2007). Black carbon warms the atmosphere, but it is a solid, not a gas. Unlike greenhouse gases, which warm the atmosphere by absorbing longwave infra-red radiation, soot has a warming impact because it absorbs shortwave radiation, or visible light (Chameides and Bergin 2002). Black carbon is an extremely powerful greenhouse pollutant. Scientists have described the average global warming potential of black carbon as about 500 times that of carbon dioxide over a 100 year period (Hansen et al. 2007; *see also* Reddy and Boucher 2007). This powerful warming impact is remarkable given that black carbon remains in the atmosphere for only about four to seven days, with a mean residence time of 5.3 days (Reddy and Boucher 2007).

Black carbon presents a particularly troubling problem for the Arctic. It contributes to warming in this region through the formation of “Arctic haze” and through deposition on snow and ice which increases heat absorption (Quinn et al. 2007; Reddy and Boucher 2007). Arctic haze results from a number of aerosols in addition to black carbon, including sulfate and nitrate (Quinn et al. 2007). The effects of Arctic haze may be to either increase or decrease warming, but when the haze contains high amounts of soot, it absorbs incoming solar radiation and leads to heating (Quinn et al. 2007).

Soot also contributes to heating when it is deposited on snow because it reduces reflectivity of the white snow and instead tends to absorb radiation. A recent study indicates that the direct warming effect of black carbon on snow can be three times as strong as that due to carbon dioxide during springtime in the Arctic (Flanner 2007). Black carbon emissions that occur in or near the Arctic contribute the most to the melting of the far north (Reddy and Boucher 2007; Quinn et al. 2007). Black carbon is a significant contributor to global climate change, and, like methane and carbon dioxide, its emissions must be reduced to curb future warming of the earth.

d. The DPEIS Must Assess Nitrous Oxide and All Other Greenhouse Gas Pollutants

Nitrous oxide has a global warming potential 310 times that of carbon dioxide and an atmospheric lifetime of approximately 114 years (Forster and Ramaswamy 2007). It constitutes the second largest proportion of anthropogenic non-CO₂ gases at 7%. The main sources of nitrous oxide emissions are agriculture, wastewater, fossil fuel combustion, and industrial adipic and nitric acid production. As discussed further below, because oil shale and tar sands production relies heavily on fossil fuel combustion, and because the fuel eventually produced will also be burned by consumers, the project will likely lead to an increase in nitrous oxide emissions. The BLM must explore these emissions in its DPEIS. The BLM must also discuss any other greenhouse gas pollutants that may result from the proposed project.

In sum, the science concerning greenhouse gases and global warming is advanced and makes clear that we must stop the growth of greenhouse gas emissions, and then rapidly reduce overall emissions to a very small fraction of current levels. The DPEIS fails to fully acknowledge this critical context in which the oil shale and tar sands development’s greenhouse gas emissions must be analyzed. The greenhouse gas intensive oil shale and tar sands development is completely incompatible with any rational energy policy to reduce greenhouse gas emissions on the timeframe that scientists tell us is absolutely necessary. Without analyzing the greenhouse gas emissions from the proposal within the overall context of the climate crisis we are facing, the BLM cannot comply with its legal obligations to fully analyze and disclose the unacceptable impact that a commercial leasing program will have on the environment.

4. Public Lands

The current custom and culture of the BLM allows even multi-national corporations to appropriate U.S. public lands and sue the federal government for obstructing their rights to develop wherever they please even when The Department of Interior chooses to withdraw certain special lands from mining activity. Such is the case with Interior’s recent uranium mining withdrawal at the Grand Canyon. Clearly there is a need for reform of the system. In the interim

we are losing far more public land to destructive industrial development than is being protected by conservation measures; this status is not representative of balanced management.

When the BLM was established in 1946 from the melding of the General Land Office and the Grazing Service, a preference for mining and grazing uses for federal public lands was embedded in the culture of the agency. Although implementation of the Federal Land Policy and Management Act of 1976 allowed public participation in creation of BLM Resource Management Plans and gave a voice to other user groups such as hunters, fishermen, recreationists and other values such as clean air, clean water, intact wildlife habitat and wilderness; it did not effectively loosen the preferential grip of mining and grazing interests on public lands. We understand that Multiple Use does not mean every use on every acre of land, however the mining activities covered in the OSTs PEIS would relegate proposed mining areas to a single use in perpetuity. We do not believe that is an acceptable outcome.

