

WYOMING ASSOCIATION OF PROFESSIONAL ARCHEOLOGISTS NEWSLETTER

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WAPA MEETING, FALL 1983

The 1983 WAPA Fall meeting will be held on November 11, 1983 at the University of Wyoming in Laramie. The Friday meeting is scheduled for 8:30 A.M. to 5:00 P.M. in the East Ball Room, Wyoming Union. At this time no papers or abstracts have been submitted to David Eckles so a Saturday session may not be necessary. The Ball Room has been reserved for Saturday if the membership desires a session to discuss business matters, current research, or for presentation of slide shows.

WAPA committees will meet from 8:30-9:30 on Friday morning for discussion of relevant issues so that they can present results to the business meeting. The business meeting will start at 9:30 and go to 12:00. This will include the usual items for discussion and election of new officers. Committee assignments will be solicited during the business meeting. Committee members and new officers will be announced after lunch.

The WAPA service award will be presented to Dr. George Frison at 1:30 and he will make a few remarks at that time. From 2:00-5:00, we will arrange a session on paleogeomorphology, soils and paleoclimate. Dave Eckles has arranged for the following presentations: John Albanese (Holocene geology), Rick Reider (Altithermal soils), Brainerd Mears (Pleistocene ice wedges), Danny Walker (Holocene fauna), Bill Reibsame (paleoclimate), and Jane Beiswenger (pollen).

There will be no WAPA banquet this fall. However, in order to allow a forum for exchange of ideas and scientific information, there will be a "FREE" kegger at the Buckhorn from 8:00 P.M. on.

Ballot for Election of Officers

The following is the ballot for election of WAPA officers for 1984. Voting members must have their dues current (paid before/or at the Fall Meeting on November 11, 1983). Return your ballot to Dave Eckles, Wyoming Recreation Commission, P. O. Box 3431, University Station, Laramie, Wyoming 82071 or bring it to the meeting on November 11. Your ballot must be in a sealed envelope with your signature on the outside of the envelope.

