

REVIEW OF
GEOARCHAEOLOGICAL INVESTIGATION AND AN
ARCHAEOLOGICAL TREATMENT PLAN FOR
151 SITES IN THE GRAND CANYON, ARIZONA

BY
GCDAMP SCIENCE ADVISORS

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REVIEW PROCEDURES

The Science Advisors (SAs) review procedure can involve one discipline of the Science Advisor Group reviewing a document and submitting a review report. The document is titled **“GEOARCHAEOLOGICAL INVESTIGATION AND AN ARCHAEOLOGICAL TREATMENT PLAN FOR 151 SITES IN THE GRAND CANYON, ARIZONA.”**

During this review the SAs did not have a cultural resource specialist as a member of the SA Group. As such, only external cultural resource specialists were requested to provide a review of this document. The attached review is therefore provided as a Science Advisor review document.

SA review protocol includes submission of general comments, specific comments and recommendations on each of its reviews. This review concentrates on text of the above document appearing in sections 1-3 and 5-8 with emphasis on sections 5-7. This includes pages 393-475.

SAs GENERAL PERSPECTIVE

An archaeological treatment plan for 151 sites in the Grand Canyon, Arizona, prepared for the Bureau of Reclamation by Jonathan Damp, Joel Pederson, and Gary O'Brian, was examined in this review. Generally the report was found to be of very high quality technically, meeting the standards of typical cultural resource management plan. There is excellent use of geomorphological data in support of assessing potential danger (or protection) to archaeological sites in the study area. The report appears thorough and well organized.

GENERAL COMMENTS AND CONCERNS

Native American Issues

The single greatest concern with this report is that it seems to be developed without direct consultation with American Indian nations who have traditional concerns with sites in the Grand Canyon. As noted on page 3, “[t]he recommended treatment plan will be reviewed by the signatories to the 1994 Programmatic Agreement on Cultural Resources (PA) including Reclamation, the Intermountain Region of the NPS, the Advisory Council on Historic Preservation (ACHP), the Arizona State Historic Preservation Officer (AZSHPO), the Hopi Tribe, the Hualapai Tribe, the Navajo Nation, Zuni Pueblo, the Kaibab Band of Paiute Indians, and the Paiute Indian Tribe of Utah.”

We understand that such consultation might not have been required by the scope of work on this project and that some allowance might have been made in the 1994 programmatic agreement, but several questions related to sites and their significance might have been more easily addressed with consultation. On page 4, the authors note that in their field assessment of sites they “reviewed tribal reports in conjunction with the tribes to make sure that confidential information is not compromised,” but in parenthesis add “this step will be carried out in consultation with the tribes and review of the draft of this treatment plan during 2007”, then make no mention of this later in the report, no citations of any tribal reports, and no mention of what they might have learned. We appreciate that in their recommended plan for most sites, the authors at least acknowledge possible tribal concerns with a boilerplate statement in a section on Scientific and Traditional Values:

“Native American groups related to the Grand Canyon consider sites of this nature to be components of the cultural landscape and thus part of their history. As such, this site may be

associated with events that made a contribution to the broad patterns of local or regional history and is therefore eligible under Criterion A.”

The problem is that Criterion A for National Register eligibility has primarily to do with contributions of a site to broad patterns of our history. What specifically are those contributions, how were they assessed, and how do the authors know these Nations are concerned about them? What, exactly, might those broad patterns be? None of the site treatment plans address possible approaches the tribes might recommend in addition to or in place of what the authors recommend.

We also appreciate in Section 5 (p. 393) the reference to Ferguson and Colwell-Chanthaphonh cultural landscapes model which was based on Native American views of space and time. The authors note (p. 394) quite correctly that “...Native American perspectives on the occurrence of events might not fit the convenient archaeological classificatory scheme.” Unfortunately, the approach is written off in favor of a strictly scientific archaeological approach. Whatever their motives or their legitimacy, Native Americans have become increasingly vocal in their concerns about sites, which indicates that the time might be here to revisit the fifteen-year-old programmatic agreement signed by the tribes. The plan does note that, even though the environment of the Grand Canyon is highly erosive, the preferred means of mitigation is stabilization, an approach that generally would meet tribal approval.

This review is occurring after the report has been submitted and perhaps even implemented. We urge, however, that ways be found for tribes to have input perhaps even while the site treatment is going on. As we read certain sections, We must admit to being confused about when the tribes will be brought in on this plan. Frankly, the best time was really before and during the time the fieldwork was done on which this plan was based. That would have made for a more complete plan, better assessment of site significance, and perhaps a greater feeling of tribal inclusion in the process.

