14 Jan. 2008

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Re: Comments – Richfield Field Office Draft Resource Management Plan and Draft Environmental Impact Statement

Please accept and fully consider these comments on behalf of the Colorado Plateau Archaeological Alliance (CPAA). Founded in 2005, CPAA works to protect archaeological and historical properties on public lands throughout the West through sound scientific research into the causes of adverse effects, through public outreach and education, and through collaborative projects with conservation and governmental entities, including the Richfield Field Office. Our goal is to ensure that cultural resources are protected for future generations, for their scientific as well as aesthetic qualities. We appreciate this opportunity to comment on the Draft Environmental Impact Statement (Draft EIS) for the Richfield Field Office that has management responsibilities for 2.1 million acres of public lands and 4.2 million acres of mineral estate in Piute, Wayne, Sanpete, Sevier, Kane and Garfield counties.

FLPMA obligates the Bureau of Land Management (BLM) to protect cultural, geologic and paleontological resource values (43 U.S.C. §§ 1701(a)(8) 1702(c)), whereas the National Historic Preservation Act of 1966 ("NHPA") (16 U.S.C. § 470 et seq.) provides for enhanced consideration of potential impacts to these resources through a cooperative federal-state program for the protection of historic and cultural resources. In particular, Section 106 (16 U.S.C. § 470f) obligates the BLM to consider the effects of management actions on historic and cultural resources listed or eligible for listing to the National Register of Historic Places, as provided under NHPA. Section 110 of the NHPA requires the BLM to assume responsibility for the preservation of historic properties it owns or controls (16 U.S.C. § 470h-2(a)(1)), and to manage and maintain those resources in a way that gives "special consideration" to preserving their historic, archaeological and cultural values. Section 110 also requires the BLM to ensure that all historic properties under the jurisdiction or control of the agency are identified, evaluated, and nominated to the National Register of Historic Places. Id. § 470h-2(a)(2)(A).

As discussed below, many other federal laws, regulations and executive orders have articulated the BLM's responsibility to protect properties of cultural and religious significance. This responsibility was reaffirmed by President Bush's "Preserve America"

initiative (See Exec. Order 13287, March 3, 2003) that requires the BLM to advance the protection, enhancement, and contemporary use of its historic properties. It states the BLM must ensure that "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 that context that the Richfield Field Office must carefully consider the effects of its RMP decision-making on archaeological and historic resources of significance to all Americans.

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Introduction

As stated in "Desired Outcomes" (DEIS 2-17), the BLM intends to "preserve and protect significant cultural resources and ensure that they are available for appropriate uses by present and future generations," in accordance with various federal laws; it will "seek to reduce imminent threats and resolve potential conflicts from natural or human-caused deterioration, or potential conflict with other resources uses;" and it will "identify priority areas for new field inventory, based on their probability for significant resources." Alternative N (no action) offers no definable strategy with measurable benchmarks to identify, preserve or protect significant cultural resources, nor does it attempt to reduce threats or resolve conflicts arising over competing uses of federal lands. Given the complete failure of Alternative N to meet even minimal agency objectives, Alternative N should be rejected. Only Alternatives A through D (referred to herein as action alternatives) are discussed in significant detail in this commentary.

A CPAA review of the Richfield Field Office Draft EIS has identified minor and major deficiencies as they relate to cultural resources, both in terms of general theoretical assumptions applied throughout the document, as well as specific strategies identified for addressing cultural resource concerns. General concerns include the absence of a meaningful and representative statistical sample of inventoried lands within the Richfield Field Office whereby the density, diversity and distribution of cultural resources could be adequately considered during the planning process; the failure of the agency to aggressively embrace its Section 110 responsibilities to identify, evaluate and nominate properties under its management jurisdiction to the National Register of Historic Places; and the failure of the agency to adequately consider the indirect and cumulative effects of various activities on the integrity of historic properties.

Among the more specific concerns identified in the Draft EIS are the absence of a clearly stated intent to initiate Section 106 compliance *prior* to the designation of ORV routes and open play areas; the designation of ORV routes in areas known to have high archaeological site densities but little or no baseline inventory data whereby adverse effects could be mitigated; the failure of the BLM to adequately recognize that Areas of Potential Effect are much greater than the immediate area subjected to direct surface disturbance; and the absence of a clearly defined public education and law enforcement strategy to promote proper behavior on and around archaeological sites that are adversely impacted by competing uses of public lands. The specific concerns are discussed collectively below under Recreation/Travel Planning.

We recognize that management strategies articulated in all four action alternatives constitute significant improvements over current approaches (Alternative N). We also recognize that all four alternatives propose management actions that will have direct, indirect and cumulative adverse effects to historic properties that are currently unknown to the BLM. Although Alternatives C and D offer the greatest potential for long-term preservation of known and unknown cultural resources, we are fundamentally concerned that BLM decision-making regarding all of the alternatives has been predicated on insufficient data related to the nature, diversity and distribution of archaeological resources within the planning area, and the Draft EIS articulates few proactive measures whereby these data gaps will be ameliorated. Quite simply, the BLM cannot manage resources it does not know exist, and management decisions made without baseline data will inevitably result in adverse and unanticipated consequences to the integrity of historic properties. As discussed in greater detail below, this is particularly relevant to the designation of ORV routes without proper efforts to determine the nature, diversity and

distribution of cultural resources that have already been adversely affected along those routes, or that could be adversely affected in the future, both directly and indirectly.

The cultural resources found within the jurisdiction of the RFO constitute some of the most scientifically significant resources anywhere on the Colorado Plateau. Archaeological investigations at Cowboy Cave, located on the eastern periphery of the RFO, virtually defined Archaic adaptations on the northern Colorado Plateau (Jennings 1980). The Fremont Culture was initially defined through investigations more than 75 years ago in Wayne County and northern Garfield County in the central portion of the RFO (Morss 1931). Subsequent investigations later defined two markedly distinct Fremont adaptations within the RFO: the Sevier Fremont found in the western portion of the RFO, who were dependent to a greater degree on riverine and marsh resources, and the San Rafael Fremont in the eastern portion, who were dependent to a greater degree on maize horticulture (cf. Marwitt 1970; Madsen 1979). And cultural resources found within the RFO remain of tremendous scientific importance to archaeologists investigating the cultural interface between Ancestral Puebloan (Anasazi) farmers on the south and Fremont farmer-foragers on the north (cf. Spangler 2001).

Resources found within the RFO are also internationally renowned for both their scenic quality and their recreational values, among them opportunities to visit and enjoy archaeological sites. We contend that cultural resources are indeed a major attraction to visitors to the region, and that management of these resources for their long-term preservation and protection will enhance local tourism-based economies. We concur with the BLM's assessment that "increased public demand for use of the lands, and increase in conflict between competing resource values and land uses" will continue to be a major challenge for federal land managers in the decades to come (DEIS 1-2). As such, we encourage the BLM to incorporate more aggressive public outreach efforts, regardless of which alternative is chosen.

