Technical Brief 20: Archeological Resource Damage Assessment: Legal Basis and Methods

Martin E. McAllister, Archaeological Damage Investigation & Assessment, Missoula, Montana

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Foreword, by Francis P. McManamon, Chief Archeologist, NPS; Departmental Consulting Archeologist, DOI

This technical brief describes and explains the archeological resource damage assessment process. The legal foundation for and the necessity of archeological damage assessments is described, as are the procedures for field damage assessment, value and cost determinations, and report preparation. Archeologists, attorneys, and law enforcement specialists involved in investigations of crimes against archeological resources must understand clearly the archeological resource damage assessment process and how to carry it out correctly. The credibility of these damage assessments directly affects the outcome of legal cases and the criminal or civil penalties imposed.

In November 2002, a new sentencing guideline issued by the United States Sentencing Commission became effective. This document, entitled, "Cultural Heritage Guideline," provided the federal judicial system with consistent, rational procedures for developing potential sentences for those convicted of crimes involving cultural heritage resources, including various kinds of archeological resources. Prohibited activities include, among other things, damage to or destruction of archeological resources, unauthorized removal of artifacts, features, or other components from protected sites, theft, and illegal trafficking.

The cultural heritage guidelines make use of the concepts of "archeological value," "commercial value," and "the cost of restoration and repair." All of these terms, as they are used in a formal legal context, are defined either in the Archaeological Resource Protection Act (ARPA), the federal law that most directly protects archeological resources, or the regulations that implement this law. Since ARPA, which became law in 1979, has been enforced, the ways in which these concepts and terms have been used has developed through their application in individual cases. After 25 years of practical use of these concepts, the synthesis of what had been learned through individual cases into a set of standards was warranted. Such general standards would be of use to archeologists, attorneys, and law enforcement personnel in federal agencies assigned to ensure effective prosecution of archeological resource looters, traffickers, and vandals.

In addition, the development and publication of the new sentencing guideline emphasized the need for standards because use of the guideline by judges throughout the federal judicial system meant that more judges, including those who might have had little or no familiarity with archeology or archeological resources, would be using these specialized concepts. Professional standards describing how archeological value calculations should be developed would serve two purposes. First, they would provide justification for a consistent set of procedures and guidelines for professional archeologists who conduct archeological damage assessments and calculate archeological value for specific legal cases. Secondly, the standards would provide an objective

basis for judgment of the legitimacy of the damage assessments used in prosecutions of those accused of crimes against archeological resources. Judges would determine whether the standards had been followed when they evaluated the procedures used to reach archeological value amounts provided by the prosecution in specific cases.

The Society for American Archaeology (SAA), an organization dedicated to the research, interpretation, and protection of the archaeological heritage of the Americas, with the support of the National Park Service, assembled a group of public and private sector and academic archeologists, government attorneys, and law enforcement experts to develop these needed standards. The group met in a workshop in March 2003. They drafted the standards at the the workshop and refined the drafts during the following months. In November 2003, the Board of Directors of the SAA reviewed and approved as official, "Professional Standards for the Determination of Archaeological Value." This technical brief is designed to provide additional guidance for the use of the standards, drawing on decades of experience in archeological resource protection.

Introduction

The criminal and civil penalty sections of the Archaeological Resources Protection Act (16 USC 470aa-mm; ARPA) require the assessment of damage to archeological resources that are harmed by unauthorized acts. Archeological resource damage assessment uses the methods of archeology to provide the information necessary to prove that the archeological elements of a criminal or civil violation of ARPA are met according to the requirements of the law and the judicial system (see Figure 1). The assessment of damages to archeological resources in archeological violation cases cannot be carried out without reference to these legal requirements. In other words, archeological resource damage assessments require both archeological expertise and adherence to legal requirements.

Figure 1: This diagram represents the relationship of Archeological Resource Damage Assessment to Archeology and to the Law and Judicial System. (Figure developed by Assistant United States Attorney Wayne Dance, Department of Justice, District of Utah. Used by permission.)

The purpose of this technical brief is to describe and explain the archeological resource damage assessment process. The legal basis of archeological resource damage assessment is presented by identifying the elements that must be proven for the prosecution of either a criminal or civil violation of ARPA. The Act's definition of an “archeological resource” also is discussed because it is a critical component of the elements of a violation and is a central issue in damage assessment. The remainder of the technical brief describes and explains the three components of archeological resource damage assessment: (1) field damage assessment; (2) value and cost determinations; and (3) archeological resource damage assessment report preparation. Procedures are recommended for accomplishing each of these damage assessment components.

Archeological Elements of an ARPA Criminal Violation

Black's Law Dictionary (2005:559) defines “elements of crime” as, “The constituent parts of a crime … that the prosecution must prove to sustain a conviction”. The archeological elements of an ARPA criminal violation come directly from the statute:

- 16 U. S. C. § 470ee. Prohibited acts and criminal penalties
- (a) Unauthorized excavation, removal, damage, alteration, or defacement of archaeological resources

  No person may excavate, remove, damage, or otherwise alter or deface, or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands unless such activity is pursuant to a permit issued under section 470cc of this title, a permit referred to in section 470cc(h)(2) of this title, or the exemption contained in section 470cc(g)(1) of this title.

- (b) Trafficking in archaeological resources the excavation or removal of which was wrongful under Federal law

  No person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange any archaeological resource if such resource was excavated or removed from public lands or Indian lands in violation of—

  (1) the prohibition contained in subsection (a) of this section, or

  (2) any provision, rule, regulation, ordinance, or permit in effect under any other provision of Federal law.

- (c) Trafficking in interstate or foreign commerce in archaeological resources the excavation, removal, sale, purchase, exchange, transportation or receipt of which was wrongful under State or local law

  No person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange, in interstate or foreign commerce, any archaeological resource excavated, removed, sold, purchased, exchanged, transported, or received in violation of any provision, rule, regulation, ordinance, or permit in effect under State or local law.

- (d) Penalties

  Any person who knowingly violates, or counsels, procures, solicits, or employs any other person to violate, any prohibition contained in subsection (a), (b), or (c) of this section shall, upon conviction, be fined not more than $10,000 or imprisoned not more than one year, or both: Provided, however, That if the commercial or archaeological value of the archaeological resources involved and the cost of restoration and repair of such resources exceeds the sum of $500, such person shall be fined not more than $20,000 or imprisoned not more than two years, or both. In the case of a second or subsequent such violation upon conviction such person shall be fined not more than $100,000, or imprisoned not more than five years, or both.

