

December 4, 2008

VIA HAND DELIVERY

Bureau of Land Management  
Utah State Office  
P.O. Box 45155  
Salt Lake City, UT 84145

NATIONAL  
TRUST  
FOR  
HISTORIC  
PRESERVATION®

**Law**  
DEPARTMENT

**Re: Protest of Sixteen Parcels Being Offered by the Utah State Office of the Bureau of Land Management in the December 19, 2008 Oil and Gas Lease Sale**

To Whom It May Concern:

Pursuant to 43 C.F.R. §§ 4.450-2 and 3120.1-3, the Colorado Plateau Archaeological Alliance, National Trust for Historic Preservation, Nine Mile Canyon Coalition and Utah Rock Art Research Association (collectively, Protestants) formally protest the following parcels being offered by the Utah State Office of the Bureau of Land Management (BLM) in the oil and gas lease sale scheduled for December 19, 2008:

|    | LEASE PARCEL          | FIELD OFFICE |
|----|-----------------------|--------------|
| 1  | UTU86856 (UT1108-83)  | Vernal       |
| 2  | UTU86876 (UT1108-86)  | Vernal       |
| 3  | UTU86877 (UT1108-87)  | Vernal       |
| 4  | UTU86850 (UT1108-328) | Price        |
| 5  | UTU86849 (UT1108-329) | Price        |
| 6  | UTU86851 (UT1108-330) | Price        |
| 7  | UTU86852 (UT1108-331) | Price        |
| 8  | UTU86853 (UT1108-332) | Price        |
| 9  | UTU86860 (UT1108-335) | Price        |
| 10 | UTU86878 (UT1108-337) | Price        |
| 11 | UTU86879 (UT1108-338) | Price        |
| 12 | UTU86881 (UT1108-340) | Price        |
| 13 | UTU86882 (UT1108-341) | Price        |
| 14 | UTU86883 (UT1108-342) | Price        |
| 15 | UTU86896 (UT1108-343) | Price        |
| 16 | UTU86898 (UT1108-345) | Price        |

## I. INTERESTS OF THE PROTESTANTS

The Colorado Plateau Archaeological Alliance (CPAA) is a Utah non-profit organization that seeks to protect and preserve the archaeological, historic and natural resources of the greater Colorado Plateau and Great Basin. CPAA advocates the protection of these important human landscapes through the use of sound,

legally defensible science, free of influence from corporate, government and political interests. CPAA also works with corporations, other non-profit organizations and governmental entities to create public awareness campaigns about the importance of protecting the archaeological and historic resources across the Colorado Plateau, including those found in Nine Mile Canyon and West Tavaputs Plateau.

The Nine Mile Canyon Coalition (NMCC) is a Utah non-profit organization dedicated to the preservation and protection of Nine Mile Canyon. To that end, NMCC develops educational and interpretative programs concerning the canyon and assists with the inventory of cultural resources in the canyon. Throughout its fifteen-year history, NMCC has worked in numerous projects to protect the cultural and historic resources of Nine Mile Canyon and the surrounding areas, as well as to enhance the experience of canyon users and visitors. NMCC members use areas of Nine Mile Canyon and the West Tavaputs Plateau included in this lease sale for a variety of professional, avocational and recreational purposes.

Congress chartered the National Trust for Historic Preservation (National Trust) in 1949 as a private charitable, educational and nonprofit organization to promote public participation in the preservation of our nation's heritage and to further the purposes of federal historic preservation policies of the United States. 16 U.S.C. § 468. The National Trust has more than 265,000 individual members and supporters nationwide, including more than 800 individual members in the State of Utah. With the support of these members, the National Trust works to protect significant historic sites and to advocate historic preservation as a fundamental value in programs and policies at all levels of government. Additionally, the National Trust has a well-documented interest in advocating for the protection of Nine Mile Canyon's internationally significant cultural resources. The National Trust has participated in the NEPA process for numerous natural gas exploration and development projects in the Nine Mile Canyon area in recent years, and has also provided monetary support for the preparation of a nomination of Nine Mile Canyon as an historic district to the National Register of Historic Places.

The Utah Rock Art Research Association (URARA) is the largest organization dedicated to Utah rock art. Its mission is to provide leadership in the preservation and understanding of the value of rock art, to encourage the appreciation and enjoyment of rock art sites and to assist in the study, presentation and publication of rock art research. URARA's 300 members have professional, academic and avocational interest in Utah rock art, and its membership represents the largest body of knowledge regarding Utah rock art. URARA members also have a strong interest in the cultural resources in the Nine Mile Canyon area and in the cultural preservation of the region, and conduct frequent educational field trips in the canyon. Additionally, URARA members frequently participate in efforts to document rock art and archaeological sites in the canyon, and have participated in the NEPA process for numerous projects and resource management plans affecting the canyon in recent years.

## II. INTRODUCTION

The Protestants have challenged each of the proposed leases that would likely require the lessee to access the parcel through portions of Nine Mile Canyon. As BLM is fully aware, industrial traffic associated with the development of federal oil and gas leases near Nine Mile Canyon is currently harming historic properties in the canyon, in particular prehistoric rock art panels located near the road. BLM is also aware that the West Tavaputs Plateau Natural Gas Full Field Development Plan (West Tavaputs Plan), for which BLM issued a draft environmental impact statement in February 2008, would increase traffic levels in the canyon by several hundred percent. Finally, BLM knows that numerous interested parties have repeatedly expressed serious concerns for the manner in which BLM is administering historic properties in Nine Mile Canyon, including the Protestants, Advisory Council on Historic Preservation, Environmental Protection Agency and the Hopi Tribe. In light of these circumstances, it is the belief and recommendation of the Protestants that BLM should defer each of the parcels located in the canyon or requiring access through the canyon from this and subsequent oil and gas lease sales until the following conditions have been met:

1. BLM prepares a supplemental environmental impact statement to the West Tavaputs Plan evaluating alternative access routes to the West Tavaputs Plateau, in particular the routes identified in the September 2008 report prepared by KPFF Consulting Engineers on behalf of the National Trust and NMCC entitled, "Alternative Access Route Feasibility Review, West Tavaputs Plateau Carbon County, Utah."
2. BLM resolves the adverse effects of the West Tavaputs Plan in consultation with the Hopi Tribe, Advisory Council and Utah State Historic Preservation Officer and completes the Section 106 process for this undertaking.
3. BLM issues the record of decision for the West Tavaputs Plan.
4. BLM consults with the Utah State Historic Preservation Officer, Hopi Tribe interested parties and members of the public to determine if amendments to the Price and Vernal RMPs are necessary to provide historic properties in Nine Mile Canyon with additional protection from the adverse effects of oil and gas leasing and development.

Of additional concern to the Protestants, the parcels included in the sale may lead to the construction of gas wells and associated infrastructure within the canyon, in particular in the section east of Cottonwood Canyon. Historic properties within this area have generally not experienced the same degree and type of harm as those located west of Cottonwood Canyon due to the presence of a locked gate near the mouth of North Franks Canyon and the lack of industrial traffic in this area. For this reason, the Protestants welcomed the news that BLM had "chosen to defer leasing in the Nine Mile Canyon area below the canyon rim and in the Desolation Canyon area

to further review stipulations and mitigation measures for this area.” Press Release, BLM, BLM Defers Additional Parcels From the December 2008 Lease Sale (Dec. 3, 2008). However, upon reviewing the errata sheet issued by BLM in connection with the press release, the Protestants discovered that at least nine parcels remained in the sale that include land beneath the canyon rim and that at least six of these parcels contain portions of the canyon bottom. Although the errata sheet lists many of these parcels as “partially deferred,” the Protestants have not been able to determine which portions of the parcels are subject to deferral, given the brief time between the posting of the errata sheet by BLM and the expiration of the lease sale protest period. As a consequence, it is not immediately apparent whether the Notice of Competitive Lease Sale as amended by the errata sheet, which, under 43 C.F.R. § 3120.4-1(c) and 3120.4-2, represents the official list of lands available in the December 19, 2008 lease sale, actually contains land beneath the rim of Nine Mile Canyon or not. Although the Protestants believe that BLM must defer all of the parcels from the lease sale the development of which will currently require access through Nine Mile Canyon, the Protestants also believe that BLM must amend the Notice of Competitive Lease Sale to clarify that no land beneath the rim of Nine Mile Canyon will be offered in the sale.

The map issued by BLM with the errata sheet complicates matters even further. This map, entitled “Nine Mile Canyon area Proposed & Deferred Lease Parcels as of December 2, 2008,” indicates that a number of parcels seemingly within Nine Mile Canyon have been deferred from the proposed sale, although the scale of the map does not allow for an accurate assessment of the parcels’ exact locations. Among the parcels shown on the map as being entirely deferred are several that the errata sheet lists as “partially” deferred. For example, the map depicts as being entirely deferred lease parcel UTU86879 (UT1108-338), which, in the initial offering, contained land both below the canyon rim and in the canyon bottom. However, the errata sheet indicates that BLM has only deferred a portion of this parcel. BLM, Errata Sheet 5 (Dec. 2008). Consequently, the errata sheet and deferred parcels map are inconsistent, and, in spite of the press release issued by BLM on December 3rd, the question remains whether BLM will offer land beneath the rim of Nine Mile Canyon for sale on December 19th.

### **III. THE PROPOSED LEASE SALE VIOLATES THE NATIONAL HISTORIC PRESERVATION ACT.**

BLM has not complied with its obligations under Section 106 of the National Historic Preservation Act (NHPA) for the proposed lease sale. As BLM is aware, issuance of oil and gas leases triggers the review and consultation process of Section 106. Mont. Wilderness Assoc. v. Fry, 310 F. Supp. 2d 1127, 1152-53 (D. Mont. 2004); New Mexico ex rel. Richardson v. Bureau of Land Mgmt., 459 F. Supp. 2d 1102, 1125 (D.N.M. 2006). Although Section 106 permits BLM to use a “phased” process to identify historic properties while planning for and approving oil and gas projects, it must still comply with certain Section 106 requirements prior to issuing leases. See The Mandan,

Hidatsa, and Arkira Nation, 164 IBLA 343, 357-58 (2005). Specifically, BLM must: (1) consult with Indian tribes over the effect of issuing the leases on historic properties identified by tribes as having religious or cultural significance, 36 C.F.R. § 800.2(c)(2)(A); (2) develop an area of potential effect (APE) for the lease sale that includes areas where historic properties may experience indirect as well as direct effects, id. § 800.4(a)(1); and (3) render an effect determination that takes into account the possibility that issuing the leases may indirectly or cumulatively impact historic properties. Id. § 800.5(a)(1). Based on the information provided to the public as part of the proposed lease sale, the Protestants believe that BLM has yet to satisfy each of these requirements.

#### **A. BLM Has Not Adequately Consulted With The Hopi Tribe.**

BLM has not adequately consulted with the Hopi Tribe over the proposed lease sale. Under Section 106, BLM must make a “reasonable and good faith effort” to consult with Indian tribes to identify historic properties that the proposed lease sale may affect. 36 C.F.R. § 800.4(b)(1); Pueblo of Sandia v. U.S. Forest Serv., 50 F.3d 856, 861-62 (10th Cir. 1995). BLM’s obligation does not end there, as it must also consult with tribes over the effects of lease sales and attempt to resolve any adverse effects prior to approving the undertaking. 36 C.F.R. § 800.2(c)(ii)(A). Here, the record does not show that BLM has engaged the Hopi Tribe in consultation over the effects of the proposed lease sale, despite being placed on notice by the tribe properties of religious and cultural significance are being adversely affected by industrial traffic in Nine Mile Canyon. Thus, BLM has violated the tribal consultation requirement of Section 106.

Pueblo of Sandia v. U.S. Forest Service although not directly on point, is highly instructive to the matter at hand. There, the U.S. Forest Service claimed that it had made a “reasonable and good faith effort” to consult over the identification of historic properties within New Mexico’s Las Huertas Canyon by sending form letters to various tribes and pueblos. The Pueblo of Sandia objected, and claimed that, by limiting consultation to the sending of form letters, the Forest Service had failed to identify and evaluate a Traditional Cultural Property (TCP) in the canyon. The Tenth Circuit concurred in large part because the Pueblo had, in previous meetings with the Forest Service, informed the agency that tribal members used the canyon for “a number of ceremonial, religious, and medicinal purposes.” Id. at 860. Additionally, the Forest Service possessed an affidavit of an elder and religious leader of the Pueblo as well as an ethnographic study both of which described the religious and cultural significance of the canyon. Id. at 860-61. The Tenth Circuit held that, because the Pueblo had placed the Forest Service on notice about the existence of a TCP, Section 106 obligated the agency to do more than send form letters to satisfy the tribal consultation requirements. Id. at 861.

The Hopi Tribe is now in a position similar to that of the Pueblo of Sandia. It has notified BLM through several letters over the past few years that properties of

religious and cultural significance exist in and around Nine Mile Canyon. See, e.g., Letter from Leigh J. Kuwanwisiwma, Director, Hopi Cultural Preservation Office, to Roger Bankert, Field Manager, Price Field Office 1-3 (Apr. 30, 2008). In these letters, the Hopi has also stated that properties of significance to the tribe are being adversely affected by industrial traffic. Id. For these reasons, and for the additional reasons set forth in the Tenth Circuit's opinion in Pueblo of Sandia, Section 106 required BLM to do more than simply send the Hopi Tribe a form letter concerning the proposed lease sale. BLM should have provided the Hopi with specific information about the location of the parcels located in and around Nine Mile Canyon, attempted to engage the tribe in a discussion of the effects of the sale on properties identified by the tribe as having religious or cultural significance and determined whether deferring specific parcels from the sale would be necessary to avoid adverse effects on those properties. Because BLM has apparently done none of these things in connection with the proposed lease sale, it has not made a "reasonable and good faith effort" to consult with Hopi under Section 106.

**B. The Determination That The Proposed Lease Sale Will Not Affect Historic Properties Is Arbitrary And Capricious.**

BLM's determination that the proposed lease sale will not affect historic properties in Nine Mile Canyon is arbitrary and capricious. Under Section 106, an agency's determinations are governed by the arbitrary and capricious standard of the Administrative Procedure Act. 5 U.S.C. § 706(2)(A); Pit River Tribe v. U.S. Forest Serv., 469 F.3d 768, 778 (9th Cir. 2006). Here, BLM found that the proposed lease sale would have no effect on historic properties, even though issuing additional oil and gas leases in and near Nine Mile Canyon will increase industrial traffic and may lead to the construction of gas wells on non-federal land in the canyon. BLM, Price Determination of NEPA Adequacy 4 (Nov. 2008).<sup>1</sup> This determination is not supported by previous findings by BLM that industrial traffic associated with the development of federal oil and gas leases has an effect on historic properties in Nine Mile Canyon. BLM, Price Final EIS/Proposed RMP 4-349 (Aug. 2008) (stating that the impacts of industrial traffic on cultural resources in Nine Mile Canyon will "continue" during implementation of the Price RMP); BLM, WTP Plan Draft EIS App.

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<sup>1</sup> Although BLM made this determination pursuant to the Utah State Protocol, it is not clear that BLM also attempted to comply with the Section 106 regulations prior to finding that the lease sale would have no effects on historic properties. As the Interior Board of Land Appeals has held, "... the process of determining whether there is 'No Potential to Effect' under the Utah Protocol should reflect the purposes of section 106 of the NHPA, as recognized in the regulations. BLM cannot avoid the consultation requirement by simply stating that it has determined that there is 'No Potential to Effect,' and therefore that nothing more is required." S. Utah Wilderness Alliance and Natural Res. Def. Council, 164 IBLA 1, 24 (2004). Yet, avoiding the requirements of the Section 106 regulations for the lease sale is precisely what BLM seems to have done in this case. The Section 106 regulations require BLM to consult with interested parties, the Utah State Historic Preservation Officer, Indian tribes and members of the public over the effect determination. 36 C.F.R. § 800.2(a)(4), 800.4(d)(1). BLM does not seem to have involved any of these parties here. Consequently, BLM has used the Protocol to impermissibly shield the proposed lease sale from the requirement to consult in accordance with the Section 106 regulations.