Vice-President

- Brian Aivazian
- Greg Smith

Member-at Large

- Steve Sigstad
- Rick Bryant

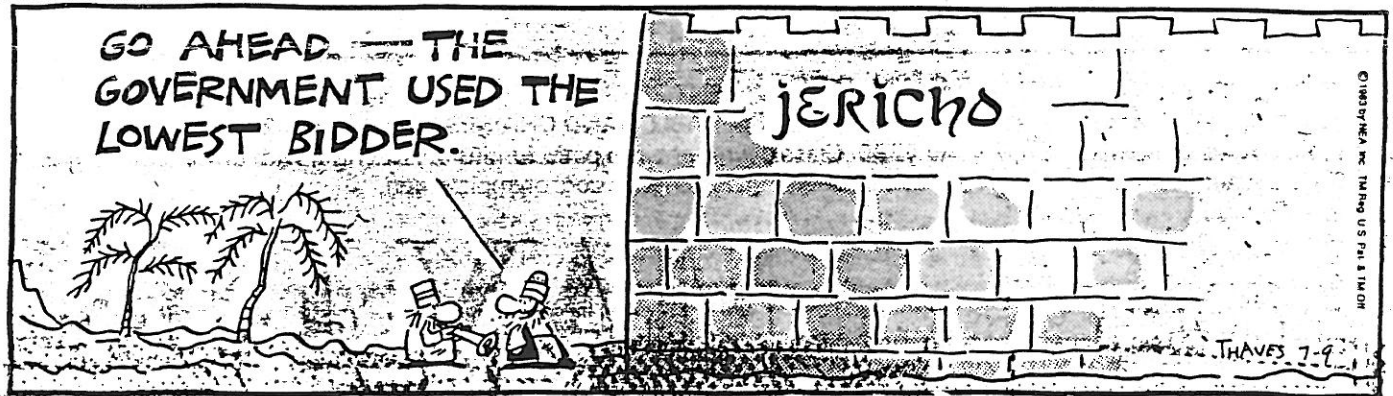
Secretary

- Jenny Anderson
- Anne (Hummer) Peebles
- David Reiss
- David McGuire

Treasurer

- Paul Sanders
- Julie Francis
- Barbara Hickman
- Dean Decker

FRANK & ERNEST



DELINQUENT DUES

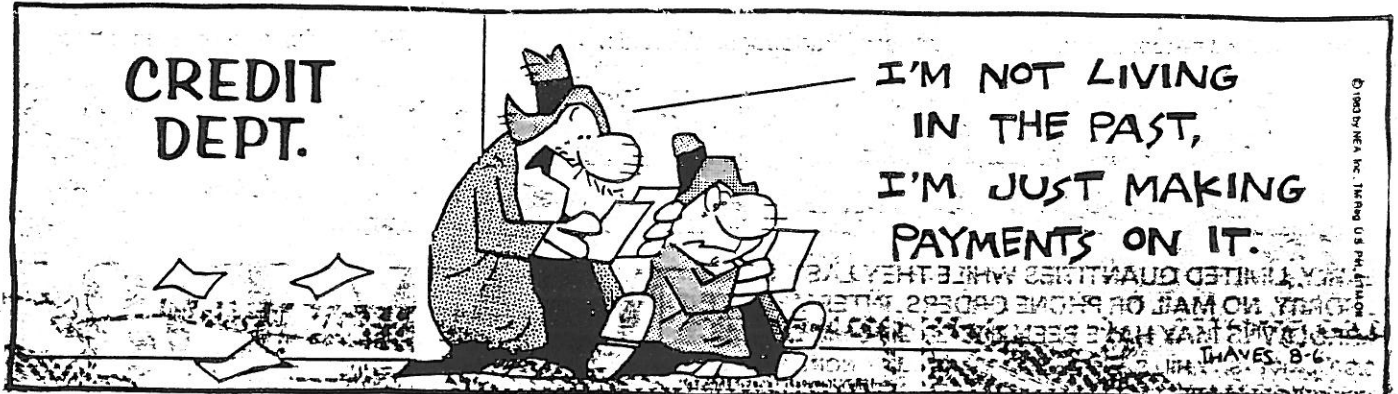
The following people have not paid their dues for 1983 (dues were payable at the spring meeting). If you are interested in retaining your membership please send your dues (\$10.00) to:

Debra Angulski
838 19th Street
Boulder, CO 80302

or pay her at the Fall Meeting.

Armitage, C.	Hopkins, Mary	Rodriguez, Herb
Bleacher, Joan	Jameson, John	Rom, Lance
Braden, Robert	Kainer, Ron	Rosenberry, Robert
Burns, George R.	Krza, Margie	Savini, John
Chapman, Frederick	Kullen, Doug	Saylor, Michelle
Craig, Caroline	Layhe, Robert	Schock, Susan
Daniels, Donna	Lennon, Tom	Schoen, James
Darlington, David	Levasseur, Andrea Kae	Schuyler, Robert
Decker, Dean	Lytle, John	Shelly, Barry
Evans, David	McCallum, Mark	Silvia, Diana
Gilbert, Miles	Metz, Bill	Stilphen, George
Grant, Marcus	Miller, Peter	Swidler, Carmel
Greiser, Sally	Moore, Gary	Treat, Pat
Greiser, T. Weber	Nelson, Asa	Weber, Dennis
Hall, Dan	Nelson, Shelli	Wheeler, Charles
Harrison, Cheryl	Norman, Vernal	Zeimens, George
Hauck, Forest	O'Brian, Patrick M.	Zier, Chris
Hauff, Jeffrey	Pastor, Jana	
Heffington, J. Douglas	Reher, Charles	
Hoknestad, Paul	Reiss, David	

FRANK & ERNEST



EDITOR'S NOTES

Rhoda Lewis

My apologies to the membership for the lateness of this Newsletter. It appears that field work picked-up/or continued late into the fall for all of us and there was a significant delay in receiving (and soliciting) information. The report by Julie Francis reminded your delinquent editor that a Newsletter was due. We would like to thank Deb Angulski for recording and preparing the minutes from the Spring meeting.

WAPA MINUTES, APRIL 1, 1983, SINCLAIR, WYOMING

Debra Angulski

The meeting was called to order by President Dave Eckles at 1:30. The announcement was made for a cash bar and banquet to be held at the Parco Inn later that evening. Dr. George Frison will be the speaker.

A motion was made by D. Eckles and seconded by M. Miller to accept the treasurer's report. The motion was passed.

