CANYONLANDS WATERSHED COUNCIL
CENTER FOR BIOLOGICAL DIVERSITY
GRAND CANYON TRUST
LIVING RIVERS/COLORADO RIVERKEEPER

May 7, 2012

DELIVERED BY EMAIL
BLM_UT_MB_Comments_2@blm.gov, Brent_Northrup@blm.gov

Bureau of Land Management
Moab Field Office
82 East Dogwood
Moab, Utah, 84532
E-mail: BLM_UT_Comments_2@blm.gov
Fax: (435) 259-2106

Re: Scoping comments Master Leasing Plan (MLP) for oil, gas, and potash (OG&P) extraction. An Environmental Impact Statement (EIS) of the Canyon Country District of southeast Utah.

Dear Mr. Brent Northrup:

Thank you for this opportunity to provide scoping comments to the Bureau of Land Management, Canyon Country District. This document is provided by Canyonlands Watershed Council (CWC), Grand Canyon Trust and Living Rivers/Colorado Riverkeeper. This coalition of NGOs is herein referred to as CWC.

CWC is non-profit conservation organization based in Moab, Utah. Its mission is to promote and protect the health of southeastern Utah's water and watersheds. We are currently a participant in the Moab Area Watershed Partnership, a multi-stakeholder group (including BLM, local, state and federal government as well as several NGOs) that is preparing a watershed plan for for Moab's and Castle Valley's municipal watersheds. By doing this we protect the single most important resource we have for ensuring continued community prosperity: our water supply. We hope that, as the MLP planning process continues alongside the watershed planning process, the results of the MAWP watershed planning process can be incorporated into the MLP.

Grand Canyon Trust is a non-profit organization based in Flagstaff, Arizona with staff and offices in Grand County, Utah. Its mission is to protect and restore the natural resources of the Colorado Plateau.

Living Rivers/Colorado Riverkeeper is a non-profit organization based in Moab, Utah. Its mission is to restore the biological integrity of the Colorado RIver and its tributaries.

Center for Biological Diversity is a non-profit organization based in Tucson, Arizona. Its mission focuses on protecting the lands, waters and climate that species need to survive.

Our coalition also endorses the comments submitted by Southern Utah Wilderness Alliance et al., on this date, which we incorporate by reference here.

Contents

1. INTRODUCTION

The need and purpose of this EIS is to amend the 2008 Resource Management Plan of the Moab and Monticello Field Offices as it relates to leasing parcels to corporations for developing fossil fuel energy and potash on 783,000 acres of federal public lands in Grand and San Juan counties. (Federal Register Notice; MAP;)

The EIS team must heed the two Secretarial Orders that provide protocols for addressing climate change and utilizing the best available, rigorous science for vetting this EIS. (SO # 3289 & SO # 3305**).**

THE MLP EIS must also be guided by the prescriptions set forth by the Council of Environmental Quality as they relate to the effects of climate change and greenhouse gas emissions.[1]

2. COOPERATING AGENCIES

BLM must consult with the Environmental Protection Agency (Region 8), US Fish and Wildlife Service, Utah Division of Wildlife Resources, Manti-La Sal National Forest Service, Southeastern Utah Group of the National Park Service, USGS Southwest Biological Science Center, USGS Utah Water Science Center, Utah Geological Survey, National Oceanic and Atmospheric Administration in Boulder, CO, the First Nations, Utah Division of State History, National Register of Historic Places, Utah Museum of Natural History, Office of the State Paleontologist, and the School and Institutional Trust Lands Administration.

3. OVER-ARCHING CONCERN

Our organizations (herein referred to as CWC) are opposed to new or continued fossil fuel and potash development on public lands until the federal government provides affirmative legislation that provides unfailing protection of water, air and soil resources in the Colorado River basin. The degradation of these resources manifests itself in the following ways:

1. Colorado River reservoirs are now being managed to respond to water shortages with prescriptive and enforceable conservation measures.
2. Fugitive dust due to the cumulative effects of surface-disturbing activities on the Colorado Plateau is a persistent springtime event that is reducing the yield of snow reserves, especially at elevations above 8,000 feet.
3. Emissions from fossil fuel development in the Uinta Basin and the Canyonlands Province are measurably affecting the air quality of rural communities and our vistas at national parks and BLM recreation areas.

Commitments of public resources to greenhouse gas-intensive energy development are incompatible with an energy or public lands policy to reduce greenhouse gas emissions. Such commitments threaten regional water quality, water quantity, imperiled species and biological diversity, recreational, agricultural and other values.

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[1] http://ceq.hss.doe.gov/nepa/regs/Consideration_of_Effects_of_GHG_Draft_NEPA_Guidance_FINAL_02182010.pdf

The 2005 Energy Policy Act, which purports to provide energy security for the nation, contributes to water insecurity for the Colorado River Basin and the planning area. 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 ground-water absorption and prevents critical aquifers from recharging.

Attempts to improve critical wildlife habitat in the Colorado River Basin are failing, especially for aquatic species. For example, the cooperative agreement for the Upper Basin Endangered Fish Recovery Program has been extended primarily because the original objectives have not been met.

In the Moab MLP EIS, BLM must consider that the cumulative impact of fossil and nuclear fuel development in the Upper Basin of the Colorado River is likely to harm the agricultural viability, ecosystem function, and drinking water supply of regional residents as well as 25 million downstream users.

Federal legislation and planning should be moving in the opposite direction of planning for increased ecological resilience in the face of rising temperatures the planning area and throughout the region, and for reducing the emission of greenhouse gases. For example, protective legislation involving mineral withdrawals have been introduced by Representative Raul Grijalva (D-AZ): 1) The Lower Colorado River Protection Act,[2] and 2) The Grand Canyon Watershed Protection Act.[3] 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.

The EIS and MLP should look at protecting important natural resources for long-term viability rather than facilitating short-term profits through mineral development. Sane energy policy would include protecting and securing the water resources of the Colorado River System in perpetuity.

4. RECOMMENDATIONS FOR THE DRAFT PLAN

a. A “no further leasing” alternative should be prepared

A “no further leasing” alternative would serve to establish baseline data and monitoring of natural and cultural resources in the district. Such an alternative shoudl include analysis of the possible landscape restoration efforts, both active and passive, that could be undertaken under these circumstances, comparing the value of healthy ecosystems to the number and quality of jobs extraction realistically provides.

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[2] H.R. 3481 Lower Colorado River Protection Act http://thomas.loc.gov/cgi-bin/query/z?c111:H.R.3481:

[3] H.R. 644 Grand Canyon Watersheds Protection Act of 2009
http://thomas.loc.gov/cgi-bin/query/z?c111:H.R.644:

It is presumptuous to implement a master plan at this time when Congress is poised to review, for example, stipulations as regards to hydrofracking practices. There is uncertainty as to the establishment of wilderness in Grand County, as recently recommended by Secretary Salazar. There is also uncertainty about the expansion of Canyonlands National Park. For these reason it is prudent to provide a no leasing alternative to the MLP EIS process until these uncertainties are resolved.

In addition to the "no leasing" alternative, the MLP EIS must provide an alternative that gives preference to other user groups' needs over mineral development interests.

b. The watershed approach to land planning

The watershed approach has been articulated by the Environmental Protection Agency at the following website: http://water.epa.gov/type/watersheds/approach.cfm. As stated by the EPA, "A watershed approach is the most effective framework to address today's water resource challenges. Watersheds supply drinking water, provide recreation and respite, and sustain life. More than $450 billion in food and fiber, manufactured goods, and tourism depends on clean water and healthy watersheds."

CWC endorses this framework and recommends that the BLM craft an alternative that places the protection of water, land, air and cultural resources on a higher tier of development than the extraction of nuclear and fossil fuels and minerals. CWC foresees such a framework as producing an unique model for the rest of the region to implement, and CWC would offer to assist MLP EIS planners in its development.

Secretary Salazar has hailed the Colorado River as the most vulnerable river system (watershed) in the United States. The BLM must initiate much firmer stipulations, such as precluding drilling redundant and speculative wildcat wells and restricting well pads from impacting proposed wilderness areas, national parks, and scenic byways and trails. BLM must begin to restore many of the unreclaimed well pads throughout southeast Utah.

i. Elements for consideration to the watershed approach

The BLM must withdraw the Lockhart Basin from development to protect its scenic resources and to allow for a Greater Canyonlands National Monument to be established in the near term. Completion of Canyonlands National Park has been a conservation objective since the park was established in 1964. BLM must also create a reasonable buffer zone around the entire perimeter of Arches National Park, and preferably establishing a no drilling zone on the internationally significant federal lands lying between Arches and Canyonlands National Parks. Another logical withdrawal would include all public lands east of the Colorado River in the vicinity of Fisher Valley, Professor Valley, and Castle Valley for reasons that that these lands have watershed, ranchland, scenic, wildlife and recreational values.

BLM must withdraw all public lands in the planning area from speculative potash development, since the exorbitant amount of water required for such mining operations will affect the entire Colorado River basin. The Basin's water resources are presently over-allocated and experiencing diminished annual yields with each passing decade. Such a decision would calm the impending conflict over water rights in the basin.