G-5 (Feb. 2008) (identifying and discussing the various effects of industrial traffic on rock art in Nine Mile Canyon); BLM, Cultural Resource Assessment of December 2008 Oil & Gas Lease Sale (undated) (finding that the issuance of proposed lease parcels U1108-325 to 345, 347 to 350, 354 and 345 will have “cumulative adverse impacts to cultural resources”). Nor does this determination square with the opinions of professional archaeologists who possess expertise in the archaeology of Nine Mile Canyon and who have found that industrial traffic is adversely affecting rock art in the canyon. See, e.g., Montgomery Archaeological Consultants, Cultural Resource Inventory of Wasatch Oil and Gas Well Locations Prickly Pear #1215-11-2, #18-3, #19-2, and #27-3, in Nine Mile Canyon, Carbon County, Utah 20-21 (Aug. 2002) (identifying industrial traffic as a “potential adverse effect” of natural gas development on the Nine Mile Canyon Archaeological District); Letter from Jerry Spangler, Executive Director, CPAA, to Brad Higdon, Planning and Environmental Coordinator, BLM 11 (Apr. 23, 2008) (archaeologist who has extensive familiarity with Nine Mile Canyon advising BLM that the dust and vibrations associated with industrial traffic constitutes an adverse effect). Because BLM has not provided a rational basis on the record for why these determinations are no longer valid and should not be followed now, its no effect finding for the proposed lease sale is arbitrary and capricious.<sup>2</sup>

### **C. BLM Designated An APE That Violates The Section 106 Regulations.**

The area of potential effect (APE) designated by BLM for each of the lease sale parcels at issue in this protest violates the Section 106 regulations. Under 36 C.F.R. § 800.4, BLM must develop an APE for each undertaking under its jurisdiction. This APE must not only include the areas where historic properties may experience direct

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<sup>2</sup> BLM seems to have based its no effect determination in part on the mistaken belief that it “can avoid all impacts to cultural resources” by attaching the stipulation contained in Instruction Memorandum 2005-003 to each of the leases. This stipulation reads:

This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation (NHPA), American Indian Religious Freedom, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration, or development proposal to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.

at 5. However, by its terms, this stipulation covers only historic properties located within the boundaries of a leased parcel. Thus, BLM could not use the stipulation to force a lessee to modify or cease activity that might adversely affect historic properties located outside the boundaries of the lease. See New Mexico ex rel. Richardson, 459 F. Supp. 2d at 1125 n.19 (noting BLM’s limited authority under this lease stipulation). For example, BLM could not enforce the stipulation to restrict or prohibit activities associated with a lease located entirely on the West Tavaputs Plateau in order to protect historic properties in Nine Mile Canyon, even if industrial traffic engendered by the lease’s development would adversely affect rock art sites in the canyon.

effects, but also the areas where indirect effects may occur. 36 C.F.R. § 800.16(d); see also Colo. River Indian Tribes v. Marsh, 605 F. Supp. 1425, 1437 (C.D. Cal. 1985) (rejecting use of a project's "permit area" as the area of potential effects under Section 106). Here, as part of the lease sale, BLM has acknowledged the general obligation to document an APE. However, in attempting to fulfill this duty, BLM omitted the areas where the leases may cause indirect effects by limiting the APE to the boundaries of the individual lease parcels. As a consequence, the APE does not include the Nine Mile Canyon Road corridor, which contains hundreds of prehistoric rock art panels that may experience indirect and cumulative effects from industrial traffic associated with the proposed leases.

Courts have consistently struck down federal agency determinations under Section 106 that attempt to limit the geographic scope of analysis to permit areas. In Colorado River Indian Tribes v. Marsh, the U.S. Army Corps of Engineers (Corps), after receiving a permit application from a developer to install "riprap" on the banks of the Colorado River adjacent to a proposed residential and commercial development, elected to identify historic properties strictly within the boundaries of the permit area. 605 F. Supp. 1425, 1437 (C.D. Cal. 1985). A coalition of Indian tribes challenged this decision, arguing that the NHPA required the identification and evaluation of historic properties within a much broader area, including areas where indirect effects might occur. Id. The court agreed and found that the Corps had violated Section 106 by looking solely at historic properties located within the permit area and not also within the broader area of indirect effects. Id.; see also Comm. to Save Cleveland's Huletts v. U.S Army Corps of Eng'rs., 163 F. Supp. 2d 776, 783 (N.D. Ohio 2001) (same).

Like the Corps in Colorado River Indian Tribes, BLM has attempted to define its Section 106 obligations narrowly and in a manner that fails to account for historic properties located outside the boundaries of the proposed leases. BLM has previously found that industrial traffic associated with the development of federal oil and gas leases on the WTP will use the Nine Mile Canyon Road and, in doing so, cause effects on rock art sites eligible for listing in the National Register of Historic Places. BLM, WTP Plan Draft EIS App. G-5 (Feb. 2008) (discussing effects of industrial traffic on rock art in Nine Mile Canyon). Section 106 thus required the inclusion of the road within the APE for the lease sale parcels. See Wilson v. Block, 708 F.2d 735, 754 (D.C. Cir. 1983) (upholding an agency's Section 106 determination that included an access road as well as the project area within the APE). Because BLM did not do so, it violated Section 106.

### **III. THE PROPOSED LEASE SALE VIOLATES THE NATIONAL ENVIRONMENTAL POLICY ACT.**

The proposed lease sale violates the National Environmental Policy Act (NEPA) because BLM has failed to prepare an adequate pre-leasing environmental analysis. Under NEPA, BLM must either prepare an environmental impact statement (EIS) or

environmental assessment (EA) prior to approving federal actions that may have significant impacts on the environment. 42 U.S.C. § 4332(C). The environmental analysis required by NEPA, whether in the form of an EIS or EA, must (1) “evaluate all reasonable alternatives” to the proposed action, 40 C.F.R. § 1502.14(a); (2) disclose the environmental consequences of the proposed action, id. § 1502.16; and (3) discuss “[m]eans to mitigate adverse environmental impacts. . . .” Id. § 1502.16(h); see also id. § 1508.9 (describing analogous requirements for EAs). In the Determinations of NEPA Adequacy (DNA) prepared by BLM for the proposed lease sale, BLM found that the environmental impact statements for the Price and Vernal Field Office Resource Management Plans (collectively, EISs) satisfied each of these requirements and therefore cover the proposed lease sale. See, e.g., BLM, Determination of NEPA Adequacy Dec. 2008 Lease Sale 2 (Nov. 2008). For the following reasons, the Protestants believe this finding to be in error.

#### **A. The EISs Lacked A Reasonable Range Of Alternatives.**

The EISs lacked a reasonable range of alternatives because BLM did not consider closing Nine Mile Canyon to oil and gas leasing. NEPA requires that an EIS contain “alternatives to the proposed action. . . .” 42 U.S.C. § 4332(C)(iii). While BLM need not consider every alternative to the proposed action, it must still consider a reasonable range that “provid[es] a clear basis for choice among options by the decisionmaker and the public.” 40 C.F.R. § 1502.14. BLM violated this requirement by not considering an alternative in the EISs that closed Nine Mile Canyon to oil and gas leasing.

In the EIS for the Price Field Office, BLM evaluated five alternatives, each of which opened Nine Mile Canyon to oil and gas leasing subject to either minor or major constraints.<sup>3</sup> 2-116. BLM ultimately chose an alternative that opened the canyon to leasing subject to major constraints—NSO stipulations—and, in non-federal areas overlying the federal mineral estate, minor constraints. at 140. However, as BLM conceded in the EIS, the impacts of traffic related to oil and gas development on historic properties in Nine Mile Canyon “would continue” in spite of the attachment and enforcement of NSO stipulations on leases issued pursuant the Price RMP. BLM, Price Proposed RMP/Final EIS 4-349 (Aug. 2008). BLM’s failure to consider an alternative that would have closed Nine Mile Canyon to leasing as a means of protecting the canyon’s historic properties violates NEPA.

#### **B. The EISs Did Not Evaluate The Impacts Of Oil And Gas Leasing On The Hopi Tribe’s TCP.**

The EISs did not evaluate the impacts of oil and gas leasing on the TCP identified by the Hopi Tribe in Nine Mile Canyon. Under NEPA, BLM must evaluate “the

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<sup>3</sup> Each of the alternatives evaluated by BLM in the Vernal RMP EIS also opened Nine Mile Canyon to oil and gas leasing. BLM, Vernal Proposed RMP/Final EIS 2-63 (Aug. 2008).

environmental impact of the proposed action” in an EIS. 42 U.S.C. § 4332(C)(i); see also 40 C.F.R. §§ 1502.16 (requiring an evaluation of the direct, indirect and cumulative impacts of proposed actions on the environment). Here, BLM has proposed an oil and gas lease sale that includes parcels located within and around Nine Mile Canyon—an area of cultural and religious significance to the Hopi Tribe. Although the EIS for the Price Field Office acknowledged the Hopi’s connections to Nine Mile Canyon, and stated that Hopi has identified the canyon as a TCP, at no point did the EIS assess the impacts of oil and gas leasing upon the TCP.

The National Trust made an identical argument in its protest of the Price RMP. Although BLM rejected this argument, it conceded that “there is no direct discussion [in the EIS] of impacts to the Nine Mile Canyon in the context of the TCP. . . .” BLM, Director’s Protest Resolution Report 57 (Oct. 2008). BLM instead claimed that it had adequately analyzed the TCP in the EIS by assessing the impacts of oil and gas leasing, along with other resource uses, on the Nine Mile Canyon ACEC and Special Recreation Management Area (SRMA). Id. However, the Nine Mile Canyon ACEC and SRMA designations and the Hopi’s TCP are entirely different resources on which oil and gas leasing would reasonably be expected to have dissimilar effects. Thus, the EISs have not evaluated the effect of the proposed lease sale on the Hopi TCP.

### **C. The EISs Did Not Evaluate The Mitigation Measures Proposed In The DNA.**

The measures discussed in the DNAs to mitigate the adverse consequences of industrial traffic on rock art in Nine Mile Canyon were not evaluated in the EISs. NEPA requires that, through an EIS, BLM develop “[m]easures to mitigate adverse environmental impacts. . . .” 40 C.F.R. § 1502.16(h). The Supreme Court has interpreted this provision to require “a detailed discussion of possible mitigation measures” in an EIS. Roberston v. Methow Valley Citizens Council, 490 U.S. 332, 352 (1989). At no point in the EIS for either the Price or Vernal RMPs did BLM describe, let alone describe in detail, “an intense dust suppression program by the [oil and gas] companies” referenced by BLM in the DNA for Price. BLM, Determination of NEPA Adequacy Dec. 2008 Lease Sale 4 (Nov. 2008). Consequently, BLM cannot claim that EISs contain adequate discussions of this proposed mitigation measure.

## **IV. CONCLUSION**

Based on the foregoing reasons, the Protestants believe that BLM has not satisfactorily met its obligations under the NHPA and NEPA for each of the proposed lease parcels identified in this protest. Consequently, the Protestants request that BLM withdraw each of these parcels from the December 19, 2008 lease sale.

Sincerely,

A handwritten signature in black ink that reads "Ti Hays". The signature is written in a cursive, slightly slanted style.

Ti Hays  
Public Lands Counsel

### Attachments

1. Press Release, BLM, BLM Defers Additional Parcels From the December 2008 Lease Sale (Dec. 3, 2008) (entire).
2. Letter from Leigh J. Kuwanwisiwma, Director, Hopi Cultural Preservation Office, to Roger Bankert, Field Manager, Price Field Office (Apr. 30, 2008) (entire).
3. Letter from Jerry Spangler, Executive Director, CPAA, to Brad Higdon, Planning and Environmental Coordinator, BLM (Apr. 23, 2008) (entire).
4. BLM, WTP Plan Draft EIS (Feb. 2008) (portions).
5. BLM, Director's Protest Resolution Report (Oct. 2008) (portions).
6. BLM, Cultural Resource Assessment of December 2008 Oil & Gas Lease Sale (undated) (entire).
7. Montgomery Archaeological Consultants, Cultural Resource Inventory of Wasatch Oil and Gas Well Locations Prickly Pear #1215-11-2, #18-3, #19-2, and #27-3, in Nine Mile Canyon, Carbon County, Utah (Aug. 2002) (portions).

**BLM Defers Additional Parcels From the December 2008 Lease Sale**

Contact: Mary Willson, 801-230-5112  
Lease Sale Information

**Salt Lake City, Utah—December 2, 2008**—In the continuing process of refining parcels available for leasing, BLM Utah announced today it will defer additional parcels from the Dec. 19 lease sale. To date, the upcoming lease sale will offer oil and gas parcels on a total of 276,025 acres of public land and geothermal parcels totaling 146,339 acres in Utah. Pending the outcome of the protest period, which ends Dec. 4, further refinements may be made prior to the lease sale.

BLM has chosen to defer leasing in the Nine Mile Canyon area below the canyon rim and in the Desolation Canyon area to further review stipulations and mitigation measures for this area. In addition, parcels over coalfields are being deferred to avoid potential conflicts with underground mining.

BLM is required by law to conduct quarterly oil and gas lease sales and in doing so must ensure the appropriate amount of accessibility to energy resources necessary for the nation's security, while recognizing that special and unique non-energy resources can be preserved. Refinement and further screening of these parcels helps BLM Utah meet this important policy objective.

Last updated: 12-03-2008

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April 30, 2008

Roger Bankert, Field Manager  
Attention: Don Stephens, Project Manager  
West Tavaputs Plateau Natural Gas Full Field Development Plan DEIS  
Bureau of Land Management, Price Field Office  
125 South 600 West  
Price, Utah 84501

Dear Mr. Bankert,

Enclosed please find the Hopi Tribe, Hopi Cultural Preservation Office review and comment on the Draft Environmental Impact Statement (DEIS) for the 137,930 acre West Tavaputs Plateau Natural Gas Full Field Development Plan, UT-070-05-055, including 807 natural gas wells and associated infrastructure, enclosed with your correspondence dated January 29, 2008.

The Hopi Tribe claims ancestral and cultural affiliation to Archaic and Fremont prehistoric cultural groups, to Hopi people as *Hisatsinom*, "People of Long Ago." Cultural remains of these ancestors are located in the Price Field Office area. The Hopi Cultural Preservation Office supports identification and avoidance of prehistoric archaeological sites and Traditional Cultural Properties. Nine Mile Canyon is a Traditional Cultural Property of the Hopi Tribe. Therefore, we appreciate the Bureau of Land Management (BLM)'s continuing solicitation of our input and your efforts to address our concerns.

The Hopi Cultural Preservation Office appreciates our administrative meeting on April 24<sup>th</sup> with Michael Stiewig and Wayne Ludington at which the Hopi ethnographic overview of Nine Mile Canyon and this DEIS were discussed. We look forward to beginning the Hopi ethnographic overview with John Fritz and Molly Molenaar.

Hopi cultural affiliation to the prehistoric inhabitants of Nine Mile Canyon has been established through previous site visits and our Traditional Cultural Property claim, including our NAGPRA claim of the flute discovered near Range Creek on the BLM Price Field Office land.

Roger Bankert  
April 30, 2008  
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For example, the spiral rock markings in Nine Mile Canyon and throughout the Southwest are the Hopi migration symbol. The plumed serpent, *Paalölökang*, is a deity, indicating that Hopi southern clans from Mesoamerica were present prehistorically in Nine Mile Canyon. The ethnographic overview will further prove our shared group identity with the prehistoric people who continue to inhabit Nine Mile Canyon, Range Creek, and the lands of the Price Field Office.

On a personal note, the Hopi Tribe honors you, Roger Bankert, for your service to our Country, and we look forward to your safe return to the position of BLM Price Field Office Manager.

Should you have any questions or need additional information, please contact Terry Morgart or me at the Hopi Cultural Preservation Office. Thank you again for your consideration.

Respectfully,

Leigh J. Kuwanwisiwma, Director  
Hopi Cultural Preservation Office

Enclosure: Hopi Tribe's comments on the West Tavaputs Plateau Natural Gas Full Field Development Plan,  
UT-070-05-055

xc: All with enclosure

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23 April 2008

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**Comments: West Tavaputs Plateau Natural Gas Full Field Development Plan Draft  
Environmental Impact Statement (UT-070-05-055)**

***Introduction***

Please accept and fully consider these comments on behalf of Jerry D. Spangler, a registered professional archaeologist and executive director 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. 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 West Tavaputs Plateau Natural Gas Full Field Development Plan Draft Environmental Impact Statement (UT-070-05-055), hereafter referred to as DEIS.

A CPAA analysis of the DEIS has identified significant and fundamental problems with all action alternatives that warrant greater consideration and analysis, and that Alternative B (no action) may be appropriate until such time the BLM fully considers the issues addressed below. Given the BLM is likely to choose an alternative that facilitates full-field development, or some combination of action alternatives, we believe the federal actions articulated in Alternative D are a preferable, although Alternatives C and E are acknowledged as significant improvements over the industry-preferred alternative (Alternative A). However, it is emphasized that impacts to cultural resources are only marginally different from one alternative to another, and that regardless of which alternative is chosen the impacts will be substantial.

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 throughout the DEIS, 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 BLM must carefully consider federal management actions designed to facilitate full-field development of the West Tavaputs Plateau and the consequent effects of such decisions on archaeological and historic resources of significance to all Americans.

As a professional archaeologist, I have conducted a major portion of my archaeological research in or near the project area, and I am intimately familiar with the cultural resources of northeastern Utah. My research in this region over most of the past 20 years, much of it conducted on behalf of the BLM, has been widely published in peer-reviewed monographs, journal articles and popular media (cf. Spangler 1993a; 1993b; 1995; 2000a; 2000b; 2001; 2002; 2003; 2004; 2006, 2007; Spangler, Barlow and Metcalfe 2004; Spangler and Spangler 2003, 2007). Ongoing CPAA research in the Desolation Canyon, Range Creek Canyon and Nine Mile Canyon drainages has been specifically focused on the direct, indirect and cumulative impacts of large-scale developments, road access and unmanaged recreation on cultural resources in a region renowned for its archaeological and historic sites (cf. Spangler, Arnold and Boomgarden 2006; Spangler, Aton and Spangler 2007; Spangler and Yentsch 2008; Spangler et al. 2007a, 2007b, 2008). The following comments are related to the cultural resources, both archaeological and historic, in the West Tavaputs Plateau (WTP) region, and are not intended to address other environmental concerns or issues raised by the DEIS.