A motion was made by M. Miller and seconded by D. Eckles to start an institutional membership for libraries. The motion was passed.

Committee Reports

The Membership Committee report was made by M. Miller who announced that there had been three new members accepted since the fall meeting.

B. Hickman was the only member of the Resource Base Committee present. She had no report to make.

The External Affairs Committee was made by M. Miller. He reported three activities:

1. Coordinating with amateurs for greater visibility, establishing liaison through George Brox (as honorary membership) to increase involvement of professionals and amateurs in the field.
2. D. Eckles and M. Miller are to attend the Stockgrowers' meeting in June.
3. In reference to PMOA; Does industry support Class III? Could B. Rippeteau present PMOA (15 minute) to WAS and get them to write a letter? Maybe the letter would be more weightful if presented by amateurs. This was then decided to be handled by the Research Design Committee.

The Research Design Committee report was presented by Julie Francis. They had had a discussion on the use of predictive modeling in Wyoming. Can areas be blown off on the basis of a Class II? Is a predictive model appropriate for hunter/gatherer societies. The overall feeling is that a

100% survey is necessary. Research designs should be addressed before predictive models are implemented. Also, what (besides planning purposes) are predictive models used for? An outline of a position paper from WAPA to the Advisory Council was presented.

Marcia Tate reported on the SAA committee on Federal Archaeology to develop a Society position on the proposed Programmatic Memorandum of Agreement (PMOA) for the Federal Coal Management Program. Present on the SAA Committee were Cynthia Irwin-Williams, Don Fowler, George Gummerman and Bruce Rippeteau.

"In summary: they believed 1) the present version of the proposed coal PMOA does not meet the requirements of law, endangers invaluable heritage resources and is counter to public interest, 2) We consider that the procedures being used to pressure it though have been anything but evenhanded, have been occasionally dishonest and have consistently disregarded the input of the archaeological community. 3) On the basis of our earlier consultation with representatives of the coal industry, we believe that a mutually beneficial agreement is still possible which would both streamline their procedure and would best protect the cultural resource base. We would like to have the opportunity to explore this possibility, both with the industry and with the Federal agencies." (From a letter by Cynthia Irwin-Williams, Chairman SAA Committee on Federal Archaeology).

The following discussion took place after the reading of the letter. R. Leicht stated that Tom King is adamant for pushing PMOA as it stands now. T. Larson said that we should at least respond, because by not saying anything it appears that we agree. G. Smith suggested we should try to make better use of the political process ourselves, it has more weight than letters. M. Tate said that maybe we should draft a letter to D.O.A. expressing that WAPA does not have faith in Tom King. M. Miller suggested public hearings at a Federal or even State level. D. McGuire suggested alerting as many people as possible. D. Eckles made a motion that WAPA come up with a letter opposing existing PMOA and any secret PMOA's that exist. The motion was seconded by McGuire and passed. T. Larson made a motion that the president appoint a committee to do this. The motion was seconded by McGuire and passed. J. Francis made a motion that a letter be written expressing distrust in T. King. D. Eckles suggested writing letters to legislative and lobby groups. M. Miller suggested using the letter in any way we see possible, but not to write a letter opposing T. King because he (as a professional) can say what he wants to (even though it may not agree with what we think). D. Eckles suggested that position papers can be bulky; maybe we should draft a letter and have copies sent to: Regional Director of OSM, Governor's Office and SHPO. He also suggested contacting other groups that share our interest in preservation and feeling out how active they are in promoting our cause. R. Leicht stated that we need all the help we can get. D. Eckles moved that contact be made with societies and groups that are potentially supportive of our position. This could be done by the Executive Committee. T. Larson seconded the motion. (although he's not exactly sure of how to pursue). P. Sanders suggested that the position paper would do. M. Miller agrees; the same letter would do. R. Lewis suggested talking to other state meetings (Montana, North Dakota).

Discussion on other topics followed. R. Bryant stated that OSM is proposing to only protect those sites on Federal land that are eligible; State and Private lands are ignored (New Coal Regulations).

G. Smith suggested that WAPA appoint liason to act with other states to develop a communication network.

J. Francis expressed a concern about the importance of Isolated Finds and their distribution (are they recorded in a systematic manner)?