Readers should note that the maximum fines for Class A misdemeanor and felony violations of federal law by individuals were increased to $100,000 and $250,000 respectively by the Criminal Fines Improvement Act of 1987 (see 18 USC § 3571(b)); maximum fines for Class A misdemeanor and felony violations by organizations are $200,000 and $500,000 respectively. As a result, these are now the maximum fines for Class A misdemeanor and felony violations of ARPA, even though the original and lower ARPA fine amounts are shown in § 470ee(d).

Thus, the six elements that must be proven for a felony violation of § 470ee(a), as supplemented by § 470ee(d), are:

Element 1. The violation affected an archeological resource as defined in ARPA.

Element 2. The violation occurred on public (federal) or Indian lands.

Element 3. The violation involved one or more of ARPA's prohibited acts.

Element 4. The prohibited act occurred without an ARPA permit for archeological investigation.

Element 5. The violator acted knowingly (i.e. with criminal intent).

Element 6. For a felony offense only, the sum of archeological value and cost of restoration and repair, or the sum of commercial value and cost of restoration and repair, exceeds $500.00. If this element is not charged, or is charged but not proven, the ARPA violation is a Class A misdemeanor.

The subsections of § 470ee prohibiting the unlawful trafficking of archeological resources, § 470ee(b) and § 470ee(c), have distinct elements that must be proven. These elements are not dealt with here because they do not affect the damage assessment process.

Elements 1, 3, and 6, are archeological elements that require archeological information, either in whole or in part, to prove each of them. Exclusively archeological information is necessary for the proof of Element 1. Element 3 requires both investigative information on how the violation occurred and archeological information on the nature of the archeological resource damage involved in the prohibited act or acts. Element 6 requires archeological information for the archeological value and cost of restoration and repair determination and both archeological and appraisal information for the commercial value determination. Elements 2, 4 and 5 can be proven without archeological information.

Archeological Elements of an ARPA Civil Violation

ARPA civil violations are subject to the assessment of an ARPA civil penalty. ARPA civil violations also have elements that must be proven. The archeological elements of an ARPA civil violation again come directly from the statute:

- 16 U. S. C. § 470ff. Civil penalties
- (a) Assessment by Federal land Manager

    (1) Any person who violates any prohibition contained in an applicable regulation or permit issued under this chapter may be assessed a civil penalty by the Federal land manager concerned. No penalty may be assessed under this subsection unless such person is given notice and opportunity for a hearing with respect to such violation. Each violation shall be a separate offense. Any such civil penalty may be remitted or mitigated by the Federal land manager concerned.

    (2) The amount of such penalty shall be determined under regulations promulgated pursuant to this chapter, taking into account, in addition to other factors—

(A) the archaeological or commercial value of the archaeological resource involved, and

(B) the cost of restoration and repair of the resource and the archeological site involved.

Substantial portions of the text of the prohibited acts and criminal penalties section of the ARPA statute (see above) are restated in the ARPA Uniform Regulations, Section __.4(a)-(c) so that a civil penalty may be assessed for a violation of this section of the statute and its reference to "any prohibition contained in an applicable regulation."

Thus, the elements that must be proven for a civil violation of § 470ff(a) are:

Element 1. The violation affected an archaeological resource as defined in ARPA.

Element 2. The violation occurred on public (federal) or Indian lands.

Element 3. The violation involved one or more of ARPA's prohibited acts.

Element 4. The prohibited act occurred without an ARPA permit for archeological investigation.

Once the civil violation is proven, the violator is subject to the assessment of an ARPA civil penalty, the maximum amount of which will be the sum of archeological value and the cost of restoration and repair, or the sum of commercial value and the cost of restoration and repair.

The elements that must be proven for the assessment of a civil penalty under § 470ff are the same as for a criminal violation of § 470ee, with the exception of element 5 (criminal intent) and element 6 which is only relevant to criminal proceedings. As in the case of the criminal violation elements, elements 1 (archeological resource), 3 (prohibited acts), as well as the value and cost determinations, are archeological elements that require archeological information to prove each of them.

Readers should note that the text of the ARPA Uniform Regulations is, as their title implies, uniform. Due to the organization of the Code of Federal Regulations (CFR), the ARPA uniform regulations appear in four different locations within the CFR. The text of the ARPA regulations is identical, but the numbering is different depending on the department or agency that the regulations cover. Specifically, for the Department of the Interior the numbering is 43 CFR Part 7, for the Department of Agriculture it is 36 CFR Part 296, for the Department of Defense it is 32 CFR Part 229, and for the Tennessee Valley Authority it is 18 CFR Part 1312. For example, Section __.4(a)-(c) of the regulations would be found at 43 CFR Part 7.4(a)-(c) for Department of the Interior agencies, such as the National Park Service and the Bureau of Land Management, and

at 36 CFR Part 296.4(a)-(c) for Department of Agriculture agencies, such as the Forest Service. References to sections of the ARPA Uniform Regulations in this Technical Brief use a department-neutral format (e.g. "Section __.4(a)-(c)").)

Archeological Resources Protected by ARPA

ARPA's definition of an "archaeological resource" is:

- 16 U. S. C.§ 470bb. Definitions
- (1) The term archaeological resource means any material remains of past human life or activities which are of archaeological interest … at least 100 years of age.

The terms "material remains" and "archaeological interest" are defined in the ARPA uniform regulations:

- "Material remains" means physical evidence of human habitation, occupation use, or activity, including the site location or context in which such evidence is found (Section __.3(a)(2)).
- "Of archaeological interest" means capable of providing scientific or humanistic understandings of past human behavior, cultural adaptation, and related topics through the application of scientific or scholarly techniques such as controlled observation, contextual measurement, controlled collection, analysis, interpretation and explanation (Section __.3(a)(1)).

The ARPA uniform regulations also includes a list of examples of "classes of material remains" considered to be archeological resources (Section __.3(a)(3)(i-x); seeAppendix A).

Field Damage Assessment

Field damage assessment is carried out to obtain information about damage to an archeological resource or resources involved in a potential violation of ARPA or other applicable statutes. The assessment is conducted at the location of this damage and is part of the overall investigation at the scene of the violation. Typically, the damage location is an archeological site, but violations may occur that do not involve sites, such as theft of isolated artifacts or theft from curation facilities or museums. The resulting information about the damage will be used in both the value and cost determinations and in the archeological resource damage assessment report that will be

developed as part of case preparation. Four operations must be completed in carrying out field damage assessment. The procedures use basic archeological data collection methods.

1. Identification of the archeological resource damage locations:

    a. Identify all damage locations.

    b. Attempt to distinguish new damage locations from old damage locations, if the latter are present.