Inadequate Sample Size

The Draft EIS is fundamentally flawed in that previous archaeological surveys collectively constitute an inadequate and statistically invalid sample, and hence the management alternatives are based on incomplete and inadequate data related to the nature, diversity and distribution of cultural resources. As stated in Section 3.3.5 Cultural Resources, BLM lands within the RFO have benefited from previous Section 106 compliance activities associated with natural resource extraction that resulted in a series of Class III investigations that identified "several thousand cultural properties." However, only about 5 percent of the RFO has been subjected to archaeological inventory.

The reality is that most previous cultural resource inventories were driven by extractive projects and other site specific uses of federal lands that required Section 106 compliance, and that these inventories, usually narrow in scope, did not lead to the investigation of the variety of environmental and ecological ranges present. It therefore must be concluded that entire environmental and ecological ranges remain unexamined, and that the RFO has little or no data as to the nature, diversity or distribution of cultural

resources on roughly 95 percent of the lands it manages. Given the paucity of baseline data and absence of survey data for most of the RFO, even estimates based on best available data have little or no basis on fact.

CPAA recognizes that it is difficult to plan for and manage cultural resources that remain largely unknown and undocumented. However, it must also be recognized that the cultural resource data on which the four action alternatives are based do not comprise a meaningful and statistically valid sample for the entirety of the RFO. Hence, the data used by BLM staff are actually a reflection of the amount of Section 106 compliance in particular areas but they may not reflect actual site densities or land-use patterns. A cursory review of archaeological site data on file with the SHPO revealed astonishingly few large Class III block surveys or large-scale Class II random sample surveys anywhere within the RFO whereby these data gaps could be ameliorated.

Concerns over inadequate sampling are relevant to management strategies reflected in all action alternatives, each of which could have detrimental impacts to unknown and undocumented cultural resources. For example, each of the action alternatives proposes the designation of official ORV routes in many areas that have never been subjected to Class III inventories to determine the nature, diversity or distribution of cultural resources that could be impacted by vehicular access. That some of these ORV routes are considered to be "existing" does not relieve the BLM of its Section 106 responsibilities to conduct Class III inventories prior to designation. The paucity of baseline data makes it difficult, if not impossible, to implement strategies where impacts to cultural resources could be avoided, minimized or mitigated (this specific issue is discussed in greater detail later in this review).

We emphasize that the BLM cannot properly manage cultural resources it does not know exist, and hence the absence of a statistically valid sample militates against adequate consideration of potential impacts to unknown cultural resources. In effect, the database is little more than a *de facto* corroboration of the failure of the BLM over the past two decades to take seriously its Section 110 responsibilities to implement a proactive preservation program for the identification, evaluation and National Register nomination of historic properties under its jurisdiction or control.

Although the action alternatives identify different priority areas for future survey (cf. DEIS 2-18), these areas were identified based on their probability to contain abundant and significant archaeological resources. None of the action alternatives articulate management strategies or objectives to inventory the broad suite of environmental and ecological ranges evident throughout the RFO whereby the nature, diversity or distribution of cultural resources could be determined. The absence of more geographically inclusive block surveys (Class III) or random sample surveys (Class II) of different environmental and ecological ranges perpetuates the data gaps that have precluded informed management decisions in the past.

In light of these considerations, we recommend:

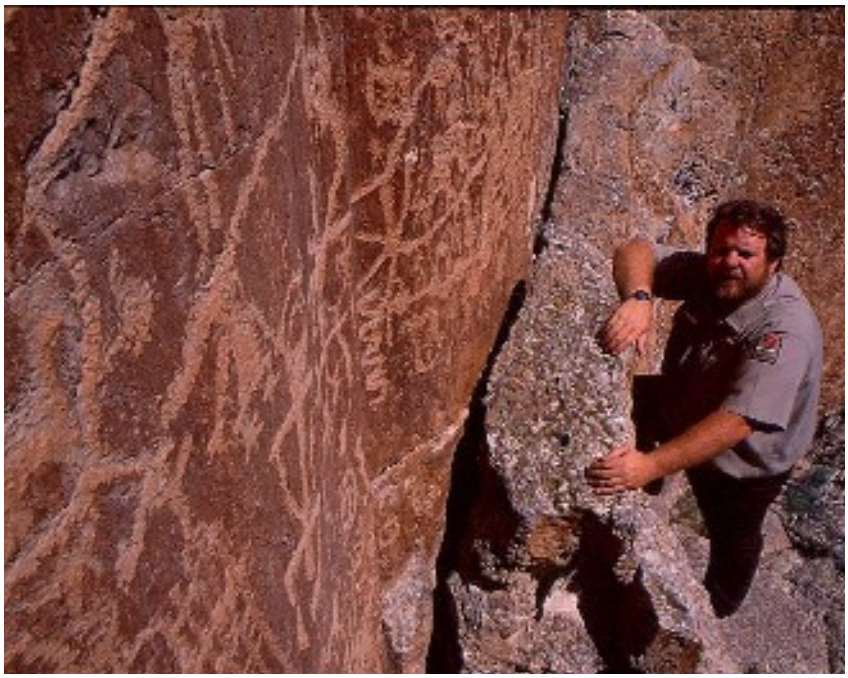
- The Draft EIS be revised to include a commitment to a meaningful and statistically valid inventory of representative lands within the RFO whereby the diversity, distribution and density of cultural resources can be properly considered in future land management decisions.
- The Draft EIS be revised to reflect the RFO intent to prioritize Class II and Class III cultural inventories that will ameliorate current data gaps through examination of geographic, environmental and ecological ranges that remain unexamined.
- Section 3.3.5 be revised to reflect detailed data. The casual reference to "several thousand sites" identified in the RFO should be replaced with actual numbers of documented sites. Furthermore, the section on site types would benefit greatly from more detailed statistical data as to the nature and distribution of documented sites within the identified categories. These data are easily available through the IMACS database and are standard on other BLM Draft EIS documents.

Section 110 Responsibilities

As stated above, the paucity of baseline cultural resource data through which informed management decisions could be made is a direct consequence of the RFO failure to embrace its Section 110 responsibilities in the past. Section 110 of the National Historic Preservation Act unequivocally specifies the responsibilities of federal agencies to proactively identify, evaluate and nominate National Register-eligible historic properties under their jurisdiction or control. Although the formal listing of sites on the National Register occurs for a small portion of the total sites in any given county or state, the paucity of listed sites is actually a reflection of the failure of the federal agencies over the past 40 years to prepare and submit nominations to the Keeper of the Register. Only three BLM localities within the RFO have been listed on the National Register: Cowboy Caves (listed in 1980), Bull Creek Archaeological District (listed in 1981) and Starr Ranch (listed in 1976).