The BLM must clearly define and articulate all watershed protection zones and withdraw extractive activities to protect water supplies for communities, national parks, and wildlife species at risk. The BLM must allocate funding to install water and air monitoring stations at strategically optimum places. The BLM can continue to advocate and enforce protection for Areas of Critical Environmental Concern (ACEC) and proposed wild and scenic river corridors.

The BLM must enhance vegetation management programs to consider the following issues: the reclamation of past disturbances, soil stabilization, soil nutrient cycles, watershed health, the aesthetic role of vegetation in the landscape, and the potential ramifications of a loss of vegetation productivity as a result of climate change and severe and sustained drought conditions. This would also include the control and eradication of noxious weeds and invasive non-native tree species such as the tamarisk monoculture, Russian olive and Chinese elm.

The BLM must impel industry to recycle fracking wastewater and recover all hydrocarbon wastes and emissions so that cumulative impacts can be significantly reduced. The BLM must close redundant roads to control fugitive dust and reduce sediment loads in the Colorado River as well as requiring any new operations to use existing roads to the greatest extent possible.

The Department of Interior and the Department of Agriculture must provide funds and programming exclusive to the Canyon Country District, to improve water quality and to increase water quantity over time. The execution of the programming could be coordinated with the Moab Area Watershed Partnership and the Utah Division of Water Quality. This would create high-quality local jobs and provide people with opportunities to conserve, protect and appreciate the watershed values of this landscape.

c. Incorporating meaningful mitigation analysis into the EIS

The EIS must explain what mitigation is possible, and at what financial cost, for areas proposed to be open to mineral extraction despite numerous resource concerns. In some EIS documents, area analysis reports for areas with few proposed restrictions often list a host of potential resource impacts (e.g., sensitive soils, presence in critical winter mule deer habitat, multiple stream crossings, or running through potential sage grouse brood rearing habitat), and then answer “YES”, with no explanation, to the question of whether the impacts to the above sensitive resources be avoided, minimized or mitigated.

In the DEIS, the public needs to be able to see for each area where the BLM considers resources concerns to be mitigatable (a) what type of mitigation is being considered; and (b) what the estimated cost of that mitigation would be, and (c) whether or not the BLM has the funds and staff to conduct the mitigation and future monitoring to ensure that permittees remain in compliance with the regulations for which impacts are being mitigated. For an impact to be considered mitigatable under NEPA, BLM must demonstrate that specific and effective mitigating can and will be performed.

d. Alternatives must include plans for enforcement of regulations

Given the wide and remote nature of much of the planning area, we are afraid that BLM will be unable to enforce the regulations and permit stipulations put forth in the MLP. Citizens, federal employees and media outlets report a widespread flouting of regulations in more heavily booming areas like the Uintah Basin. While the Moab planning area does not currently see that

level of development, a rise in mineral prices could forseeably create similar conditions--where extraction activities far outstrip BLM's ability to monitor them.

BLM must document how it credibly expects to enforce the rules the EIS claims will protect resource values--on a practical budget and staffing level. It is the responsibility of BLM to include in its plan real and effective consequences for permittees if they do not follow the stipulations of their contracts. Without enforcement, stipulations and mitigating measures cannot be counted as effective for EIS analysis purposes.

5. WATER RESOURCES

a. Current Climate

Moab's present climate can be described as a high-elevation desert that experiences cold winters and hot summers, with monsoonal cloudbursts that consistently occur in the summer and fall. The moisture for these summer storms is usually derived from evaporation at the Gulf of Mexico. The wettest month in Moab is October (1.16 inches) followed by April (.98 inches).

The elevation of Moab is 3,967 feet and the elevation of Mt. Peale is 12,721 feet. The vertical relief between Moab and Mt. Peale is 8,754 feet. The average precipitation at the Colorado River bridge in Moab is about 9 inches per year. The average rainfall on the slopes of the La Sal Mountains is not precisely known, but is thought to be somewhere between 35 and 40 inches per year.

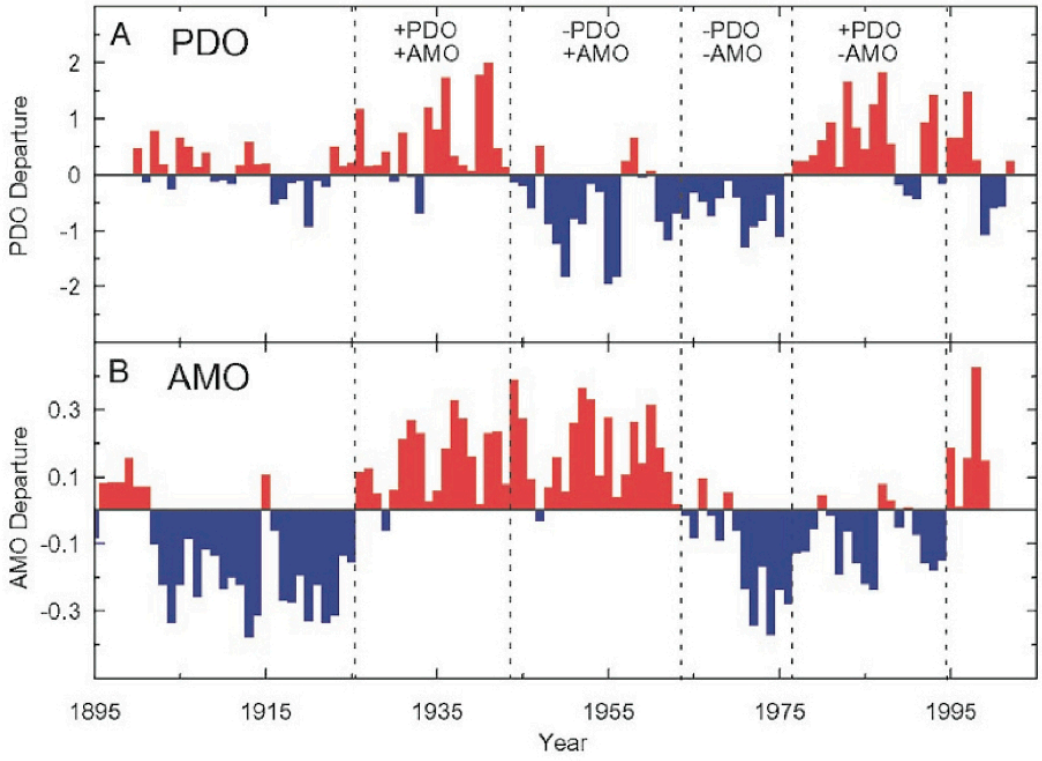
Figure No. 1: Precipitation and temperature of select places in Grand County.

	Arches National Park HQ				Thompson				Moab				Canyonlands (The Neck)			
	4,130 feet elevation (1,259 m)				5,151 feet elevation (1,570 m)				3,967 feet elevation (1,209 m)				5,899 feet elevation (1,798 m)			
	1980-2000				1948-1994				1893-1992				1965-2000			
Month	Maximum Temp •F	Minimum Temp •F	Average Temp •F	Average Precip *(inches)*	Maximum Temp •F	Minimum Temp •F	Average Temp •F	Average Precip *(inches)*	Maximum Temp •F	Minimum Temp •F	Average Temp •F	Average Precip *(inches)*	Maximum Temp •F	Minimum Temp •F	Average Temp •F	Average Precip *(inches)*
Jan	42.8	20.0	31.4	0.58	37.1	14.6	25.9	0.8	42.0	18.0	30.0	0.56	36.8	20.1	28.5	0.51
Feb	50.9	26.7	38.8	0.44	45.5	22.3	33.9	0.53	51.8	25.5	38.7	0.43	44.0	25.9	35.0	0.41
Mar	62.0	35.5	48.8	0.85	55.3	29.7	42.5	0.86	51.9	34.2	48.0	0.85	53.3	32.4	42.9	0.81
Apr	70.2	41.9	56.1	0.84	66.0	37.9	52.0	0.76	71.9	41.9	56.9	0.98	62.0	38.6	50.3	0.79
May	80.9	51.1	66.0	0.76	75.6	47.0	61.3	0.88	82.3	50.1	66.2	0.72	73.1	48.5	60.8	0.79
Jun	92.3	60.4	76.4	0.43	86.9	57.1	72.0	0.43	93.1	57.5	75.3	0.48	84.2	59.0	71.6	0.48
Jul	98.1	66.9	82.5	0.90	93.1	63.9	78.5	0.69	99.1	64.1	81.6	0.83	90.3	65.1	77.7	1.02
Aug	96.1	65.9	81.0	0.99	90.4	61.5	76.0	1.0	96.5	62.8	79.7	0.88	88.1	63.2	75.7	0.83
Sep	86.6	55.5	71.1	0.80	81.6	52.6	67.1	0.94	87.3	52.8	70.0	0.75	78.6	54.6	66.6	0.87
Oct	72.6	41.6	57.1	1.33	69.5	41.1	55.3	1.07	74.4	40.8	57.6	1.16	64.8	42.8	53.8	1.22
Nov	56.2	31.0	43.6	0.69	52.1	28.2	70.2	0.64	58.3	30.6	44.5	0.74	48.6	30.8	39.7	0.74
Dec	44.0	22.3	33.2	0.45	40.4	18.1	29.3	0.59	45.1	21.4	33.2	0.65	37.9	21.5	29.7	0.61
Average Temperature •F 57.2					Average Temperature •F 55.3				Average Temperature •F 56.8				Average Temperature •F 50.2			
Total Annual Precipitation 9.06					Total Annual Precipitation 9.19				Total Annual Precipitation 9.04				Total Annual Precipitation 9.08			

The Colorado River basin is affected by temperature phases of the Pacific and Atlantic oceans.[4] The phases are cool, neutral and warm. Hurricanes and tornados are more common during warm phases of the Atlantic Ocean. The names of this phenomenon are: Pacific Decadal Oscillation (PDO) and Atlantic Multi-decadal Oscillation (AMO). In the Northern Hemisphere, when the PDO is warm (+), the Colorado River basin usually gets more moisture and when the PDO is cool (-), the basin receives less. The PDO is also influenced by the temperature of the Atlantic Ocean.