### **Inadequate Surveys**

As defined in the DEIS (ES-1), the project area is bounded on the west by Sheep Canyon, on the north by Nine Mile Canyon and the east by the Green River, with the southern boundary defined by subsurface features, but which includes portions of several high mesas, as well as Jack Canyon and Desolation Canyon. As such, the project area

encompasses three areas (Jack Canyon, Nine Mile Canyon and Desolation Canyon) known to have an exceptionally high density of National Register or National Register-eligible archaeological sites with spectacular visual qualities that draw visitors from throughout the world. This project area also encompasses intermediate mesas and high plateaus where very little problem-oriented archaeological research has been conducted and little is known about Archaic, Formative and post-Formative foraging behavior and how those adaptations may be related to more-robust and more-sedentary adaptations in the canyon bottoms.

Although archaeological insights and understandings of prehistoric adaptations in the region have benefited greatly from the Section 106 clearances, mostly conducted by Montgomery Archaeological Consultants on behalf of BBC, it is emphasized that this research has been driven predominantly by the *location* of Section 106 compliance activities in a particular area, and these surveys probably do not reflect the actual nature, diversity or density of archaeological sites in the project area. A review of archaeological site data on file with the Antiquities Section of the Utah Division of State History reveals remarkably few archaeological block surveys within the project area that would contribute to a better understanding of potential site densities or to the distribution of archaeological sites across an entire landscape.

The DEIS offers no encouragement that existing data gaps will be ameliorated through problem-oriented research. Rather, the DEIS offers unimaginative and minimalist approaches to Section 106 compliance that includes hundreds of small-scale Section 106 clearance surveys, each of which has minimal potential to contribute meaningful insights into prehistoric human behavior in the region. In fact, Appendix N (Preconstruction Cultural Resource Identification Plan) calls for 10-acre surveys of each well pad, 5 to 10 acres around other facilities, and a 300-foot corridor along new roads and pipelines. There is no stated intent anywhere in the DEIS that statistically valid random sample surveys (Class II) or a larger block surveys (Class III) would be requested by the BLM or initiated by BBC or other operators. Rather, despite the massive area to be impacted by full-field development, the BLM plan defines the Area of Potential Effect (APE) as small individual well pads, individual access roads and pipelines, and spatially limited areas around other surface facilities. Consequently, the scattering of small-scale clearance surveys based on the location of extraction activities is unlikely to result in a scientifically meaningful sample that is representative of the actual nature, distribution and density of sites in the project area.

Also problematic are the survey parameters defined in Appendix N that call for 10-acre surveys of each well pad, 5 to 10 acres around other facilities, and a 300-foot corridor along new roads and pipelines. As noted in the DEIS, these parameters are more stringent than in many other Utah areas managed by the BLM. However, whether or not the standards are more stringent is irrelevant if the standard is inadequate, as appears to be the case with survey requirements for transportation corridors. CPAA research efforts in the West Tavaputs Plateau region have demonstrated a direct relationship between vehicle access and frequency of vandalized sites. These studies indicate that archaeological 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; see also Spangler and Boomgarden 2007, and Spangler and Yentsch 2008).

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. Ongoing CPAA studies reify the findings of a largely forgotten BLM study conducted more than 30 years ago that found transportation networks and accessibility were determining factors in site vandalism, and that "pothunters are an inherently lazy lot" who require access whereby they can conduct their "illegal and destructive purposes with the least possible physical exertion" (Scott 1977:13).

These findings are particularly relevant to the action alternatives that provide for new road construction into any areas that have been protected from looting and vandalism by their roadless qualities. As articulated in Appendix N, the transportation corridor that would be surveyed would be about 50 meters on each side of center line, or about half of the area of potential effect identified by Nickens et al. (1981) and 25 percent of the area identified by Spangler, Arnold and Boomgarden (2006). Appendix N makes no provision for surveys or site documentations outside the designated corridor even if cultural sites are visible from the actual corridor. This omission creates a distinct probability that archaeological sites visible from a transportation corridor (e.g., rockshelters, rock art, architectural sites) will be directly or indirectly impacted during the course of corridor development *or at some point in the future*, as demonstrated in studies by Simms (1986), Ahlstrom et al. (1992) and Spangler, Arnold and Boomgarden (2006). As such, subsequent damage to such properties, whether or not caused by individuals associated with the development, must be considered "reasonably foreseeable effects caused by an undertaking that may occur later in time" (36CFR800.5(1), and must therefore be addressed through Section 106 compliance as an adverse effect.

All action alternatives call for reclamation of access roads upon abandonment of individual wells (as well as reclamation of the well pad itself), but it is not clear in the DEIS whether these reclamation efforts include reclamation of *all* roads constructed as part of the WTP project, or just access spurs to individual well sites. This could present significant potential that in 30 to 40 years, upon complete abandonment of the project area, roads constructed by the operators will be utilized by off-road vehicles to gain access to archaeologically sensitive areas that otherwise would have been protected by their topographic setting or geographic isolation. The DEIS also does not address the potential that upon abandonment, primary access routes (Cottonwood Canyon, Prickly Pear, Harmon, Horse Bench, etc.) will subsequently facilitate easy public access into remote areas of the West Tavaputs Plateau now protected by their isolation. In effect, major transportation corridors constructed and maintained to facilitate full-field

development will inevitably result in easy public access to the project area after future abandonment, and that greater public access could result in subsequent damage to cultural resources. Likewise, these future impacts to sites in remote areas made accessible by full-field development must also be considered "reasonably foreseeable effects caused by an undertaking that may occur later in time" (36CFR800.5(1)).

Especially disconcerting is that the small-scale-survey approach articulated in Appendix N fails to adequately consider the cumulative effects on eligible historic properties within the project area that may not be directly impacted by surface-disturbing activities, but which are impacted due to activities that "may alter, *directly or indirectly*, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association" (36CFR800.5(a)(1)). Although cumulative effects are acknowledged in the DEIS, none of the alternatives offer substantial discussions as to how cumulative impacts will be avoided, minimized or mitigated. In fact, there is an inherent but flawed assumption in all action alternatives that avoidance of historic properties results in no adverse effects.

Avoidance of cultural sites evident on the ground surface *may* avoid direct damage to the surface evidence. However, there is a potential for damage to archaeological sites not clearly evident on the site surface, as well as adverse effects to sites outside the area of surface disturbance. Particularly relevant is 36 CFR 800.5(1) that states "an adverse effect is found when an undertaking may alter, *directly or indirectly*, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association. Consideration shall be given to *all* qualifying characteristics of a historic property ..." (emphasis added; See also 65 Fed. Reg. 77698, 77720 (Dec. 12, 2000) discussing indirect effects). This section of the Federal Code clearly states that federal agencies shall consider the indirect effects of undertakings on eligible properties. It can also be concluded that re-routing or relocating ground-disturbing activities to avoid direct impacts to known historic properties visible on the surface may not avoid, minimize or mitigate the indirect effects of such undertakings.

Also relevant to this discussion are provisions in the Alternatives A, B, C and E for temporary worker housing at strategic locations on the mesa tops, with each location capable of accommodating up to 15 sleeping trailers, kitchen and recreation facilities, and ancillary toilets, trash containers, water tanks and other support equipment (DEIS 2-29). CPAA supports the concept of consolidated worker housing to reduce traffic in those locations where dust accumulation is a serious concern (see discussion below). However, stipulations for surveys of 5 to 10 acres around these facilities is clearly inadequate and fails to recognize that individuals during off-work hours will explore well beyond the 10 acres defined in Appendix N.

Although preliminary, CPAA research in Range Creek Canyon and Desolation Canyon is attempting to address the relationship between vandalism of archaeological

sites and the location of overnight or extended-stay campsites. Initial data (to be augmented by additional Desolation Canyon GIS studies in 2008) suggest archaeological sites within 300 to 400 meters of an established camp are especially vulnerable to looting, vandalism, graffiti and other malicious activities that denigrate the integrity of the historic properties. In effect, boredom drives some individuals to engage in destructive activities, and the area of potential effect may be considerably greater than the 5 to 10 acres identified under Appendix N.

Any allowance for temporary worker housing creates significant cultural resource management challenges not articulated or analyzed in the Draft EIS. Sullivan et al. (2002:42) in a study of recreational use of public lands clearly recognized that individuals 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." They also found 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). These findings are relevant to any longer-term residency on the mesa tops where workers have not been thoroughly educated as to proper behavior expected in archaeologically rich landscapes.

In light of these concerns, CPAA recommends:

- BLM planning and cultural resource preconstruction survey requirements that currently articulate scattered Section 106 clearance surveys should be modified and augmented to include additional Class II and/or Class III block surveys of poorly understood areas within the larger project area, and that these surveys should be designed to address valid scientific research questions with a potential to make significant contributions to an understanding of prehistoric lifeways in the region. Through the course of proper consultation, Class II and/or Class III block surveys could contribute toward the mitigation of cumulative adverse effects.
- The survey standards articulated in Appendix N should be modified to include provisions for spatially broader areas of potential effect, including the documentation of all sites visible from a vehicle access route regardless of distance, as well as wider corridors that are consistent with the findings of Nickens et al. (1991) and Spangler, Arnold and Boomgarden (2006). Regardless of which alternative is chosen, all cultural sites visible from an access corridor should be thoroughly documented and monitored for future adverse impacts.
- The survey standards articulated in Appendix N should be modified for temporary housing localities to reflect the probability that off-duty workers will explore and wander far from the actual housing facilities. CPAA recommends a minimum 500 meter buffer around temporary worker housing,

as well as any other areas visible from the facilities with a likelihood of containing significant cultural resources regardless of distance (e.g., rockshelters and cliff faces).

- The EIS should be clarified and augmented to indicate that reclamation upon abandonment will include the recovery of *all* roads constructed as part of the development. The final EIS must also fully consider the future impacts to cultural resources (and other resources) of unrestricted and uninhibited public access into the West Tavaputs project area due to operator improvements to major access roads.
- Regardless of which alternative or combination of alternatives is chosen, the BLM should clearly articulate prohibitions on harvesting of fuel wood that could increase erosion, prohibitions on worker camping or campfires outside of the boundaries of temporary worker housing, and prohibitions on any ground disturbance regardless of how minimal for disposal of human waste. Concurrently, the BLM should require operators implement a program to educate all workers on proper behavior and etiquette expected in archaeologically rich environments.

### **Predictive Modeling**

As acknowledged and summarized in Table ES-2, certain assumptions are common to all alternatives, in particular that activities associated with the project could potentially “conflict with” known and unknown cultural resources. The numbers of sites impacted varies by alternative, but are generally the same under industry preferred Alternative A and agency-preferred Alternative E in that new surface disturbance would potentially conflict with 37 known sites, 21 of which are eligible for listing on the National Register; road maintenance and upgrades will conflict with 43 known sites, of which 26 are eligible; and that surface-disturbing activities “would potentially conflict directly with between 94 and 219 unknown cultural resources” (DEIS ES-24).

Although these statements clearly acknowledge that cultural resources will be impacted, the DEIS offers little information as to the type, nature and distribution of resources to be impacted, and how the BLM arrived at those numbers. To make an assumption of numbers of unknown sites that would be impacted implies the BLM used a predictive model to arrive at those numbers. However, no information is clearly articulated as to the type of predictive model that was employed, whether it incorporates statistically valid and professionally accepted approaches to predictive modeling, whether the model is capable of predicting actual site types, site locations and site significance, or whether it is only capable of predicting relative site density; and whether the model is even valid for the entire West Tavaputs Plateau or only small environmental zones within the greater plateau.

Rather, it appears that BLM planners utilized Class I data from Whitfield et al. (2006) and a single block survey (Landt 2006) on the upper plateau to estimate ranges of site numbers based on site densities within the WTP project area. Site densities were calculated by dividing the known number of sites per period by the total acres in the

project area. Such an approach is problematic on several important points, including the absence of a stratified random sample that considers different environmental zones or ecological ranges in both upland and canyon corridor settings, and the absence of a consistent and statistically valid sample of surveyed areas. At best, the BLM analysis must be considered a "rough estimate" of potential site densities, but with a probability that site density could actually be much higher or lower.

As accurately noted in the DEIS, surveys in the 1980s and 1990s rarely had comprehensive or inclusive inventory areas and must be considered to be intuitive, at best (see Spangler 1993b). But the DEIS erroneously states that the high density of sites identified at that time is "inflated" when in fact the sites-per-acre-surveyed by Brigham Young University (Spangler 1993b) and Carbon County volunteers (see Spangler 2002 for an overview of these surveys) actually reflects a lower threshold of site density. Likewise, if more thorough Class III investigations had been conducted, actual site density would have been significantly greater than reported in those studies.

In fact, not all acres within those project areas were subjected to Class III inventories, and those areas subjected to intuitive surveys were certainly not to currently not investigated to current standards (cf. Banning 2002). For example, Carbon County volunteers rarely ventured above the first bench area, and most of the canyon above the first bench area remains uninvestigated. The BYU surveys in lower Nine Mile Canyon avoided exceptionally steep or precarious terrain, and the mesa tops were not investigated even though some mesa localities outside the project area were known to contain large and impressive architectural and rock art sites. Hence, the high site densities demonstrated by those largely intuitive surveys of easily accessible cliff faces and bench areas are actually an under-representation of actual site densities had the entire area been comprehensively surveyed.

Also problematic are the statements in the DEIS to the effect that some sites have been determined eligible for National Register listing and others have not (DEIS ES 24). No indication is offered in the DEIS as to where these sites are located (upland areas or canyon bottoms) and whether or not these "not eligible" sites are included within the boundaries of the Nine Mile Canyon Archaeological District and would therefore be part of the National Register district currently under review by the SHPO and BLM. In fact, there is minimal discussion throughout the DEIS action alternatives as to how proposed development would directly, indirectly or cumulatively impact cultural resources within the proposed National Register district (BLM planners have had access to the National Register documents and proposed boundaries for more than a year).

The theoretical approach to predictive modeling articulated in Chapter 4 demonstrates the immense difficulty planners face when utilizing incomplete data, much of it gathered two or three decades ago by volunteers or inexperienced field crews. In effect, the current database reflects an extremely diverse mix of research of varying quality. Consequently, current data offer minimal broad-scale perspectives other than site density is higher in the canyon bottom and it is lower on the higher plateaus. This

discussion (DES 4-217) also highlights the tremendous need to conduct Class II surveys that encompass a full range of environmental variables on the West Tavaputs Plateau.

It is therefore recommended:

- The EIS should be modified to include more thorough discussions of BLM efforts to test the validity of any predictive model used as part of the planning process.
- The EIS should be modified to more clearly explain where impacted sites would be located (canyon corridors versus mesa tops), including the relationship of impacted sites to the proposed National Register district for Nine Mile Canyon.
- Given the BLM's application in Chapter 4 of an "indirect" impact standard to impacts that are clearly direct impacts (e.g., dust accumulation) the DEIS should more thoroughly examine, articulate and tabulate the impacts, conflicts and other factors related to all sites within the project area that would be directly and *indirectly* impacted by the various action alternatives. This would require a more thorough consideration of impacts to sites outside of areas of direct surface disturbance, but within the range of dust accumulation, increased erosion and vibration, and that are more susceptible to vandalism and looting.

### **Consulting Parties**

Despite the voluminous nature of the document, the DEIS reflects a remarkable paucity of creative thinking in terms of how cultural resources are addressed and considered under all five alternatives. In effect, the impacts to cultural resources under Alternative A (industry preferred) are largely identical to impacts articulated for Alternative E (agency preferred) and only marginally different from Alternative C (transportation reduction alternative). The no-surface-occupancy stipulations specified under Alternative D (conservation alternative) offer some potential that cultural resources in some localities would be impacted less than under the other action alternatives, but the impacts under this alternative are nonetheless substantial. There is no indication that any of the alternatives proposed in the DEIS have considered a full range of alternatives to avoid, minimize or mitigate potential adverse effects to historic properties, nor does the document reflect efforts among consulting parties to reach agreement on measures to achieve those ends.

Especially disingenuous are statements to the effect that the BLM seeks a collaborative approach to problem solving. As stated in Chapter 1, any amendments necessary to the Price River Management Framework Plan to accommodate full-field development would be developed by the BLM through "a collaborative and multi-jurisdictional approach, where possible, to jointly determine the desired future condition of public lands" (DEIS 1-7). In actuality, the Price Field Office has demonstrated repeated opposition, if not hostility, to a collaborative approach to resolving conflicts over cultural resources by categorically denying consulting party status to the National

Trust for Historic Preservation, the Southern Utah Wilderness Alliance, the Nine Mile Canyon Coalition and CPAA -- all "organizations with a demonstrated interest in the undertaking" that are legally entitled to "participate as consulting parties due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties" (36CFR800.2(5)(d)(1); see also 2006 letter from Patrick Gubbins to CPAA denying consulting party status).