D. Eckles made a motion that individuals should submit abstracts (syntheses) to the Research Design Committee in an effort to synthesize. The motion was seconded by M. Miller and passed.

D. McGuire suggested getting some research areas organized in an effort to synthesize data.

The Peer Review Committee report was made by Jenny Anderson. Two reports have been reviewed. An appeal was made to submit additional reports for review.

The following discussion was held regarding Peer Review. T. Larson asked who submits the reports, do you submit your own? J. Francis said that it's not back-stabbing, but stating what the contributions are. M. Miller suggested that we get a list of potential reviewers and their area of interest so that peer review is not swamped. D. Eckles questioned if a reviewer should remain anonymous. R. Bryant thought abstracts could be provided. M. Miller notes that there is already a statement in the by-laws for P.I.'s to provide abstracts (but no one has ever done it). D. Eckles asked if we want to review other people's work. J. Francis wondered why shouldn't we review each others reports? Are we afraid? D. McGuire brought up the point that it's expensive and that they are reviewed by Federal agencies; who should be qualified. If someone else is interested they can come and get a copy. R. Bryant said the the SHPO looks at them from a compliance point of view; not a scientific point of view. A. Hummer suggested that maybe we should elect a committee which would indicate our (WAPA) confidence in those individuals. M. Miller stated that people on Peer Review can solicit opinions from other who may be better qualified. B. Waitkus moved to print the two reviews in the WAPA Newsletter. The motion was passed by Larson and passed.

A break was called from 3:00 to 3:30 P.M.

D. Eckles opened the floor for new business.

M. Miller nominated George Brox for honorary membership. The motion was seconded by D. Eckles and passed. George Brox will be the liason between WAPA and WAS.

U. Eckles stated that more historic sites are nominated to the register than prehistoric. R. Lewis questioned whose responsibility it was to nominate sites, the Federal agencies or individuals?

D. Eckles said that he would try to get John Albanese to chair a round table discussion on geomorphology and paleo-environmental issues at the next WAPA meeting. He made a motion to get J. Albanese and Jane Beiswenger to talk at the next WAPA meeting. M. Miller seconded the motion and it was passed.

D. Eckles discussed more WAPA involvement with WAS as far as publications are concerned. G. Brox said that WAPA would have the full support of WAS to publish there. D. Eckles suggested Western Prehistoric Research as an outlet. R. Lewis suggested Wyoming Contributions to Anthropology as an outlet.

Eckles opened the floor for nominations for new officers. The following nominations were made:

Vice President (to be President next year)

Bruce RippetEAU
Brian Aivazian
Greg Smith

Secretary
Jenny Anderson
Anne Hummer
Dave Reiss
David McGuire

Treasurer
Paul Sanders
Julie Francis
Barbara Hickman
Dean Decker

Member-at-Large
Steve Sigstad
Rick Bryant

M. Miller moved that nominations be closed.

T. Peebles moved that R. Lewis remain editor of the Newsletter. The motion was seconded by Sanders and passed.

R. Lewis suggested that current research be sent to the Newsletter (not more than three pages).

G. Brox expressed his appreciation of the honorary membership, and thanked WAPA.

T. Larson suggested a joint meeting with WAS.

R. Leicht reported that the 40-acre well pad policy exists no more. A memo from Washington states that the area of direct impact will only be done. But the BLM will encourage 40 acres anyway (with 10 acres of direct impact). Archaeologists should inform contractors of the advantage of the 40 acre survey. He also presented the following statistics from the end of the year reports.

Statistics from End of Year Reports

There are 47 permit holders required to submit reports.

27 did some work in Wyoming

9 did 96 or more jobs; the maximum was 187 jobs.

8 did less than 5 jobs

1588 surveys were done

123,095 acres were surveyed (106,138 public land, 17,057 private land)

There were 1866 recorded sites

465 were evaluated as potentially eligible

There were 1.17 sites located per survey

95 sites were mitigated

T. Larson suggest to the BLM that we need an updated manual.

D. Eckles motioned to adjourn. The motion was seconded by Miller and passed. The meeting was adjourned at 4:15 P.M.

ARCHEOLOGISTS FOR SCIENCE AND MANAGEMENT

Julie Francis

PREDICTIVE MODELS AND CLASS II INVENTORIES

Introduction

Over the recent past, there has been an ever-growing trend on the part of Federal regulatory agencies to employ Class II sample inventories and predictive models to give archeological and historical clearance to specific areas. Most familiar to professional archeologists is the controversy over various drafts of the new proposed PMOA for the Coal Management Program being negotiated by the OSM. In addition, Wyoming BLM has considered approving several Class II inventories to clear large areas of southwestern Wyoming for oil and gas drilling, and the Forest Service has long used Class II inventories to clear timber sales.