When the Atlantic is warm, the Colorado River basin receives less moisture overall for longer periods of time. For example, in the dry decades from 1930 to 1960, the Atlantic phase was warm. When the Atlantic is cooler, as was the case in the early 20th century and in the 1980s, the Colorado River annual flow increased dramatically. At present the Atlantic Ocean has been in a warm phase since 1997 and one reason why the Southwest is presently experiencing sustained drought conditions. The other reason is climate change induced by loading the atmosphere with greenhouse gases from the combustion of fossil fuels.

Figure No. 2: TIme series of the annual PDO and AMO. Shaded areas indicate combinations of positive and negative PDO and AMO periods.



b. Climate change

In the last 50 years the temperature of the Colorado River basin has increased 1° Celsius, and the annual yield of the Colorado River has dropped about 1 million acre-feet. The temperature of the basin is predicted to increase another 1° Celsius in 50 years, which will decrease the yield of the Colorado River another 1 million acre-feet. If adjustments are not made soon to reduce

[4] McCabe, Gregory J. Michael A. Palecki, and Julio Betancourt. 2004. Pacific and Atlantic Ocean influences on multi-decadal drought frequency in the United States. Proceedings of the National Academy of Sciences. Vol. 101, No. 12.
http://www.riversimulator.org/Resources/ClimateDocs/OceanOscillationsMcCabeEtAl2004.pdf

water consumption, the present available storage in the basin's large reservoir system could be exhausted in about 20 years.

Figure No. 3: Annual and 11-year running average of temperature in the Colorado River Basin. Courtesy of Western Regional Climate Center and Bureau of Reclamation.

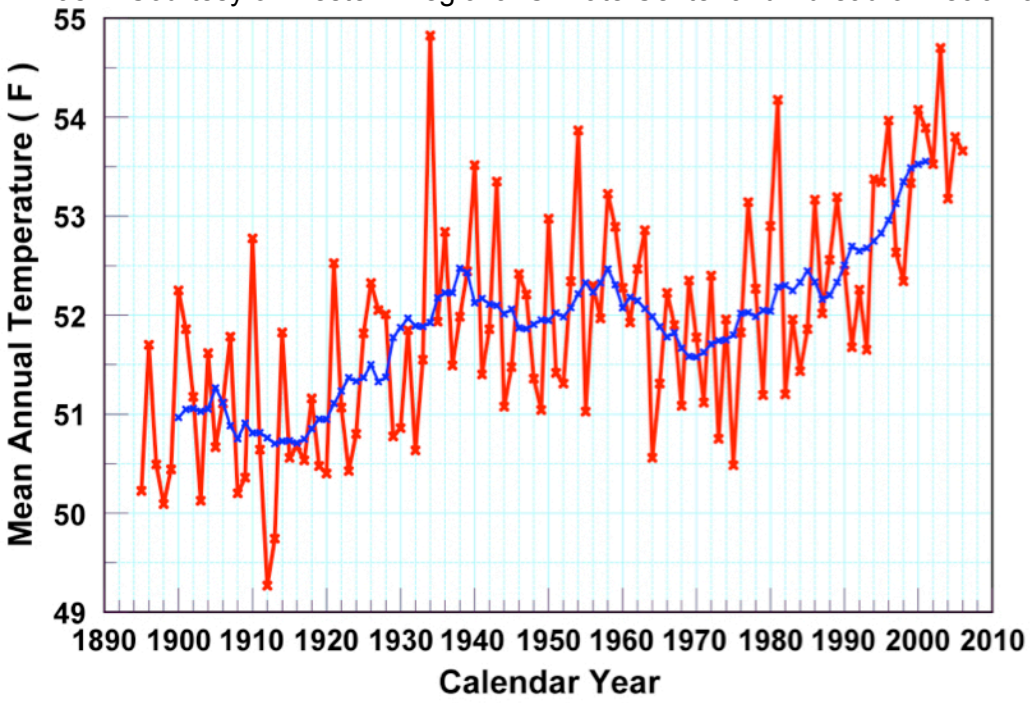


Figure No. 4: Historic Colorado River natural flow and projected natural flow. Department of Interior. Reference: Leopold;[5] Prairie;[6]

Annual Average Natural Flow at Lee's Ferry	Million acre-feet
Yield as of 1922 Compact (Leopold & Prairie)	16.6
51-year average yield as of 1956 (Prairie)	15.6
52-year average yield from 1957 to 2008 (Prairie)	14.5
Projected yield as of 2050 (Basin Study)	13.7
Projected yield as of 2100 (trend line estimate)	12.7

c. Floods, both modern and prehistoric

On the other side of the spectrum, extreme floods occur in the Colorado River basin at various intervals and magnitude. Sometimes they adffect dthe basin as a whole and sometimes they

[5] Leopold, Luna B. 1959. Probability Analysis Applied to a Water-Supply Problem. USGS Circular 410. http://www.riversimulator.org/Resources/USGS/Leopold1959.pdf

[6] Prairie, James. Colorado River Basin Natural Flow. Spreadsheet. http://www.usbr.gov/lc/region/g4000/NaturalFlow/index.html

affect a specific large tributary. Sometimes a clouburst in a lateral drainage can momentarily exceed the mean daily flow of the Colorado River.[7]

On July 4, 1884 the Colorado River peaked at 125,000 cfs at Loma, Colorado; the peak at Hoover Dam site was estimated to be 300,000 cfs and the Bureau of Reclamation considered this discharge volume for its spillway design.[8] The study of slack water deposits (perched sediment along the margins of the river corridor) completed in the last two decades has since revealed a flood in the Grand Canyon occurred about 1,400-years ago with a discharge of 500,000 cfs.[9]

In 2005, scientists from the University of Arizona studied slack water deposits 10-miles above Moab on the Colorado River and determined four floods with a discharge of 300,000 cfs have occurred in the last 2,000-years.[10]

On October 6, 1911, the San Juan River peaked at a flow of 154,000 cfs after a week of heavy rains attributed to a Pacific hurricane. The frequency of such a storm has been determined statistically to occur every 150-years.[11]

In 1963 Sam Taylor (co-publisher of The Times-Independent)[12] testified in Moab at a hearing with the Army Corps of Engineers to urge the mitigation of flood control for the Moab Valley, citing a review of articles in the Times-Independent that revealed the loss of life, property and farm land. He also noted, “And the two meandering streams, which our records show were only several feet wide, have washed channels which now occupy a large percentage of land area within the City of Moab and Moab Valley in general.”

d. Water supply and demand

Most of the orographic precipitation that falls on the slopes of the La Sal Mountains manifests itself as ground-water that percolates into the surrounding sandstones called the Glen Canyon Group Aquifer. The porosity of these sandstones is quite high. For example, the Navajo Sandstone unit of the Group has a porosity rate of 25%. The water is perpetually flowing (unconfined) through these sandstones toward the Colorado River.

This flow of groundwater augments surface water streams, such as Mill Creek, Castle Creek and Kane Creek (to name a few). The water purveyors of Grand County intercept this ground-water for culinary water and irrigation. Most of the culinary water of Moab is completely gravity fed from artesian springs, and most of the culinary water of Spanish Valley is pumped via electricity in wells that are generally shallow in depth. The quality of Moab’s drinking water generally ranges from excellent to pristine.