The archaeological resources of the RFO include archaeological sites that are visually spectacular, as well as significant sites that are admittedly not as visually remarkable. It is emphasized that visual appeal is not a definitive standard whereby National Register sites or districts are deemed appropriate for listing (see *National Register Bulletin 16A*). Many known archaeological sites are clearly eligible under Criterion A in that the are associated with broad patterns of human prehistory on the Colorado Plateau (e.g., Archaic and Fremont); are eligible under Criterion C in that they embody distinctive characteristics of type, period or method of construction, or represent a significant and distinguishable entity, even if the individual sites lack distinction (e.g., Barrier Canyon Style and Fremont rock art); and most importantly are eligible under Criterion D in that they have yielded or are likely to yield important information about the prehistory of the region. Euroamerican historic sites in the RFO could also be eligible under these three criteria, and potentially under Criterion B if they are associated with important individuals. It is emphasized that some of the most important sites in the history of Utah archaeological research are located within the boundaries of the RFO.

The Draft EIS utterly fails to recognize the agency's mandates under Section 110 of NHPA to identify, evaluate and nominate, instead implying in Section 1.5.1.2.1 that "proposal" of cultural sites to the National Register is an administrative action that does "not require a planning decision to implement" (DEIS 1-9). CPAA strongly disagrees with this conclusion. We believe the nomination of archaeological sites or archaeological districts to the National Register is a fundamental component of land use planning, and that National Register eligibility must be a consideration in all of the action alternatives whereby special management of National Register resources can be analyzed. Indeed, at least one other Utah BLM field office has resisted the nomination of an archaeological district to the National Register because the proposed district was not part of its current Resource Management Plan. It should also be noted that the Richfield Draft EIS is the only draft RMP anywhere in the region not to acknowledge at least an intention to address Section 110 responsibilities; some plans (e.g., Moab, Little Snake) even identify priority lists of sites they intend to nominate under different alternatives.



Unlike the other draft RMPS currently under consideration, the RFO Draft EIS offers no indication that it will initiate proactive Class II and Class III inventories to identify sites in areas of high recreational use, along ORV routes, hiking and equestrian trails, areas lacking existing inventories, ACECS and buffer zones around communities. Furthermore, the identification of historic properties is only one component of the agency's responsibilities in this regard. Section 110(2)(a) also mandates the agency implement a program to ensure "that historic properties under the jurisdiction or control of the agency are identified, *evaluated and nominated* to the National Register" (emphasis added). There is no indication the RFO intends to fully embrace its responsibilities under Section 110. It is indeed a sad commentary on the BLM's abrogation of its Section 110 responsibilities in the past that only three sites have been

formally listed in the past 40 years, none in the past 25 years. The Draft EIS offers little encouragement that that trend will improve during the life of the new RMP.

The absence of a stated strategy to actually nominate sites to the National Register would appear to reflect a common misperception that National Register designations are accompanied by greater levels of protection for listed resources. Under provisions of the National Historic Preservation Act, sites *eligible* for listing are afforded the same protection as sites actually listed on the National Register. Consequently, any eligible properties identified in the past or during the course of future inventories that are deemed eligible for listing would be afforded the same degree of protection as if they were actually listed. Given the federal agency's mandate to actually "nominate" properties to the register, the Draft EIS should reflect the commitment of the BLM to actually nominate eligible sites and archaeological districts where the cultural resources have been determined eligible for National Register listing.

The stated intent expressed in the Draft EIS that the RFO will initiate inventories in selected areas is an important improvement. CPAA supports new inventories for Horseshoe Canyon South, Trough Hollow and Bull Creek, as articulated in Alternatives B, C and D. However, the identification for future inventory of "areas of special cultural designation that have not been fully inventoried" (DEIS 2-19) is vague and warrants clarification. What specifically are "areas of special cultural designation"? Are these National Register sites/districts or Traditional Cultural Properties? Do they include special "designations" such as Areas of Critical Environmental Concern and Wild and Scenic River segments?

It should also be noted the historic practice in BLM field offices throughout the West has been to prioritize budgets based on greatest demand, usually to the neglect of non-consumptive management initiatives. As stated in the Draft EIS, energy development has received enhanced priority through the Energy Policy and Conservation Act of 2001 (DEIS 1-13). Given that non-energy-related BLM budgets have been static or have declined in recent years, there would appear to be little incentive for the RFO to prioritize funding for non-project-driven initiatives, including Class II and Class III surveys of priority areas articulated in the action alternatives.

Given these considerations, it is recommended that:

- The EIS be augmented to articulate the RFO commitment to its Section 110 responsibilities, including proactive Class III and Class II inventories of different ecological ranges (see discussion above), areas impacted by increased recreational activities and areas with special management designation (see discussion below).
- The EIS should explicitly recognize that proactive cultural resource work is a critical need accentuated by increased ORV use. The level of proactive cultural resource program work to be performed annually should be specifically stated in the RMP, and funding for such work should be prioritized within the RFO budget.

- Funding shortfalls to address issues like site monitoring and protection can be ameliorated through partnerships with advocacy groups, site stewards, non-profit organizations and research entities through the aggressive use of Challenge Cost Share grants and other non-BLM funding sources. The EIS should explicitly state the willingness of the BLM to engage non-governmental partners in its proactive cultural resource management initiatives.
- The BLM should aggressively pursue the nomination to the National Register of historic properties under its jurisdiction, including archaeological sites and archaeological districts of local, regional and national significance. These efforts should explicitly reflect the agency's commitment to Section 110 compliance regardless of which alternative is chosen.
- The BLM should aggressively seek public input regarding which sites should be prioritized for nomination. This could include discussions with interested Native American tribes, the Utah Professional Archaeological Council, local and statewide historical societies, and historic preservation advocacy organizations such as the National Trust for Historic Preservation.

Transportation/Travel Planning

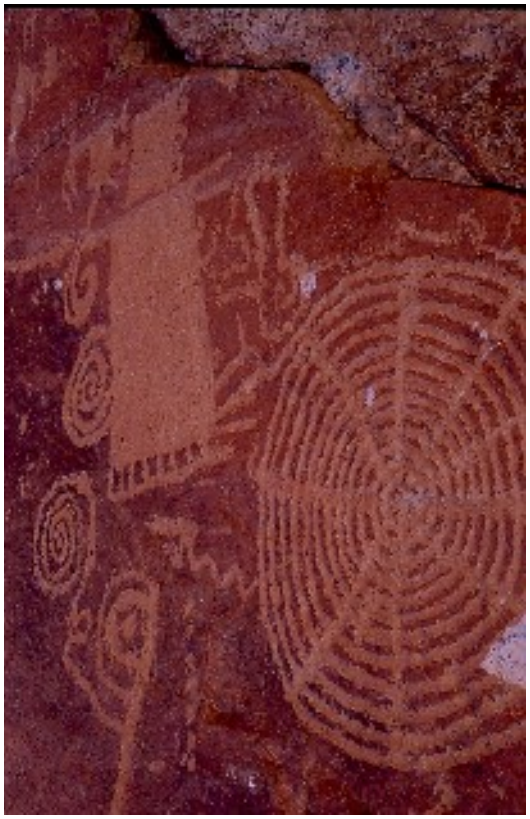
The fundamental component of the Draft EIS is to address growing needs to manage off-road vehicles and the competition between ORV use and other environmental values and uses. As stated in Section 3.4.4.1 (DEIS 3-70), the number of ORV registrations has grown by 70 percent between 2001 and 2004, with a concurrent increase in the use of ORVs on public lands. This level of ORV use was not anticipated in the current land-use plan (Alternative N), and consequently most RFO lands are currently open to cross-country travel. We concur with "Issue 1" that increased ORV use has precipitated greater conflicts over resources on public lands and how they are used, and that "ORV use needs to be managed, including identifying areas to be restricted or closed for the protection of other resource values" (DEIS 1-7). It is highly probable that ORV use will continue to increase, and that such use has already or will in the future adversely impact cultural resources in the RFO.