In light of these trends, the Research Design Committee of the Wyoming Association of Professional Archeologists has authored this position paper on Predictive Models and Class II inventories. This paper was designed to explore the issues surrounding the use of predictive models: specifically, what they are and what they are not, what constitutes an adequate model and what does not, and when they are appropriate and when they are not. The purpose of this paper is two-fold: first to alert the professional community to the fact that the use of models and samples demands an awareness of the biases and shortcomings involved; and second, to express to the Federal regulatory agencies our misgivings with their inappropriate incorporation of models and samples into all aspects of cultural resource management.

The Nature of Predictive Models

Models, by definition, are constructs designed to explain the relationships or workings of a particular body of observations. A sample is, or should be, a representative percentage of a population useful for the purpose of determining parameters or characteristics of the whole population. Predictive models (models based on samples)

should be firmly based in probabilistic statements. Each statement should constitute an independent test of a specific assumption behind the model which must be tested and verified before being accepted and perpetuated. That is, predictive models are abstractions of relationships assumed to operate within a sample of data; projection of these "relationships" beyond the sample as a means of explaining a larger universe should not be made in the absence of adequate testing of the assumptions on which the model is based.

As applied in American archeology, most predictive models have been designed to look at general patterns of site location (see Gumerman 1971). To accomplish this goal, most archeologists have focused on environmental variables in constructing both their model and sampling strategy. Thus, at the outset, predictive models are biased toward providing information on biogeophysical data and their correlation with site locations, rather than with individual site characteristics, function, or significance. Therefore, the end result of most predictive models based on Class II sampling is not an explanation or discussion of interactions and patterns among sites within the study area, but the classification of environmental zones as high, medium, or low density areas with respect to the probability of encountering sites.

In addition, almost all predictive models have only considered recent environmental variables to predict site location. Thus, sites buried within prehistoric soil horizons cannot be predicted by current methods. And, since most predictive models address only variation in site density, the more rare or significant the site type (i.e. medicine wheels, rock art, deeply stratified sites, bison kills preserved by geologic accident [Frison 1978], etc.), the less likely is one to predict its location. In other words, predictive models are not necessarily designed to locate the sites which are most often considered significant.

Elements of an Adequate Class II Survey and Predictive Model

A Class II cultural resource inventory evaluates selected parcels of land in order to generate predictions for a much larger area regarding the distribution, diversity, and density of cultural sites. With the aid of probability sampling, it is possible to draw reasonably

reliable inferences which accurately reflect the parameters of the total population from only a fraction of the total data. To maximize the information return of a large scale topographical survey, the Class II survey should include a research design, a clear outline of data collection techniques and presentation of data, and an evaluation of the model.

The research design is one of the most important elements of the Class II survey and predictive model. It states the purpose and reasons for the research, underlying assumptions, and the theoretical and methodological base of the approach. The research design provides an overview which assesses the current state of archeological, environmental, ethnographic and historical data, identifies data deficiencies, and formulates significant regional research questions. Stemming from the overview, the research design should define the project's research goals, hypotheses to be tested, and field and laboratory strategies for the evaluation of these hypotheses (see Binford 1964).

The specific strategies should outline the methods and techniques for the acquisition and analysis of the data in order to achieve the formulated research goals. The research design should identify and justify: 1) environmental variables and categories of cultural data to be sampled; 2) sampling strategies (random, stratified, etc.), sample fraction, and sample size (see Mueller 1975); 3) data collection techniques; and 4) analytical variables and procedures. To be complete, the research design must predict the expected outcome of the analysis and specify the data that will allow empirical testing of the specific problems or hypotheses.

The value of the research design is that it improves efficiency by providing criteria for determining the relevancy of data and by establishing criteria for assessing the adequacy of inferences drawn from the data. The important questions are defined in advance, and the types of data needed to address those questions are defined. The significance of a particular site is more readily apparent if it can be demonstrated to have the potential to address these questions.