Use of GPS

We note that GPS is used for a great deal of the mapping on sites, from features to point-plotting of artifacts:

“All surface artifacts will be mapped from the entirety of the site before any excavation begins. Point plotting on the site surface will be performed with the use of a Trimble Explorer XT GPS

unit with sub-meter accuracy or a unit of more precise measurement if advances in technology so allow.” (p. 467)

We wish the investigators would have been more specific in their use of GPS. For general site locations, the use of GPS is fine; for point-plotting it might be next to meaningless. The possibility of a meter variation makes GPS mapping in a one meter unit potentially meaningless. We assume they are using a corrected signal (DGPS or WAAS) and that their conversion over to GIS or CADD is right. We also take note that they mention having difficulty on some sites in getting adequate signals.

The point is this: What does it mean if you plot artifacts and features when the best you can be sure of is accuracy within a meter? One cannot necessarily assume standard error within that meter. How reasonable is that when assessing context? How accurate will site maps be? They will do simple GPS site mapping to locate features on existing site maps (p. 466), but we hope that GPS will not be used for site or excavation maps

We understand that GPS mapping is convenient and fast, but is the level of accuracy it gives appropriate? We wish this had been discussed instead of assumed.

Treatment of Human Remains

Certainly NAGPRA applies, but if there are specific procedures established by Grand Canyon National Park, these might have been spelled out or referenced (p. 467). This would increase the confidence level of tribes that one of their key concerns is being taken seriously.

Pollen Samples

We are curious as to why pollen samples will be taken from ground stone artifacts used in food preparation (*manos* and *metates*, we assume). Relatively few plants are used while pollinating; most are in a fully mature state. As well, pollen rain falls on everything exposed. We are not sure of the point of this. Opal phytoliths, perhaps?

SPECIFIC COMMENTS AND RECOMMENDATIONS

Section 1

Section 1 describes the area covered by this project nicely, along with the 161 sites with the greatest threat due to erosion, 10 of them already being dealt with by the Museum of Northern Arizona. Figure 1.1 shows the approximate location of the 151 sites covered in this plan and is the first of a series of excellent figures using satellite images that allow an assessment

of topography and site distribution. Our only problem is that the maps could have used a few area names to orient a reader, especially when in text the investigators use names such as Kanab Creek, Havasu Creek, park headquarters, and the like. They wouldn't need to be on all maps, but an overview map of major named features to the same scale as the satellite maps would help. The section spells out the three major management tasks of the project and five associated research objectives. This is clearly presented and reasonable. We do have questions and comments regarding tribal involvement as discussed above, related to implementation of the treatment plan as discussed on the top of page 9.

Section 2

In setting the archaeological context, the authors rely heavily on Fairley's 2003 prehistory of the Grand Canyon and the Arizona Strip and discuss its variations from the more traditional Pecos classification used for most of the Colorado Plateau. However, the temporal classification is clearly understandable and the periods and their stylistic markers reasonably standard. The authors do a nice job of raising what they see as variations and commonalities across the region. This is similar to other CRM culture history "boilerplates" and discussions of them. They use this scheme well in the chronology modeling discussion in Section V, providing placement of most of the 151 sites within it. It also provides a reader with a fair assessment of the archaeological complexities of the region and the difficulties they might present for assessing site significance

Section 3

We found the geomorphological context especially interesting. The complexity of the Grand Canyon surfaces made for a fascinating read, especially in looking at the possible situations of site selection at different times, issues of site preservation, and potential issues to consider for the treatment plan. The last paragraph of the section on gullies and the possible role of check dams to mitigate erosion seems to merit much more attention.

Section 4

Part I— The treatment plans for the 151 sites look very reasonable, with questions about them mostly related to issues in the General Comments and Concerns section above. We find the single erosion ranking based on the dominant surficial process, as well as descriptions of the secondary processes, to be extremely useful. Table 4.1, with the erosional ranking and

information potential rankings, is especially useful in understanding the level of treatment for some sites compared to others. The Scientific and Traditional Values section for each site within the framework of the criteria for inclusion on the National Register sometimes seem to be a stretch with supporting reasons meager at best. As set up, the vast majority of archaeological sites fit criterion D, and it has almost become a game for archaeologists to see if they can somehow fit a site into another criterion. The sites that cause the greatest concern are those with rock art (Sites AZ A: 15:005, AZ A: 15:018, AZ A: 16:159) which tend to be a magnet for vandals even if in the most remote locations. Little can be done to protect them, but there needs to be some assurance that recordation has been thorough.