2. Identification of the archeological resources damaged and the damage to them:

    a. Identify the archeological resources protected by ARPA or other statutes at the damage locations (refer to the ARPA definition of an archeological resource [see above] and the ARPA uniform regulations examples of the "classes of material remains" considered to be archeological resources [see Appendix A]).

    b. Identify the damage to these resources in terms of the acts prohibited by ARPA (see above).

3. Measurement of the amount of archeological resource damage:

    a. Make accurate tape measurements of the amount of damage, unless other, more sophisticated quantification methods are available (see 3b.). To meet forensic standards of documentation, make as complete a series of measurements as possible given the time available. Either metric or English standard measurements (e.g. inches, feet, yards) may be used, but metric measurements of damage must be converted to standard measurements in the damage assessment report. Note that if the damage has extended below the surface of a site, depth measurements are important. Sufficient measurements should be made to calculate the volume of damage.

    b. Use other more sophisticated methods to quantify the amount of damage, such as total station or 3D laser scanning. More detailed measures such as these may be employed to complete an assessment, following the initial use of tape measurements.

4. Documentation of findings:

    a. Take accurate and complete notes on all aspects of the field damage assessment process.

    b. Photograph the damage locations, the archeological resources damaged and the damage to them.

    c. Map the damage locations.

d. Documentation should be as detailed and objective as possible.

Value and Cost Determination

ARPA identifies three monetary determinations as the measures of the severity of harm to the archeological resource(s) involved in either a criminal violation or a civil violation of the statute. These monetary determinations are:

- Commercial Value
- Archeological Value
- Cost of Restoration and Repair

As is indicated by the definitions of these terms in the ARPA uniform regulations (see below), all archeological violation cases that involve damage to *in situ* archeological resources require both archeological value and cost of restoration and repair determinations.

Archeological violation cases may or may not involve a commercial value determination. Commercial value derives from collector interest in archeological resources. Archeological resources that have collector interest will have a fair market value, while those that are not of interest to collectors will not have a market value. A commercial value determination is not necessary when the archeological resources involved in a violation are not of collector interest and do not have a fair market value. When there is collector interest in the resources and a resulting fair market value, then a commercial value determination is required. (Note that market value does not necessarily mean the exchange of cash, but can also include the exchange of goods, i.e., barter. For example, artifacts may be traded for drugs or other artifacts as well as for money.)

The tables referred to in the following sub-sections on "Commercial Value," "Archeological Value" and "Cost of Restoration and Repair" and the "Archeological Resource Damage Assessment Report Preparation" section may be developed at any point in the process of making the value and cost determinations and preparing the resource damage assessment report. Typically, they are prepared as a component of the determinations and prior to writing the report text, but this is not required.

Readers should note that there are some basic and highly important concerns in the ARPA value and cost determination process. First, speculation is not permissible. Second, and following from the first point, values or costs included must be fully justifiable in terms of being either incurred

or projected on an actual and reasonable basis. Third, values or costs for the same operation must not be included twice or "double counted" in the value and cost determinations. When operations appearing to be the same or similar are included in different aspects of a value and cost determination, their differing purposes must be fully explained. Examples of issues related to these concerns will be provided in the discussion of commercial value, archeological value and cost of restoration and repair.

Commercial Value

"Commercial Value" is defined in Section __.14 of the ARPA uniform regulations:

> Commercial value. For the purposes of this part, the commercial value of any archaeological resource involved in a violation of the prohibitions in § __.4 of this part or conditions of a permit issued pursuant to this part shall be its fair market value. Where the violation has resulted in damage to the archaeological resource, the fair market value should be determined using the condition of the archaeological resource prior to the violation, to the extent that its prior condition can be ascertained (Section __.14(b)).

Black's Law Dictionary (2005:12944) defines "fair market value" as, "The price that a seller is willing to accept and a buyer is willing to pay on the open market …". Note that the definition requires the commercial value of damaged archeological resources to be determined only in this damaged condition unless it can be show that the damage was caused by the violation.

Procedures for Determination of Commercial Value.

The following procedures can be used to determine commercial value. These procedures should be carried out by an expert on the fair market value of the archeological resources involved in the violation. In most cases, the archeological resources of commercial value will be artifacts such as modified stone, ceramic, wood, glass, or metal, but they also may be archeological features or components of archeological features that have been removed, such as rock art panels or rock art boulders. Intact artifacts such as whole pots and unbroken glass bottles definitely have commercial value, but, in today's marketplace, even items such as pottery sherds, broken points, and lithic flakes can have commercial value. Typically, an archeologist will be identified who has or will develop this expertise, but a commercial insurance or estate appraiser who has knowledge of archeological resource market values also may be used. The determination should be based on the most current fair market values of the archeological resources for the time period when the violation occurred.

1. Identify any archeological resources that are evidence in the case that have interest to collectors of archeological resources and, therefore, commercial value.

2. Determine (or have a commercial appraiser determine) the current fair market value of these items from appropriate commercial value sources (see below).

3. Develop a commercial value table or tables showing the fair market value of each item and the total commercial value figure (see Figure 2 for an example).

A commercial value determination should not include a value figure for an archeological resource that is assumed to have been removed but was not actually recovered. This would be speculative. Only archeological resources that are evidence in the case and can be examined during any legal proceedings should be considered in a commercial value determination.

Figure 2: Example of a Commercial Value Table (reproduced from McAllister 1999:10-13; Note that "grades" applied to artifacts are based on definitions in Robert M. Overstreet's *Overstreet Identification and Price Guide to Indian Arrowheads*.)

Artifact Commercial Values by Sequential Artifact Photo Numbers

Photo Number	Point or Artifact Type	Grade	Commercial Value
01	Pinto	8	$125
02	Humboldt Base Notched	8	$150
03	Pinto, Stemmed	8	$175
04	Elko Base Notched	9	$150
05	Drill	4	$15
06	Rose Spring	6	$20
07	Rose Spring	7	$25
08	Pinto	7	$25
09	Rose Spring	7	$25
10	Elko	7	$25
11	Desert Side Notched	5	$8
12	Rose Spring	7	$45
13	Rose Spring Side Notched	7	$45
14	Rose Spring	7	$25
15	Pinto	7	$30
16	Desert Side Notched	7	$20
17	Elko Base Notched	7	$35
18	Desert Side Notched	7	$20
19	Northern Side Notched	6	$65
20	Elko Eared	8	$50
…			
199	Un-typable Point	1	$0
200	Side Notched	2	$5
205	Side Notched	2	$5
209	Side Notched	2	$3

215	Side Notched	3	$7
221	Elko Corner Notched	2	$5
228	Side Notched	2	$5
229	Side Notched	3	$8
234	Scraper	5	$8
236	Scraper	5	$8
247	Side Notched	2	$5
248	Elko Corner Notched	3	$8
250	Elko Corner Notched	2	$5
TOTAL COMMERCIAL VALUE			$4,636

Commercial Value Sources. The following are examples of commercial value sources:

- artifact price guides
- artifact collector publications
- artifact shops and galleries
- artifact shows and sales
- gun or knife shows and sales where artifacts are sold
- Internet artifact websites

Note that the Internet may or may not be useful in determining the commercial value of archeological resources. Its usefulness depends upon how much information is available on the market value of specific types of archeological resources. Sometimes there is no information and, in other instances, there may be too much information. Often, artifact price guides and artifact collector publications are more useful sources of information on commercial value.