An adequate Class II survey and predictive model must include a clear presentation of the data collected under the guidance of the

research design. This should start off with a discussion of the regional sample and sample units surveyed. At a minimum, the number and size of units, environmental characteristics of units, overall sample fraction, sample fraction of each environmental zone, etc., are necessary. This should be accompanied by maps showing location of sample units and survey areas. This should be followed by a clear presentation of the findings in each sample unit - number of sites, number of isolated finds, site types, site density per sample unit, and environmental zone, etc. Maps showing locations of sites and isolated finds within each sample unit are necessary.

The predictive model should be evaluated. This should consist of an evaluation of the hypotheses outlined in the research design, a discussion of the adequacy of the sample in terms of statistical accuracy and precision (see Cochran 1953), and probabilistic statements regarding variation in site density per environmental zone or the appropriate stratum as outlined by the research design. The final and most important step in the evaluation of the model is the verification of the findings with independently collected data. This should involve a final stage of field inventory to determine if the predictions of the model hold and are reasonably accurate. If major discrepancies between the model and new findings are found, the research design should be modified and retested. In other words, the formulation and testing of a predictive model is a dynamic process and models should be updated as our knowledge of a given area increases.

Uses of Class II Surveys

With few exceptions, the state-of-the-art in Class II survey techniques does not provide sufficient accuracy and precision to allow for "clearing" a given project area. Class II surveys can be useful at the planning stages of a project to provide information for evaluating the probable or potential impacts to cultural resources.

The objectives of a Class II survey are to predict the number, nature, and distribution of sites in an area within acceptable statistical limits. At the planning stage of a large project, or when developing a management plan or suitability study, the Class II survey can be

used to determine that "Area A" will probably contain fewer sites than "Area B" and that "Area A" would be preferred because of less impacts to sites and lower mitigation costs. Class II surveys should not be used to clear projects when specific project locations and the nature of their impacts are known.

A rule-of-thumb can be used to determine the level of survey required: cultural resource survey intensity and inventory data should be at the same level of detail as the project design. For example, if project planning is at the stage where several possible project locations are being evaluated for suitability, Class II data on each area is appropriate. When the final project location has been determined and specific facility placement is being staked on the ground, cultural resource data on these areas should be collected at the same level of detail. That is, by an on-ground Class III survey, not a Class II.

A Class II level inventory does not provide adequate data for "clearing" a specific project impact area for the following reasons:

1) A Class II survey can provide only a prediction within statistical limits of site type, density and distribution.

a) Predictions of site types will, by design, identify the common site types in the area, but also by design, they cannot predict the anomaly or one-of-a-kind site which may be the most significant site in the area.

b) Site density and distribution is not the same as site location. Predicting that there are two or four or eight sites of a given type in a certain environmental zone does not tell one exactly where each site is.

c) To be useful, the environmental zones used as the basis of a predictive model must be based on combinations of so many factors that a huge number of zones must be identified. If these factors cannot be isolated and the zones identified from existing data in the lab, then they must be delineated in the field. If one is going to survey an entire project area to identify the eco-zones, one might as well forget the predictive model development and just survey the area for sites.

2) Class II surveys cannot predict a given site's integrity, size, depth, cultural content or significance.

3) No Class II model has been developed which can predict historic sites by type or their location or significance.

4) No Class II model has been developed which will predict the nature or location of ". . . districts, objects, buildings, or structures . . ." all of which may be eligible for the National Register of Historic Places.

5) A Class II survey does not meet the compliance requirements of NHPA 110(2) or Executive Order 11593 because it does not ". . . locate, inventory and nominate all properties which appear to qualify . . ."

6) Class II predictive models do not account for all factors involved in site location. Generally, no provision is made to account for: a) differences in the locations of the same type of sites of different ages, b) sites located in various micro-zones within larger eco-zones, c) cultural factors not related to environment, and d) changes in environmental conditions over time.

In summary, Class II surveys cannot identify and evaluate all sites which may be eligible and subject to impacts, and should not be used as a basis for clearing specific project areas. Class II surveys should be limited to planning, not clearing. Use of a Class II inventory without regard for the above considerations constitutes an abuse of methodology.