CPAA believes the utter absence of creative approaches to avoid, minimize or mitigate impacts to cultural resources articulated in the DEIS is a direct consequence of the agency's refusal to allow public participation in the Section 106 process in the past whereby BLM planners, state and tribal historic preservation officers, industry *and* organizations with demonstrated interests in the project area could attempt to reach agreement on avoidance, impact minimization and/or mitigation measures. Consequently, the DEIS alternatives are predominantly a reflection of BLM approaches (Alternative E) and industry approaches (Alternative A), with other action alternatives largely reflecting combinations of the two approaches.

By deferring all public participation to the public comment process allowed under NEPA, the Price Field Office has failed to recognize a fundamental and important difference between public participation under the National Historic Preservation Act and that allowed under NEPA: NEPA allows for public *comment* whereas NHPA allows for public *participation* in the resolution of conflicts arising from federal undertakings. Furthermore, BLM managers have not recognized that NHPA clearly draws a distinction between "organizations with a demonstrated interest in the undertaking" to be sought out as consulting parties (36CFR800.2(c)(5)) and the federal agency's mandate to "seek public comment and input" (36CFR800.2(d)(2)).

As stated in 36CFR800.2(5)(d)(1), "The views of the public are essential to informed Federal decision making in the Section 106 process. The agency official *shall* seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties" (emphasis added). As mentioned above, "certain individuals and organizations with a demonstrated interest in the undertaking may participate as consulting parties due to ... their concern with the undertaking's effects on historic properties." By deferring all public participation to "comments" allowed under NEPA, the BLM has willingly and intentionally violated the underlying spirit and intent of NHPA. In effect, the agency *plan* to involve the public in the Section 106 process (36CFR800.3(e)) is to not allow public participation in the Section 106 process at all.

Furthermore, 36CFR800.6(4) states "the agency official shall provide an opportunity for members of the public to express their views on *resolving adverse effects* of the undertaking" (emphasis added). This section is unequivocally referring to the public's opportunity to comment on those efforts among consulting parties to resolve adverse effects, not on the public's ability to comment on the undertaking itself through the NEPA process. The DEIS articulates no efforts whatsoever on the part of the Price BLM to solicit comments from the public specific to the resolution of adverse effects. In

fact, the BLM has not revealed to the public what if any efforts have been initiated to resolve conflicts over cultural resources.

CPAA strongly recommends:

- The BLM embrace the spirit and intent of the NHPA by *seeking out* all willing consulting parties to participate in the resolution of adverse effects arising from full-field development, and that future collaboration will reflect a willingness on the part of the BLM to engage alternative viewpoints of all interested parties.
- The BLM more proactively communicate with the public on its efforts to resolve adverse effects to cultural resources, and that it provide additional opportunities to the public to express their views on efforts to resolve adverse effects. This could and should include a transparent process of regular public meetings whereby consulting parties could explain efforts to reach agreement and the federal agency could account for its actions under NHPA.

### Dust Concerns

The DEIS clearly acknowledges that dust is a problem, particularly along the Nine Mile Canyon corridor where rock art panels are abundant and dust has significant potential to obscure clarity. However, the DEIS discussion repeatedly appears to deemphasize the seriousness of the problems related to impacts from road dust precipitated by industrial traffic. These include statements to the effect that “anticipated *indirect* impacts to cultural resources include the accumulation of dust and its impact on rock art, (and) the impact of vibration and project-related erosion on cultural resources” (DEIS ES 24-25), when in fact the accumulation of road dust resulting from project traffic, impacts from vibration due to project-related traffic and increased erosion of cultural resources from project-related activities are all *direct* impacts to cultural resources resulting from project activities, and that these impacts are *cumulative* over the 30 to 40-year life of the project.

As such, these impacts constitute adverse effects under one or more criteria that must be thoroughly addressed within the context of Section 106 compliance, regardless of whether the impacts are direct or indirect. As clearly stated in 36CFR800.5(a)(1), “an adverse effect is found when an undertaking may alter, *directly or indirectly*, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling or association” and that “adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative” (emphasis added).

Particularly troubling is DEIS Appendix G, an October 2007 revised study of particulate dust conducted by Constance Silver of Preservar Inc., included in its entirety. This study cites preliminary lab results from EMSL Analytical of Westmont, N.J., to suggest that 17 dust samples were inconclusive for magnesium chloride, that “thus far it

has been impossible to isolate and identify magnesium chloride in the laboratory,” and that magnesium chloride used in Nine Mile Canyon may have been chemically altered so that “magnesium chloride may not be present in Nine Mile Canyon because there is no magnesium chloride present” (Appendix G:6).

However, these statements are completely and unequivocally in opposition to test data from EMSL Analytical dated Oct. 22, 2007, that indicate that 15 (not 17) samples were analyzed, and that magnesium chloride was specifically identified in five samples, and that magnesium and/or chloride were identified in all remaining samples, although these could not be isolated to show magnesium chloride specifically (see EMSL Case No. 360700946). The contrary statements in Silver’s report suggest that either (1) the BLM mistakenly attached a preliminary report to the DEIS that inaccurately reflected the actual laboratory results and these do not represent Silver’s subsequent findings or final report; (2) that Silver never submitted a final report and that the DEIS is therefore based on incomplete and erroneous data; or (3) the inclusion of preliminary lab results rather than final results is an intentional and deceptive effort on the part of the BLM to manipulate scientific data by minimizing the prevalence of magnesium chloride on rock art panels in Nine Mile Canyon.

Given the presence of magnesium chloride, magnesium and/or chloride in all samples tested, Silver’s conclusions about the equivocal nature of the data should be rejected. Also suspect is her statement that “there is no proof at present that magnesium chloride used for dust abatement in Nine Mile Canyon has – or will – become a vector of deterioration for the canyon’s resources” (Appendix G:33) in light of her statements that magnesium chloride is a “documented agent of deterioration of concrete and works of art” (Appendix G:1) and that agencies, organizations and scientists are raising concerns about magnesium chloride (Appendix G:32). CPAA concurs with Silver’s recommendations that additional studies into dust abatement technologies are warranted, and that impacted sites need to be identified and evaluated (Appendix G:34).

CPAA also concurs with the DEIS (Section 4.12.1.2) that additional efforts are needed to identify, develop and implement acceptable dust-abatement treatments, that additional research needs to be initiated to develop treatments for removal of existing dust, that analytical systems should be implemented to quantitatively examine the success of dust-abatement treatments, and that all impacted rock art panels should be evaluated to determine the extent of the dust accumulation problem and thereby devise dust-abatement strategies (4-219). However, the DEIS identifies few strategies whereby these laudable goals will be achieved, nor does it specify a timetable wherein the research would be conducted, reported and recommendations implemented. Also disconcerting is the absence of interim strategies to protect rock art panels while scientific studies are underway, a *de facto* acknowledgment by the BLM that current dust-abatement methods are sufficient until such time that future research demonstrates otherwise.

Ongoing site condition assessments in the Cottonwood Canyon confluence area (CPAA report in preparation) suggest the number of sites impacted by significant dust accumulation could be substantial, particularly in those areas where the road abuts the canyon wall. Preliminary data suggest that rock art sites within 30 meters horizontal and

30 meters vertical of an existing road have been severely impacted by dust accumulation, often to a point where images are no longer visible or are barely discernible. Dust accumulation was observed at many sites up to 50 meters from an existing road, but not all sites. Evidence of dust accumulation at sites located beyond 50 meters from a road is more equivocal. The problem is particularly evident at those site locations where the rock art is located below and within overhangs that block rising dust plumes and redirects the rising plumes downward, coating the panels a second time. Also particularly vulnerable are rock art sites on sloping surfaces of less than 90 degrees. This study, which compares original site photographs to current site condition, examines only issues surrounding visual clarity and does not address the merits of different approaches to dust abatement.

In light of these concerns, CPAA recommends:

- The EIS should more accurately reflect that dust accumulation is a direct impact to cultural resources, primarily rock art sites and historic signatures, and that these impacts will be thoroughly mitigated through Section 106 compliance.
- Dust abatement studies recommended by Silver, including the corrosive nature of magnesium chloride and related technologies, should be required and completed *prior* to implementing any dust abatement measures with materials other than purified water. Regardless of what alternative is chosen, the final EIS should clearly require dust abatement measures and operators will be accountable for compliance with these measures.
- Baseline site condition assessments should be conducted to identify and evaluate those sites impacted by dust accumulation, and to determine the spatial extent of the dust problem.
- The EIS should articulate a requirement that periodic and consistent audits of site conditions will be conducted at those localities where National Register-eligible cultural resources are vulnerable to dust accumulation to monitor site degradation over the life of the project.
- The EIS should be augmented to include a more thorough and thoughtful analysis by transportation engineers of potential options wherein dust impacts to cultural sites could be avoided entirely. This analysis should include an examination of potential re-routing of the existing road away from vulnerable and high-density cultural resources, an examination of new access routes through side canyons without a significant density of significant sites, and upgrades to existing routes that bypass Nine Mile Canyon.
- In light of (a) public concerns over dust in Nine Mile Canyon, both from cultural resource protection and public safety perspectives, (b) the BLM's stated preference to utilize the Nine Mile Canyon corridor, and (c) the likelihood that scientific studies on dust abatement issues will not generate consensus for many years, CPAA recommends that *all* portions of the Nine Mile Canyon Road and project roads in major tributary canyons be paved in those areas where rock art panels and historic inscriptions are located within 50 meters horizontal distance from of outer edge of the road right-of-way.

## Public Access

CPAA has long advocated that access routes created for energy development should, where possible, be gated and maintained as administrative routes to deter access into archaeologically sensitive areas by individuals who would vandalize or destroy cultural resources. CPAA has reported to the Price Field Office recent instances on the West Tavaputs Plateau where off-road vehicles (ORVs) have used existing roads constructed for oil and gas development to gain access to lower Nine Mile Canyon where significant sites were directly impacted by vehicles traveling cross-country. Likewise, individuals using ORVs used an energy access road into Jack Canyon to travel cross-country into the roadless portion of that drainage where at least one alcove site was looted (Spangler, Boomgarden et al. 2007). CPAA supports limiting to administrative use the Horse Bench Road, Jack Canyon Road and other access routes into archaeologically sensitive areas as a mechanism to protect critical and vulnerable sites.

It should also be noted that areas with critical and vulnerable sites would include undocumented sites in the lower Horse Bench area where BLM river rangers recently discovered a series of very large and aesthetically impressive surface architectural complexes that have not yet been documented but appear to be among the most important surface architectural sites anywhere in the region. CPAA, in cooperation with the Antiquities Section of the Utah Division of State History, intends to document these sites as part of joint Desolation Canyon studies later in 2008.

Although CPAA supports road closures in many instances, the DEIS should clearly state that all routes whether closed or open to public access are BLM routes under the management of BLM and are not the property of those holding leases to develop subsurface rights, and that BLM has jurisdiction and ultimate authority to determine who will have administrative access. This has not been the case in the past with BBC, which has denied public access to some side canyons. For example, on or about July 15, 2007, BBC contractors refused to allow three archaeologists working with CPAA, the Range Creek Research Project and the Tree-Ring Laboratory at the University of Arizona to travel up the Harmon Canyon Road to acquire tree-ring samples needed for a regional tree-ring index. The archaeologists were told that Harmon Canyon was an administrative route for approved industrial traffic only, even though this was not and never has been the case. Private landowners in Nine Mile Canyon have reported similar encounters with BBC contractors who have expressed proprietary rights over the road networks.

In light of these concerns, CPAA recommends that:

- Access route closures to all but administrative purposes be accompanied by BLM public outreach, including appropriate signage that would ameliorate conflicts between the public and operators.
- Given the isolated nature of the broad geographic areas that would be closed to public access and the consequent opportunities for oil and gas workers to engage in activities that denigrate or diminish the integrity of archaeological sites here, independent audits of site conditions by qualified archaeologists

should be periodically implemented during the life of the project to assess any human-caused changes to site conditions. Such audits would deter inappropriate and illegal behavior, and could therefore be considered within the context of "minimizing" adverse effects, as defined in 36CFR800.

### **Desolation Canyon**

CPAA is fundamentally concerned that full-field development as articulated under the industry alternative and the agency alternative would have visual and auditory impacts to the Desolation Canyon National Historic Landmark. As indicated in the Executive Summary, the eastern boundary of the project area is the Green River (DEIS ES-1), which is the centerline of the NHL. This is a *de facto* acknowledgement that the full-field development includes the Desolation Canyon NHL, even though, as summarized in Table ES-2 under Alternative A and Alternative E, "No surface disturbance would occur within 1 mile of the Green River," or within the NHL boundary. However, Alternative A indicates that approximately three well pads are proposed within the (NHL) viewshed and there is potential for auditory impacts," whereas Alternative E indicates the impacts would be the same but there would be mitigation of visual and auditory impacts (DEIS ES-29). The DEIS acknowledges that noise from development could diminish recreational experiences within Desolation Canyon.

CPAA believes that visual and auditory impacts are clearly an adverse effect as defined in 36CFR800.5(2)(v) that states "Adverse effects on historic properties include ... introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features." The significant historical features of the Desolation Canyon NHL, designated by Secretary of Interior Stewart Udall in 1969 to commemorate the John Wesley Powell expedition of 1869, included scenic and wilderness qualities of "mountains, rapids and other natural landmarks," and because the NHL was "almost unchanged from its appearance in 1869" (Sarles 1968:206). As such, the introduction of visual or auditory elements would clearly diminish the unchanged appearance for which the Desolation Canyon NHL was initially created, constituting a diminishment of the historic integrity. Full-field development without complete mitigation could result in adverse effects to a NHL that would require the BLM to notify the Advisory Council on Historic Preservation and invite the council to participate in consultation, as articulated in 36CFR800.6(i)(B).

In light of these concerns, CPAA recommends:

- That full-field development should include stipulations of no surface occupancy of any areas of Desolation Canyon that are visible from the river corridor, and where visual effects will adversely impact the historic integrity of Desolation Canyon and/or the recreational experience of visitors seeking to enjoy the historical context of the Powell expeditions in 1869 and 1871, regardless of distance from the center of the Green River.
- That full-field development should include mitigation of all auditory impacts that may intrude on the NHL, and that mitigation be implemented at all phases

of development from construction to operations and reclamation. Mitigation should be effective enough that auditory impacts are indiscernible along the Green River and the river camps at all times of day.

### Jack Canyon

Management of cultural resources in WSA areas of Jack Canyon is problematic given the existing road has been in place for more than 30 years and that this route has precipitated vehicular access by individuals who have looted and vandalized sites. This vandalism appears to have been episodic, occurring during the time the original well pads were developed in the 1970s and again within the past five to six years. Vandalism is most prevalent in proximity to existing roads and facilities in that portion of the canyon with a demonstrated high density of significant archaeological sites, both along the canyon bottom and on the canyon rims.

Recent investigations in Jack Canyon (Allison 2004; Patterson 2004; Spangler, Boomgarden et al. 2007) have demonstrated a high density of significant residential, rock art and storage sites in the *middle* portion of the canyon, beginning about 3 miles west of the confluence in an area of the canyon where they would not be expected. There is currently a road leading from the plateau into the bottom of the canyon to a well head about 3 miles west of the confluence. As discussed in Spangler, Boomgarden et al. (2007), many of those sites located in proximity to the existing road have been vandalized, whereas most sites not located near the road remain in good to excellent condition. BLM documentation indicates that individuals associated with gas drilling in the 1970s were responsible for the vandalism, and that inscribed names at vandalized sites correspond to oil and gas workers (BLM 2004).

It should also be noted that the well-head access road was used by ORVs in 2004 to subsequently pioneer an illegal trail from the well head to the Green River, a distance of about 3 miles. In about 2001, individuals also transported sifting screens and other equipment to 42Cb2642, a large vandalized alcove about 2 miles below the end of the access road. Given the amount of equipment left behind it is suspected that vehicles were used to transport the items. This site had been previously protected by its isolation from vehicular access. It also appears the remoteness of Jack Canyon has allowed vandalism to continue with little risk that perpetrators will be observed or apprehended (Spangler, Boomgarden et al. 2007).