Part II—Discussions of conclusions reached based on the geomorphological and archaeological assessments are useful. Figure 4.1 certainly underscores that gully erosion (overland flow) is the predominant concern in the study area with more sites affected by this primary surficial process than the other four processes combined. The statement on page 379 that “[a]rchaeological site density throughout the Colorado River corridor in Grand Canyon is probably controlled by geomorphic as well as human factors” is an axiom almost everywhere, which is why so many states now require geomorphological assessment for Section 106-based projects. Still, we think this report does an especially good job of considering the surficial processes that threaten sites. A question arose as we read the descriptions of debris fans at the base of gullies. Scientists should pay attention to the debris fans from gullies and small alluvial fans from small streams coming out of valley walls. Deep testing (coring) sometimes reveal deeply buried cultural materials on the fans. This can both conceal and protect sites. Is there any potential for that to happen here? We appreciated Table 4.4 on page 383 and the use extent of erosion being used to create preliminary treatment recommendations of “(a) no action; (b) simple erosion control and maintenance of existing erosion control structures; (c) occasional monitoring of site condition; (d) visitation mitigation, generally issues with trailing; and (e) data collection focused on a single feature, several features, or an entire site.”

Conclusion—The color coding (red, orange, yellow, etc.) of site endangerment in Table 4.8 (p. 388) is clever and gives a good, quick summary of the state of sites in the study area.

Section 5

We understand the reliance on Fairley's research and archaeological approaches. They are comfortable for the researchers and for heritage managers, but present a very incomplete picture of what the heritage means to some stakeholders. If contemporary Native American stakeholders see time and space in relative and representational ways, there is every likelihood their ancestors also did, and this would assuredly be a factor in site selection by those ancestors and part of an assessment of significance by their descendants. Using archaeological models alone tends to exclude other views. As noted in general comments, we are concerned about the level of involvement of the tribes in the way sites are treated. They may have no real disagreement with the treatment plan or how the sites are viewed, but we can't know that unless we try to find out. See the General Comments above. Such issues can be very problematic in the Southwest especially. It costs more and takes more time, but makes for a better product! Admittedly, more may have been done in this regard than the plan details, but if so, it should be spelled out in the plan. If not, the plan should include a section on how this will happen. We do not fault the investigators for this, but would advise that any report on the actual treatment of the sites include a section on how consultation with tribes was handled and its results. We note that on page

431 the authors say:

“As such it is expected that Native American consultation will take place and promote revisions. Rather than trying to cram normative typologies into all nooks and crannies and have every cognitive system adopt a single standard, it is fully expected that the tribes with an involvement in the Grand Canyon will be given the opportunity to provide flesh to the classificatory skeleton.”

We couldn't agree more, and sooner, rather than later!

On page 395, in the discussion of Paleoindian and Early to Middle Archaic, We notice that there is some discussion of the possibility of aggradational environments deeply burying sites, and we wonder if there is any way of doing some deep testing anywhere to assess the likelihood of this. We understand that getting Giddings rigs or other coring tools to some sites might be tough, but perhaps might be worth the effort. If fluted points, even isolated finds, are there, sites have to be someplace nearby. To paraphrase Dennis Stanford in a video on the earliest human habitation of North America, we won't find 40,000 year old sites until we start looking on 40,000 year old terraces.

We like the overview maps by cultural periods. They give you a great feeling for site distribution and raise some puzzling questions about why there are apparently no sites in some areas but concentrations in others. Sometimes we think the authors are a bit remiss in asking the “why aren’t there” questions in favor of explaining why sites are present in some areas. Where this most jumped out was on the Late Archaic Period map (Fig. 5.2). They discuss this to a degree, noting possible sampling biases, and in their favor they do raise the issues for which more consultation with some of the tribes could provide answers.

The Early Formative Period map (Fig. 5.5) raises some important questions about site locations, especially of Basketmaker III and Cohonina sites. This is fascinating, and the authors seem to be asking the right questions. The difference does indeed seem to turn on issues like this (p. 401): “Methodologically, it remains to be seen what the real cultural differences are between those sites identified as Basketmaker III with plain gray ware and those sites listed as Cohonina with a different variety of plain gray ware.” There seems to be a similar issue with Pueblo 1 sites on the South Rim. Can this fully be explained by the proximity of Park headquarters?

Modeling Site Type—“ This treatment plan advocates that steps be taken during the implementation of the plan to explicitly define modes and classify these modes in a meaningful way so that comparable statements on site type, function, and chronology can be made.” (Page 414). We very much agree.