REFERENCES CITED

- Binford, Lewis R.
1964 A consideration of archeological research design. American Antiquity 29:425-441.
- Cochran, W.G.
1953 Sampling techniques. John Wiley and Sons, New York.
- Gumerman, George M.
1971 The distribution of prehistoric population aggregates. Prescott College Anthropological Papers No. 1. Prescott College, Arizona.
- Mueller, James W. (editor)
1975 Sampling in archaeology. University of Arizona Press, Tucson.

LEGALITY OF CLASS II SURVEYS FOR CLEARANCE PURPOSES

The Historic Preservation laws under which we all operate (NHPA 1966, amended 1980, EO11593, AHPA 1974, ARPA 1979, etc.) do not specify what constitutes an adequate identification strategy for inventorying cultural resources. Some regulations do (e.g. BLM's 8111 Manual), but each agency has its own regulations. Those sponsoring the most work in Wyoming are the Bureau of Land Management (BLM), the U.S. Forest Service (FS), and the Office of Surface Mining (OSM).

The BLM's 8111 regulations (1978) specifically prohibit the use of the Class II - Field Sampling Inventory for clearance:

Class II inventory is a tool utilized in management and planning activities to predict cultural resources in the area of consideration. Since the method is not designed to completely inventory an area, it cannot be used for site specific cultural resource clearance unless the site specific area coincides with previous intensively inventoried sampling units (8111.13A2).

The objectives of a Class II inventory are to identify and record all cultural resources within a portion of a defined area. It is intended to provide the data base for estimating the nature and distribution of sites within a study area, usually that covered by a regional environmental statement, or smaller areas with special management or research needs. Explicit sampling designs and follow-up evaluations are strongly encouraged.

Forest Service policy varies from region to region. The draft Guidebook of Procedures and Techniques for Managing Historical and Archaeological Resources (Wildesen 1977) for the Pacific Northwest Region states that:

Neither Reconnaissance nor Sample Survey meet E.O. 11593, Section 2(a) requirements (that all Federal agencies inventory the properties under their control and nominate those historic sites which meet the criteria for the National Register of Historic Places), because neither usually locates all cultural resources in an area sampled (p.5).

However, the guidelines go on to equivocate and allow that:

Sample Survey meets inventory requirements for projects licensed or permitted by the Forest Service, if adequate safeguards or stipulations are included in the license or permit to ensure that as-yet-unidentified cultural resources are identified and protected during the licensee's or permittee's planning process. Both Reconnaissance and Sample Survey meet inventory requirements when they result in data equivalent to that provided by Complete Inventory; that is, in cases where a Partial Field Inventory is sufficient to locate all locatable cultural resources or to document the non-existence of cultural resources in the area sampled. Under these circumstances, this level of inventory meets E.O. 11593, Section 2(a) requirements as well as those applicable to project planning (Ibid).

Like the BLM, the Forest Service encourages sampling strategies which permit reliable predictions of the number, nature, and distribution of cultural resources existing in a project area, but not actually encountered during fieldwork. Sampling strategies for Forest Service projects must be documented, justified, and systematically followed.

At the Fall 1982 WAPA meeting, Steve Sigstad, USFS Archeologist - Region 2, briefly explained that region's policy on sample inventories. Only land exchanges and strip mines receive complete inventories; sampling inventories are used for timber sales, however, areas of primary impact receive full coverage. Sample inventories will be used to meet the requirements of E.O. 11593, Section 2(a) by 1990, it is hoped. Although Steve admitted that Sample Inventories should be guided by a valid research design, the Forest Service makes a clear distinction between "research" and "compliance", and thus does not encourage research designs as part of the compliance process.

OSM, as you are aware, is in the process of negotiating a New PMOA for the Coal Management Program. Under the old PMOA, OSM tacitly adopted BLM inventory standards which call for a complete (Class III) inventory of all mine permit areas, at least west of the Mississippi. The majority of mining is done on private land, and although OSM's permitting process is a federal undertaking, nationwide inventory standards have not been adopted by the agency. Since most of the states

where mining takes place have their own OSM - approved programs, inventory standards vary. Complete inventories of mine permit areas in the west are justified by the almost certain involvement of either Federal land or mineral rights in addition to a Federal permit itself.