Archeological Value

"Archaeological Value" is defined in Section __.14 of the ARPA Uniform Regulations:

> Archaeological value. For purposes of this part, the archaeological value of any archaeological resource involved in a violation of the prohibitions in § __.4 of this part or conditions of a permit issued pursuant to this part shall be the value of the information associated with the archaeological resource. This value shall be appraised in terms of the costs of the retrieval of the scientific information which would have been obtainable prior to the violation. These costs may include, but need not be limited to, the cost of preparing a research design, conducting field work, carrying out laboratory analysis, and preparing reports as would be necessary to realize the information potential (Section __.14(a)).

Note that the definition specifies that scientific information retrieval costs "may include, but need not be limited to" those of the four operations listed. Therefore, costs of other legitimate scientific retrieval operations also may be included in the archeological value determination. An example of a necessary scientific information retrieval operation that is not included in the definition's list of operations is consultation with the State Historic Preservation Officer (SHPO), the Tribal Historic Preservation Officer(s) (THPOs), or other parties as appropriate. Other examples are repatriation of Native American Graves Protection and Repatriation Act (NAGPRA) items and the long-term curation of other artifacts and materials when items of either category would be recovered during scientific information retrieval.

In determining archeological value, it is important to understand the legal concept on which this value is based. Archeological value is not a dollar figure for the cost of actually carrying out scientific research or contract archeological work in which all currently accepted methodological standards would apply. Archeological value is a projected cost figure for scientific information retrieval operations as required by ARPA for use in the legal system in order to assess the amount of harm to an archeological resource caused by unauthorized acts. This determination requires the calculation of reasonable and credible costs for appropriate retrieval of scientific information from the damaged portion of the archeological resource if it was still in an undamaged condition. These costs should be proportional to the amount of damage in order to be accepted as a justifiable measure of the harm caused. Therefore, methodological considerations that would apply to actual retrieval of information from the archeological resource do not necessarily apply in an archeological value determination.

For example, proposing to base archeological value on continuing an excavation unit to sterile soil at a depth of two meters below the surface would not be proportional to the damage caused by an unauthorized excavation by a looter that stopped at one yard (0.9144 meter) below the surface, even though an actual excavation unit normally would continue to sterile soil. Alternatively, proposing to base archeological value on complete scientific excavation of a site would be proportional to complete destruction of the site by unauthorized mechanical excavation, even though actual scientific information from the site as a unit using modern archeological methods normally would be based on a sampling strategy.

Procedures for Determination of Archeological Value.

The following procedures can be used to determine archeological value. These procedures are phrased as questions to be answered making this determination. The questions are based on the Society for American Archaeology "Professional Standards for the Determination of Archaeological Value" (2003). The standards are included here as Appendix B (see also McAllister 2006). The applicable standard is referenced in each question. The use of these

professional standards in determining archeological value is recommended strongly. An archeologist who has or will develop the required expertise should carry out these procedures.

1. What is the archeological resource involved in the violation (see Standard 1 a., c. and d.)? For example:

   Is it an isolated artifact?

   Is it a portion of a site where no features are present?

   Is it a feature (e.g. a house floor; an historic cemetery plot; a rock art panel or boulder)?

   Is it the entire site?

2. How, both qualitatively (type of damage) and quantitatively (amount of damage), has the identified archeological resource been affected by the violation (see Standard 1. b.)? For example:

   Has an isolated artifact been removed?

   Has a portion of the site where no features are present been excavated and, if so, how much excavation, both horizontally and vertically, has occurred?

   Has a feature been excavated or defaced and, if so, how much of the feature has been affected (i.e. all of the feature or only some portion of the feature)?

   Has an entire site been affected and, if so, how has it been damaged (e.g. has it been bulldozed; have all the metal artifacts been removed with the aid of metal detectors; has it been completely surface collected)?

3. How, both quantitatively (scale, e.g., area and depth) and qualitatively (methods), would scientific information have been retrieved from the identified archeological resource prior to the violation (see the discussion of scale and methods in Standards 2 and 3)? For example:

   What scientific information retrieval strategy would have been used if the isolated artifact affected by the violation had been located during an archeological survey (e.g., documentation, mapping and controlled collection)?

   What scientific information retrieval strategy, both quantitatively (scale) and qualitatively (methods), would have been used if the featureless portion of the site affected by the violation had been excavated scientifically (e.g., a test excavation and, if so, of what size)?

   What scientific information retrieval strategy, both quantitatively (scale) and qualitatively (methods), would have been used if the feature affected by the violation had been excavated or

documented scientifically (e.g. scientific excavation or documentation the entire feature or only a portion of the feature)?

What scientific information retrieval strategy, both quantitatively (scale) and qualitatively (methods), would have been used if the entire site affected by the violation had been excavated or documented scientifically (e.g., scientific excavation or documentation of the entire site or only a sample of the site)?

4. Is the scientific information retrieval strategy projected for the identified archeological resource proportional, both quantitatively (scale) and qualitatively (methods), to the effect of the violation (see the discussion of proportionality in Standards 2 and 3)?

5. What operations would be involved in the scientific information retrieval strategy projected for the identified archeological resource and what is the justification for each of these operations (see Standards 3 and 4)?

6. What is the line item cost of each of these operations?

   Develop an archeological value table that shows the operations and their line item costs (see Figure 3). Note that these costs should be consistent with industry standards and should include all administrative overhead costs such as employee benefits.

7. What is the total dollar figure for archeological value?

   Include this figure in the archeological value table.

Examples of Categories of Scientific Information Retrieval Operations in an Archeological Value Determination

The following are examples of categories of scientific information retrieval operations that might be included in an archeological value determination in a case involving unauthorized excavation at a Native American site. (It should be noted that the scientific information retrieval operations included in an actual archeological value determination will depend upon the specific circumstances of the case.) These operations can be categorized as planning, investigation, and post-investigation activities. The italicized operations are those specifically identified in the definition of archeological value in the ARPA uniform regulations. It is important to consider the initial consultation and the latter two, post-investigation activities.