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[7] Woolley, Ralf. 1946. Cloudbursts of Utah, 1850 - 1938. USGS Water Supply Paper 994. http://www.riversimulator.org/Resources/USGS/WoolleyUtahCloudburst1946.pdf

[8] Swain, Robert E. 2008. Evolution of the Hoover Dam Inflow Design Flood: A study in changing methodologies. Department of the Interior: Bureau of Reclamation. http://www.riversimulator.org/Resources/USBR/EvolutionOfHooverDamInflowDesignAndFloodStudySwain.pdf

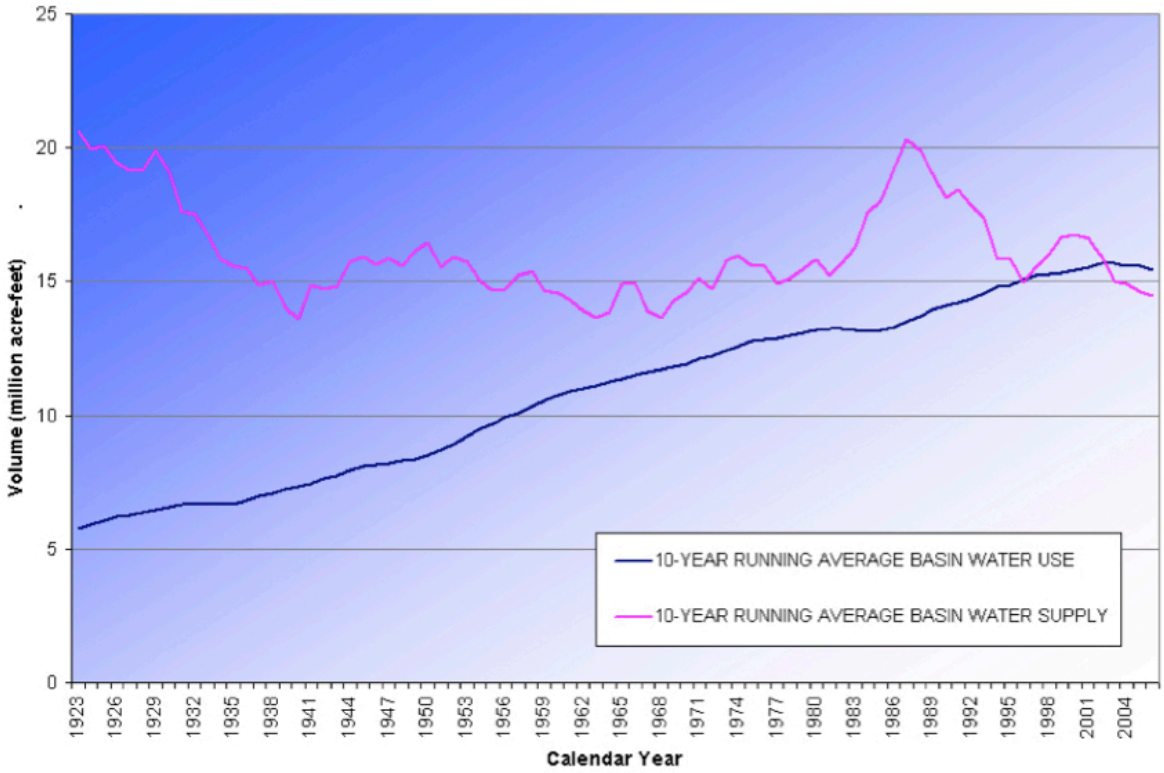
[9] http://www.riversimulator.org/Resources/Hydrology/OconnerBaker1994.pdf

[10] http://www.riversimulator.org/Resources/Hydrology/MoabMillProject.pdf

[11] http://pubs.usgs.gov/of/2001/ofr01-314/

[12] http://www.riversimulator.org/Resources/farcountry/ClimateDocuments/MoabFloodsTaylor1963.pdf

Figure No. 5: Historic supply and demand of the Colorado River. Bureau of Reclamation.



Culinary water in Castle Valley is intercepted from the alluvium as it flows toward the Colorado River. Some residents in Castle Valley draw groundwater from lenses that are saline. Consequently some residents in Castle Valley have reverse-osmosis systems, some harvest rainwater, and some transport their drinking water from Moab.

Surface water from Mill Creek is diverted for only irrigation purposes for both Moab and Spanish Valley; diversions from Castle Creek supply irrigation water for Castle Valley.

The water purveyors intercept the flow of groundwater before it reaches the alluvium of Moab and Spanish valleys. The remainder of the ground water then flows through the alluvium and migrates slowly toward the Colorado River. This groundwater supports the shade canopy of trees in the valley.

A recent study by Dr. Kip Solomon (University of Utah)[13] has suggested that the groundwater flowing through the alluvium may be completely consumed before it even reaches the Colorado River. Dr. Solomon has also suggested there may be a unknown groundwater return flow to the Colorado River. If this flow does indeed exist and could be measured, then that flow would represent the available surplus in our watershed. If it does not exist, then the water supply already matches the demand.

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[13] http://www.riversimulator.org/Resources/farcountry/Hydrogeology/InvestigationHydrologicConnectionMoabMillMathesonWetlandGardnerSolomon2003.pdf

e. Water quantity and quality

The communities and federal reserve lands of Grand and San Juan County are completely dependent on groundwater for household use and much of the irrigation supply. If this water becomes polluted, or supplies are diminished, the impacts to local communities and wildlands would be catastrophic. It is not currently practical--and may not be legal given the over-allocation of the Colorado River Basin--for local communities to develop water supplies from Colorado and Green Rivers.

Recent statements from both Secretary Salazar and the Bureau of Reclamation acknowledge in their Interim Report[14] (June, 2011) that the current demand for water in the basin exceeds the supply. The report also noted that climate change will reduce the flow of the Colorado River by about 10 percent, for each degree (Celsius) of increased temperature. Unfortunately the report did not include the decrease in the annual flow caused by dust on snow, which is estimated to be an annual reduction of 750,000 acre-feet.[15] Public lands in San Juan and Grand Counties are major contributors of this fugitive dust.

Therefore, even if San Juan and Grand Counties could afford the infrastructure to tap into the Colorado River, the supply is already under the command of senior water right holders above and below the river. A situation of water scarcity for these communities would exist if mineral extraction depletes or pollutes the available groundwater of these two counties.

The two counties also have two national parks in their boundaries. The need for an uninterrupted supply of water from springs, seeps and streams in our national parks is a natural resource that is guaranteed for perpetuity. The supply must also have excellent water quality to preserve wildlife resources, and to recover sensitive and endangered species.

Not to be forgotten is the responsibility all the state and federal agencies have to protect the Colorado River for downstream users. Currently, millions of dollars are being spent to reduce salinity, nitrogen, toxins, heavy metals, and endocrine disrupters.

The storage and movement of groundwater in the Earth's crust is a bewildering phenomenon and consequently, poorly understood. Baseline data is largely uncompiled and incomplete. Sufficient monitoring wells are not adequate, nor in appropriate places to accommodate the activities of the proposed action.

CWC strongly suggests that until our water supply is better understood and quantified, the extraction of OG&P should not be permitted.

The technology of extracting non-renewable resources has become invasive and is poised to alter the natural state of renewable groundwater reserves. Essentially, communities are being asked to exchange one resource for another. Though alternatives exist for energy and fertilizer, no alternative exists for dependable and inexpensive water supplies for these two counties.

f. Water resources for potash mining

The groundwater of systems on the west side of the Colorado River do not have the excellent recharge capabilities provided by the precipitation, catchment system of the La Sal Mountains.

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[14] http://www.usbr.gov/lc/region/programs/crbstudy/Report1/StatusRpt.pdf

[15] http://www.riversimulator.org/Resources/ClimateDocs/ColoradoRiverRunoffDustRadiativeForcingPainter2010.pdf

This underground water source was likely recharged to its optimum capacity during the last ice age. This aquifer currently has sufficient head to create artesian springs on public lands, including Arches National Park. Natural recharge does occur during significant cloudbursts, especially when the alluvium in streambeds is saturated. At present this aquifer appears to be sustainable over time, but cumulative withdrawals in the future (particularly solution mining for potash) could seriously threaten the water rights of perpetuity for federal reserve lands.

Since the Colorado River is overallocated and groundwater reserves in Grand and San Juan Counties are assumed to be at the limit of sustainability, and because the solution mining of potash requires vast amounts of water for the lifecycle of any proposed facility, potash mining is indeed a speculative industry and all potash leases in Grand and San Juan Counties must be withdrawn. For example, the proposed Pinnacle Potash, Inc. facility to be developed on Utah School & Institutional Trust Lands Administration (SITLA) is under protest with the Utah Division of Water Rights (State Engineer). The Department of Interior, as represented by the Bureau of Reclamation and the National Park Service, has filed letters of concern with the State Engineer for this proposed massive water withdrawal.[16] We have identified this potential problem as a serious legal challenge for both state and federal agencies. We also think it is legally defensible to withdraw all potash leases in Grand and San Juan Counties for reasons that the State Engineer has unrealistic paper promises for the delivery of Colorado River water.

6. AIR QUALITY

a. Studies are incomplete

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 MLP EIS and from the reasonably foreseeable development scenario (RFDS) proposed as required by NEPA.