It is emphasized that the BLM's intent to designate ORV routes under all action alternatives is a significant improvement over current management approaches (Alternative N) where most lands are open to cross-country ORV travel. However, the mere designation of trails does not ameliorate the potential adverse effects to archaeological sites and historic properties along those routes, most of which remain undocumented. There is also an inherent assumption throughout the Draft EIS that all individuals using designated trails will remain on the designated trails.

Of particular concern, the Draft EIS does not explicitly state that Section 106 compliance (e.g., Class III inventories) will be required *prior* to designation of routes currently in use. As such, the Travel Plan is fundamentally flawed on two important points: (1) The failure of the BLM to conduct adequate analysis in the past related to ORV impacts along routes currently being used by motorized vehicles was and still

remains an abrogation of agency's Section 106 responsibilities, and the failure of the agency to recognize or correct this deficiency in the new Travel Plan appears to validate and perpetuate the agency's failure to comply with Section 106 requirements in the past; and (2) the failure to require Class III inventories along routes prior to designation suggests the agency official has already made a determination, as per 36 CFR 800.3(a), that travel route designations in such instances are not an undertaking as defined in 36 CFR 800.16(y).

CPAA strongly disagrees with any determination that designations of existing routes are not a federal undertaking. Section 36 CFR 800.16(y) clearly states that an undertaking is "a project, *activity* or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency" (emphasis added). CPAA contends that ORV route designation is an activity managed by the BLM, and that BLM resources are being expended to plan for ORV route designation and use areas and to enforce ORV travel restrictions. As such, it is an activity funded in whole or in part under the direct jurisdiction of a federal agency, and clearly meets the definition of an undertaking. As such, the agency official has a responsibility to determine whether this activity has the potential to cause effects on historic properties (36 CFR 800(a)) and to initiate the Section 106 process.



The Draft EIS is remarkably equivocal on exactly what Section 106 compliance would be required as part of the Travel Plan. There is no explicit statement that designation of existing or future ORV routes would require Section 106 compliance

either prior to or subsequent to the designation. The Draft EIS also makes no effort to address Areas of Potential Effect outside of designated corridors, even acknowledging under various action alternatives that mechanized vehicles would be allowed to pull off of designated routes for parking, staging and camping. Section 4.3.5 acknowledges that these activities would have deleterious impacts on cultural resources, but offers no management strategies to ameliorate the adverse effects. The mere fact the action alternatives acknowledge these adverse effects but offer no management strategy to avoid, minimize or mitigate damage to cultural resources would appear to be a complete abrogation of BLM's NHPA and FLPMA responsibilities. Furthermore, it appears to extend preference to one user group (ORVs) over other resource values.

Improper ORV use constitutes perhaps the greatest single threat to the long-term preservation of cultural resources in the RFO and elsewhere in the West. The Draft EIS clearly recognizes that both legal and illegal ORV use are damaging resources and creating conflicts with other users. There is also little dispute that ORVs enhance the ability of users to penetrate the backcountry where patrols are difficult. This may lead to secondary impacts to cultural resources from increased vandalism and theft. There is no question that ORVs have greatly enhanced the ability of the public to gain access to and enjoyment from cultural resources that have previously been protected by their isolation, lack of visibility or distance from an improved road. There is also little dispute that some individuals have utilized ORVs to facilitate damage to cultural resources, either directly or indirectly, and that ORV access has increased inadvertent damage to cultural resources.

CPAA research in eastern and southeastern Utah has demonstrated that damage to archaeological sites by ORVs can be both direct (driving vehicles through archaeological deposits) and indirect (using ORVs to gain access to topographic locations where sites are located). In Arch Canyon in southeastern Utah, indirect impacts were considered to be more common in that archaeological sites were being impacted by pedestrians who used mechanized vehicles to arrive at or near site locations. Research also found that sites with the greatest evidence of adverse human impacts were those visible from an existing ORV route (Spangler 2006).

Similar research in Range Creek in eastern Utah also demonstrated a direct relationship between vehicle access and frequency of vandalized sites. Sites within 200 meters of an existing vehicle route were more likely to have been vandalized, as were sites visible from a vehicle route regardless of distance (Spangler, Arnold and Boomgarden 2006). These findings are consistent with other vandalism studies in the Southwest. Nickens et al. (1981) found that archaeological sites within 100 meters of an existing dirt road that were more than 20 miles from a town were more likely to have been vandalized; these findings were supported by interviews with known artifact collectors. Simms (1986) also observed a correlation between vandalism and visibility from the road, distance from the road and ease of access; all alcoves and rockshelters in that sample had been vandalized. Ahlstrom et al. (1992) found site type to be a major factor in vandalism.

In Tenmile Canyon near Moab, CPAA studies demonstrated a prevalence of direct and indirect impacts from both legal and illegal ORV activities. Most ORV users observed during the four-day study remained on the signed trail, which directly impacts only one of 21 sites investigated. However, large numbers of individuals left the signed trail, using vehicles to gain access to bench areas above the trail where they directly impacted cultural deposits at four sites. Indirect impacts were observed at 12 other sites where vehicle tracks were observed within 50 meters of archaeological sites with significant potential for subsurface deposits associated with the identified site. At least 12 of 21 sites had been maliciously vandalized, presumably by individuals using motorized vehicles to gain access to the remote site locations at some point in the past (Spangler and Boomgarden 2007).

Given the thousands of miles of existing ORV trails currently being utilized within the RFO, it is highly probable that significant impacts to historic properties have already occurred throughout the planning area, although there is little or no baseline data currently available to validate this assumption. Unlike permitted uses, no cultural resource inventories were conducted in association with the development of these existing ORV trails. Given that most of the BLM lands are currently open to cross-country travel, these activities have likely already impacted historic properties, although the extent of these impacts are not quantifiable due to the fact that most cultural resources remain unknown and undocumented. CPAA has been unable to identify any public outreach effort by the BLM in Utah to educate ORV users as to the fragile and irreplaceable nature of cultural resources, to promulgate proper etiquette among ORV users who visit these resources or to enlist the vigilance of the ORV community in reporting vandalism and looting.