- Consultation with SHPO, THPO(as appropriate), affiliated tribes (if any), and other consulting parties

- *Preparation of Research Design*

- *Conducting Field Work*
- *Carrying Out Laboratory Analysis*
- *Preparation of Reports*
- Repatriation of NAGPRA human remains and cultural items (if any)
- Curation of artifacts and remains not repatriated under NAGPRA and records

This list of operations also can be used to illustrate some important concerns and potential problems in archeological value determinations. Operations and resulting costs that cannot be justified should not be included. For example, laboratory analysis costs in an archeological value determination should be for the analysis of artifacts and specimens reasonably expected to be recovered in the scientific information retrieval strategy on which this determination is based. They should not include analysis costs for artifacts or specimens not observed in association with the damaged archeological resources since there would be no reasonable basis for projecting their recovery. For example, it would be speculative and inappropriate to include radiocarbon dating analysis costs when specimens expected to contain carbon are not present. By the same token, it would not be appropriate to include repatriation operations and costs unless the violation affected items protected by NAGPRA.

Also note that all of the costs in the archeological value determination should be directly associated with scientific information retrieval operations and should be clearly distinct from operations carried out or projected as part of restoration and repair (see below) to avoid the "double counting" problem. Two examples illustrate this point. Archeological value laboratory analysis costs should be for artifacts and specimens expected to be recovered in retrieving scientific information from the archeological resources involved in the violation. Restoration and repair examination and analysis costs are those costs incurred or projected for actual damage to archeological resources. Similarly, repatriation and curation costs under archeological value should be for items subject to these requirements reasonably expected to be recovered in retrieving scientific information. Restoration and repair repatriation and curation costs are for items actually collected or seized as evidence.

Figure 3: Example of an Archeological Value Table Format. (Adapt as necessary based on circumstances of violation. Note that cost is shown only as an example.)

Archeological Value

[Category / Line Item]	**[Units / Unit Cost]**	**[Line Item Cost]**
Consultation with SHPO	4 hours @ $50.00/hour	$200.00
Consultation with THPO(s) or Other Parties	4 hours @ $50.00/hour	$200.00
Preparation of Research Design	_____	_____
Conducting Field Work	_____	_____
Carrying out Analyses	_____	_____
Preparation of Reports	_____	_____
Curation	_____	_____
Total Archeological Value		_____

Cost of Restoration and Repair

"Cost of restoration and repair" is defined in Section __.14 of the ARPA uniform regulations:

- Cost of restoration and repair. For purposes of this part, the cost of restoration and repair of archaeological resources damaged as a result of a violation of prohibitions or conditions pursuant to this part, shall be the sum of the costs already incurred for emergency restoration or repair work, plus those costs projected to be necessary to complete restoration and repair, which may include, but need not be limited to, the costs of the following:

(1) Reconstruction of the archaeological resource;

(2) Stabilization of the archaeological resource;

(3) Ground contour reconstruction and surface stabilization;

(4) Research necessary to carry out reconstruction or stabilization;

(5) Physical barriers or other protective devices, necessitated by the disturbance of the archaeological resource, to protect it from further disturbance;

(6) Examination and analysis of the archaeological resource including recording remaining archaeological information, where necessitated by disturbance, in order to salvage remaining values which cannot be otherwise conserved;

(7) Reinterment of human remains in accordance with religious custom and State, local, or tribal law, where appropriate, as determined by the Federal land manager;

(8) Preparation of reports relating to any of the above activities (Section __.14(c)).

Note that the definition specifies that restoration and repair costs "may include, but need not be limited to" those of the eight operations listed. Therefore, costs of other legitimate restoration and repair operations also may be included in the cost of restoration and repair determination. Examples of necessary restoration and repair operations that are not included in the definition's list of operations are the eventual repatriation or curation of archeological resource items seized as evidence (repatriation of NAGPRA items, curation of other archeological materials and the associated documentation).

It is important to note that there are two types of restoration and repair: emergency restoration and repair and projected restoration and repair. Emergency restoration and repair operations are those already carried out or those that have not been carried but will need to be carried to prevent further immediate loss or damage of the resource(s) or to complete the emergency operations. The field damage assessment procedures and preparation of the archeological resource damage assessment report are part of the emergency restoration and repair process (these operations are components of items (6) and (8) above). Projected restoration and repair operations are those that will need to be carried out, but do not need to be carried out immediately. Examples of projected restoration and repair are full reconstruction to the pre-violation condition of a prehistoric or historic structure damaged by vandalism and curation of items collected or seized as evidence.

Procedures for Determination of Cost of Restoration and Repair

The following procedures can be used to determine the cost of restoration and repair. An archeologist who has or will develop the required expertise should carry out these procedures.

1. Identify the emergency restoration and repair operations already carried out or that will be carried out to complete emergency restoration and repair.

2. Identify the projected restoration and repair operations to be carried out in the future.

3. Determine the line item cost of each of these operations.

4. Determine the subtotals for emergency restoration and repair costs and projected restoration and repair costs and their sum, the total cost of restoration and repair.

5. Develop a cost of restoration and repair table that shows the operations, their line item costs, the subtotals for emergency restoration and repair costs and projected restoration and repair costs and the total figure for cost of restoration and repair (see Figure 4). Note that

costs should be consistent with industry standards and should include all administrative overhead costs such as employee benefits. (Separate tables may be developed for emergency restoration and repair costs and projected restoration and repair costs; however, the recommended approach is to show these costs in a single table since they are components of the total cost of restoration and repair.)

Examples of Categories of Emergency and Projected Restoration and Repair Operations in a Cost of Restoration and Repair Determination

The following are examples of categories of emergency and projected restoration and repair operations that would be included in a cost of restoration and repair determination in a case involving unauthorized excavation at a Native American site. (It should be noted that the restoration and repair operations included in an actual cost of restoration and repair determination will depend upon the specific circumstances of the case.) The italicized categories are those specifically identified in the definition of cost of restoration and repair in the ARPA uniform regulations.

Emergency Restoration and Repair

- *Examination and analysis of archeological resources* (field damage assessment)
- Consultation with affiliated tribes (if any)
- *Stabilization of archeological resources* and preparation of stabilization records
- *Preparation of reports* (damage assessment report preparation)

Projected Restoration and Repair

- Repatriation of NAGPRA items collected or seized as evidence (if any)
- Curation of non-NAGPRA items collected or seized as evidence and the associated documentation
- Consultation with SHPO, THPO and/or affiliated tribes (if any).

Examples of important concerns and potential problems with restoration and repair determinations are also illustrated by this list. As in the case of an archeological value determination, all operations and costs in a restoration and repair determination should be fully justifiable. For example, the consultation with affiliated tribes as part of emergency restoration repair is required because looting of a Native American site constitutes an “inadvertent discovery” under NAGPRA. The consultation operation under projected restoration and repair may or may not be necessary depending on whether or not any of the other operations proposed in this phase would require

consultation. If they do not, the second episode of consultation is not justifiable and should not be included.