In Utah, air quality monitoring in the Colorado Plateau over the past two winters revealed some of the nation's highest ozone measurements, even outpacing Los Angeles & San Bernardino County in California. 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 MLP EIS, if obtained from industry sources, must 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 are unmonitored and unmeasured. The MLP EIS 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

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[16] http://www.farcountry.org/articles.cfm?mode=detail&id=1322859204856

For a comprehensive database of known chemicals used in the oil and gas development industry and their effects on human health please see www.endocrinedisruption.com. The population of Grand and San Juan counties is nearly 27,000 residents and visitors annually are about 2 million, and any heavily concentrated oil/gas development scenario such as may be possible in the MLP EIS, which augments existing impacts, should assess possible effects on human health.

b. The MLP EIS 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).[17] 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).[18] Recently, Dr. James Hansen has stated that the limit will need to be revised downward to 350 ppm (McKibben 2007).[19] 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

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[17] Bernstein et al. 2007. Synthesis Report *In Climate Change 2007: A Report of the Intergovernmental Panel on Climate Change*. Available at http://www.ipcc.ch. Brandt, A. and A. Farrell. 2008. Dynamics of the Oil Transition: Modeling Capacity, Costs, and Emissions. Technical report, University of California Energy Institute.

[18] Hansen, J. 2006. Expert report submitted to the United States District Court, District of Vermont in regard to Case No. 2:05-CV-302 and 2:05-CV-304, Green Mountain Chrysler-Plymouth-Dodge-Jeep et al. v. Thomas W. Torti, Secretary of Vermont Agency
of Natural Resources, et al.

Hansen, J., M. Sato, R. Ruedy, K. Lo, D.W. Lea, and M. Medina-Elizade 2006a. Global temperature change. *PNAS* Published online September 25, 2006, doi: 10.1073/pnas.0606291103.

Hansen, J., M. Sato, R. Ruedy, P. Kharecha, A. Lacis, R. Miller, L. Nazarenko, K. Lo, G.A. Schmidt, G. Russell, I. Aleinov, S. Bauer, E. Baum, B. Cairns, V. Canuto, M. Chandler, Y. Cheng, A. Cohen, A. Del Genio, G. Faluvegi, E. Fleming, A. Friend, T. Hall, C. Jackman, J. Jonas, M. Kelley, N.Y. Kiang, D. Koch, G. Labow, J. Lerner, S. Menon, T. Novakov, V. Oinas, Ja. Perlwitz, Ju. Perlwitz, D. Rind, A. Romanou, R. Schmunk, D. Shindell, P. Stone, S. Sun, D. Streets, N. Tausnev, D. Thresher, N. Unger, M. Yao, S. Zhang2 2006b. Dangerous human-made interference with climate: A GISS modelE study. 13 October 2006 Draft. Available at http://arxiv.org/abs/physics/0610115. (Last visited March 17, 2008).

[19] McKibben, Bill. "Remember This: 350 Parts Per Million." *The Washington Post*. (Dec. 28, 2007, A12). Available at: http://www.washingtonpost.com/wpdyn/content/article/2007/12/27/AR2007122701942.html

sources. See, e.g. Hansen 2006, Hansen et al. 2006a,b; Hansen and Sato 2004.[20] 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).

c. The MLP EIS 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. 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 covered by snow or ice, 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.

d. The MLP EIS 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).[21] Black carbon warms the atmosphere, but it is a solid, not a gas. Unlike greenhouse gases, which warm the atmosphere by absorbing longwave infrared radiation, soot has a warming impact because it absorbs shortwave radiation, or visible light (Chameides and Bergin 2002).[22] 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;[23] *see also* Reddy and Boucher 2007).[24] 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).

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

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[20] Hansen, J. and M. Sato. 2004. Greenhouse gas growth rates. *PNAS* 101: 16109-16114.

[21] Quinn, P.K., T.S. Bates, E. Baum, N. Doubleday, A. Fiore, M. Flanner, A. Fridlind, T. Garrett, D. Koch, S. Menon, D. Shendell, A. Stohl, and S.G. Warren. 2007. Short-lived pollutants in the Arctic: Their climate impact and possible mitigation strategies. http://niflheim.nilu.no/spac/QuinnEtAl_EOSsubmitted.pdf

[22] Chameides, W.L., and M. Bergin. 2002. Soot takes center stage. *Science* 297:2214-2215.

[23] Hansen, J., M. Sato, P. Kharecha, G. Russell, D.W. Lea, and M. Siddall. 2007. Climate Change and Trace Gases. *Phil. Trans. R. Soc. A* (2007) 365, 1925–1954 doi:10.1098/rsta.2007.2052.

[24] Reddy, M.S., and O. Boucher. 2007. Climate impact of black carbon emitted from energy consumption in the world's regions. *Geophysical Research Letters* 34, L11802, doi:10.1029/2006GLO28904.

dioxide during springtime in the Arctic, for example (Flanner 2007).[25] 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.

e. The MLP EIS 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. OG&P production relies heavily on incidental fossil fuel combustion, and because the fuel eventually produced will also be burned by consumers, the project will likely lead to an overall increase in nitrous oxide emissions. The BLM must explore these emissions in its MLP EIS. The BLM must also discuss any other greenhouse gas pollutants that may result from the proposed projects.

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 MLP EIS must fully acknowledge this critical context in which OG&P development's greenhouse gas emissions must be analyzed. Without analyzing the greenhouse gas emissions 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.

7. SOILS

OG&P mining exploration and development have similar yet many different processes, facilities, footprints that will disrupt the soil resource. BLM should identify all disturbance vectors and processes associated with these resource projects. For example, at the Moab open house, two potash processing scenarios were presented.

BLM should consider the disturbance effects of all other 'uses/users' (legal and illegal) that would factor into associated and cumulative effects. As BLM is aware, these are many. As an example of soil loss that has far ranging effects, numerous studies worldwide have assessed the impacts of fugitive dust generated by driving on the typical gravel road. Impacts include negative human health effects as well as local visibility problems (travel safety), impairment to roadside vegetation, and degraded viewshed.

BLM should pay particular attention to road widths/corridors, that for OG&P production particularly, may include various pipeline facilities adjacent to the road bed that contribute substantially to disturbance area. Also, new roads allow more access by 'unforeseen users' to adjacent undisturbed areas that can lead to further damage to soils.

The analysis must address all soil resources that BLM and NRCS have mapped. Soil impacts typically addressed include, for example, soil erosion from wind and water (rain splash/runoff/ flash flooding), soil compaction/structure loss, soil fertility, and the ability to be reclaimed after

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[25] Flanner, M. G., C. S. Zender, J. T. Randerson, and P. J. Rasch (2007), Present-day climate forcing and response from black carbon in snow. *J. Geophys. Res.*, 112, D11202, doi:10.1029/2006JD008003.

disturbance. In addition, BLM should analyze the effects on the soil matrix biological community – fauna and flora – which is key to soil quality.

BLM must take into consideration soils typically known to be sensitive – these include but may not be limited to those that occur on steep slopes and rugged topography, riparian zones, uplands adjacent to riparian zones that can provide buffers to riparian/stream corridors, headwater areas.

Biological soil crust ecosystems (BSC) present a very special case as a sensitive soils category due to their extent and importance in maintaining soil stability and ecological balance. On the Colorado Plateau, soil crust communities are integral to the cool desert ecology and are fundamental in maintaining healthy, fully functioning watersheds. BLM should be striving to restore BSC lost to previous use and abuses while planning for futures uses.

“Crusts [BSC] are well adapted to severe growing conditions, but poorly adapted to compressional disturbances. Domestic livestock grazing, and more recently, recreational activities (hiking, biking, and off-road driving) and military activities place a heavy toll on the integrity of the crusts. Disruption of the crusts brings decreased organism diversity, soil nutrients, stability, and organic matter ” http://www.soilcrust.org/

“The impact of a given disturbance depends on its severity, frequency, timing, and type, as well as the climatic conditions during and after it.”[26]

BLM should give special analysis consideration to BSC in the planning area. This starts with accurate mapping of this sensitive resource in addition to the existing soil survey mapping available for the study area.

Disturbance effects can result in a wide variety of negative impacts to BSC. A partial list of topics that must be fully addressed include:
• Species Composition
Air pollution (dust, HAPs emissions from operations and support systems)
Annual plant invasion (cheatgrass and other noxious and obnoxious weedy species that disrupt ecological balance)
Mechanical disturbance due to all activities associated with exploration, development, and operation.
Oil spills and other spills from process, production, etc chemical materials from the O&G activities or potash operation scenarios and ancillary/support activities (eg vehicle/equipment maintenance, etc)
Burial of SBC and associated ‘secondary creeping loss’ caused by the initial disturbance.

• Nutrient inputs and retention including carbon fixation and nitrogen inputs
• Vascular plant germination, survival, and nutrition
• Surface albedo increase due to disturbance
• Soil hydrology: water infiltration, runoff, soil moisture holding capacity, and aquifer recharge
• Wind and water erosion and loss of soil stability and effects of soil loss and sedimentation to surface waters

Also, special attention should be given to unique and rare SBC ecosystems such as those formed on gypsiferous soils.

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[26] Biological Soil Crusts: Ecology and Management. 2001. Belnap et al. BLM/ID/ST-01/001+1730p44

a. Soils including SBC and climate change

Climate change and climate variability present a variety of challenges to an ecologically, economically, and socially sustainable land management program. Drought, floods, and temperature fluctuations due to climate change can directly affect soil quality and nutrient/water balances that in turn affect watershed function. Other indirect effects of climate change include higher soil erosion rates, conditions more conducive to invasive species, and changes in soil and vegetative relationships.