Jack Canyon has considerable potential to contribute important new insights to prehistoric land use patterns and settlement patterns in the broader Tavaputs Plateau region, specifically how Desolation Canyon and its tributary canyons were incorporated into the complex settlement and subsistence strategies evident in Nine Mile Canyon and Range Creek Canyon. As such, the significance of these sites cannot be understated, and therefore any alternative implemented by the BLM for full-field development should include a more holistic approach to mitigation measures. In light of these concerns, CPAA recommends:

- Given the industry and agency preferred alternatives call for 20 to 43 wells in the spatially restricted Jack Canyon area, it must be acknowledged that both alternatives will have significant impacts to the roadless qualities that have protected many, if not most, of the archaeological sites in the drainage. As such, CPAA concurs that access routes into Jack Canyon should be gated and access limited to development and administrative purposes.
- A complete assessment all previously recorded sites and any additional sites identified through additional Section 106 compliance surveys should be initiated to establish a thorough baseline database of site conditions evident at the time Jack Canyon was restricted to industry traffic.
- Given the isolated nature of Jack Canyon and the consequent opportunities for oil and gas workers to engage in activities that denigrate or diminish the integrity of archaeological sites here, independent audits of site conditions by qualified archaeologists should be periodically implemented to assess any human-caused changes to site conditions. Such audits would deter inappropriate and illegal behavior, and could therefore be considered within the context of "minimizing" adverse effects, as defined in 36CFR800.
- Jack Canyon would be an appropriate and discrete environmental universe to initiate broader mitigation measures, including Class II stratified random sample surveys and/or Class III block surveys. These surveys could contribute important new insights into the relationship between seasonal water sources and human land-use patterns on the West Tavaputs Plateau. These insights could assist and augment BLM management of cultural resources elsewhere on the plateau by identifying those environmental niches where significant cultural resources are likely to occur.

#### **Agency Preferred Alternative**

As discussed in Table 2.7-1, the agency's preferred alternative articulates a "unique component" that would *require* BBC and other operators to construct turnouts and/or designated parking locations at appropriate intervals to reduce transportation-related safety concerns, and that BLM would invite BBC and other operators to cooperate in a partnership to develop visitor interpretation and enhancement to improve the recreational experience in Nine Mile Canyon (DEIS 2-97). Any enhancement of the Nine Mile Canyon recreational experience that is consistent with the 1995 BLM Recreation and Cultural Area Management Plan for Nine Mile Canyon is long overdue, and CPAA enthusiastically supports implementation of public outreach and educational measures hinted at in the agency preferred alternative.

However, the effort as articulated in the agency preferred alternative (Alternative E) is, at best tepid and reflects a paucity of innovative approaches on the part of the BLM. There is also an inherent assumption that pullouts and parking areas will ameliorate dust accumulation and conflicts between recreational canyon visitors and industrial traffic, and that this will facilitate a safer visitor experience. Yet there is no acknowledgment that this assumption would be valid only at those localities with pullouts and parking areas, but that the recreation public commonly observes dozens if not

hundreds of additional sites visible from the existing roadway where vehicle congestion, road dust and visitor safety would continue to be a serious problem. The designation of parking areas or pullouts is in fact meaningless if not accompanied by an aggressive transportation plan that considers and accommodates public visitation in the canyon corridor as a whole.

Furthermore, there is a near-absence of public education and outreach as part of the agency-preferred alternative. The mere statement that BBC and other operators would be "invited" to cooperate in a partnership is itself meaningless in light of the BLM's refusal to engage willing participants as consulting parties in the resolution of adverse impacts prior to full-field development. The BLM's denial of public participation has clearly resulted in an adversarial climate between BBC/BLM and resource preservation advocates wherein any future partnerships will undoubtedly be hampered by a paucity of mutual trust or relationships. The absence of trust, if not outright hostility, makes it unlikely that BBC or other operators would willingly engage in public education and outreach initiatives without appropriate incentives.

There is also considerable doubt among resource protection advocates that public education and outreach will receive any priority whatsoever within the Price Field Office, either in terms of budget or at the policy level. They point to the fact that few measures articulated in the Nine Mile Canyon management plan have actually been implemented over the past 13 years of the plan. This mistrust of the federal agency is also a reflection of the BLM's failure to fully embrace interested groups as consulting parties in the past and the perception that decisions impacting cultural resources (and other environmental and private property values) have been decided without their participation.

In general, the agency-preferred alternative tangentially acknowledges there is a need for public outreach and education, but it is vacuous in terms of how to accomplish those ends, offering piece-meal approaches with no stated benchmarks or goals. The statement that BBC and other operators would be "invited" to participate is in fact an abrogation of the BLM's responsibility to fully consider the direct, indirect and cumulative impacts of its decision-making on historic properties in the short-term or long-term, in effect shifting all responsibility for public education and outreach to the willingness of the operators to engage a public that is already distrustful of the BLM and BBC. And the preferred alternative offers no assurances that anything other than parking areas and pullouts will be the ultimate legacy of full-field development.

A number of more innovative approaches could be included in the agency-preferred alternative. Among the most fundamental would be a commitment from the BLM to engage all parties, including resource protection advocates and operators, in a transparent planning process over the life of the project that will establish and monitor short-term and long-range objectives for resource protection in the canyon, and that operator participation in that process will be mandatory. This process could, if properly implemented, provide the basis for prioritizing all public education, outreach and enhanced recreational and law enforcement initiatives.

Among the related strategies that should be considered:

- Requiring operator participation in a cultural resource mitigation fund wherein annual commitments would be required to pay for ongoing studies of adverse effects (e.g., dust studies), stabilization or recovery of sites impacted by development activities, development of recreational facilities that ameliorates conflicts with industrial uses, and other projects that could mitigate the cumulative impacts of industrial development.
- The nature and extent of the annual commitments to a mitigation fund *could* be based on a percentage of annual revenues from the project area with an established minimal threshold of participation. Mitigation funds could be dispersed through a non-lapsing grant pool to independent researchers/applicants with appropriate research designs (see similar mitigation grant pool programs established for the Central Utah Project and for the federal lands disposal program in Las Vegas, Nevada).
- The mitigation fund should be adequate to prioritize research projects that will contribute to the long-term preservation of cultural resources through avoiding and minimizing impacts to cultural resources in the West Tavaputs area, and they should not be applied toward the operators' Section 106 survey mandates. Such funds could become important matching revenue that would assist the BLM in the fulfillment of Section 110 responsibilities in the region (e.g., Challenge Cost Share Program funding) including Class II or Class III block surveys, or completion of the canyon corridor surveys initiated almost 20 years ago by Carbon County volunteers. Operator participation in such mitigation projects could become a fundamental component of mitigating the direct, indirect and cumulative impacts of the project to the integrity of the National Register district's location, design, setting, materials, workmanship, feeling or association.
- The mitigation fund should be adequate to implement a monitoring and auditing program wherein those sites at risk from increased degradation from air-bourn pollutants, increased vulnerability to vandalism, and increased susceptibility to erosion and vibration could be consistently examined to determine the nature and extent of ongoing impacts. This would also include establishing a baseline from which future impacts could be measured.
- The mitigation fund should be established at a level adequate to implement the Nine Mile Canyon special management plan in its entirety, including hiring a full-time law enforcement officer and/or rangers trained in cultural resource protection and authorized to enforce state and federal cultural resource protection laws and investigate violations of those laws. Funding of a law enforcement officer dedicated to Nine Mile Canyon should be a fundamental component of the EIS regardless of which alternative is chosen.
- The agency-preferred alternative should require operator participation in a long-term public outreach and education initiative that extends beyond Nine Mile Canyon. Such initiatives are increasingly a common components of major development projects throughout the West to (a) educate the public as to the nature of the cultural resources that were encountered and impacted

through the course of development, (b) explain the scientific contributions resulting from Section 106 compliance, (c) foster a better understanding of cultural resource protection laws and how operators complied with those laws, and (d) promulgate an appreciation for cultural resources as part of the local, regional and national heritage. Good examples of such outreach initiatives in Utah include *From Hunters to Homesteaders* (Stettler and Seddon 2005) produced as part of the Kern River pipeline project, and *Treasures of the Tavaputs* (Spangler and Spangler 2007), produced collaboratively by CPAA and Questar coincident to pipeline construction on the West Tavaputs Plateau. Public outreach should also be considered as one component of mitigation of adverse effects to cultural resources, whether those impacts are direct, indirect or cumulative.

- The BLM should encourage all operators on the West Tavaputs Plateau to engage in those practices, projects and initiatives that go above and beyond what the letter of federal law requires, and that operators who engage in a broad range of proactive initiatives as part of their corporate citizenship be appropriately acknowledged by the BLM. Such initiatives could include partnerships to preserve and protect cultural resources, as well as efforts to enhance other environmental values. Likewise, there should be no special acknowledgment or recognition for any compliance with “the letter of the law” that is required of all citizens.

#### **Miscellaneous Recommendations:**

The CPAA analysis of the DEIS identified a number of minor concerns and errors that should be corrected in the final EIS:

- The Draft EIS repeatedly makes reference to Bill Barrett Corporation (BBC) and other oil and gas operators. CPAA recommends that all “other operators” be clearly identified, as well as their proportional financial and legal interests in the WTP leases.
- CPAA concurs with Section 1.7.1.3 that (1) proposed development could have direct, indirect and cumulative impacts to petroglyphs, prehistoric habitation and historic resources due to increased traffic, noise and infrastructure, (2) that development could impact the proposed Nine Mile Canyon Historic District, (3) that the accumulation of dust and/or dust suppressants could change rock art clarity, and that (4) increased access to the WTP project area could facilitate increases in vandalism, looting and unauthorized ORV use. However, these statements should be clarified to reflect that (1) proposed development could have direct, indirect and cumulative impacts to petroglyphs and pictographs, to prehistoric architectural and habitation sites, and to historic resources; (2) that development could impact sites that are part of the Nine Mile Canyon Archaeological District (historic resources are not part of the nomination); (3) the accumulation of dust and/or dust suppressants could change the clarity of prehistoric petroglyphs and pictographs, as well as historic signatures; (4) and increased access to and longer-term residency of

the WTP by project workers could result in an increase in vandalism, looting and improper vehicle use.

- The DEIS should be modified throughout to better reflect the BLM's commitment under FLPMA to protect cultural resource values, and under the Energy Policy Act that commercial development shall "be conducted in an environmentally sound manner using management practices that will minimize potential impacts" to other resources.
- Table 2.2-6 indicates that operators would "inform" their personnel, contractors and subcontractors about relevant federal regulations intended to protect archaeological and cultural resources, whereas the next section indicates operators would be "required" to ensure those personnel abide by hunting laws. This appears to deemphasize the significance of cultural resource protection. This section should be modified to reflect that operators would be *required* to ensure their personnel, contractors, and subcontractors abide by relevant federal laws and regulations intended to protect archaeological and historic resources. Furthermore, operators should be required to report to appropriate law enforcement officials any violation of these laws and regulations, and that they will assist authorities in the prosecution of violators under the Archaeological Resources Protection Act and other relevant state and federal laws. It is also recommended that the EIS specify that operators have a personnel policy that requires immediate dismissal of individuals who violate laws and regulations intended to protect cultural resources.
- Section 3.12.2 Cultural Overview contains a minor error in that it states "Gunnerson (1969) reported a skeleton with cranial deformation" at Rasmussen Cave. The skeleton had no cranial deformation.

### Summary

As discussed above, the draft EIS contains many deficiencies related to cultural resources, as well as factual inaccuracies. These concerns range from serious omissions or misrepresentations of scientific data related to magnesium chloride to a failure of the BLM to consider a full range of management alternatives commensurate with the size and scope of such a massive undertaking lasting 30 to 40 years. Indeed, the Draft EIS is remarkably uninventive, offering no new approaches or insights to management of impacts to cultural resources in an area of the northern Colorado Plateau renowned the world over for its cultural resources. As reflected by the minimal differences between the action alternatives in the DEIS, there would seem to be a serious deficiency in thoughtful consideration of alternatives that would avoid and minimize impacts to cultural resources, with an implied preference of mitigation of impacts but only to those sites within the spatially restricted area of potential effect.

To this end, CCAA is concerned about the general tone of the DEIS that repeatedly cites FLPMA and the Energy Policy Act to emphasize the valid rights of lease holders to exercise those leases with statements to the effect that "operators must fulfill their obligations and responsibilities under Federal leases to explore, develop and

produce commercial quantities of hydrocarbons" (DEIS ES-2), while at the same time the DEIS appears to deemphasize provisions in those same federal laws mandating balanced multiple uses of federal lands and preservation of environmental values. Likewise, there is near-absence of discussion or consideration of the long-term cumulative impacts to cultural resources that would result from three or four decades of development in the region (a single page of discussion in a document more than 1,000 pages long).

As articulated repeatedly throughout the DEIS, the development of oil and gas resources is consistent with the mission of the BLM and with various federal laws, primarily the Mineral Leasing Act of 1920, FLPMA and the Energy Policy Act of 2005 (see Executive Summary ES-1 to ES-9). CPAA concurs that BBC and other operators have valid lease rights, and that the purpose and need of the West Tavaputs Plateau (WTP) full-field development is to provide a mechanism whereby those operators can exercise those leases and extract natural gas from the subsurface, and that development of those leases is within their legal rights. However, CPAA is concerned about how those leases will be developed over the next 30 to 40 years, and how development will avoid, minimize or mitigate the direct, indirect and cumulative impacts to known and unknown cultural resources throughout the West Tavaputs Plateau.

An overriding concern is the paucity of baseline data on the canyon generally (an exception is the growing corpus of data from the upper plateau) whereby informed management decisions could be made. Because of the small areas subjected to Section 106 clearances in the past, the BLM simply does not know the quantity, diversity or density of cultural resources under its jurisdiction, and hence management decisions have been predicated on incomplete or inadequate information. Indeed, there has been little recent survey work done in the Nine Mile Canyon corridor where site density is the highest and where entire sections of the canyon bottom have never been surveyed. These sites remain most vulnerable to anticipated increases in vehicular traffic. Based on CPAA analysis of existing data, we believe that less than 10 percent of the canyon corridor has been even cursorily investigated, and that the number of sites along the corridor (exclusive of the upper bench areas, mesas and plateaus) is conservatively estimated at about 10,000 sites. Most of these would be located within the boundaries of the proposed Nine Mile Canyon Archaeological District.

Given the nature of the undertaking and the sheer number of known and unknown sites that are or will be directly and indirectly impacted by the full-field development, it is imperative that the DEIS more fully consider management strategies that will foster the preservation and protection of these resources. Yet the DEIS offers no strategy to identify the cultural resources that could be impacted, nor does it articulate under the action alternatives any intent to ameliorate these data gaps through fulfillment of its own Section 110 responsibilities. CPAA is fundamentally concerned that BLM decision-making has been predicated on insufficient data related to the nature, diversity and distribution of archaeological resources within the project 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. At the current time approximately 90 percent of archaeological sites in the canyon bottom remain undocumented. Furthermore, the vast majority of the roughly 1,000 sites documented in the canyon corridor have not been documented to currently accepted standards, nor is there an adequate baseline from which future site degradation can be monitored.

CPAA appreciates the opportunity to comment on the Draft EIS, and as an organization we look forward to working collaboratively with the Price Field Office on future projects that will preserve and protect historic properties for future generations. These efforts could include assisting the BLM in the preparation of National Register nominations, the development and dissemination of "best practices" materials for recreation users, the development of baseline data to facilitate future monitoring of adverse effects, the development of public outreach materials and site interpretation, and data recovery. We are optimistic BLM managers will prioritize funding for proactive management strategies, and we strongly encourage and support the BLM in any effort to more aggressively embrace its Section 110 responsibilities. Please feel free to contact me if you have questions or need additional clarification.

Best Regards,

Jerry D. Spangler, MA RPA  
Executive Director

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Nine Mile Canyon/Prickly Pear Unit Request for Stay/State Director Review  
List of Exhibits

1. ENBB entry/form and CX Review and Approval form UT-070-08-023
2. ENBB entry/form and CX Review and Approval form UT-070-08-024
3. ENBB entry/form and CX Review and Approval form UT-070-08-025
4. ENBB entry/form and CX Review and Approval form UT-070-08-026
5. ENBB Listing
6. Declaration of Steve Hansen
7. Declaration of Jerry Spangler
8. West Tavaputs DEIS comments of CPAA – flysheet below – document sent with e-mail:
9. West Tavaputs DEIS comments of Hopi – flysheet below – available at:  
[http://www.suwa.org/site/DocServer/Hopi\\_Comments\\_-\\_WTDEIS.pdf?docID=3883](http://www.suwa.org/site/DocServer/Hopi_Comments_-_WTDEIS.pdf?docID=3883)
10. West Tavaputs DEIS comments of National Trust – flysheet below – available at:  
[http://www.suwa.org/site/DocServer/NTHP\\_Comments\\_on\\_the\\_Draft\\_EIS\\_for\\_the\\_West\\_Tavaputs\\_Pr.pdf?docID=3884](http://www.suwa.org/site/DocServer/NTHP_Comments_on_the_Draft_EIS_for_the_West_Tavaputs_Pr.pdf?docID=3884)
11. West Tavaputs DEIS comments of SUWA et al. – flysheet below – available at:  
[http://www.suwa.org/site/DocServer/Public\\_West\\_Tavaputs\\_Plateau\\_DEIS\\_Comments.pdf?docID=3885](http://www.suwa.org/site/DocServer/Public_West_Tavaputs_Plateau_DEIS_Comments.pdf?docID=3885)

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5  
**CONCLUSIONS**  
**AND RECOMMENDATIONS**

Although the research described in this report remains in progress, it is possible to conclude that the degraded sections of road in Nine Mile Canyon are generating large amounts of dust as industrial traffic passes. These particulates are very fine and would appear to conform to the descriptions by Thomson: that the finest particles are the most dangerous for cultural property for many reasons, including their ability to remain suspended in air until they find a surface upon which to settle. In the case of Nine Mile Canyon, that surface can be a rock-art panel.