As was also noted in relation to archeological value determinations, restoration and repair operations should not include any of the same operations projected as part of the scientific information retrieval strategy developed for the archeological value determination. Already discussed has been the necessity for a clear distinction between analysis, repatriation and curation operations potentially projected for an archeological value determination versus the analysis, repatriation and curation operations included in a restoration and repair determination. Other examples are provided by the consultation and report preparation operations potentially included in both determinations. Consultation in a restoration and repair determination should pertain directly to restoration and repair measures already carried out or projected to be necessary to complete this process. By contrast, this operation in an archeological value determination is the consultation that would be required prior to carrying out the projected scientific information retrieval strategy on which archeological value is based. Similarly, the report preparation operations in restoration and repair and archeological value determinations have two different purposes. The report prepared as part of emergency restoration and repair is a damage assessment report documenting the findings on damage to archeological resources actually caused by the violation. Alternatively, the report preparation operation in an archeological value determination pertains to the technical report that would be required on the findings of the projected scientific information retrieval strategy.

Figure 4: Example of a Cost of Restoration and Repair Table Format (Adapt as necessary based on circumstances of violation. Note that cost is shown only as an example.)

Cost of Restoration and Repair

[Category / Line Item]	**[Units / Unit Cost]**	**[Line Item Cost]**
Emergency Restoration and Repair		
Examination and Analysis	3 hours @ $50.00/hour	$150.00
Consultation		
Consultation with SHPO	4 hours @ $50.00/hour	$200.00
Consultation with THPO(s) or Other Parties	4 hours @ $50.00/hour	$200.00
Stabilization		
Labor	_____	_____
Materials	_____	_____
Preparation of reports	_____	_____
Emergency Restoration and Repair Subtotal		_____
Projected Restoration and Repair		
Repatriation	_____	_____
Curation	_____	_____
Projected Restoration and Repair Subtotal		_____
Total Cost of Restoration and Repair		_____

Archeological Resource Damage Assessment Report Preparation

The field damage assessment and value and cost determination procedures carried out and the findings of this process are presented in an archeological resource damage assessment report. The archeological resource damage assessment report is an extremely important part of the overall criminal case report or civil case documentation because it provides the information necessary to prove that the archeological elements of a violation of ARPA (criminal or civil) or other applicable statutes are met. The report also is the basis for the author's testimony in a criminal or civil legal proceedings since it tells the attorneys involved in the case what this archeologist is prepared to testify about.

Report Topics

The topics that will be included in an archeological resource damage assessment report are listed below. These topics serve as an outline for planned reporting and as a table of contents for reports as they are drafted. Some resource damage assessment reports may not include all of these topics. The order of the sections in the report dealing with these topics is optional. For example, in some

reports, the archeological resource damage section precedes the field damage assessment procedures section. Also, the field damage assessment procedures and archeological resource damage sections are sometimes merged into a single section.

1. Introduction
2. Archeological Resource Description
3. Field Damage Assessment Procedures
4. Archeological Resource Damage
5. Value and Cost Determinations
6. Conclusions
7. Summary

Basic Stylistic Rules

Three basic stylistic rules should be observed in preparing archeological resource damage assessment reports. The first two are particularly critical because these reports must be read and understood by non-archeologists. For example, in a criminal case, non-archeologists who will read the report include the case agent, the prosecuting attorney and the defense attorney. The judge may also read portions of the report.

1. Write for non-archeologists, not other professional archeologists.
2. Use clear, easily understandable language and explain archeological terms clearly (when a number of archeological terms will be used in the report, a glossary is recommended).
3. Present all necessary information, but do not include unnecessary information.

Procedures for Archeological Resource Damage Assessment Report Preparation

The following section-by-section listing suggests procedures that can be used to prepare an archeological resource damage assessment report. They are presented using the topical outline for such a report suggested above.

1. Introduction

Describe how you became involved in the case and the details of your participation.

2. Archeological Resource Description

Show that all aspects of ARPA's archeological resource definition are met (refer to the ARPA definition of an archeological resource [see above] and the ARPA uniform regulations list of the "classes of material remains" considered to be archeological resources [see Appendix A]).

In establishing that the archeological resource has archeological interest, discuss both scientific interest (the scientific or historical importance of the resource) and humanistic interest (the importance of the resource to living people, both descendants of the people associated with the resource, if any, and the general public).

3. Field Damage Assessment Procedures

Describe the field damage assessment procedures carried out.

4. Archeological Resource Damage

Describe the damage to the archeological resources in terms of the acts prohibited by ARPA (see above) or other statutes and state the total amount of damage. This text may be supplemented with a table showing damage amounts by damage location if such a table will be of assistance in understanding how the total amount of damage was determined. Photographs and a map or maps should be included as figures to illustrate the extent of damage and profile drawings may also be useful for this purpose in cases involving excavations.

5. Value and Cost Determinations

Identify the value and cost determinations carried out. For example, as was noted above, some cases may involve an archeological value and cost of restoration and repair determination, but not a commercial value determination. Also, in some cases, the archeologist who prepares the damage assessment report dealing with topics 1 through 4, may not have carried out any of the value and cost determinations or only some of them. For example, a government archeologist determines the cost of restoration repair, a contract archeologist determines archeological value and a third archeologist or an appraiser determines commercial value. In such a situation, there would be a report dealing with the procedures carried out by each person. (Note that there should be only a single dollar figure for each of the prosecution's value and cost determinations, even when different individuals determine the figures.)

a. Commercial Value

Describe the procedures carried out in determining commercial value (see above) in text that clearly and convincingly explains the method(s) used in making this determination. This text is extremely important because it provides the rationale for the commercial value determination method(s) and supports the commercial value table(s) developed for the determination. At the conclusion of this text, state the total figure for commercial value that is also shown in the commercial value table(s).

b. Archeological Value

Describe the procedures carried out in determining archeological value in text (or in the case of question 6, a table) that clearly and convincingly answers each of the seven questions asked in the procedures for determining archeological value (see above). This text is extremely important because it provides the rationale for the scientific information retrieval strategy and operations proposed to determine the archeological value figure and supports the archeological value table developed in making this determination.

1. Identify the archeological resource involved in the violation in text that references the "Archeological Resource Description" section of the report.

2. Describe the archeological resource damage in text that references the “Archeological Resource Damage” section of the report.

3. Describe both the quantitative (scale) and qualitative (methods) approach projected to retrieve scientific information from the identified archeological resource prior to the violation.