Each state, under an OSM - approved program, must require the mine permit applicant to describe and identify the nature of known significant cultural resources listed on or, if required by the regulatory authority, eligible for listing on the National Register of Historic Places within the proposed permit area. Wyoming's State Program, administered by WDEQ/LQD, requires the applicant to describe:

. . . any significant artifacts, fossil or other articles of cultural, historical, archeological, or paleontological value. Upon recommendation by a qualified archeologist or a qualified paleontologist, the Administrator may require the evaluation of the proposed permit area prior to the time that a permit or license is issued (WDEQ/LQD Rules and Regulations, Chapter II, Section 2.a.[1][k]).

WDEQ/LQD requires that the applicant conduct a complete (Class III) inventory of the proposed permit area for two reasons:

1. Current BLM and Forest Service regulations require intensive inventories of areas to be directly impacted, and BLM and/or Forest Service land and/or minerals are involved in most cases.
2. After 10 years of trial and error, archeologists in Wyoming generally agree that the most efficient inventory method for locating cultural phenomena in a plains or desert environment is that of the systematic, 100 ft (30 m) interval transect. BLM, the Forest Service, OSM, and the SHPO agree that this is the correct method for conducting a Class III (100%) pedestrian inventory, even though in reality under the best of conditions only 20% of the ground is examined.

Sample inventories have only been condoned by OSM, WDEQ, and the SHPO as field checks of previously surveyed areas under the Old PMOA.

Under the New PMOA, the mine permit applicant must prepare an acceptable "Historic Management Plan" which:

- establishes the likely kind and number of significant cultural resources within the permit area by means of a well-researched overview,
- develops a research design and sampling strategy designed to identify the predicted sites,
- and includes a plan to mitigate adverse effects to those significant sites (i.e. eligible for the National Register) that are identified.

It is generally felt that the Advisory Council, under Administration political pressure for "regulatory relief", intended that the "preservation plan" concept allow mine permit applicants to conduct sample surveys for compliance purposes. The new PMOA calls for testing and verification of the predicted site distribution,

. . . using an appropriate level and kind of sample survey, combined as appropriate with selective survey, sufficient to support a professionally acceptable assessment of reliability (p.35).

However, the new PMOA also specifies that,

. . . the implementation plan must insure a reasonable, good faith effort to identify those archeological properties subject to direct effects . . .

and calls for

. . . sample surveys within all areas predicted not to contain archeological properties and within all areas where insufficient data are available to verify predictions (p.37).

WDEQ/LQD feels that the net effect of the multiple survey methods specified in the new PMOA will increase the cost of conducting inventories and decrease their reliability. Therefore, the State of Wyoming will continue to require Class III (100%) intensive inventories of all mine permit areas. The State, however, does endorse those portions of the Historic Management Plan in the new PMOA which call for adequate research designs, analysis, and long range planning.

The weight of legal evidence for the use of sample surveys for clearance is obviously subject to interpretation. The BLM, the Forest Service, and OSM all require complete inventories for areas to be directly impacted, and the BLM and Forest Service forbid the use of

sample inventories for those areas because sample inventories, in their opinion, do not fulfill the requirements of Executive Order 11593. OSM (i.e. the Advisory Council), despite the vacillations evident in the PMOA, apparently does too.

In the final analysis, it is a methodological - philosophical problem, not a legal one. The law requires the identification and preservation (or salvage) of all cultural resources considered eligible for the National Register that are owned by the U.S. Government or affected by a government undertaking. All means all! As archeologists, we know that complete identification of all sites is impossible, so we strive for the most accurate, best representative sample we can get. Even a Class III (so-called 100%) intensive survey is still an inspection of only 20% of a given area because the keenest observers can only identify objects on the ground within 10 ft of either side of their 100 ft - spaced transects reliably. Coupled with the fact that archeological sites are only partially preserved, even during a Class III survey, only a sample of a sample is actually recorded.

Philosophically, most archeologists would agree that past human behavior (their subject matter) was not confined to just the sites we consider eligible for the National Register. On the contrary, human behavior is geographically diverse and cannot be understood unless its full range, evident in all types of archeological sites, is recorded and analyzed. A priori decisions which restrict the area to be investigated generates no new knowledge about the past, only confirms what is already known.

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