There is an on-going study of traffic in Nine Mile Canyon, supervised by the BLM, but on-site observations alone indicate that heavy industrial traffic has increased as energy-related work has increased. This traffic quickly cuts through any protective hardpack on the road and reaches and liberates the powdery substrate, which is thrown into the air as dust. In this regard, it should be recalled that the canyon was created by water-borne depositions, so fine silts and clays would not be unexpected. The heavy traffic further pulverizes these very fine particulates.

It is also clear that treatments that control the generation of dust from the road have been effective, although not perfect. In this regard, particle counts taken in Dry Canyon, where the road remains naturally hard-packed and receives little traffic, are very close to the particle counts taken at sites where the adjacent road sections have been treated with a dust abatement system and are watered continuously.

The analytical systems utilized in this study provided useful and verifiable data. These methods are especially useful because they are relatively inexpensive and simple to use, and the data are generated quite quickly. However, some refinements in use of these systems will be required. There is a discrepancy in the raw data from on-site readings with the particle counter, when compared with particle size distribution calculated from collected depositional material. One possible explanation is that the particle counter literally counts all particles in the air, including smoke, pollen and vegetal exudates, but these particulates are not calculated in the depositional analysis by laboratory systems.

To date the laboratory analyses, in combination with visual observations, confirmed that conditions at the control site, Dry Canyon, differ substantially from those at the sites in Nine Mile Canyon. In Nine Mile Canyon, the combination of raw road surfaces and heavy vehicular traffic produces large plumes of fine dust that settle on the adjacent rock

art. Laboratory analyses provided spectra "signatures" of the depositional dust that confirm that it originates from the road at the Hunt Scene and Cottonwood Canyon panel. However, the depositional dust at the two sites adjacent to sections of road treated for dust abatement raises several questions about the origins of the dust overall on many sites in Nine Mile Canyon. Specifically, variations in the spectra suggest that some of the dust may have been deposited prior to the current industrial use of the road at Rasmussen Cave.

At all the study sites, the analyses raised an important, intriguing and totally unexpected question: what dust abatement system has been used on the road in Nine Mile Canyon? The dust abatement work on the road has occurred on sections that are under the purview of agencies not connected to the BLM. Consequently, the BLM does not have verifiable records of that road work. The anecdotal information is that magnesium chloride was used for dust abatement, but no documentation of its use has been provided.

In fact, magnesium chloride is widely used as flakes and as a powder for both dust abatement and for de-icing. Analyses confirm the presence of magnesium and chloride in samples from the road and in depositional dust in Nine Mile Canyon, but the actual salt, magnesium chloride, has not been isolated and identified. The presence and possible contamination of sites by magnesium chloride is a critical component of this study. Magnesium and chloride may be present naturally in the particulates of Nine Mile Canyon, although they are not present in Dry Canyon or in some of the dust at Rasmussen Cave.

The obvious source of magnesium chloride would be its application for dust control on the road. However, it has not been possible thus far to isolate and identify magnesium chloride from a section of treated road adjacent to the Harmon Canyon site. A possible explanation is that magnesium chloride was used with hydrated magnesium oxide to create a hard-pack surface material called Sorel cement. If this is the case, perhaps the magnesium chloride is transformed in the process, making its identification impossible.

The analytical mystery surrounding the use and presence of magnesium chloride in Nine Mile Canyon must be clarified. The presence of introduced magnesium chloride could serve as an effective marker as research in dust abatement and control continue in the canyon. Because of mounting concern about the environmental impacts caused by magnesium chloride, it is important to know if it is present and has contaminated the rock art. Continuing research will be required.

Finally, and most importantly, the need for refinement of analytical methods and additional research must not deflect from the need to act quickly to stop the generation of dust on the road in Nine Mile Canyon and to treat sites that have been affected. The final sections will examine these two critical issues.

5.1  
**DUST ABATEMENT ON THE ROAD AND  
CONCERNS ABOUT MAGNESIUM CHLORIDE**

Increasingly, there is a body of scientific literature that is raising concerns about the use of magnesium chloride. Magnesium chloride is a salt that will deliquesce at a very low relative humidity; that is, it will pull ambient water out of the air and remain wet. A case history that reveals the potential for the deleterious effects of magnesium chloride occurred some years ago at the Metropolitan Museum. The Abydos Frieze is an important work of art from dynastic Egypt, on display in the museum. It is made from carved limestone, which was constantly deteriorating. Eventually, it was determined that naturally occurring magnesium chloride in the stone was heavily deliquescing in the humid climate of New York City. The magnesium chloride could not be removed from the fabric of the stone. Therefore, the frieze had to be placed in a climate-controlled case.

It cannot be proved that particulate magnesium chloride landing on a rock-art panel in Nine Mile Canyon will produce the same damage as occurred on the Abydos Frieze in the Metropolitan Museum. Nevertheless, the deterioration of a work of art by this salt does motivate concern for its use around any work of art.

More troubling data about the use of magnesium chloride is being raised from several agencies and organizations around the country following its introduction as a de-icing material (Cody 1996; Cody 2000; Leiser 1967). The work of these concerned scientists contrasts (not unexpectedly) with the benign pronouncements of the companies that make and market magnesium chloride (Peters Chemical Industry 2006).

A particularly focused and accessible paper has been written by Peter Snow of the American Concrete Institute (Snow 2002). Salient passages are quoted:

During the winter of 2000-2001 scaling on concrete surfaces in the Idaho Falls region increased 10 times more than in all the previous 9 winters. The American Concrete Institute (ACI 302) and the National Ready Mix Concrete Association in their series "Concrete in Practice" define local flaking or peeling of a finished surface of hardened concrete as a result of freezing and thawing. A review of scientific and engineering literature indicated that chloride-containing deicing materials such as calcium chloride, potassium chloride and sodium chloride can exacerbate scaling as concrete goes through freeze-thaw cycles. By the winter of 2000-2001 there was a major change: governments had introduced a relatively new magnesium chloride-based deicing material.

How does magnesium chloride damage concrete? One must have a fundamental knowledge of concrete in its hardened state. Concrete, when setting from a plastic to hardened condition, goes through a number of chemical reactions. Basically, hardened concrete consists of two major chemical compounds;

calcium-silicate-hydrate and calcium hydroxide. Actually, the reaction products from cement hydration with water are very chemically complex, but for the purposes of this review we will stick to the basics. When concrete is to be exposed to severe freezing, it is standard practice to entrain a system of microscopic air bubble in concrete mixtures typically occupying a volume of 5-8%. The purpose of this air-void system is to provide space for the increased volume that water will occupy as it becomes ice. If one were to look at concrete under a microscope in the range of 3000x this entrained air would look very much like a wasp nest. Magnesium chloride for deicing is effective in reducing the temperature at which water freezes. The problem begins as the magnesium chloride comes into contact with the now deiced concrete surface and remains contained in the melt water and permeates into the concrete. While deicing salts containing sodium, potassium and calcium are chemically innocuous to concrete, this is not true of magnesium. The magnesium ions accumulate and react with the cementitious compound calcium-silicate-hydrate converting it to magnesium-silicate-hydrate (or a mineral called brucite), which is non-cementitious in nature. In other word, a fundamental major mineralogical product of solidified concrete has now been chemically altered (completely changed). Formation of magnesium-silicate hydrate breaks down the "glue" that binds aggregates together and concrete surfaces begin to deteriorate. The net effect is we now have a chemical and physical attack that concrete is not designed to withstand, nor be subjected to.

The bad news is that the consequent damage to concrete and its financial impact upon the community at large is significant. Private property owners particularly suffer damage and are looking for someone to blame. A couple of essential points: The magnesium chloride adheres to vehicle tires and to the vehicle itself and is therefore contaminating private property owners' driveways and sidewalks and causing damage as previously outlined. Who is to pay for this?

The last essential point of this review is that this material is extremely corrosive, causing damage to plant and vegetable life, and greatly accelerating the destruction of most metals, primarily automobiles and their accessories. The producers of the magnesium chloride claim to have integrated a corrosion inhibitor to attempt to negate some of the auto damage, but a joint study of the Colorado Transportation Department and National Trucking Association (as a result of truckers' complaints about corrosion to their vehicle and electronics) has not borne out that this "corrosion inhibitor" is effective.

Again, there is no proof at present that magnesium chloride used for dust abatement in Nine Mile Canyon has---or will---become a vector of deterioration for the canyon's resources. However, it is important that all stewarding agencies be aware of the potential for damage that this material, and other dust abatement materials, may present.

## 5.2

### **RECOMMENDATIONS**

Action needs to be taken to address the following problems:

1. Dust Abatement on the Road. Research needs to begin immediately to identify, develop and implement a treatment for the road that will be environmentally acceptable as well as effective. If at all possible, it would also be useful to implement a temporary dust abatement system adjacent to at-risk sites so that dust will not continue to build up on the panels.

2. Conservation Treatment for the Rock Art. Research needs to begin immediately to develop treatments for the removal of the dust from the rock art panels. Extensive dust removal from rock art has not been addressed in conservation literature, so the research will be innovative. Therefore, time and experimentation will be needed to develop an effective and safe treatment. Consequently, this research needs to begin immediately in order to have effective treatments in place in a timely manner.

3. Adjustment of Analytical Methods. As the dust abatement work continues in Nine Mile Canyon, analytical systems need to be employed in order to determine the success of the abatement and improvement in air-quality over the short-term and the long-term. A key research question is how much of the road---or how much of a given stretch of road near a site---needs to be treated to ensure that a rock art panel will not be impacted by dust. In this regard, the research now taking place at Burrup, Australia, may provide some prototypes of monitoring systems that could be installed in the canyon. Otherwise, the simpler and more conventional systems utilized in this study could be used if they are clarified and adjusted.

The mystery surrounding the presence or absence of magnesium chloride in Nine Mile Canyon needs to be resolved as soon as possible, as part of the continuing research.

4. Location of Impacted Sites. Nine Mile Canyon is replete with rock art panels, but it is not known how many have been affected by settlement of dust. For the purposes of long-term planning for both dust abatement on the road and conservation treatment, impacted sites need to be identified and evaluated.

**Issue Excerpt Text:**

the Proposed RMP failed to consider the views of the Hopi Tribe concerning the management of Nine Mile Canyon. On several occasions in the past, the Hopi Tribe has raised objections with BLM concerning natural gas development projects in the Nine Mile Canyon region. See Letter from Leigh J. Kuwanwisiwma, Director, Hopi Cultural

Preservation Office, to Roger Bankert, Manager, Price Field Office (April 30, 2008) (commenting on the Draft EIS for the West Tavatpus Plateau Natural Gas Full Field Development Plan). In particular, the Hopi has objected to the ongoing use of Nine Mile Canyon Road as the principal means of access to natural gas project areas located on the West Tavatpus Plateau.

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***Summary***

The Proposed RMP failed to consider effects (including those from vehicular traffic) on the Traditional Cultural Property (TCP) identified by the Hopi Tribe in Nine Mile Canyon. The Proposed RMP failed to consider the views of the Hopi Tribe concerning the management of Nine Mile Canyon.

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***Response***

On p. 5-2 of the PRMP/FEIS, the BLM acknowledges that Nine Mile Canyon is considered a TCP. On p. 2-25, the PRMP/FEIS states that “[t]he BLM would coordinate with tribes or other cultural groups to identify and manage traditional cultural properties (TCP)...[t]he BLM would seek agreements with the tribes or other cultural groups to identify the types of projects or areas where they desire.” The BLM will adhere to these commitments in implementing of the Proposed Plan.

In a December 2007 letter, the Hopi Tribe expressed concern for the Nine Mile Canyon area, requesting that management of the Canyon avoid impacts to prehistoric archaeological sites and that an influx in visitation be addressed. In the Proposed Plan, the BLM is designating an ACEC (p. 2-116) and a Special Recreation Management Area (SRMA) (p. 2-69) to address these issues. The designation of the 26,200 acre Nine Mile Canyon ACEC provides special management for this area (a portion of which lies within the Vernal planning area) to protect these cultural resources. Management prescriptions for the area will limit surface disturbing activities (to NSO), utility corridor approvals (to one, with minimal disturbance), and OHV use (to designated routes).

The SRMA will more effectively manage recreation and interpretive activities for visitors of the cultural and historic resources. The SRMA closes semi-primitive non-motorized areas (as defined by the BLM’s Recreation Opportunity Spectrum (ROS)) to OHV use and limits camping to designated areas. Any new facilities (interpretive materials, signage, etc.) will only be allowed in ROS roaded natural areas.

Combined, the management of this area will provide protection of the TCP. Although there is no direct discussion of impacts to the Nine Mile Canyon in the context of the TCP, considerable analysis of impacts to Nine Mile Canyon from the BLM’s Proposed Plan has been provided. Impacts related to the ACEC designation are discussed on pp. 4-345 to 4-349. Impacts to the Nine Mile Canyon SRMA are discussed on pp. 4-252, 4-256, 4-263, and 4-268. The BLM incorporated the direct impacts to the TCP in the analysis of the impacts to Nine Mile Canyon. Thus, the BLM has adequately considered impacts to the TCP.

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### Cultural Resource Assessment of December 2008 Oil & Gas Lease Sale

Public land parcels identified by the BLM for its scheduled December 2008 O&G lease sale have been assessed relative to potential impacts to cultural resources. Fifty three parcels were reviewed.

**UT1108-319** This parcel is located on the Price River. There has been no previous archaeological inventories in this parcel. Inventories nearby have been limited. This parcel is mainly steep slopes along the Price River. Only a few sites would be expected in this parcel because of the topography. There is likely an area on this parcel for a well pad to be located without affecting a historic property.

**UT1108-320** This parcel is at the head of Price Canyon. The parcel has only one archaeological site previously recorded. There are sites known to present, including those associated with a historic railroad, a historic highway and historic water systems for Price and Helper cities. There is likely an area on this parcel for a well pad to be located without affecting a historic property.

**UT1108-321 to 324** These parcels are located in the area of former coal leases of the Willow Creek Mine. Fourteen archaeological inventories, covering about 1592 acres, have previously been made within these parcels. Four archaeological sites have been recorded. It is likely there are areas for development of a well pad without affecting a historic property.

**X UT1108-325 to 345, 347 to 350, 354 and 345** These parcels are within the area effected by the West Tavaputs Gas Development. Development of these parcels would increase the cumulative adverse impacts to cultural resources. These parcel should be deferred until the West Tavaputs EIS is finalized and the consultation is completed and the adverse effects resolved as required by 36CFR800.

**U1108-346 and 351** These parcel are in the area of the north and south forks of Gordon Creek. Five archaeological inventories, covering about 60 acres, have previously been made within these parcels. Seven archaeological sites have been recorded. The site density is very high within the canyons of Gordon Creek and developing well pad there would likely effect cultural resources. Elsewhere it is likely there are areas for development of a well pad without affecting a historic property.

**U1108-352 to 353** These parcels are located north of East Carbon. Five archaeological inventories, covering about 65 acres, have previously been made within these parcels. No archaeological sites have been recorded. It is likely there are areas for development of a well pad without affecting a historic property.

**U1108-356 TO 370** These parcels are located west and south of Green River. Twenty nine archaeological inventories, covering about 1313 acres, have previously been made within these parcels. Twelve archaeological sites have been recorded. It is likely there are areas for development of a well pad without affecting a historic property. Parcels 356,357 and 358 have the Old Spanish Trail running through them and should have an Old Spanish Trail NTL attached to them.

**U1108-371** This parcel is within the Dry Lake Archaeological ACEC. It should have NSO stipulation S-06 attached



**MONTGOMERY  
ARCHAEOLOGICAL  
CONSULTANTS**

Box 147, 322 East 100 South, Moab, Utah 84532 (435) 259-5764 Fax (435) 259-5608

August 2, 2002

Blaine Miller, Archaeologist  
Bureau of Land Management  
Price Field Office  
125 South 600 West  
Price, UT 84501

Dear Mr. Miller:

Enclosed please find the report entitled "Cultural Resource Inventory of Wasatch Oil and Gas Well Locations Prickly Pear #1215-11-2, #18-3, #19-2, and #27-3, in Nine Mile Canyon, Carbon County, Utah." The inventory resulted in the re-visitation of nine previously documented sites (42Cb31, 42Cb35, 42Cb48, 42Cb242, 42Cb696, 42Cb708, 42Cb724, 42Cb725, and 42Cb1252). All 9 sites are assessed as eligible to the NRHP. For the recommendations, please refer to Management Recommendations in the report.

I have also included a copy of the draft and the final resource management plan for vibration standards for the protection of rock art used by the BLM, White River Resource Management Area.