4. Describe how the scientific information retrieval strategy projected for the identified archeological resource is proportional, both quantitatively (scale) and qualitatively (methods), to the effect of the violation.

5. Describe the operations that would be involved in the scientific information retrieval strategy projected for the identified archeological resource and the justification for each of these operations in text that clearly and convincingly explains what each operation is and why it would be necessary in terms of learning about the identified archeological resource. Show how any operations that appear similar to restoration and repair operations are included in the scientific information strategy for a different purpose (e.g. projected repatriation of NAGPRA items expected to be recovered in the scientific information retrieval strategy developed for the archeological value determination versus actual repatriation of NAGRPA items collected or seized as evidence as a component of restoration and repair).

6. Present the archeological value table developed in making this determination.

7. State the total figure for archeological value that is also shown in the archeological value table.

c. Cost of Restoration and Repair

Describe the procedures carried out in determining the cost of restoration and repair (see above) in text that clearly and convincingly explains what each emergency and projected restoration and repair operation is and why it is necessary to carry it out to restore and repair the archeological resource. This text is extremely important because it provides the rationale for the restoration and repair operations identified in determining the cost of restoration and repair figure and it supports the cost of restoration and repair table developed in making this determination. Show how any operations that appear similar to archeological value operations are included as part of restoration and repair for a different purpose (e.g. actual curation of non-NAGPRA items collected or seized as evidence versus projected curation of non-NAGPRA items expected to be recovered in the scientific information retrieval strategy developed for the archeological value determination). At the conclusion of this text, state the total figure for cost of restoration and repair that is also shown in the cost of restoration and repair table.

6. Conclusions

State the damage assessment report's conclusions. When figures have been developed for any or all of the three value and cost determinations, commercial value, archeological value and cost of restoration and repair, state these figures again in the Conclusions section.

7. Summary

Summarize the damage assessment report and its findings.

Summary and Conclusions

This technical brief has discussed the legal basis and methods for archeological resource damage assessment. Archeological resource damage assessments provide the information necessary to prove that the archeological elements of a criminal or civil violation of ARPA are met according to the requirements of the law and the judicial system. Three specific topics have been considered. First, the elements of an ARPA criminal or civil violation have been identified. Second, because of its importance to proving the ARPA violation and in conducting damage

assessment, ARPA's definition of an “archaeological resource” has been presented. Finally, and most importantly, procedures for field damage assessment, value and cost determination and damage assessment report preparation have been recommended and explained. These procedures can be utilized to carry out these three components of the archeological resource damage assessment process.

Given its relationship to the law and the judicial system, the importance of the archeological resource damage assessment process cannot be overemphasized. The credibility of the archeological resource damage assessments produced for violations of ARPA will directly affect the outcome of these cases and the criminal or civil penalties imposed. Their importance is clearly demonstrated by the effect that the monetary determinations for archeological value, commercial value and cost of restoration and repair have on sentencing in criminal cases under the United States Sentencing Guideline that applies to ARPA and other federal crimes involving “Cultural Heritage Resources” (USSG § 2B1.5). Under this guideline, adopted by the United States Sentencing Commission in 2002, the sum of these three monetary determinations constitutes a “Specific Offense Characteristic,” a sentencing enhancement that increases the severity of the sentence as the total amount increases. (Note that this specific offense characteristic is based on the sum of all three values, archaeological value plus commercial value plus cost of restoration and repair, whereas the sections of the ARPA statute and the ARPA Uniform Regulations that apply to criminal and civil penalties allow consideration of only archaeological value plus cost of restoration and repair or commercial value plus cost of restoration and repair.)

Therefore, archeologists, government attorneys, and resource managers who become involved in archeological resource damage assessment for violations of ARPA must fully understand this process and how to carry it out correctly. It is hoped that this technical brief will be of assistance to them in this endeavor and in the protection and preservation of archeological resources.

Appendix A

ARPA Uniform Regulations Examples of Protected Archeological Resources
(Section __.3(a)(3)(i-x))

1. Surface or subsurface structures, shelters, facilities, or features, including, but not limited to:

- domestic structures
- storage structures
- cooking structures
- ceremonial structures
- artificial mounds
- earthworks
- fortifications
- canals
- reservoirs
- gardens or fields
- bedrock mortars
- grinding surfaces
- rock alignments
- cairns
- trails
- borrow pits
- cooking pits
- refuse pits
- burial pits or graves
- hearths
- kilns
- post molds
- wall trenches
- middens

2. Surface or subsurface artifact concentrations or scatters

3. Whole or fragmentary tools, implements, containers, weapons or weapon projectiles, clothing, and ornaments, including, but not limited to:

- pottery
- other ceramics
- cordage
- basketry
- other weaving
- bottles
- other glassware
- bone
- ivory
- shell
- metal
- wood

- hide
- feathers
- pigments
- flaked stone
- ground stone
- pecked stone

4. By-products, waste products, or debris resulting from manufacture or use of human-made or natural materials

5. Organic waste, including, but not limited to: vegetal and animal remains, coprolites

6. Human remains, including, but not limited to: bone, teeth, mummified flesh, burials, cremations

7. Rock carvings, rock paintings, intaglios, and other works of artistic or symbolic representation

8. Rockshelters and caves or portions thereof containing any of the above material remains

9. All portions of shipwrecks, including, but not limited to: armaments, apparel, tackle, cargo

10. Any portion or piece of any of the foregoing (Regulations __.3(a)(3)(i-x))

Appendix B

SOCIETY FOR AMERICAN ARCHAEOLOGY PROFESSIONAL STANDARDS FOR THE DETERMINATION OF ARCHAEOLOGICAL VALUE, 2003

Introduction

The Society for American Archaeology (SAA) is an international organization dedicated to the research, interpretation, and protection of the archaeological heritage of the Americas. With more than 6,800 members, the society represents professional, student, and avocational archaeologists working in a variety of settings including government agencies, colleges and universities, museums, and the private sector.

The Archaeological Resources Protection Act of 1979 (ARPA) (Title 16, United States Code, Sections 470aa-470mm) and the ARPA Uniform Regulations establish "archaeological value" as one of three measures of the gravity of any criminal or civil violation of ARPA. In order to assist archaeologists performing archaeological damage assessments in ARPA cases, the SAA Task Force on Archaeological Law Enforcement has developed the following professional standards for the determination of archaeological value. The SAA Board strongly endorses these standards and encourages their use by professional archaeologists.

The determination of archaeological value is directly analogous to a routine professional practice that occurs daily in the United States. This is the process of developing real budgets for actual recovery of archaeological materials and data in mitigation or research projects that will be implemented through funding from contracts, grants, donations or other sources. In this sense, the determination of archaeological value is simply the structured application of this professional practice in order to provide information required by federal law.