Soil is a part of the natural world. Soil, "...Skin of the Planet…", is both affected by and contributing to global warming. Soil, via mechanical, chemical, and biological processes, is one of the largest exchange sources of carbon in the world. This exchange mechanism has operated in a dynamic equilibrium in response to change over time. However, accelerated climate change and variability over the last 150 years has introduced new ecological challenges to the ability of the soils resource to function within resilient boundaries. For example, changes in temperature regime and rainfall patterns can damage the physical structure of soils. Organic matter in particular is being affected, its balance being crucial to the nutrient balance of the soil, its stability, the amount of water it can hold, soil organism populations, and vegetation that the soil can support. Additionally, these changes are likely to leave some soils more vulnerable to damage by wind and water erosion. The BLM should consider these interdependent and interactive dynamics in its analysis.

Effects of blowing dust from unstable soils on human (and animal) health has been documented. In our area for example, the Mancos shale contains mercury and arsenic, among other constituents and fine particles (PM10), that when disturbed, can be entrained by the wind and then available to be inhaled, possibly resulting in respiratory ailments.

"The situation in the West has gotten much worse in the past five years, since drought set in. And climatologists say there are signs this is just the start of a 30-year pattern known as a megadrought. The research on crusties [biological soil crusts] was based on their life during wetter years. ….We don't have any idea of how what we now know applies to the future, if it's going to be a lot drier," Belnap says."[27]

The uncertainty expressed in Belnap's statement underscores that the BLM must address the potential effects on soils of changing climate scenarios as it proceeds with this planning process.

Soil reclamation potential must be addressed in light of trends toward drier times and more intensive weather patterns that have been predicted for the Colorado Plateau.

b. Monitoring and mitigation

During this planning level process, BLM should develop a robust, on-the-ground monitoring/ mitigation program that clearly includes baseline inventory (Order 1 level survey) requirements so that it is in place if/when exploration or development applications are proposed for the next round of NEPA compliance.

c. Impact assessment and criteria

As the EIS process moves forward, CWC would like to be able to review the soil impacts criteria to be used to identify significant versus non-significant impacts and how the agency will define low, moderate, and high levels of effects using quantifiable metrics.

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[27] J. Belnap, May 31, 2006 National Public Radio interview.

8. VIEWSHEDS

a. Dark skies and scenic views

The national parks here, Arches and Canyonlands, are known for their dark skies and receive special visits and educational programs from stargazers, and people who enjoy distant scenic views, sunrises and sunsets. OG&P facilities (lights, pads, pipes, jacks, condensation tanks and etc.) would degrade these established values and purposes of the national parks. The existing potash facility on SITLA lands is a detriment to the visitors of Dead Horse Point State Park and any other similar facility would have a cumulative impact.

At a minimum, please require lessees to comply with Grand County Land Use Code Section 6.6 for full cutoff lighting, and shielding all light sources from offsite view.

b. River corridor

To be consistent with the BLM's recent withdrawal of placer mining for rare and precious minerals along the river corridors in SE Utah,The Three Rivers Withdrawal, so should OG&P facilities also be withdrawn from the river corridors.

c. Scenic byways and trails

Scenic Byways in Grand and San Juan Counties include Hwy. 128 ("River Road"), Hwy. 279 ("Potash Hwy."), Hwy. 313 ("Dead Horse Mesa"), Hwy. 211 ("Indian Creek Corridor"). The view for these highways should not be impaired by OG&P facilities or pipelines. The views from trails in established BLM Resource Areas should also not be impaired.

9. GREATER CANYONLANDS

CWC supports the expansion of Canyonlands National Park. When the park was established in 1964 it contained just 257,400 acres, little over one quarter of Interior's one million acre proposal. With the addition of the Horseshoe Canyon annex in 1971, also a compromised boundary, the park increased in size to its current 337,540 acres. Utah politics intervened in what should have been protection of an entire hydrogeological basin, the Canyonlands Basin watershed, which is critical to the health of the Colorado River System.We reiterate here and emphasize that any industrial development in this region will imperil the drinking water of 25 million downstream users.

In 1936 Bob Marshall and Althea Dobbins conducted a roadless inventory in southern Utah cataloging 9 million acres. That same year, the first Escalante National Monument proposal was introduced recognizing the extraordinary character of the immense, unimpaired landscape; it contained 6000 square miles and included the entire Greater Canyonlands region. This visionary concept was shot down in Utah but later followed by two more 'modest' Escalante proposals encompassing 2,450 square miles or 4.5 million acres; one was promoted in 1940 by then Interior Secretary Harold Ickes. Since these historic proposals were written, much wild country in southern Utah has been lost to roadbuilding and industrial development. However, the Greater Canyonlands region contains a relict of that wild, roadless country which should be protected intact for future generations.

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

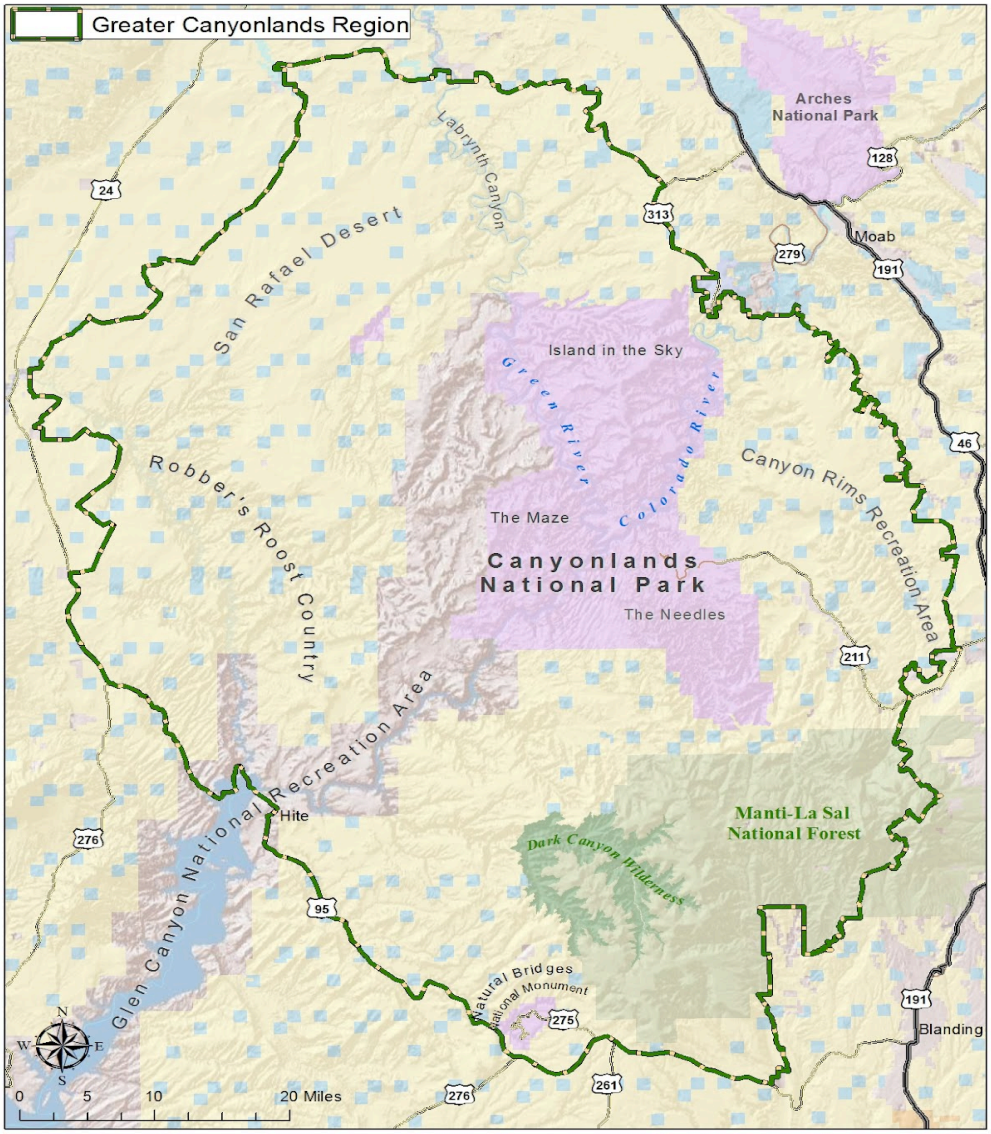
other values such as clean air, clean water, intact wildlife habitat and wilderness; it did not effectively loosen the preferential grip of mining and grazing interests on public lands.

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.

Development of OG&P in the Lockhart Basin must not occur and the BLM leasing program should provide opportunities to assist the objectives of the Organic Act of 1916, especially as the Act approaches its 100th anniversary in 2016.