After your review, could you please forward a copy of this report to Mr. Jim Dykmann, Utah SHPO. Please call me if you have any comments or questions.

Sincerely,

Keith R. Montgomery  
Principal Investigator

cc: Todd Cusick, Wasatch Oil & Gas, Farmington, UT  
R. Heggie Wilson, Stonegate Resources, Park City, UT

**COVER PAGE**  
**Must Accompany All Project Reports**  
**Submitted to Utah SHPO**

**Project Name:** Cultural Resource Inventory of Wasatch Oil and Gas Well Locations Prickly Pear #1215-11-2, #18-3, #19-2, and #27-3, in Nine Mile Canyon, Carbon County, Utah.

**State Project No.:** U-02-MQ-0169b

**Report Date:** May 8, 2002

**County (ies):** Carbon

**Principal Investigator:** Keith R. Montgomery

**Field Supervisor:** Keith R. Montgomery

**Records search completed at what office(s)?** BLM Price Field Office; Utah SHPO, Salt Lake City

**Record search date(s):** April 4, 2002; April 8, 2002

**Area Surveyed - Intensive:** 40 acres **Recon/Intuitive:**      acres

**7.5' Series USGS Map Reference(s):** USGS Cowboy Bench, UT 1968

| Sites Reported                                       | Count    | Smithsonian Site Numbers  |
|--|----------|---|
| Archaeological Sites                                 |          |   |
| Revisits (no inventory form update):                 | <u>3</u> | <u>42Cb696, 42Cb708, 42Cb724</u>                                    |
| Updates (updated IMACS form attached):               | <u>6</u> | <u>42Cb31, 42Cb35, 42Cb48,</u><br><u>42Cb242, 42Cb725, 42Cb1252</u> |
| New recordings (IMACS form attached):                | <u>0</u> | _____   |
| <b>Total Count of Archaeological Sites:</b>          | <u>9</u> | _____   |
| <b>Historic Structures (USHS 106 form attached):</b> | <u>0</u> |   |
| <b>Total National Register Eligible Sites:</b>       | <u>9</u> |   |

**Checklist of Required Items**

1.  One Copy of the Final Report.
2.  Copy of 7.5' Series USGS Map With Surveyed/Excavated Area Clearly Identified.
3. Completed IMACS Site Inventory Forms, Including,
  - Parts A and B or C,
  - The IMACS Encoding Form,
  - Site Sketch Map,
  - Photographs, and
  - Copy of the Appropriate 7.5' Series USGS Map with the Site Location Clearly Marked with the Smithsonian Site Number.
4.  Completed "Cover Page" Accompanying Final Report and Survey Materials.

1. **Report Title:** Cultural Resource Inventory of Wasatch Oil and Gas Well Locations Prickly Pear #1215-11-2, #18-3, #19-2, and #27-3, in Nine Mile Canyon, Carbon County, Utah.
2. **Development Company:** Wasatch Oil & Gas Company
3. **Report Date:** August 2, 2002
4. **Antiquities Permit No.** 02-UT-60122
5. **Responsible Institution:** Montgomery Archaeological Consultants
6. **County:** Carbon
7. **Fieldwork Location:** T 12S, R 15E, Section 11 and 27; T 12S, R 16E, Section 18 and 19  
**Map Reference:** USGS 7.5' Cowboy Bench, UT 1968
8. **Description of Project Proposal:** Development of four well locations.
9. **Description of Examination Procedures:** An intensive pedestrian survey was performed for this project which is considered 100% coverage. At each of the proposed well locations, a 10 acre square parcel was defined, centered on the well pad center stake. The interior of the well location parcel was examined for cultural resources by the archaeologists walking parallel transects spaced no more than 10 meters (30 ft) apart. All the proposed well locations are accessed by existing roads. Ground visibility was considered good.
10. **Linear Miles Surveyed:**  
**and/or**  
**Definable Acres Surveyed:** 40 acres
11. **Inventory Type:** Intensive
12. **Description of Findings:** The project resulted in the re-visitation of nine previously documented sites (42Cb31, 42Cb35, 42Cb48, 42Cb242, 42Cb696, 42Cb708, 42Cb724, 42Cb725, and 42Cb1252).
13. **Number of Sites Found:** 9
14. **Collection:** None
15. **Actual/Potential National Register Properties Affected:** Overall, the proposed drilling program is considered to have an adverse effect on the integrity of the proposed Nine Mile Canyon Historic District.
16. **Literature Search, Location/Date:** BLM, Price Field Office, 4/4/02; Utah SHPO, 4/8/02

17. **Conclusion/Recommendations:** In order to mitigate the above potential adverse effects to significant or unknown cultural resources in the project area, the following recommendations are proposed:

1) Construction activities at all four well locations should be monitored by an archaeologist because of the adjacent sites (42Cb31, 42Cb35, 42Cb48, 42Cb242, 42Cb696, 42Cb708, 42Cb724, 42Cb725, and 42Cb1252) or the potential for significant buried cultural remains in the canyon bottom.

2) A dust abatement program should be initiated by Wasatch Oil & Gas Company to alleviate any secondary impacts to the rock art panels in the project area.

3) Since it is not feasible to relocate the proposed actions that could result in the production of vibrations a distance far enough away from the cultural resources; it is recommended that an archaeologist should inspect the sites for any alterations or damage during and after the drilling program is completed.

18. **Administrator:**

*Keith Montgomery*

**Field Supervisor:**

*Keith Montgomery*

**CULTURAL RESOURCE INVENTORY OF  
WASATCH OIL AND GAS WELL LOCATIONS  
PRICKLY PEAR #1215-11-2, #18-3, #19-2, AND #27-3  
IN NINE MILE CANYON, CARBON COUNTY, UTAH**

by

**Anne E. Raney  
and  
Keith R. Montgomery**

**Prepared For:**

**Bureau of Land Management  
Price Field Office**

**Prepared Under Contract With:**

**Wasatch Oil and Gas  
P.O. Box 699  
Farmington, UT 84025**

**Prepared By:**

**Montgomery Archaeological Consultants  
P.O. Box 147  
Moab, Utah 84532**

**MOAC Report No. 02-19**

**August 2, 2002**

**United States Department of Interior (FLPMA)  
Permit No. 02-UT-60122**

**State of Utah Antiquities Project (Survey)  
Permit No. U-02-MQ-0169b**

## ABSTRACT

In April, 2002, a cultural resource inventory was conducted by Montgomery Archaeological Consultants (MOAC) of four well locations for Wasatch Oil & Gas Company. Prickly Pear #1215-11-2 well location is in Nine Mile Canyon (T 12S, R 15E, S. 11); Prickly Pear #18-3 well location is in Dry Canyon (T 12S, R 16E, S. 18); Prickly Pear #19-2 is in Dry Canyon (T 12S, R 16E, S. 19) and Prickly Pear #27-3 is in Dry Canyon (T 12S, R 15E, S. 27). A total of 40 acres was inventoried on BLM administered land, Price Field Office.

The inventory resulted in the documentation of nine previously recorded sites (42Cb31, 42Cb35, 42Cb48, 42Cb242, 42Cb696, 42Cb708, 42Cb724, 42Cb725 and 42Cb1252). These include eight prehistoric sites with rock art panels (42Cb31, 42Cb35, 42Cb48, 42Cb696, 42Cb708, 42Cb724, 42Cb725, and 42Cb1252), and a historic ranch with a prehistoric rock art panel (42Cb242). Based on rock art styles and other site attributes, the inventory area was occupied by Archaic, Fremont, Ute, and European/American groups. All of the sites, except for 42Cb1252, were originally assessed as eligible to the NRHP. Site 42Cb1252, a probable Fremont culture pictograph, was originally rated as unevaluated, and is now assessed as eligible to the NRHP under Criteria C and D.

All of the cultural resources located during the Wasatch Oil and Gas Company's four well locations inventory occur within the proposed Nine Mile Canyon National Historic District. The archaeological sites located during this project are concentrated around proposed well locations Prickly Pear #19-2 and Prickly Pear #1215-11-2, with no sites found near well locations Prickly Pear #18-3 or Prickly Pear #27-3. Overall, the proposed drilling program is considered to have an adverse effect on the integrity of the proposed Nine Mile Canyon Historic District. Factors which may conflict with the cultural value and cohesiveness of the district include the introduction of visual, audible, or atmospheric elements that are out of character with the proposed Nine Mile Canyon Historic District. In order to mitigate the above potential adverse effects to significant or unknown cultural resources in the project area, the following recommendations are proposed:

- 1) Construction activities at all four well locations should be monitored by an archaeologist because of the adjacent sites (42Cb31, 42Cb35, 42Cb48, 42Cb242, 42Cb696, 42Cb708, 42Cb724, 42Cb725, and 42Cb1252) or the potential for significant buried cultural remains in the canyon bottom.
- 2) A dust abatement program should be initiated by Wasatch Oil & Gas Company to alleviate any secondary impacts to the rock art panels in the project area.
- 3) Since it is not feasible to relocate the proposed actions that could result in the production of vibrations a distance far enough away from the cultural resources; it is recommended that an archaeologist should inspect the sites for any alterations or damage during and after the drilling program is completed.

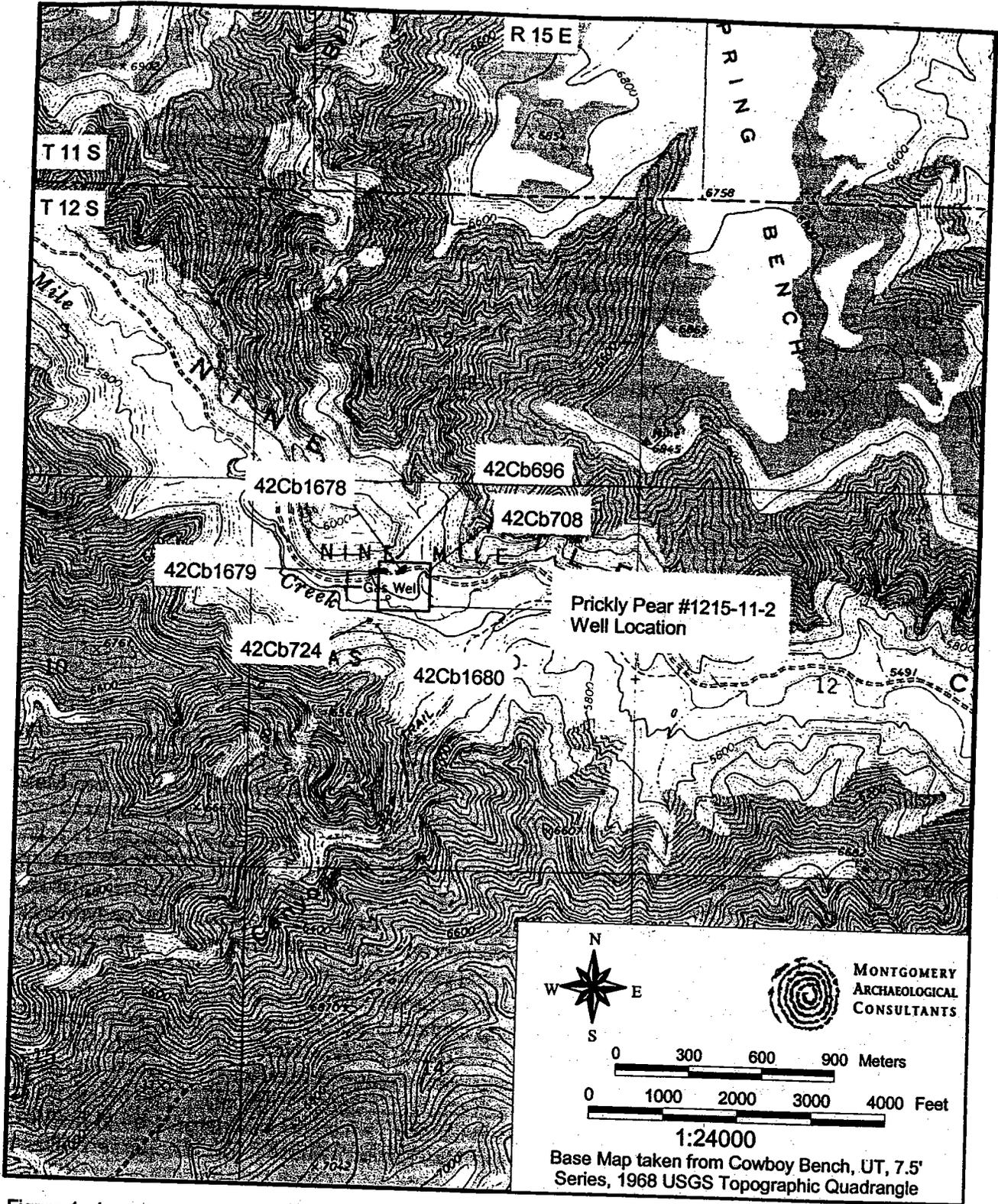


Figure 1. Inventory Area of Wasatch Oil and Gas Prickly Pear #1215-11-2 Well Location with Cultural Resources.

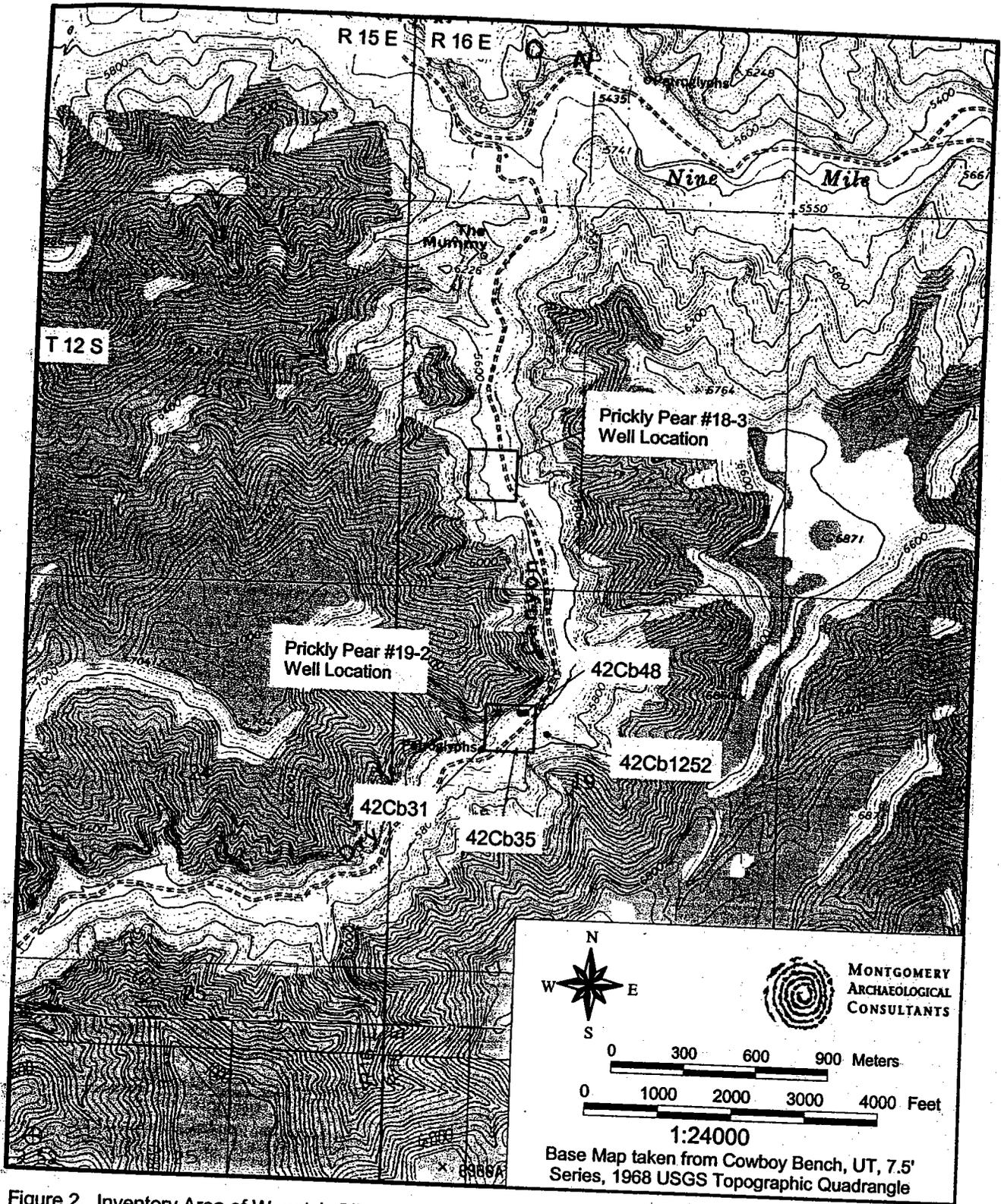


Figure 2. Inventory Area of Wasatch Oil and Gas Prickly Pear #18-3 and #19-2 Well Locations with Cultural Resources.

