

***Archaeological Resource Management Reports (ARMR):
Recommended Contents and Format
February 1990***

Preface

The California Office of Historic Preservation (OHP), under its state and federal mandates, has developed Archaeological Resource Management Reports (ARMR): Recommended Contents and Format (ARMR Guidelines) for the preparation and review of archaeological reports. The purpose of this guidance is to improve the quality of public archaeology in California. The ARMR Guidelines were developed to aid archaeological report preparation and review by ensuring that all needed data would be included and organized to optimize efficiency and utility. "Needed data" refers to information usually required by regulatory or review agencies and by the Information Centers of the California Archaeological Inventory. The checklist included with this guidance was developed as an additional means of rapidly assessing archaeological report quality.

It may be unnecessary to include all classes of information presented in this guidance in all reports. The content appropriate for any report should be determined by the type and scale of a project, by the nature and scheduling of cultural resources studies, and by the complexity of the resources and the information under consideration. Applicable federal or state laws and regulations, local ordinances and procedures may also determine appropriate report content.

Certain federal and state agencies routinely produce abbreviated reports adequate for management decisions. Some of the information discussed in this guidance (e.g., setting, research design, methods description) is presented in agency handbooks, manuals, guidelines, or overviews. Reference to these sources may be substituted in reports for an extended discussion of this information when routine or repetitive undertakings are involved.

Although these guidelines do not represent a state-mandated program, the OHP strongly urges anyone involved with public archaeology to read and use them. This guidance can be understood and effectively used by the professional archaeologist as well as by a broad spectrum of other professionals and decision-makers interested in ensuring that an investment in archaeology serves the public interest. Local governments in particular should adopt the guidelines as the standard according to which archaeological studies will be carried out, reported, and judged.

This guidance, and further guidance to follow, are major elements of the preservation planning process carried out by the OHP in accordance with its mandates. A central goal of this process is to ensure that land use planning at all levels of government routinely and affirmatively takes into account the needs and the value of historic properties. We hope this guidance will be an effective contribution toward attainment of that goal.

For copies of the ARMR guidelines, or further information on OHP programs and guidelines contact:

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Acknowledgements

The ARMR Guidelines is the product of many minds. Authored by Mr. Robert Jackson, the guidelines evolved from interim guidance developed by the author at the OHP. The guidelines also borrow from the Guidelines For Cultural Resource Management (CRM) Reports developed by Mr. Lester Ross and issued through the San Bernardino Archaeological Information Center.

Dr. Hans Kreutzberg devoted substantial editorial and organizational attention to the ARMR Guidelines, rendering the document intelligible to a broad spectrum of potential users. Mr. Thad Van Bueren provided valuable and substantial input on the document. Thanks also go to Ms. Dorene Clement and Mr. Nicholas Del Cioppo, Mr. Jim Woodward, and Dr. Michael Moratto for their review and editorial comments.

As a review agency, the OHP frequently offers critical comments that focus on problems of quality and consistency encountered in archaeological reports. While the ARMR Guidelines have been prepared to address such problems, it is important to acknowledge the many excellent archaeological reports that we have reviewed over the last several years. While too numerous for individual acknowledgement, the authors of these reports have provided models for specific topics presented in the ARMR Guidelines. To these authors we offer thanks and appreciation.

The cover illustration was drafted by Thad Van Bueren for the 1984 report Archaeological Investigations in the Sacramento River Canyon, Volume I: Report of Testing at Seven Aboriginal Sites, by Infotec Development, Incorporated. The California Department of Transportation, for whom the report was prepared, graciously consented to our use of the illustration.

Archaeological Resource Management Reports (ARMR):
Recommended Contents and Format

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I. Cover Letters

Adequate cover letters greatly facilitate review of ARM reports because they succinctly summarize the purpose and intent of the study. Cover letters are necessary for federal agency submissions to the Office of Historic Preservation or the Advisory Council on Historic Preservation. Unlike management summaries or abstracts, which are often prepared by a consultant, cover letters reflect the agency's views and requests of the reviewing entity on such issues as archaeological resource significance and management. Regardless of origin, cover letters should at a minimum:

- A. Provide the undertaking's name, location, and any identifying number.
- B. State the agency name and where applicable, district, region, section or branch.
- C. Briefly describe the undertaking, including:
 - 1. the type of undertaking (e.g., hydroelectric generating facility, highway widening, land exchange);
 - 2. the acreage of the area encompassed by the undertaking, or its length and width in the case of linear projects;
 - 3. the component parts of an undertaking and their land- and resource-disturbing potential; and
 - 4. undertaking schedules or other factors that have affected, or that may affect, the conduct of archaeological resource studies.
- D. Identify the law, regulation or agreement under which the document was prepared. These could include the National Historic Preservation Act (NHPA), the National Environmental Policy Act (NEPA), the California Environmental Quality Act (CEQA), or local laws and regulations. The letter should also identify the point that compliance with applicable laws and regulations has reached.
- E. Describe the phase of investigation addressed by the document or the type of documents submitted (e.g., inventory/identification report, research design or report on evaluation, treatment or management plan). Reference the specific type of investigation represented by the report. For instance, if the investigation is a survey, state also whether the survey was intensive, general, intuitive, etc.
- F. Describe the results of the investigation. If the document reports the results of survey/identification, include the number and types of properties identified (e.g., historic archaeological, prehistoric archaeological). In addition, the letter should:
 - 1. identify (by name) properties within and outside an Area of Potential Effects (APE) (if survey exceeds APE boundaries);
 - 2. identify properties that may and may not be affected by the undertaking;

3. note special circumstances (e.g., Native American or other public concerns, controversies, undertaking time constraints, political sensitivity).
- G. Indicate what action is being requested under the terms of applicable laws or regulations, and cite the specific section(s) of regulations to which the report is pertinent. Examples include requests for OHP consultation and concurrence in the adequacy of identification effort (36 CFR 800.4 [b]); requests for concurrence in National Register of Historic Places eligibility (36 CFR 800.4[c]); and requests for concurrence in determinations of effect (36 CFR 800.5). Include a description of further actions the agency anticipates taking to comply with pertinent laws such as CEQA or the NHPA. If the document addresses previous review comments, it may be appropriate to attach review comments to the cover letter.
 - H. Name the agency contact person most familiar with the undertaking and with archaeological resources studies who has authority to deal with issues raised during the course of review (e.g., agency cultural resource specialists who prepare the letters and reports). Include phone number.

II. Title Page

The National Park Service has developed, and is encouraging the use of, a National Archaeological Data Base (NADB) comprising an annotated bibliography of archaeological resource management (ARM) reports. If used extensively and consistently, the NADB can be a valuable and efficient tool for managing ARM information. Consistent information and format in title pages will greatly facilitate computer entry of NADB data. A title page consistent with NADB standards, as outlined below, is appropriate for all reports.

- A. List the authors. Include name, address, and phone number of any consulting firm.
- B. Date the report by month and year.
- C. Present the report title. Indicate the type of investigation conducted, undertaking name, location including county and city or equivalent designation.
- D. Identify the entity submitting the report, such as the consulting firm, agency, or group that prepared and submitted the document. The submitter and the author may be identical.
- E. Identify the party to whom the document was submitted (e.g., contracting or responsible party such as an agency, developer, or a lead agency under CEQA).
- F. Reference the contract number/federal agency permit number.
- G. Cite the U.S.G.S. topographic quadrangles depicting study area.
- H. List the acreage included in the study.
- I. List keywords. NADB accommodates a large number of key words. Appropriate content for the title page depends on the type and complexity of the report. Key words can

include site numbers, county, type of undertaking, type of archaeological study, place names, important diagnostic artifact type, presence of human burials, evaluation, no resources found (if appropriate), Information Center file number (Information Centers should supply number), number of acres surveyed, quads, etc.). Archaeological site trinomials, township, and range but not section) are required in the key words section. If there are a large number of sites reported, cite the report page(s) that list the site trinomials.

III. Table of Contents (appropriate if text of report exceeds 10 pages)

- A. List major report sections, subheadings, and appendices, with page numbers
- B. Provide a list of maps with page numbers.
- C. List figures with page numbers.
- D. List tables with page numbers.

IV. Management Summary/Abstract

This section is appropriate in any type of ARM report. The Management Summary/Abstract should be a succinct (one to five pages) abstract of the scope and findings of the report. While much of the information described in this section is duplicated in a cover letter, cover letters often are either discarded after agency review or separated from archaeological reports in agency files. The Management Summary should be written so that non-archaeological professionals and the public, as well as professional archaeologists, can understand it.

- A. Describe the purpose and scope of the archaeological investigation. Specify the type of study that was conducted (e.g., literature search, inventory, evaluation, data recovery).
- B. List the date(s) of the investigation.
- C. Summarize the major findings of the investigation. For example, if the document reports an archaeological survey, list the number and types of resources identified during the survey.
- D. If resources have been evaluated, summarize their significance as determined pursuant to Appendix K of CEQA: California Environmental Quality Act Statutes and Guidelines, the National Register of Historic Places criteria, or other standards as appropriate.
- E. Discuss how the undertaking affects significant resources.
- F. Describe constraints on the investigation (e.g., time, finances, logistics, vegetation, weather, landowner permission).
- G. Offer a summary of recommendations (e.g., evaluative test excavation, National Register eligibility recommendations, treatment recommendations).
- H. Describe the disposition of field notes, collections, and reports.