The following map delineates the area we would like to see exempt from any new OG&P leasing:

Figure No. 6: Map of Greater Canyonlands National Park



10. WILDERNESS

The BLM's inventory of contiguous wilderness study areas in the boundary of the MLP EIS include Arches National Park—Devil's Garden Unit (18,069 acres) and Canyonlands National Park—Needles Unit (61,182). Other contiguous and isolated inventories include such places as Mary Jane Canyon (28,400 acres), Negro Bill Canyon (7,260 acres), Mill Creek Canyon (9,780 acres), Fisher Towers (19,100 acres), Beaver Creek (27,500 acres), Hunter Canyon (5,800 acres), Behind the Rocks (12,635 acres), Hatch Wash - (14,100 acres), Goldbar (8,100 acres), Gooseneck (8,100 acres), and Hart's Point (19,700 acres).[28]

The proposed America's Red Rock Wilderness Act[29] has larger acreages, and is legislation that CWC supports. The MLP EIS should withdraw any OG&P parcels from the proposed Red Rock Wilderness Act to create a situation of no harm that would allow Congress the opportunity to pass this wilderness bill in the future.

11. WILDLIFE AND ECOSYSTEMS

a. Threatened, Endangered and Species of Special Concern

The federally-listed threatened, endangered, and candidate (C) plant and animal species found in Grand and San Juan Counties are listed below.

Figure No. 7: Federally-Listed Species[30]

Common Name	***Scientific Name***	***Type***	***Status***
Jones Cycladenia	*Cycladenia humilis var jonesii*	Plant	T
Humpback Chub	*Gila cypha*	Fish	E
Bonytail	*Gila elegans*	Fish	E
Colorado Pikeminnow	*Ptychocheilus lucius*	Fish	E
Razorback Sucker	*Xyrauchen texanus*	Fish	E
Greater Sage-grouse	*Centrocercus urophasianus*	Bird	C
Gunnison Sage-grouse	*Centrocercus minimus*	Bird	C
Mexican Spotted Owl	*Strix occidentalis lucida*	Bird	T
Yellow-billed Cuckoo	*Coccyzus americanus*	Bird	C
Black-footed Ferret	*Mustela nigripes*	Mammal	Extirpated

The state of Utah has its own list of state sensitive species. The list includes threatened, endangered, and extirpated species, and species of special concern. According to the list

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[28] http://www.gpo.gov/fdsys/pkg/GPO-DOI-BLM-UTAH99/pdf/GPO-DOI-BLM-UTAH99.pdf

[29] http://action.suwa.org/site/PageServer?pagename=WATE_longtoc

[30] Messmer, T. A., R. Drake, and A. McElrone, editors. Utah endangered and threatened animals. Berryman Institute Publication No. 17, Utah State Univ., Logan. 60 pp. 1998.

appendix, “By rule, wildlife species that are federally listed, candidates for federal listing, or for which a conservation agreement is in place automatically qualify for the Utah Sensitive Species List. The additional species on the Utah Sensitive Species List, ‘wildlife species of concern,’ are those species for which there is credible scientific evidence to substantiate a threat to continued population viability.”

These additional wildlife species of concern (SPC) and under conservation agreement (CS) are listed below for Grand and San Juan Counties.

Figure No. 8: Grand and San Juan Counties, Utah State-Listed Wildlife Species of Concern

Common Name	***Scientific Name***	***Type***	***Status***
Allen’s big-eared bat	*Idionycteris phyllotis*	Mammal	SPC
American white pelican	*Pelecanus erythrorhynchos*	Bird	SPC
Bald Eagle	*Haliaeetus leucocephalus*	Bird	SPC
Big Free-Tailed Bat	*Nyctinomops macrotis*	Mammal	SPC
Bluehead sucker	*Catostomus discobolus*	Fish	CS
Burrowing owl	*Athene cunicularia*	Bird	SPC
Corn snake	*Elaphe guttata*	Reptile	SPC
Eureka mountainsnail	*Oreohelix eurekensis*	Mollusk	SPC
Ferruginous hawk	*Buteo regalis*	Bird	SPC
Flannelmouth sucker	*Catostomus latipinnis*	Fish	CS
Fringed myotis	*Myotis thysanodes*	Mammal	SPC
Great Plains toad	*Bufo cognatus*	Amphibian	SPC
Gunnison’s prairie dog	*Cynomys gunnisoni*	Mammal	SPC
Kit fox	*Vulpes macrotis*	Mammal	SPC
Lewis’ woodpecker	*Melanerpes lewis*	Bird	SPC
Mountain plover	*Charadrius montanus*	Bird	SPC
Northern goshawk	*Accipiter gentiles*	Bird	CS
Roundtail chub	*Gila robusta*	Fish	CS
Smooth greensnake	*Opheodrys vernalis*	Reptile	SPC
Spotted bat	*Euderma maculatum*	Mammal	SPC
Three-toed woodpecker	*Picoides tridactylus*	Bird	SPC
Townsend’s big-eared bat	*Corynorhinus townsendii*	Mammal	SPC
White-tailed prairie dog	*Cynomys leucurus*	Mammal	SPC

The proposed OG&P projects will likely affect the life history of several rare, threatened, and endangered species. These species all share a common trait, namely scarcity in populations. Because of this, protection of habitat that may be colonized if numbers increase is very important. So even if a listed species does not occur on the site, it may be affected by the proposed disruption of habitat, because it can grow into that area if conditions improve.

Sensitive fish that live downstream will be affected by pollution as demonstrated by the studies presented elsewhere in this letter.

b. Temporal loss of ecosystem function during extraction and post-reclamation

Temporal loss (also called restoration lag) is the effect created by the time lag between the event of ecological destruction and the maturation of the reclamation site. In other words, when the drilling or mining begins, habitat is destroyed, and ecological functions are lost. This is the mining temporal loss. During the lease, those functions are not replaced. This effect is common knowledge among ecologists, for example.

When the extractive processes are over, the reclamation will be completed. From that time until the ecosystem matures, the ecological functions are still much lower than the pre-developed condition. The time between reclamation installation and maturity is the post-mining temporal loss. In this case, the minimum post-mining temporal loss can be estimated by the time it takes the cryptobiotic crust to re-grow and provide all ecological functions, which takes 250 years.[31]

Therefore, the total temporal loss of ecological functions is the sum of the mining and post-mining temporal loss, which is 10 + 250 = 260 years until all ecological functions are restored. Research shows that other reclaimed mine sites are still significantly ecological different from the original land cover. A study that investigated the mine-induced negative effects of nutrient cycling (carbon, nitrogen, and phosphorus) from land into a nearby stream found “major impacts on the adjoining stream ecosystem.”[32]

These impacts show the interconnectedness of the ecosystem, and further add to the temporal loss time estimate: “Currently the goal of mine reclamation is simply the establishment of permanent vegetative cover. This approach is shortsighted and does not take into account the importance of ecosystem processes like nutrient cycling nor the potentially harmful conditions created... As a result, recovery of comparable ecosystem function will take decades to centuries.”[33]

The final estimate for the temporal loss would then be 260 years or longer to build up soil crust, nutrients, and other ecological elements to the current levels. Even established reclamation sites are still too young. Reclamation produces an ecologically compromised landscape. No compensation for this temporal loss is included in the mining proposal. Therefore, the mining will result in overall damage to the ecosystem.

Temporal loss is frequently addressed by federal agencies such as the US Army Corps of Engineers, and is accepted as a known phenomenon.[34] When industry fills wetlands and applies for mitigation, they must address and compensate for temporal losses of ecosystem function as

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[31] Belnap, Jayne. Surface Disturbances: Their Role in Accelerating Desertification. *Environmental Monitoring and Assessment*. 37: 39-57. 1995.

[32] Simmons, Jeffrey A, William S. Currie, Keith N Eshleman, et al. Forest to Reclaimed Mine Land Use Change Leads to Altered Ecosystem Structure and Function. *Ecological Applications*, 18(1), 2008, pp. 104-118.

[33] Simmons, Jeffrey A, William S. Currie, Keith N Eshleman, et al. Forest to Reclaimed Mine Land Use Change Leads to Altered Ecosystem Structure and Function. *Ecological Applications*, 18(1), 2008, pp. 104-118.

[34] US Army Corps of Engineers Regulatory Guidance Letter 02-2. December 24, 2002.

well as permanent losses. Although temporal loss is commonly addressed in state and federal wetland regulation, it is not addressed in mining regulation. This regulatory oversight harms the environment and results in a net loss of ecosystem function in every case.

The result is economic harm to society, because the community loses a functional part of the landscape. That loss of function has a dollar value, as one Ohio study quantifies over a 50-year period: Findings of this study make a strong case that time lag costs to society of wetland function restoration should no longer be ignored in the mitigation decision-making process.

Restoration lag costs for the low elevation sites range from $2,939 to $11,179 per acres with an average of $6,136 per acre for floristic functional restoration. Restoration lag costs to achieve equivalency under logarithmic growth for both floristic and soil indicators range from $3,460 to $49,811 per acre with an average of $16,640 per acre. For high elevation constructed inland marshes, time lag costs range from $22,368 to $31,511 per acre when achieving floristic equivalency with an average cost of $27,392 per acre.[35]

The economic costs of temporal loss in the proposed continuing mine sites may be much greater because of the slow growth rates and time required to achieve full function of the cryptobiotic crust. The drilling, mining and reclamation temporal losses must, at a minimum, be addressed by the agencies, and preferably should be avoided by denial of the mining or drilling permit.