The professional archaeologist who performs an archaeological value determination should be qualified to serve as an expert witness (Rule 702, Federal Rules of Evidence). In addition to meeting general professional standards in archaeology, required qualifications include regional expertise and experience with resources similar to the resource(s) involved in the archaeological value determination. Formal training in the preparation of archaeological value determinations is recommended.

The specific legal provisions governing the determination of archaeological value are as follows.

ARPA Criminal Offenses and Archaeological Value

The "Prohibited Acts and Criminal Penalties" section of ARPA specifies that "archaeological value" will be considered in determining whether the archaeological resource violation qualifies

as a felony offense (Title, 16 United State Code, Section 470ee(d)). Trafficking in archaeological resources also may constitute a violation of ARPA (Title 16, United States Code, Section 470ee(b), (c)). Federal courts are required to use archaeological value in determining appropriate sentences for defendants convicted of ARPA violations or other federal offenses involving cultural heritage resources (United States Sentencing Guidelines, Section 2B1.5).

ARPA Civil Penalties and Archaeological Value

The "Civil Penalties" section of ARPA specifies that "archaeological value" will be considered in determining the amount of a civil penalty for an archaeological resource violation (Title 16, United States Code, Section 470ff(a)(2)(A)).

ARPA Prohibited Conduct

The ARPA Statute and ARPA Uniform Regulations specify that under certain circumstances (e.g., lack of ARPA permit), prohibited conduct includes the following acts: "excavate, remove, damage, or otherwise alter or deface" any archaeological resource, "or attempt to (do any such act)" (Title 16, United States Code, Section 470ee(a); Regulations, section __.4(a)). This prohibited conduct applies to both ARPA criminal offenses (Title 16, United States Code, Section 470ee(d)) and ARPA civil penalties (Title 16, United States Code, Section 470ff(a)(1); Regulations, Section __.15(a)).

ARPA Definitions

Archaeological Resource

> "The term "archaeological resource" means any material remains of past human life or activities which are of archaeological interest … at least 100 years of age" (Title 16, United States Code, Section 470bb(1)).

Material Remains

> '"Material remains" means physical evidence of human habitation, occupation, use, or activity, including the site, location, or context in which such evidence is situated" (Regulations, Section __.3(a)(2)).

Archaeological Interest

> '"Of archaeological interest" means capable of providing scientific or humanistic understandings of past human behavior …" (Regulations, Section __.3(a)(1)). Archaeological Value " … The archaeological value of any archaeological resource involved in a violation … shall be the value of the information associated with the archaeological resource. This value shall be appraised in terms of the costs of the retrieval of the scientific information which would have been obtainable prior to the

violation. These costs may include, but need not be limited to, the cost of preparing a research design, conducting field work, carrying our laboratory analysis, and preparing reports as would be necessary to realize the information potential (Regulations, Section __.14(a)).

Professional Standards for the Determination of Archaeological Value

Standard 1 - Identification of the Archaeological Resource(s) Involved in the ARPA Violation

The first step in determining archaeological value is to specifically identify the archaeological resource(s) involved in the ARPA violation (i.e., the archaeological resource(s) excavated, removed, damaged, or otherwise altered or defaced). Identification of the archaeological resource(s) involved in the violation must be based on:

a. the physical attributes of the archaeological resource(s), including spatial extent, and the discernable or inferable archaeological context of the resource(s) (this archaeological context could be an entire site, groups of features or strata, a single feature or stratum, single artifacts, or other commonly defined components of the archaeological record);

b. the physical evidence of the prohibited conduct (i.e., excavation, removal, damage, alteration, or defacement) and its spatial extent; c. knowledge about similar archaeological resources based on professional experience; and d. other archaeological, historical, and ethnographic sources, including information from descendant communities, to the extent that these sources contribute to scientific knowledge.

Standard 2 - Scale of Scientific Information Retrieval to be Used in Determining Archaeological Value

The ARPA Uniform Regulations specify that archaeological value "shall be appraised in terms of the costs of the retrieval of the scientific information which would have been obtainable prior to the violation" (Regulations, Section __.14(a)). Therefore, the appropriate scale of scientific information retrieval must be selected.

When the context of the archaeological resource(s) involved in the prohibited conduct **cannot** be ascertained more specifically than a site or location (e.g. unauthorized excavations in a site with no visible surface features), the scale of scientific information retrieval used in determining archaeological value must be based on the standard archaeological unit(s) that would at least encompass the spatial extent of the prohibited conduct (e.g., the volume of excavation resulting

from the prohibited conduct). A standard archaeological unit in this case means a metric unit (e.g., a 2 by 2 meter square).

When the context of the archaeological resource(s) involved in the prohibited conduct **can** be ascertained more specifically than a site or location (e.g., an archaeological feature at a site), the scale of scientific information retrieval also must be based on the standard archaeological unit for that context. A standard archaeological unit in this case means a cultural unit, such as a pithouse, fire pit, burial feature, or petroglyph panel (for which metric units would be used as appropriate).

In addition, the scale of scientific information retrieval must be proportional to the nature and extent of the prohibited conduct. For example, a small, shallow hole dug into a large pithouse would not warrant an archaeological value determination based on scientific information retrieval from the entire structure. If, on the other hand, a backhoe had been used to excavate most of the pithouse, scientific information retrieval for the entire structure may well be the appropriate scale. This proportionality concept relates the scale of scientific information retrieval to the magnitude of harm to the archaeological resource(s) resulting from the prohibited conduct.

Standard 3 - Methods of Scientific Information Retrieval

The methods of scientific information retrieval used as the basis for the archaeological value determination should be appropriate to the scale of the standard archaeological unit that has been selected. Depending on the conventions of archaeological practice in the area, examples of appropriate methods in a particular case involving unauthorized excavation would include a column sample, an excavation square, an excavation trench, a set of statistically based sample excavation units, or a block of contiguous excavation units. There also would be a comparable range of appropriate methods for cases involving other types of prohibited conduct.

In addition, the scientific information retrieval methods should be proportional to the nature and extent of the prohibited conduct. For example, the methods employed for scientific information retrieval from an entire pithouse would not be proportional contextually or justifiable scientifically relative to excavation of a small, shallow hole in the pithouse.

Standard 4 - Scientific Information Retrieval Standards

The methods of scientific information retrieval used as the basis for the archaeological value determination should meet current and customary professional standards appropriate to the archaeological resource, the archaeological context, and the standard archaeological unit in the region. The retrieval methods also should comply with applicable government agency standards (e.g., Secretary of the Interior's Standards and Guidelines) (Society for American Archaeology 2003).

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