V. Undertaking Information/Introduction

Undertaking means the land- or resource-disturbing activity for which an ARM study is prepared. The nature of an undertaking can determine the nature of the ARM study. Information about the undertaking is needed to determine how important archaeological resources may be affected. How much information is appropriate for a given report may depend on what was included in previous reports for the undertaking, and on the scope and size of the undertaking. Some of the following topics may not be relevant to a given undertaking.

- A. Identify the contracting institution, contract number, permit number and expiration date.
- B. Explain why the study was undertaken, citing relevant Federal, State, and local laws. Mention any studies that preceded and recommended the present effort.
- C. Describe the undertaking, including the nature and extent of disturbance anticipated. If the undertaking consists of many features or facilities, identify and describe the nature and extent of its land- and resource-disturbing potential. Include:
 1. an undertaking location map consisting of photocopies of relevant portions of appropriate USGS quadrangles clearly delineating the undertaking boundaries. Indicate the undertaking name, quad name, quad scale, township/range, and sections on each copy.
 2. specific characteristics of the undertaking that influenced the nature of the ARM study. Include impact map(s) consisting of a photocopy of the undertaking location map (see above) that delineate areas of potential effects (APE), both direct and indirect. If appropriate, duplicate this map in Section XI, and include copies of planning maps, engineering drawings, architectural drawings, or artist's renderings that assist in defining the nature and extent of the undertaking.
- D. Include a schedule for the undertaking. Describe phases of planning and construction.
- E. Identify the geographical limits of the ARM study area in acres (e.g. the length and width of the survey area for linear undertakings). This area may or may not coincide with the undertaking area.
- F. Describe how personnel conducting the work were organized and list the active participants and their duties. Statements of qualifications are to be provided in an appendix. Identify the persons participating in the study such as Native American observers, monitors, and consultants, interested parties with special knowledge or expertise, and technical specialists.

VI. Setting

A description of the undertaking's setting includes a discussion of both the natural and cultural environments in which archaeological resources were created and used. The discussion of setting, whether physical or cultural, involves a review of existing data and literature.

A. Natural Setting

While appropriate for all archaeological investigations, descriptions of the area's physical environments should be scaled to the size (area) of the undertaking and the potential role of the environment in understanding archaeological resources that might be present. Archaeological resources can be important for reasons other than their research value, and an analysis of the natural setting may provide such reasons.

1. Identify the natural physiographic region and biotic communities found therein.
2. Describe the current natural environment of the general area including landforms, hydrology, geology, soils, climate, vegetation, and animal life, as appropriate. The location of culturally important resources such as outcrops of cryptocrystalline, reservoirs, townsites, etc., should also be discussed, as appropriate.
3. Describe the natural environment as it is believed to have existed during the temporal periods of occupations under investigation, if such information is available.
4. Describe current land use (e.g., agriculture, mining, recreation, residential).
5. Assess the current condition of the land within the area of the undertaking (e.g., relatively unmodified, partially disturbed by construction or improvements).

B. Cultural Setting

1. Provide an overview of the archaeology of the study area, with the level of detail scaled to the undertaking size and type. Existing overviews should be cited. Regardless of whether overviews exist, survey reports should include at least a brief summary of the prehistory of the study area, citing relevant information sources. As appropriate, include:
 - a. a review of the ethnographic information relevant to the study area, scaled to undertaking size and type. Consultation with the Native American Heritage Commission as well as interviews with knowledgeable consultants may be necessary.
 - b. a review of the history (which may or may not include ethnographic period information) of the study area, particularly when historic archaeological resources are or could be present. Again, the depth and extent of this review should be

scaled to the size and type of undertaking as well as the recognized patterns of historic land use.

2. For resource identification reports, evidence of a record search for known archaeological resources and previous ARM reports conducted at an Information Center of the California Archaeological Inventory should be included. Either a copy of the record search report performed by Information Center staff or the results of a records search performed by a professional consultant should be provided in an appendix.
3. If other documentary research is conducted, provide the names and addresses of institutions and other sources consulted and include copies of correspondence. Refer to the types of documents examined and briefly outline the results.