11. VEGETATION

There are five basic native vegetation communities (zones) in the Canyon Country District: 1) salt desert shrub; 2) pinyon-juniper; 3) sagebrush; 4) pines and fir; 5) riparian and wetlands.

The MLP EIS must begin vegetation management programs to consider the following issues: restoration of past disturbances, soil stabilization, soil nutrient cycles, watershed health, the aesthetic role of vegetation in the landscape, and the potential ramifications of a loss of vegetation productivity in a sustained drought.

For example, in 2001, the Veritas Corporation completed seismic work in Grand County at considerable damage to vegetation, wildlife burrows, and soil crusts. The stipulations for seismic exploration must be more thoroughly vetted with the consultation of certified ecologists.

a. Non-native plant species

Non-native plant species include noxious weeds and invasive trees such as tamarisk that adversely affect native plant community integrity and function. Noxious weeds and increaser species that become prevalent after soil disturbance must be addressed. For example, cheatgrass (Bromus tectorum), not a declared noxious weed in Utah, has had devastating impacts to rangelands and habitat throughout the west including the Colorado Plateau and the MLP area. The BLM is aware of the extensive scientific literature on this topic. BLM should include requirements for reclamation plans that addresses cheatgrass.

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[35] Gutrich, John J, and Fred J. Hitzhusen. Assessing the substitutability of mitigation wetlands for natural sites: estimating restoration lag costs of wetland mitigation. *Ecological Economics* 48 (2004) 409– 424.

b. Communities dependent upon ground and surface waters

Wetland, riparian, seep/spring, and headwater ecosystems are limited in extent but have high species diversity and provide key elements to watershed function including aquifer recharge. Disturbance of these valuable resources must be avoided. Adjacent lands to these ecosystems can serve as buffer areas for protection. Three hundred foot buffer areas should be established and part of mitigation requirements.

c. Reclamation

Vegetation recovery after removal of plants and soil disturbance in the planning area is difficult and requires good baseline data to ensure reclamation plan requirements are robust and on-target. Because soil moisture is so extremely limiting as well as unpredictable, broadcast seeding efforts are largely failures. This will only increase the challenges for reclamation as the forecast for climate change sees only more extreme weather patterns in the area. BLM should consider such techniques as soils stockpiling and interim seeding for soil stabilization and maintaining soil biotic communities, plant salvaging for later replanting, and identify other factors that will lead to successful reclamation. Monitoring program should include criteria to deem reclamation a success and require at least a 15-year timeframe.

12. SOCIOECONOMICS

According to the Scenic Byways Corridor Management Plan for Grand County (Jorgen, 2008), Grand County has transitioned from a resource extraction-based economy prior to the late 1980's to a tourist-based economy, the latter contributing 56% of employment to the economy. Potential impacts to this key piece of the local economy due to OG&P exploration and development should be addressed in this EIS.

Cumulative impacts and connected actions related to OG&P exploration and development effects on tourism should be addressed. For example, tar sands and oIl shale exploration and development is occurring in northern Grand County. Increased air pollutants and GHG emissions should be considered as connected actions and addressed in the RFDS for cumulative effects analysis. Other areas of concern include but may not be limited to impacts to regional and local traffic, housing of workers and impacts to local infrastructure, and effects on tourism.

Economic benefits may be most easily understood if they are specific, and quantified, to allow affected counties to understand the relative benefits likely to occur. Please include projections of how many full-time jobs at what pay level are expected during exploration for what time period, similarly for post-exploration, and projected annual mineral lease monies and other revenues likely to accrue to each affected county.

Recently, interested stakeholders, businesses, and elected officials created an informal steering committee to explore the economic and fiscal significance of public lands in Grand County. Members of the steering committee contacted Headwaters Economics to help research and write the study. Headwaters Economics is a non-profit economics research group that works regularly with public land management agencies and has specialized expertise in rural economic development. Their report was finalized in September, 2011 and is called *The Economic Value of Public Lands in Grand County, Utah.*[36] The data in this report will serve the

[36] http://www.riversimulator.org/Resources/farcountry/Economy/GrandCountyReport2011.pdf

purposes of the MLP EIS well, in regards to assessing the impacts of extractive activities in the Canyon Country District.

13. CULTURAL RESOURCES

The Canyon Country District is rich in history, archeology and resources necessary to maintain the culture of the indigenous people, as well as the dominant society. Impacts to sacred sites and medicinal plants are also sensitive resources that need to be evaluated in the MLP EIS. There are several Executive Orders that mandate agencies to address impacts to these resources, including the National Historic Preservation Act of 1966.

a. National Historic Preservation Act requirements

Any areas that may be subject to direct impacts or vehicle access because of this management plan must be analyzed and surveyed for archaeological/historical sites under Section 106 of the National Historic Preservation Act, and a plan to protect them must be included in the MLP EIS.

The EIS must also assess the cumulative impacts of increased use of the areas, both legal and illegal, that is likely to occur when recreational OHV use invades roads built for extraction activities. Section 106 of the National Historic Preservation Act ("NHPA"), 16 U.S.C. § 470f, requires land managers to protect historic sites from harm caused by transportation impacts. The BLM shall also be responsible for identifying consulting parties and inviting them to participate in the decision-making process. The consulting parties shall include, as appropriate, the Utah State Historic Preservation Officer (Utah SHPO), Tribal Historic Preservation Officers (THPOs), and other federally recognized Tribal governments. The Advisory Council on Historic Preservation (the entity charged with interpreting the NHPA) states that the:

> Area of Potential Effect (APE) for the road, trail, or area shall include corridors or zones adjacent to the road, trail, or area that the Service determines to be subject to direct or indirect effects due to local environmental factors or the proximity of particularly sensitive resources. This will include the road, trail, or area surfaces, passing or parking areas, and campsites or other features established as part of the road or trail. It shall also include additional affected areas or properties if the designation would facilitate increased access to those historic properties.

B. Archaeological Resources Protection Act requirements

Looting and vandalism of cultural resource sites is a major problem on BLM land on southeastern Utah. BLM must incorporate the requirements of ARPA, as well as consult with First Nation peoples, on locations and preferred practices surrounding important sites in the planning area. Analysis must be site-specific and enforceable.

This problem is exacerbated by increased ease of access, which applies particularly to mineral development roads and their subsequent use by off-road vehicles. A 2000 paper published by the BLM notes:

> Uncontrolled use is the most immediate and pervasive threat to cultural resources on BLM lands... The explosion in the use of mountain bikes and ATVs, and even the designation of backcountry byways, has dramatically increased visitation to lands that were previously used only by small numbers of hikers. This increased visitation

> inevitably results in intentional and inadvertent damage through collection, vandalism, surface disturbance, and other depreciative behavior.[37]

The MLP EIS must consider not only the direct effect of surface disturbances (roads, drill pads, processing infrastructure etc.) but the cumulative impacts of an increased road system and increased use of that system, by both the industry and by recreationists.

14. PALEONTOLOGICAL RESOURCES

The Morrison Formation is a dominant formation in the MLP study area and is rich with paleontological resources. Special inventories must be prepared to preserve and protect these scientific and educational resources and the appropriate consulting agency is the Office of the State Paleontologist.

15. RECREATION

Recreation is currently the main source of income and jobs for the Canyon Country District for reasons of scenic views, scientific curiosity, and a challenging landscape. Extractive industries would likely become a competitive force that could disinterest the 2 million annual visitors from returning. Extractive industries provide short-term benefits and long-term impacts to the watershed, whereas the tourism industry has a lower impact on natural resources and may have the capacity to avoid the boom-and-bust cycles that plague mining activity.

However, of course, recreation is becoming a serious impact that could measure up to extractive industries if not checked. This applies particularly to the use of old mining routes for off-road vehicle activity, but extends to nonmotorized recreation as well. For example, the river corridors were getting crowded and unsanitary in the late 60s and early 70s; the managing agencies provided stipulations and regulations for that user group that resolved the problem. Now off-road use, both motorized and nonmotorized, is at a level where sensitive resources are being damaged and little revenue is generated to repair the increasing damage. Inadequate law enforcement is also increasing the impacts over time, and public education on the ethics of “leave no trace” are falling to the wayside. Again, all of these cumulative impacts to canyon country must be considered in the EIS.

16. CONCLUSION

We urge BLM to remember that dependence on fossil fuels is completely unsustainable, and that this fact is being recognized throughout the federal government. Facilitating oil and gas drilling and hardrock mining on public lands in the Moab area, while facing increasing impacts from climate change and recreation, endangers water resources, ecosystems, and local economies on a long-term basis. We are concerned that last-ditch efforts to extract marginal profits from this environment has the potential to permanently cripple the long-term quality and sustainability of life here, and we hope that the BLM will look at these cumulative impacts in the context of the high value of ecosystem services.

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[37] Bureau of Land Management “Strategic Paper on Cultural Resources at Risk” at http://www.blm.gov/nhp/efoia/wo/fy00/ib2000-136a.pdf

Thank you very much for your consideration of these comments. Please include the organizations below as the planning process continues.

Sincerely yours,

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