We found it interesting that they choose roasters as an example of the need to define types by modes. The phenomenon of roasting features/pits which seem to be ubiquitous from at least Late Archaic onward raises questions and was used in the site treatment plans without definition. Yet, there was extreme variation in the size, construction, and associated artifacts. Similar roasting pits (by function, not necessarily what was being roasted) were used in the Black Hills from the Archaic onward for processing yucca (akin to the agave which might have been roasted in Grand Canyon sites). This represents a very stable subsistence pattern. Why so stable? Stability suggests important cultural continuity even if there are well documented differences in shape, size, and construction of the roasters. Some are apparently associated with fire-cracked rock (FCR), could have been written off in the old days except to note size and general material type. But in work on the Head-Smashed-In site in Canada, for example, there

was obvious selectivity in types of rocks used in hearths, with some selected types being carried in instead of using rock immediately at hand. If it has not already been done for the region, we urge the investigators to pay some attention to FCR as part of roaster construction. Their discussion of thermal features on pages 422-425 is interesting and does include some discussion issues we raised above. This is, by the way, another place where tribal input may be of some use especially “to explain ceremonial use of certain features/areas, repeated congregation at locales, or social boundaries”

Application of Hogan and Stauber’s guidelines (page 417) using binary oppositions should be instructive, as they discuss. Consultation with tribes may add additional questions related to social meaning that will further elucidate site types.

The Site Types and Traditional Viewpoints discussion from 431-433 discusses the idea that tribal input will come and will promote revisions, consulting with them about what factors need to be considered in alternate views of Grand Canyon archaeology. As they note, “[t]his approach calls for a blank sheet to be presented so that new knowledge can be promulgated rather than a normative check list tendered for approval or disapproval.” The problem is that the approach has already made a blank sheet almost impossible. What exactly will be presented to the tribes? The work the archaeologists have already done? It would have been better to have the tribes involved at as this plan was being developed, not afterwards. However, that is “water over the dam” so a way needs to be found to have tribal involvement much earlier than this plan seems to allow.

Section 6

The research domains outlined are archaeologically very good and logically follow from the earlier materials in the report. A few things jump out:

The notion of abandonment is complex, although it seems simple on the surface (pp 439-440; 446-447). The matter of site reuse, as they discuss, is one complexity. Another has been pointed out by Colwell-Chanthaphonh, Chip and T. J. Ferguson (2006 Rethinking Abandonment in Archaeological Contexts. *The SAA Archaeological Record* 6(1): 37-41). Tribal views of what abandonment means can be very different from archaeological meanings, which may even be alienating to some Indians.

Population and demography are extremely difficult. The authors' focus is wise when they say they "will deal with individual sites as part of a sample that when seen as a whole will trace changes in population over time and space" (p. 446).

The Social Organization and Regional Relationships research domains are fairly broad, and the 151 sites in the study area will be of limited utility in answering many of the questions posed. Still, the questions are interesting, and we notice the ceramic stylistic issues associated with Puebloan and Cohonina sites are raised in this discussion. Similarly, the stylistic variations between Virgin and Kayenta will be interesting.

The investigators will be collecting an impressive amount of data (pp. 457-459). The categories of information are standard for most archaeological projects, but what we like about this research design is that the data collected are well integrated, that is, they present a reason why they want to collect each data type and what they expect to learn from it.

Section 7

Four research domains and one research topic were developed in the previous section and were tied into Fairley's (2003) research design. The research domains developed included the environment and economy, population and demography, social organization, regional relationships, and chronology. The truth is that the questions raised in the research domains are many and intriguing, but with the proposed level of work done on the sites in this plan, few, if any, will be answerable. Of course, that is not really the authors' intent. Rather, the domains provide context for the research potential of the sites under National Register criterion D. We do appreciate the desire to provide the detailed data ordination and analysis proposed on pp. 458-465, but we also hope that non-archaeologist readers of this plan understand the relatively limited amount of data that will be provided from detailed surface mapping on 10 sites and excavation of 478 square meters spread over 54 sites. Many of these questions have been around since Fairley's report and probably earlier, and it is unlikely any of them will be answered in a definitive way from this work. In other words, don't expect too much.

Some questions about the implementation of the plan were raised in the General Comments section above, especially issues associated with GPS mapping. The rest of the plan looks good, although an annual descriptive report may be taxing depending on the amount of materials recovered, staffing, and the like. Again, we notice nothing in the implementation plan

about when tribes will be consulted. Apparently we are talking years out, which is just not adequate. A way must be found to bring them into the project earlier.

Section 8

The summary is straightforward and a reasonable reflection the preceding sections. Archaeologically this is a very good research design. Although we raise a few questions about methodology, we have no real concerns about archaeological aspects of the treatment plan. At the risk of sounding like a broken record, we must reiterate that the major problem with the plan is the lack of Native American input at this level of the project. Although it may not be the fault of the investigators, such input must become a more important part of the planning process for the Grand Canyon. We would hope that this plan would be shared with the pertinent groups and that some allowance be made if they would like to monitor some portion of the excavations.