The primary consideration in this discussion is that ORVs allow greater public access to archaeological sites, and that this access facilitates adverse effects. This is tangentially acknowledged in the Draft EIS with statements in all action alternatives to the effect that reduced mileage of designated trails would reduce impacts to cultural resources, as would limiting the distance off a designated trail that ORVs could travel for parking, staging and camping. CPAA concurs with the Draft EIS that "increased access to cultural sites could increase contact by visitors who could intentionally damage sites by collecting artifacts, vandalizing, illegally digging or otherwise excavating the sites…. Reducing such access by closing roads or restricting travel could this protect cultural resources" (DEIS 4-67).

As discussed above, damage to or destruction of archaeological sites is most prevalent along existing routes, usually within 200 meters of an existing route (cf. Spangler, Arnold and Boomgarden 2006). Hence, the limitation of ORV travel to existing or designated routes may not significantly reduce impacts to cultural resources adjacent to those routes. These data stand in contrast to statements in the Draft EIS that damage would be limited to the immediate vicinity of the designated route (cf. Alternative C DEIS 4-76). None of the alternatives indicate what the Area of Potential Effect would be.

There seem to be inherent assumptions throughout the DEIS that (1) all ORVs will remain on the designated trail, and hence there would be no vehicular damage to sites adjacent to the trail; and (2) that designated ORV trails would not facilitate pedestrian access to archaeological sites that could be subjected to illegal looting, vandalism, improper surface collection of artifacts and increased erosion and structural degradation caused by public visitation. Both assumptions are in conflict with data elsewhere that demonstrate a significant portion of ORV users do not remain on designated trails (Spangler and Boomgarden 2007), that vehicular routes facilitate greater pedestrian access to archaeological sites that are then subjected to direct and indirect impacts (Spangler 2006) and that archaeological sites within 200 meters of a vehicle route are far more likely to be vandalized (Spangler, Arnold and Boomgarden 2006; see also Nickens et al. 1981 and Simms 1986). It must be considered probable that such damage has already occurred along existing routes, and that damage to known and unknown sites will continue in the future.

Historically, damage to historic properties along vehicle routes has not been well documented, and there has been little effort by the RFO to identify sites along ORV routes that have been damaged or are vulnerable to damage. In effect, there are no baseline data to evaluate the nature and extent of that damage. BLM's development of a major travel plan without basic information about the impacts of existing ORV use in these places puts the cart before the horse. It is difficult to see how the BLM can meet its statutory duties with respect to cultural properties if it has no or little information about how one of the major uses it proposes to authorize would affect these sites.

Alternatives C and D would offer the greatest protection to cultural resources from vehicular impacts. It is emphasized that all four alternatives are preferable to Alternative N that would not restrict cross-country ORV travel. It is also emphasized that restriction of ORV travel to designated routes, as articulated in all three action alternatives, is a dramatic improvement over current management approaches. However, the mere designation of thousands of miles of official ORV routes is meaningless without a BLM commitment of necessary resources to enforce such travel restrictions. Unlike other Travel Plans, this Draft EIS fails to acknowledge a risk that designated routes will be used to "pioneer" other routes, which will place cultural resources along the pioneered routes at significant risk. Given that caveat, it is imperative that Section 106 compliance be initiated as a component regardless of which alternative is chosen. In short, the BLM cannot manage for and properly protect resources that the agency does not know are there.

This is particularly relevant to Alternatives A and B (preferred) that call for cross-country ORV travel areas. As acknowledged in the Draft EIS, open play areas have considerable potential to result in damage to archaeological sites. Given such vehicular travel could result in direct and indirect adverse effects to cultural resources, Class III inventories of all lands open to cross-country travel should be initiated and completed prior to designation, and specific strategies should be implemented to ensure such travel does not adversely effect historic properties and/or to recover all scientific data that would be lost. These could include prohibitions on vehicular travel on or around

archaeological sites, fencing of vulnerable sites and/or complete data recovery. These efforts to avoid, minimize and mitigate adverse effects should be conducted with the assumption that cross-country travel will damage or destroy those sites, and that the damage is irreversible.

This makes Alternative A particularly problematic. This alternative would designate 449,000 acres as open to ORV travel. We contend that (1) the RFO has insufficient baseline data as to the nature, diversity and distribution of archaeological sites that would be impacted by cross-country travel, and (2) that it would be cost-prohibitive to conduct Class III inventories of such a large area. We also are troubled by the statement "the potential for new impacts to cultural resources is low since these areas have been subject to disturbance from cross-country use over recent years, and continued use of ORVs would not be expected to cause additional adverse impacts" (DEIS 4-71).

This statement is particularly problematic in that it asserts no additional adverse impacts, even though the BLM has little or no baseline data to know what sites are being adversely impacted, the nature of the impacts or the National Register eligibility of the impacted sites. It also fails to recognize that even though some scientific data will have been irretrievably lost to past ORV activities, it is highly probable most sites damaged through direct or indirect ORV activities will retain some scientific value, and that continued ORV use will inevitably result in continued degradation of the remaining scientific values that make these sites eligible for listing on the National Register. Nor is there any acknowledgement that future ORV use through archaeological sites could result in accelerated erosion that would expose subsurface cultural deposits not evident when the site surface was initially damaged.

Alternative B is certainly preferable to Alternative A in that it would reduce cross-country ORV travel areas to 8,400 acres. Again, it is emphasized the BLM has little or no baseline data on the nature, diversity and distribution of archaeological sites that would be damaged or destroyed under this alternative. And although Class III surveys are more feasible for a smaller area, a Class III survey of 8,400 acres will still require a tremendous commitment of limited BLM financial resources to ensure complete Section 106 compliance. This alternative does not explicitly state that Section 106 compliance would be conducted, although it clearly qualifies as a federal undertaking (see discussion above).

Even if the management of open travel areas were structured to avoid known archaeological sites, the nature of subsurface deposits is such that many archaeological sites may not be identified until after the ground surface has been altered, either through natural erosion or human factors. Hence, vehicular traffic may subsequently expose cultural materials that were not visible at the time a Class III inventory was conducted, enhancing the need for ongoing monitoring and future data recovery. This will require a significant ongoing commitment of limited BLM resources to ensure that damage to sites exposed in the future is avoided, minimized and/or mitigated. Furthermore, data recovery is an adverse effect that must be properly considered through the Section 106 process (cf. King 2000a, 2000b).

This concern is particularly relevant to the stated intent under Alternatives A and B that the BLM would consider and promote leasing of ORV open areas near communities "to encourage local management of ORV play areas. Generally these would include areas with existing surface disturbance" (DEIS 2-69). As stated above, even if Class III inventories were conducted prior to leasing, ground-disturbing activities could subsequently expose subsurface cultural deposits not visible at the time of the initial Section 106 compliance. It is unlikely that private or public entities holding these leases would have the archaeological expertise to conduct periodic monitoring or recognize subsurface cultural deposits as significant resources.