The Tavaputs Plateau and the Uinta Basin of northeast Utah includes Dinosaur National Monument, Flaming Gorge National Recreation Area, and counties including Daggett, Duchesne, Carbon, Emery, Grand and Uintah. The BLM has identified about 650,000 total acres of potential contiguous wilderness in northeast Utah. These units include Bull Canyon (12,297 acres), Coal Canyon (61,430 acres), Cold Spring Mountain (17,682 acres), Cripple Cowboy (15,200 acres) Daniels Canyon (2,496 acres), Desolation Canyon (290,845 acres), Diamond Breaks (35,380 acres), Floy Canyon (72,605 acres), Flume Canyon (50,800 acres), Jack Canyon (7,500 acres), Moonshine Draw (3,900 acres), Turtle Canyon (33,690 acres), Spruce Canyon (20,900 acres), White River (13,500 acres) Westwater Creek (10,100 acres), Wild Mountain (500 acres). Additionally, the citizen's proposal contained in America's Red Rock Wilderness Act identifies a total of 838,600 acres of wilderness in this region.

The special tar sands districts in the San Rafael Swell, the Triangle Tar Sands and White Canyon should be completely eliminated from the PEIS for reasons of their close proximity to extensive wilderness lands, Canyonlands National Park, Capitol Reef National Park, Glen Canyon National Recreation Area and the formerly proposed San Rafael Swell National Monument.

Keeping these wilderness lands intact is an excellent opportunity to preserve pristine ecosystem functions for both wildlife and human enjoyment. In Utah, surface and underground mining for either tar sands or oil shale would be devastating to wilderness and national park values. Which of these uses is an appropriate and balanced management decision for the nation's public lands?

5. The Program Would Not Meet the Requirements of Section 369 of the EPL Act. Oil Shale and Tar Sands Development Cannot Proceed Because, as the DPEIS Demonstrates, it Cannot Be Done in an "Environmentally Sound Manner."

Section 369 of the EPL Act makes clear that as a substantive matter, oil shale or tar sands development on public lands in the Rockies may proceed, if at all, only in an "environmentally sound manner." Thus, while NEPA standing alone does not necessarily mandate an environmentally sound outcome as a substantive matter, such result is required here. See, e.g., *Wyo. Outdoor Council v. U.S. Army Corps of Eng'rs*, 351 F. Supp. 2d 1232, 1240 (D. Wyo. 2005) ("NEPA mandates that federal agencies take into consideration the impacts of their actions on the environment in the hopes that such consideration will lead to environmentally sound decisions that balance the needs of humans and the environment in which they live").

The DPEIS and other studies demonstrate, however, that oil shale and tar sands development, as would be facilitated by the proposed action, would not proceed in an “environmentally sound” way. According to the DPEIS, the proposed development could destroy habitat, alter topography, displace birds and animals, kill animals, destroy plants including many oil shale endemic species, and could even drive some highly imperiled plant species to extinction, like the clay reed-mustard, Dudley Bluffs bladderpod, Dudley Bluffs twinpod, shrubby reed-mustard, and Uinta Basin hookless cactus. It will also, as described below, require vast energy inputs that may produce up to four times more greenhouse gas pollution than conventional oil production—rendering a global warming impact that the nation and world simply cannot afford.

Indeed, such impacts are not just possible, but quite likely. Many studies have documented the severe environmental effects of oil shale and tar sands development. See, e.g., Environmental Defence (2008) at 7-18 (documenting impacts of tar sands development, including toxic contamination of air and water, and increased global warming); WWF (2008) at 13-53 (documenting impacts to land, air, water, and climate); Rand (2005) at 35-43 (documenting environmental and social impacts of oil shale development in the United States); OTAa (1980) at 255-356 (discussing environmental considerations relevant to oil shale development in the United States); OTAb. For example, tar sands development in Canada is some of the most polluting, toxic, greenhouse-gas emitting, energy-intensive, destructive, and unsustainable activities on earth, and it is most certainly not “environmentally sound.” Environmental Defence (2008); WWF (2008). Oil shale development on public lands is likely to have longlasting, devastating consequences. Rand (2005); OTAa (1980). As unconventional sources of fossil fuel energy, there really is no way to avoid the insidious impacts that will inevitably result from oil shale and tar sands development, or minimize them to an “acceptable” degree.

At the very least, it is clear that the BLM lacks sufficient information to be able to evaluate fully the environmental consequences of such development—in particular, about project-specific technologies and their impacts to sensitive species and their habitats—as the agency itself acknowledges. If the BLM cannot determine whether oil shale and tar sands development will proceed in an environmentally sound manner, it cannot proceed with the proposed action.