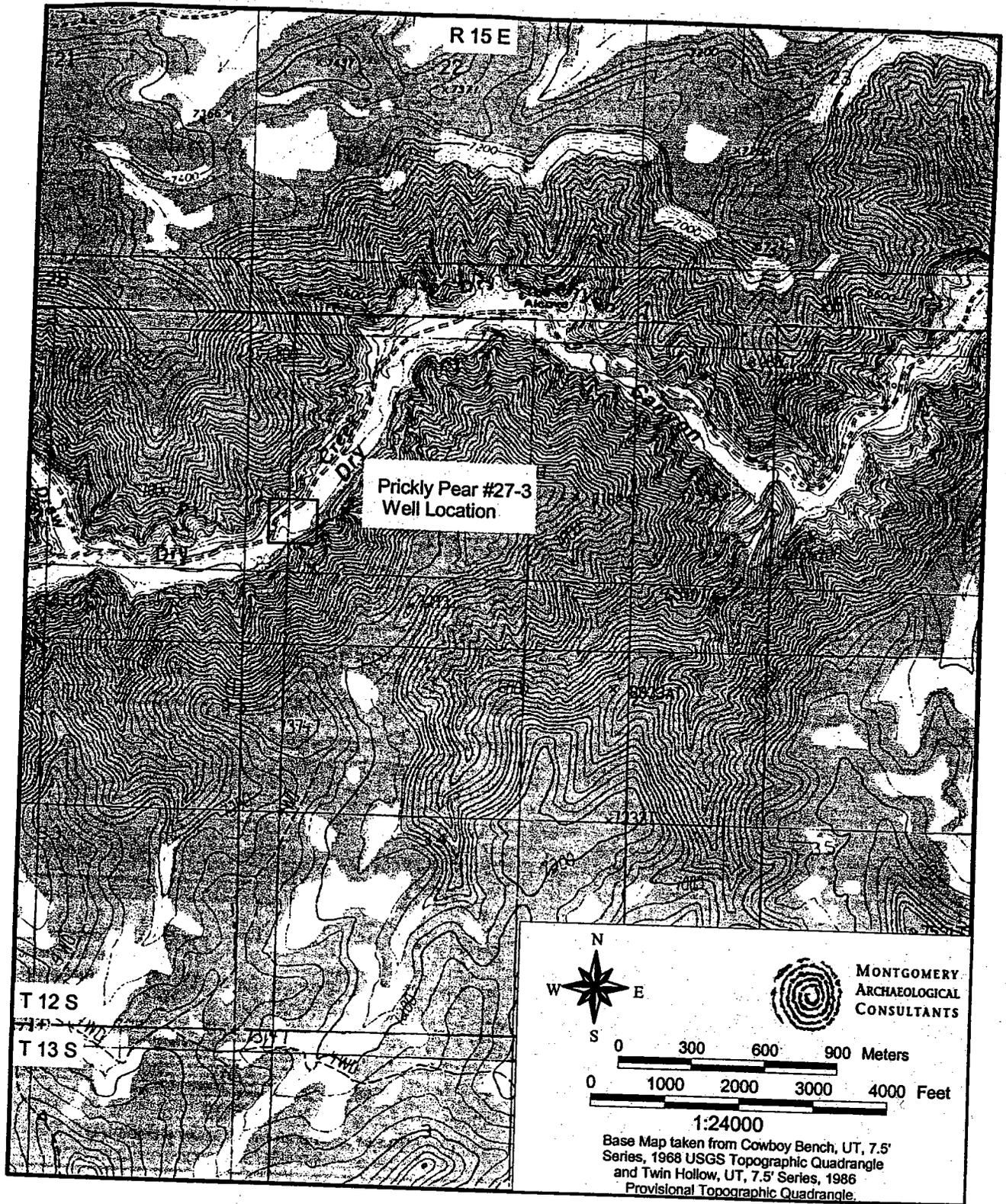


Figure 3. Inventory Area of Wasatch Oil and Gas Prickly Pear #27-3 Well Location.

quadrangle and photographed; site data were entered on an Intermountain Antiquities Computer System (IMACS, 1990 version) inventory form. Permanent datums were placed at the sites consisting of a rebar and aluminum cap stamped with the site number. A number of previously recorded sites were located within the inventory area and additional information was collected as necessary, including updated IMACS site forms. An isolated find was defined as an individual artifact, or light scatter of items, lacking sufficient material culture to warrant an IMACS form, or to derive interpretation of human behavior in a cultural and temporal context. No isolated finds were found during this inventory.

## INVENTORY RESULTS

The inventory of Wasatch Oil and Gas four well locations resulted in the re-visitation of nine previously documented sites (42Cb31, 42Cb35, 42Cb48, 42Cb242, 42Cb696, 42Cb708, 42Cb724, 42Cb725, and 42Cb1252).

### Archaeological Sites

Smithsonian Site No.: 42Cb31  
Legal Description: T 12S, R 16E, Sec. 19  
Well Location: Prickly Pear #19-2  
Jurisdiction: BLM, Price Field Office  
NRHP Eligibility: Eligible

Description: This site was originally recorded in 1972 by the Bureau of Land Management and includes rock art panels at the base of a cliff wall in Dry Canyon. The BLM reports the existence of several possible rock alignments that could not be located during the current inventory. The rock art has been divided into seven distinct panels (Panels 1-7). Motifs include petroglyph spirals, snakes, several anthropomorphs, rows of pecked dots, and desert bighorn sheep on patinated sandstone. There are no pictographs. All of the panels exhibit characteristics that indicate they are affiliated with the San Rafael Fremont culture. There is some graffiti on the panels, however, overall they are in good condition. The images range from 0.5 m to 5 m above modern ground surface. The surrounding area consists of a Big Sage Community in residual soil with a scattering of medium-sized rock spalls. No surficial artifacts were found associated with the rock art. The site is marked "petroglyphs" on the USGS 7.5' topographical map. This site is evaluated as eligible to the NRHP under Criteria C and D.

Smithsonian Site No.: 42Cb35  
Legal Description: T 12S, R 16E, Sec. 19  
Well Location: Prickly Pear #19-2  
Jurisdiction: BLM, Price Field Office  
NRHP Eligibility: Eligible

Description: The rock art component of this site was originally recorded by the Bureau of Land Management in 1972. The site consists of rock art panels at the base of a cliff wall in Dry Canyon. The rock art is divided into four distinct panels (Panels 1-4). Petroglyph motifs include a lobed circle, a turkey track, an anthropomorph, and vertical rows of pecked dots. Pictographs include several paint splotches of red and white paint. There is no graffiti on the panels, although dust and mineral deposits have obscured most of the pictographs. The petroglyphs are in good condition. The images range from 0.41 m to 2.30 m above modern ground surface. The surrounding area consists of Big Sage and Riparian Communities in residual and colluvial soil. The colluvial soil next to the cliff wall has been moved by aeolian action creating mounds of colluvial soil extending one

meter away from the cliff wall. No surficial artifacts are associated with the rock art. Up slope and south of the rock art panels is a highly disturbed area with a scatter of small corn cobs and bone fragments. One area along the cliff wall appears to have been hand trenched by vandals. The trench is along the cliff wall under a slight overhang, with the back dirt piles located alongside the trench. The number of corn cobs (n=11+) indicates that a storage facility may have once been in the area, evidenced by several slabs. In addition to human disturbance, a pack rats nest is situated in a crack in the cliff wall. This site is evaluated as eligible to the NRHP under Criterion D.

Smithsonian Site No.: 42Cb48  
Legal Description: T 12S, R 16E, Sec. 19  
Well Location: Prickly Pear #19-2  
Jurisdiction: BLM, Price Field Office  
NRHP Eligibility: Eligible

Description: This site was previously documented by Metcalf Archaeological Consultants in 1998, and by the Bureau of Land Management in 1972. It consists of the remains of two granaries about 45 meters apart, located on sandstone ledges approximately 3 meters above modern ground surface. Granary #1 is constructed of roughly tabular shaped sandstone blocks and mud mortar. This granary measures about one meter wide. Granary #2 is constructed of "turtle-back" adobe bricks (the bricks were wet when used in construction giving each one a concave underside). The adobe granary measures 0.9 m x 1.3 m. A rock art panel is situated along the cliff base between the granaries. The panel consists of two pictographs, a single zig-zag motif and a zig-zag connected by a half circle that are rendered in red pigment. There is no graffiti on the panel, and it is in good condition. The images range from 3.34 m to 3.85 m above modern ground surface. The area surrounding the granaries and the rock art consists of Big Sage and Riparian Communities in residual and colluvial soil. Along the cliff wall are numerous medium to large boulders, probably wall spalls from the cliff face. No surficial artifacts are associated with the rock art. This site is evaluated as eligible to the NRHP under Criteria C and D.

Smithsonian Site No.: 42Cb242  
Legal Description: T 12S, R 15E, Sec. 11  
Well Location: Prickly Pear #1215-11-2  
Jurisdiction: BLM, Price Field Office  
NRHP Eligibility: Eligible

Description: This site was previously recorded by Sargent and Lindsey in 1976 and by volunteers in the Nine Mile Survey in 1990. The site consists of an abandoned historic ranch and prehistoric rock art, as well as evidence of historic and modern recreational camping. The historic component includes five structures, hearths, two eroded rock walls, historic debris, and a historic and modern inscription panel. Structure #1 is constructed of roughly shaped sandstone blocks and mud mortar, built into the talus slope of the northwest side of the canyon wall. There is some evidence that the structure may have previously burned. The structure measures about 5 m by 5 m. Structure #2 is almost entirely demolished both as a result of natural deterioration and possibly for the construction of the road. All that remains are the bottom three feet of one wall and about four feet of the length of the two abutting walls. The building is constructed of similarly shaped sandstone blocks and mud mortar. Currently the structure measures about 5 m long and 1.5 m wide. Structure #3 is a small structure built using a natural 80° angular cut in the cliff wall. Only the foundation stones remain of the two free-standing walls. The structure measures about 1.5 m by 2 m. Structure #4 is constructed of unshaped sandstone blocks and possibly mud mortar, and it is built into the talus slope of the northwest side of the canyon wall. Most of the structure is made of large rocks and boulders with walls measuring between 4-5 ft high next to the cliff slope. The

Sage Community in colluvial soil with a scatter of rock spalls of medium sized boulders. No surficial artifacts are associated with the rock art. This site is evaluated as eligible to the NRHP under Criteria C and D.

Smithsonian Site No.: 42Cb708  
Legal Description: T 12S, R 15E, Sec. 11  
Well Location: Prickly Pear #1215-11-2  
Jurisdiction: BLM, Price Field Office  
NRHP Eligibility: Eligible

Description: This site was originally recorded in 1990 by volunteers in the Nine Mile Survey and includes rock art panels near a cliff base adjacent to the modern road. The rock art has been divided into two distinct panels (Panels 1 and 2). Representations are an anthropomorphic figure on a quadruped, a lightly pecked anthropomorph, a lightly pecked and scratched bighorn sheep, and an undetermined pecked area on patinated sandstone. There are no pictographs. The images range from 0.40m to 3.25m above modern ground surface. Panel 1, the anthropomorph on a quadruped, is most likely affiliated with the Ute culture. Graffiti is limited to a bullet hole in the quadruped with a riding anthropomorph. Also, the road and vegetation have negatively affected the panels; overall they are in fair condition. The surrounding area consists of a Greasewood Community in colluvial soil. No surficial artifacts are associated with the rock art. This site is evaluated as eligible to the NRHP under Criteria C and D.

Smithsonian Site No.: 42Cb724  
Legal Description: T 12S, R 15E, Sec. 11  
Well Location: Prickly Pear #1215-11-2  
Jurisdiction: BLM, Price Field Office  
NRHP Eligibility: Eligible

Description: This site was originally recorded in 1990 by volunteers in the Nine Mile Survey and consists of rock art panels near the cliff base. The rock art has been divided into two distinct panels (Panels 1 and 2). Petroglyph motifs include zigzags, a bisected oval, wavy lines, and abraded areas on natural sandstone. Pictograph motifs include several anthropomorphs and linear elements rendered in red and yellow pigment. The images range from 0.40 m to 3.20 m above modern ground surface. The panels have characteristics that indicate they are possibly affiliated to the Archaic and/or San Rafael Fremont cultures. Graffiti is limited to several bullet holes. The panels have been affected by erosion including clay and mineral deposits and vegetation abutment; overall they are in fair condition. The surrounding area consists of a Big Sage Community in colluvial soil with scattered rock spalls of medium sized boulders. No surficial artifacts are associated with the rock art. This site is evaluated as eligible to the NRHP under Criteria C and D.

Smithsonian Site No.: 42Cb725  
Legal Description: T 12S, R 15E, Sec. 11  
Well Location: Prickly Pear #1215-11-2  
Jurisdiction: BLM, Price Field Office  
NRHP Eligibility: Eligible

Description: This site was originally recorded in 1990 by volunteers in the Nine Mile Survey and consists of rock art panels near a cliff base. The rock art has been divided into three distinct panels (Panels 1-3). Motifs include petroglyph anthropomorphs with large hands and feet, a turkey track, and a variety of meanders, animals, anthropomorphs, and miscellaneous pecking, primarily on lightly patinated sandstone. Pictographs include a zigzag and a row of conjoined triangles, both

## MANAGEMENT RECOMMENDATIONS

The inventory of Wasatch Oil and Gas Company's four well locations in Nine Mile Canyon resulted in the location of nine archaeological sites that are assessed as eligible for inclusion to the NRHP. The majority of these sites contain prehistoric rock art panels that meet Criteria C and D of the NRHP as outlined in 36 CFR 60.4. These significant cultural resources, along with the four Wasatch Oil and Gas Company's well locations, occur within the proposed Nine Mile Canyon National Historic District. According to the BLM, the proposed district is eligible for listing on the NRHP because: (1) the quality and quantity of prehistoric remains in Nine Mile Canyon, including rock art and structural remains, which represent the changing prehistoric lifeways over thousands of years, are of national significance; and (2) remains of the historic period, including transportation and communication, settlement, farming and ranching, and military history, are significant on local and national levels. A great deal of the historic significance in the planning area is derived from the historic landscape associated with prehistoric and historic period occupations. The natural features of the canyon dominate the location and relationships the man made features have with one another. Features associated with the Fremont occupation include rock art, rock cairns, stone towers, storage structures in rock shelters and built on narrow ledges of the canyon walls, small villages and isolated habitation structures, as well as garden plots in riparian communities along the water courses. Associated with the historic period occupation are cabins, fences, abandoned farm equipment, irrigation ditches, diversion structures, reservoirs, tunnels, roads, bridges, and fields (Blaine Miller, BLM, Price Field Office, Personal Communication).

The archaeological sites located during this project are concentrated around proposed well locations Prickly Pear #19-2 and Prickly Pear #1215-11-2, with no sites found near well locations Prickly Pear #18-3 or Prickly Pear #27-3. Overall, the proposed drilling program is considered to have an adverse effect on the integrity of the proposed Nine Mile Canyon Historic District. Factors which may conflict with the cultural value and cohesiveness of the district include the introduction of visual, audible, or atmospheric elements that are out of character with the proposed Nine Mile Canyon Historic District. More specifically, there are several issues related to direct impacts to cultural resources in Nine Mile Canyon that need to be addressed in relation to this proposed undertaking. First, there is a possibility that construction activities would expose subsurface cultural remains associated with the known sites and unknown sites covered by sediments in the canyon bottom. As described in this report and supporting documents, the colluvial and alluvial depositional environment in the canyon has covered cultural remains associated with prehistoric rock art panels and structural features. This has been observed where vandals have unearthed artifacts and cultural deposits at various prehistoric sites located during this project. Second, direct impacts by the drilling program also include potential alterations that could compromise the integrity of rock art panels and granaries caused by dust and vibrations. The physical integrity of several rock art sites documented during this project, in addition to others located throughout Nine Mile Canyon, have been diminished by dust created by vehicle traffic along the unpaved or graveled roads. A third direct impact are vibrations caused by the drilling program that may generate physical damage to significant cultural resources by inducing structural failures of architecture or formations supporting rock art panels and structures. This has been documented in a similar canyon environment with compatible cultural resources in the Canyon Pintado Historic District (western Colorado) where vibration standards have been established as a result of proposed actions related to energy exploration (White River Resource Area, Resource Management Plan 1994).

In order to mitigate the above potential adverse effects to significant or unknown cultural resources in the project area, the following recommendations are proposed:

- 1) Construction activities at all four well locations should be monitored by an archaeologist because of the adjacent sites (42Cb31, 42Cb35, 42Cb48, 42Cb242, 42Cb696, 42Cb708, 42Cb724, 42Cb725, and 42Cb1252) or the potential for significant buried cultural remains in the canyon bottom.
- 2) A dust abatement program should be initiated by Wasatch Oil & Gas Company to alleviate any secondary impacts to the rock art panels in the project area.
- 3) Since it is not feasible to relocate the proposed actions that could result in the production of vibrations a distance far enough away from the cultural resources; it is recommended that an archaeologist should inspect the sites for any alterations or damage during and after the drilling program is completed.