The designation of such an ORV "open play area" appears to extend preference to one user group over other irreplaceable values, including cultural resources, with no articulated rationale. Instead of "minimizing" impacts to cultural resources, it actually increases the likelihood that such resources will be damaged or lost. This approach also appears to be at odds with BLM management of open ORV areas elsewhere. For example, Little Sahara Recreation Area allows open travel only in those areas where there are no competing values. Consequently, large areas of the recreation area have been placed off-limits to vehicle travel to protect sensitive plant species and natural values (see www.ut.blm.gov and www.utah.com/playgrounds). A similar approach to the protection of cultural resource values in open play areas would be appropriate in the RFO.

If Class III inventories of proposed open play areas demonstrates the presence of significant historical properties, closure of open play areas to protect cultural resource values is entirely consistent with Executive Orders 11644 and 11989 that mandate federal land managers "protect the resources of (federal) lands" and that agency heads who determine that the use of off-road vehicles is causing or will cause adverse impacts to cultural or historical resources shall "immediately close such areas or trails to the type of off-road vehicle causing such effects, until such time as he determines that such adverse effects have been eliminated and that measures have been implemented to prevent future recurrence" (Executive Order 11989). Given the likelihood that at least some potentially eligible sites will be identified in open play areas in the RFO, the mitigation of adverse effects to eligible properties can only be accomplished through site avoidance, in effect a closure of open play areas as is articulated in Alternatives C and D. If the BLM proceeds with its preferred Alternative B, those areas demonstrated through future Class III surveys to have eligible properties should be closed to ORV travel.

Also problematic are allowances specified in Alternatives A, B and C for parking, staging and camping. Alternative A would allow vehicles to pull off of designated routes 100 feet for parking and staging, and 300 feet for camping (DEIS 4-71). Alternative B would allow vehicles to pull off of designated routes 50 feet for parking and staging, and 150 feet for camping (DEIS 4-73). And Alternative C would allow vehicles to pull off of designated routes a distance of 25 feet and camping would be limited to designated campgrounds (DEIS 4-76). Alternative D is similar to Alternative C but no allowances are specified (DEIS 4-78).

Given the thousands of miles of ORV routes proposed for designation under the various action alternatives, allowances for vehicles to leave the designated route creates a scenario whereby known and unknown cultural resources adjacent to the routes would be directly impacted by vehicular traffic (e.g., those within 150 feet of the designated route as stated in Alternative B). "Inadvertent impacts" are acknowledged in the alternatives, but no strategies are identified to avoid, minimize or mitigate those impacts. Such allowances accentuate the need for Section 106 compliance not only of the route corridor, but all areas within the allowance for parking, staging and camping whereby cultural resources would be directly impacted. As discussed above, we contend that the Area of Potential Effect is much larger, extending at least 200 meters beyond the limits established for off-route parking, staging and camping areas. This would mandate a Class III survey of at least 300 meters on either side of the centerline under Alternative A, 250 meters on either side of the centerline under Alternative B, and about 210 meters under Alternative C.

Any allowance for camping along designated routes creates significant management challenges not articulated or analyzed in the Draft EIS. As articulated by Sullivan et al., recreational users of public lands may not know or understand what constitutes heritage resources, and that cultural resources are being damaged by "people who are unaware that they are behaving destructively in an archaeologically rich landscape" (2002:42). Inadvertent vandalism to heritage resources could result from camping on or around archaeological sites, construction of hearths within cultural deposits, harvesting of prehistoric wood construction beams for fire pits, removal of culturally rich soils to extinguish fires, burying of modern human trash and waste in archaeologically rich soils, and removal of surface vegetation for fires, thereby enhancing erosion of archaeological sites (see also Hartley and Vasser 2004; Uphus et al. 2006).

We emphasize that the BLM elsewhere has developed detailed plans to accommodate ORV use in archaeologically sensitive areas that could be an appropriate model for the RFO. For example the Tangled Lakes Archaeological District (TLAD), a BLM-managed National Register district in Alaska, encompasses 185,321 acres and more than 600 archaeological sites. Since the 1980s, the Glennallen Field Office has proposed designating ORV routes with the express purpose of protecting the high density of archaeological sites. A draft travel plan calls for seasonal restrictions on designated trail use, prohibits off-trail travel for game retrieval with some exceptions, imposes weight restrictions on vehicles, expands efforts to provide educational materials to trail users about the archaeological significance of the region, provides suggestions for best trail-use practices, provides for a heightened law enforcement presence during high-use periods, and calls for expanded monitoring of trails. The plan also defined the area of impact due to motorized use to be one-half mile on either side of a designated trail (BLM 2006).

The TLAD has applied a tripartite management approach that clearly acknowledges the potential conflicts between ORV users and the protection of archaeological resources listed on the National Register. According to the proposed plan, ORV travel is to be restricted to those routes where impacts to resources would be minimized and archaeological sites avoided. Second, these restrictions will be augmented

with proactive efforts to educate trail users about the sensitivity and significance of archaeological resources, as well as rules, regulations and best practices intended to protect those resources. And third, the plan calls for enhanced law enforcement and monitoring of potential impacts.

As it relates to the Travel Plan, we also emphasize that any approach that limits vehicular access is an effective management tool to further the long-term preservation and protection of archaeological sites. The paucity of existing roads in roadless areas has facilitated a much higher level of protection of cultural resources and a corresponding minimization of impacts to such resources (see Spangler et al. 2006; Spangler et al. 2007; Spangler et al. 2008). As such, the management of these lands as roadless areas would greatly enhance the protection of cultural resources and minimize future impacts through prohibitions on ORV use. Alternative D is certainly preferable in that it would offer enhanced protection for cultural resources in areas where they could become vulnerable to adverse effects resulting from ORV travel and other activities. However, even Alternative D does not offer full protection or minimization of impacts to cultural resources in roadless areas on a comprehensive basis.