6. The DPEIS Must Analyze Greenhouse Gas Emissions’ Threat to Ecosystems and Endangered Species

The dangerous consequences of continued “business as usual” greenhouse gas emissions are all too foreseeable. Global warming is already profoundly changing our planet, representing the most significant and pervasive threat to biodiversity worldwide and affecting both terrestrial and marine species from the tropics to the poles.

The IPCC report recognizes this, finding that the resilience of several ecosystems is likely to be overcome this century by a dangerous brew of climate change, associated disturbances, such as flooding, drought, wildfire, insects and ocean acidification, and other environmental drivers like pollution and over-exploitation of resources (Bernstein et al. 2007). Along with increases in global average temperatures beyond 1.5-2.5° C and accompanying increased levels of atmospheric carbon dioxide concentrations will come major changes in ecosystem structure and function, species’ ecological interactions, and species’ geographical ranges (Bernstein et al.

2007). In fact, global warming has already resulted in the extinction of at least dozens of species (Pounds et al. 2006). Absent major reductions in greenhouse gas emissions, by the middle of this century upwards of 35 percent of the earth's species will be extinct or committed to extinction as a result of global warming (Thomas et al. 2004).

Other scientific reports have reached the same conclusion as the IPCC that anthropogenic warming has had a recognizable influence on biological systems (Adger et al. 2007). In a study published in *Nature* in 2003, the authors reported a “globally coherent fingerprint of climate change impacts across natural systems” (Parmesan and Yohe 2003). In documenting this “fingerprint” of global warming on ecosystems, scientists have predicted three categories of measurable impacts from recent warming: (1) earlier timing of spring events and later autumn events (i.e. changes in “phenology”), (2) extension of species' range poleward or upward in elevation, and (3) a decline in species adapted to cold temperatures and an increase in species adapted to warm temperatures (Parmesan and Galbraith 2003).

In the abstract, changes in phenology, distribution, or even an abundance of a species may not by themselves be harmful to the species' long-term persistence. But if such changes put essential life history traits of the species out of sync with other components of the ecosystem, or if natural or anthropogenic barriers prevent poleward or upward migration, the consequences can be catastrophic.

The Edith's checkerspot butterfly (*Euphydryas editha*) and the American pika (*Ochotona princeps*), two North American species, demonstrate such deleterious effects of global warming. The Edith's checkerspot butterfly is one of the first species for which scientists documented a clear range shift due to global warming. The butterfly's range has moved both northward and upward in elevation in response to a 0.72° C increase in regional warming (Parmesan and Yohe 2003). The range shift was not due to butterfly populations actually moving, but instead to a higher proportion of population extinctions in the southern and lowland portions of the range (Parmesan and Yohe 2003). These population extinctions are the result of the fact that the species' host plant, *Plantago erecta*, now develops earlier in the spring, while the butterfly's caterpillars continue to hatch at the same time (Parmesan and Yohe 2003). As a result, the caterpillars now hatch on plants that have already completed their lifecycle and dried up, instead of on younger edible plants (Parmesan and Yohe 2003). The tiny checkerspot caterpillars are unable to move far enough to find other food and, as a result, starve to death (Parmesan and Yohe 2003).

Another animal struggling under the heavy hand of climate change is the American pika. This small mammal, a relative of the rabbit, is adapted to life in talus piles on high, treeless mountain peaks. Fossil evidence demonstrates that pikas once ranged widely over North America, but their range has contracted to a dwindling number of isolated peaks during the warm periods of the last 12,000 years (Krajick 2004). Pikas are limited by their metabolic adaptation to their cold habitat niche (Krajick 2004).

Hence, while more mobile alpine species such as birds may be able to shift their ranges poleward as warming temperatures and advancing treelines, competitors, and predators impact their mountain habitat, pikas are generally incapable of such long range dispersal (Krajick 2004).

Rather, they can only migrate upslope as the climate warms (Krajick2004). In large portions of its range, however, the American pika is already occupying the highest elevation talus habitats that exist on a given mountain range; in such cases there is no upslope habitat to migrate to, and the mountain's population will ultimately disappear as the climate continues to warm. Already, at least 9 of 25 (36%) of pika populations found in the Great Basin have been extirpated and the pika range has shifted upslope by 900 feet in this region. This small creature may well become one of global warming's first victims.

Species like the checkerspot butterfly and American pika demonstrate how climate change brought about by global warming will influence the earth's biodiversity as various species struggle to adapt to their changing habitats. Likewise, sensitive ecosystems, some literally melting under the impacts of global warming, have provided even more evidence of the dire consequence global warming will have on the earth's biological balance.

Thank you for your consideration of these comments.

Sincerely,

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