In light of these considerations, we recommend:

- All ORV travel should be restricted to designated routes and that the designation of all ORV routes must be based on full Section 106 reviews of all direct and indirect adverse effects resulting from enhanced access to backcountry areas and increased use of travel corridors resulting from formal designations.
- The Class III inventory and site evaluations be conducted along existing and designated routes, and these inventories be expanded to include areas of indirect impacts, with specific focus on identifying cultural resources in adjacent topographic settings that could be impacted by increased vehicular access. This should include, but not be limited to, the identification of rockshelters with potentially intact cultural deposits that are visible from a designated route regardless of distance, and to all other localities within at least 200 meters of an existing route.
- If camping is allowed along the designated routes, all areas within the corridor where camping, parking and staging should be subjected to Class III inventories, as well as an APE of 200 meters beyond the maximum point allowed for such activities.
- Historically, site monitoring has consisted of on-site inspections with minimal field notes and substantial reliance on institutional memory as to what the original site condition was. It is recommended that the RMP require that any site monitoring program include a uniform statewide database whereby impacts to cultural resources can be accurately and consistently measured and documented, and site conditions compared and contrasted over time in a manner that will facilitate more informed management decisions.
- We concur that BLM should encourage “Leave No Trace” and “Tread Lightly” (DEIS 2-44), but we believe such efforts should also include public

outreach efforts to educate ORV users about the fragile nature of cultural resources, the laws protecting those resources, "best practices" expected of ORV users in archaeologically sensitive areas, and proper procedures to follow when encountering cultural resources or when observing improper or illegal behavior. The BLM should also implement a mechanism whereby visitors can report ORV damage and violation of rules to BLM personnel. Various methods of reporting improper activities (e.g., phone numbers, Internet) should be widely advertised to facilitate maximum public participation.

- Route or area closures are an appropriate and proven management tool to mitigate the adverse impacts of ORVs on and around archaeological sites. As demonstrated in Range Creek in eastern Utah, these closures are most effective when accompanied by an administrative commitment to maintain a visible law enforcement presence (Spangler, Arnold and Boomgarden 2006). The plan should clearly specify such a management strategy.
- The EIS should clearly state that Class III inventories, site assessments and site mitigations will be completed prior to the designation of ORV routes, including existing routes and open ORV areas, and that cultural resource protection will be a fundamental goal of any transportation planning.
- In the event the BLM leases open play areas near communities, the RMP should state that lease stipulations will include periodic monitoring requirements by qualified archaeologists, as well as provisions to allow the BLM to terminate the lease to protect cultural resources from additional degradation (e.g., closing the area to ORVs) if needed to protect those resources.
- CPAA concurs with the management action common to all alternatives that rock climbing not be allowed within 300 feet of cultural sites (DEIS 2-44)

Special Management Designations

CPAA believes that designation of special management areas, including ACECS, Wild and Scenic River segments, and lands with wilderness qualities are effective management tools to foster greater on-the-ground management and protection of *all* affected resources in a sensitive area, including cultural resources that may or may not be known. We concur with "Issue 4" that "recreational use needs to be managed," including identifying areas that require special management attention due to conflicts between user groups and/or impacts on other resources (DEIS 1-7). Special management designations could result in greater management focus, priority funding for those areas most at risk, and limitations on ground-disturbing activities that could result in damage to cultural resources.

CPAA unequivocally supports the establishment of Areas of Critical Environmental Concern as articulated in Alternatives B, C and D. In particular, proposed ACEC designations articulated in Alternatives C and D for the Bull Creek Archaeological District, Dirty Devil/North Wash, Fremont Gorge/Cockscomb, Horseshoe Canyon, Quitchupah and Thousand Lake Bench could greatly enhance proactive management and

protection of the substantial and remarkable cultural resources known to exist in those areas. We also emphasize that ACEC designation in other areas specified in Alternatives B, C and D could foster greater protection for cultural resources that currently are unknown due to the paucity of baseline inventories there.

As such, we support:

- ACEC designations for the Bull Creek Archaeological District, Dirty Devil/North Wash, Fremont Gorge/Cockscomb, Horseshoe Canyon, Quitchupah and Thousand Lake Bench areas, all acknowledged in the DEIS as having remarkable cultural values.
- An ACEC designation for the Henry Mountains, an area with minimal archaeological baseline data that is known to contain significant cultural resources. This area is also a Traditional Cultural Property of tremendous historical and spiritual significance to the Navajo Nation, and it should be managed accordingly.

As with ACEC designation, the designation of river corridors as Wild and Scenic offer additional protections to cultural resources found along those water sources. In water-stressed environments, such as those found in the RFO, human populations were tethered to a greater or lesser degree to permanent water sources, in particular perennial and ephemeral streams, springs and rivers (Spangler 2001). In addition to wild, scenic and recreational qualities, "river" segments proposed for inclusion in the WSR under Alternatives B, C and D would also have been the focus of significant human adaptations throughout prehistory, and that the nature of these resources remains largely unknown due to the absence of baseline data.

Of those river segments identified for possible WSR designation that have remarkable cultural values, Alternative B (preferred) includes only the Dirty Devil River, although the Fremont River Gorge is likely to contain significant but as-yet-unknown cultural resources that would benefit through WSR designation. Alternatives C and D include the Dirty Devil River, as well as segments of Fish Creek and Quitchupah Creek, all of which have remarkable cultural values, as appropriate for WSR designation. Hence, Alternatives C and D would offer greater protection and management of those cultural resources found in optimal environmental niches along these river/stream corridors. It is emphasized that evidence of prehistoric adaptations will likely be found along most, if not all water sources in the RFO, and these should be of exceptional high density and quality to warrant aggressive BLM management regardless of which alternative is chosen or formal WSR designation.

Any plan to manage recreational use of riparian corridors, either as Wild and Scenic or though some other designation, should include:

- A management plan that includes the identification and documentation of cultural resources that may be impacted by recreational activities.

- The development of public outreach efforts that promulgate proper etiquette on and around cultural resources along riparian corridors.
- The identification of management strategies to protect cultural resources (e.g., areas where camping is prohibited such as rockshelters and alcoves).
- The development of a site monitoring plan to assess the cumulative impacts of recreation visitors on the cultural resources along riparian corridors.

CPAA concurs with the Draft EIS that all lands currently designated as WSAs should be managed in compliance with the BLM's Wilderness Interim Management Policy and terms of the Wilderness Act of 1964, that no designated routes or road construction be allowed within WSAs. It is also recommended that the EIS clearly state the BLM's intent to identify and monitor cultural resources within WSAs that are vulnerable to impacts from illegal ORV use and vandalism.

Management of lands for wilderness qualities, but without WSA designation, is also an effective management tool to further the long-term preservation and protection of archaeological sites. The paucity of existing roads in such areas has facilitated a much higher level of protection of cultural resources (see discussion above related to ORVs). As such, the management of these lands as potential wilderness would greatly enhance the protection of cultural resources through prohibitions on new road construction, restricting ORV use, and closing the areas to development that would precipitate new road construction and enhanced public access. Alternative D, although not optimal, is certainly preferable to the other alternatives in that it would offer enhanced protection for cultural resources in areas where they could become vulnerable to adverse effects resulting from ORV travel, energy development and other activities.

Factual Errors

The Culture History narrative found in Section 3.3.5 contains numerous factual errors and incomplete information that warrant a complete rewriting of this section to reflect current archaeological understanding of cultural resources in the RFO. Among the inaccuracies identified:

- Section 3.3.5.3 Cultural History Overview places the beginning of the Archaic Period at 5500 B.C. This temporal delineation may be valid for the Northwestern Plains (cf. Frison 1991), but it is not valid for any area within the RFO. The eastern portion of the RFO lies within the northern Colorado Plateau as traditionally defined and where scholars generally agree the Archaic Period began at about 8000 B.C. (cf. Agenbroad 1990; Schroedl 1991; see also Jennings 1980 specific to Cowboy Cave in the RFO). The western portion of the RFO lies on the eastern periphery of the Great Basin, where Madsen (1982) has placed the beginning of the Archaic Period at 7000 B.C. An Archaic temporal range of 8000 B.C. to 600 A.D. is generally accepted for most of the RFO.
- The same Culture History narrative also places the beginning of the Formative at A.D. 700. Most Utah prehistory scholars agree that behavioral

characteristics commonly attributed to the Formative were in place centuries prior to that time (e.g., maize agriculture, bow-and-arrow technology, residential and storage structures indicative of greater sedentism). However, the delineation of a "Formative Period" is typically reserved for that time after the introduction of ceramic technologies that enhanced the effectiveness of food processing and storage and resulted in population aggregation (see Spangler 2001 for an overview of these data). Scholars typically place the introduction of plain grayware ceramics north of the Colorado River, including all of the RFO, at about A.D. 600. By consequence, A.D. 600 is the beginning of the Formative as typically defined for most of Utah.

- Likewise, the same narrative states that evidence of agriculture exists in southern and southeastern Utah dated to about 1000 B.C. (DEIS 3-21). No such early maize radiocarbon dates have yet been reported from anywhere in Utah. The earliest maize dates north of the Colorado River were obtained from samples in the Escalante River (B.C. 266 calibrated midpoint) and the Elsinore Burial (B.C. 195 calibrated midpoint). These early dates suggest the possibility of nascent maize horticulture in the RFO as early as 200 B.C., although the vast majority of data suggest an introduction of maize horticulture sometime after A.D. 200 (see Spangler 2001 for an overview of early maize dates).
- Section 3.3.5.1.1 states that "Rock art has not been attributed to specific human groups with any degree of assurance, but it is believed that rock art within the RFO represents groups living from before 9000 B.C. to the present" (DEIS 3-19). Although attribution of prehistoric rock art to "specific human groups" is impossible, rock art is commonly attributed to cultural entities with a shared ideology through time and space. Hence, rock art sites can with some confidence be assigned to Archaic, Fremont, Anasazi, Athapaskan or other cultural entities, many of which have modern descendants who assign ceremonial significance to the images.
- Also problematic is that statement that rock art can be attributed to groups living before 9000 B.C. Although this is possible, there are no data to support such an early date. The oldest rock art style north of the Colorado River is Glen Canyon Style 5, which has a striking similarity to split-twig figurines dated to about 2000 B.C. Turner extended the beginning of this style of rock art in Glen Canyon to 2,000 to 6,000 B.C., suggesting these images constituted "… the best candidates for the earliest rock art in the New World" (1963:7). There is no evidence in the RFO or elsewhere in North America of rock art images dating to 9000 B.C.
- "Cist" is listed in the catalog of site types as small structures usually built for storage purposes. It states "They are slab lined or coursed masonry, generally about one meter in diameter. They are usually semi-subterranean but can occur on the surface, freestanding or attached to a cliff face or ledge" (DEIS 3-20). Surface masonry structures for storage are typically labeled as granaries, whereas subsurface structures are typically labeled as cists. The term as used in the Draft EIS commingles standard definitions for cists and granaries (see IMACS handbook). Hence, the term cist in the Draft EIS should

be replaced with "storage" or "storage facilities" to encompass all types of localities where items are stored for future use. It should also be noted that storage facilities were commonly utilized as burial chambers.

In addition, this section should be augmented with data on the actual number of sites identified, a chronological breakdown of known sites by site type, spatial patterns evident in the current database, the number of sites determined eligible for National Register listing and known data gaps that warrant attention through implementation of a new resource management plan.

Summary

As articulated above, of the alternatives provided by the RFO in the Draft EIS, Alternative D affords the best protection of cultural resources within the RFO for current and future generations, although it is emphasized that all four alternatives described in the Draft EIS are fundamentally flawed. All alternatives propose management actions that will have direct and indirect adverse effects to historic properties that are currently unknown to the BLM. Cultural resources are sensitive, irreplaceable resources with potential public and scientific uses, and as such are an important and integral part of our national heritage. Consequently, a planning document that directs management decisions, including ORV route designations, over the next 15 to 20 years must reflect a more careful consideration of the direct, indirect and cumulative effects to irreplaceable historic properties.

The risk to cultural resources is more than a hypothetical possibility. Ongoing research across the northern Colorado Plateau has demonstrated that the explosion in ORV use over the past two decades has resulted in significant degradation of archaeological and historic sites, and that these impacts are accelerating. As noted in the Draft EIS, "impacts to cultural resources from surface disturbance are long-term in nature; once a site has been impacted, the effect typically cannot be reversed" (DEIS 4-60). However, damage to archaeological sites may not be coequal with the destruction of archaeological sites, and we emphasize that sites previously damaged by ground-disturbing activities, vandalism and looting may retain scientific values that could be further degraded by continued non-management of those resources.

This is particularly relevant to ORV use. CPAA recognizes that responsible use of ORVs in certain areas is an appropriate use of federal lands. CPAA agrees with the Draft EIS that ORV use has become one of the fastest growing recreation activities in southern Utah, drawing thousands of visitors each year, and that continued growth in this recreation sector will constitute the most challenging management issue facing federal land managers in the West for many years to come. Consequently, the Richfield RMP and Travel Plan should reflect the BLM's careful consideration of the potential impacts of such activities on irreplaceable resources. These considerations should include, at a minimum, the articulation of agency objectives and strategies to avoid, minimize and mitigate potential adverse effects. These considerations are not clearly articulated in the Draft EIS, and as such it fails at a very fundamental level.

Cultural resources in the RFO are among the most spectacular and scientifically important anywhere in the West with considerable potential to contribute important new insights into how humans throughout history adapted to and lived within the constraints of these desert environments, how populations were limited by their access to and efficient use of water, how changing climates may have influenced their ability to grow food crops, how excessive population expansion may have exceed the carrying capacity of the local environment and prompted societal collapse, and how families and communities responded to environmental and social changes through time.

Research into these questions bears directly on current socioeconomic conditions in the arid West – an area characterized by periodic and persistent droughts, population growth, limited sources of water to accommodate growing populations, a disappearance of agricultural lands to housing developments, an influx of outsiders with different social and cultural values, and changing floral and faunal regimes that influence the viability of traditional lifeways such as livestock ranching. The preservation and protection of cultural resources for public enjoyment and scientific inquiry must be reflected through careful planning that fully considers the future adverse impacts of decisions made today. Thank you for considering my concerns and recommendations.

Best Regards,

Jerry D. Spangler, MA, RPA
Executive Director

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