VII. Research Design

Research designs are explicit statements of the theoretical and methodological approaches to be followed in an archaeological study. Research designs should be included in almost every type of archaeological report, and should vary in nature and level of detail with the undertaking and investigation type. In some cases, research designs have been developed for specific geographic regions, types of investigations, or types of resources. At a minimum, such research designs should be included into ARM reports by reference. In other reports, project-specific research design sections are necessary (e.g., evaluative and data recovery excavations).

Research designs link theory, known information, research goals, and methods. The use of previously formulated research designs is acceptable if these designs are current and relate directly to the area and type of study under consideration. Predictive models are elements of a research design applicable to archaeological surveys. Predictive models are structured predictions concerning the types and locations of archaeological phenomena anticipated in an area.

- A. Discuss the theoretical basis of the proposed research. Cite or discuss the research paradigms under which the investigators are operating.
- B. Summarize previous research. A summary of important research questions pertinent to the study area or to identified resources should be presented, with particular emphasis on the identification of relevant data gaps. Statements appealing to generally recognized goals of archaeology or anthropology by themselves usually lack the detail necessary for an adequate research design.
- C. Present testable hypotheses or state the goals of the research. Any useful theoretical approach should be capable of generating testable hypotheses. A research design should present important research questions recognized for the region and relevant to the study, based on previous research.
- D. Identify the test implications of the hypotheses.
 1. Describe expected archaeological resource types, archaeological patterns, and data categories anticipated, as they relate to test implications. Discuss operational

definitions for archaeological resource types (and rationales for their use), if different from OHP definitions of archaeological sites, historic resources, and isolated artifacts or resources.

VIII. Methods

Methods of investigation must always be included in an ARM report. The length and detail of this presentation should be scaled to the type and scope of the investigation. Discuss methodological considerations (as distinguished from methods) relevant to the resource types present or anticipated in the study area. Discuss the kinds of methods appropriate to achieving the objectives of the study. Conversely, identify constraints and difficulties that hinder(ed) realization of these goals.

- A. If not offered previously, present definitions (and rationales for their use) of archaeological resource types. This is necessary when the definitions used for archaeological sites, historic resources, and isolated artifacts differ from those contained in the California Archaeological Inventory Handbook for Completing An Archaeological Site Record, distributed by the California OHP.
- B. Describe the data gathering methods employed (e.g., remote sensing data; surface survey; surface chemical analysis; sub-surface methods such as probing road and stream cuts or analyzing core probes). The methods description should provide details such as maps of survey transects, deployment of survey personnel, site recordation techniques, chemical analyses, subsurface test locations and methods, and remote sensing techniques.
 1. Describe specific research and sampling strategies employed, the rationale for their use, a description of how they were implemented, and how many person-hours/days were expended, if such information is available. If methods follow agency or professional standards, define or at least cite the source for the definition of the method (e.g. intensive, general, intuitive, cursory surveys).
 2. Using U.S.G.S quadrangles, show area(s) subject to investigation in relation to the Area of Potential Effects (APE) and project boundaries. For survey reports, depict areas surveyed, not surveyed, or surveyed using various strategies. Larger scale maps may also be appropriate to convey information regarding the nature of the investigation. Such maps can be included in an appendix (see section IX.A.2.b.).
 3. Provide a descriptive summary of the areas examined, noting undertaking areas that were not inspected in relationship to the sampling strategies employed, and why. Note the percentage of ground visibility for the areas inspected.
 4. Describe site recording procedures as appropriate.
 5. Describe the types and methods of excavation. Number each excavation location on a map of the site sufficiently detailed to depict the relationship between natural and archaeological features within the site.
 6. Describe cultural materials collected (if any), including methods of documentation and removal.

7. Describe measures undertaken or needed to restore archaeologically disturbed site areas when archaeological field studies are completed.

C. Indicate where collected materials, photographs, and other documents are curated. Curatorial agreements and reburial agreements should be provided in an appendix.

1. When photos or other documentation (e.g., remote sensing data) are not included in the report, name the repository where these data are stored. Provide appropriate reference numbers used to file and retrieve this data at the repository.
2. Discuss problems or constraints in conducting the research.

IX. Report of Findings

This section presents the information collected during the study. Thorough description of collected data is essential for the construction of meaningful and well-supported interpretations. When interpretations of data are mixed with or substituted for basic data presentations, the reader is left with no basis for independently assessing conclusions and inferences. It is therefore critical to explicitly separate data presentation from interpretation of those results whenever possible. Specific descriptive requirements for particular types of ARM studies are outlined below.

A. Archaeological Resource Inventory Reports

1. If no archaeological resources were located, their absence should be explicitly noted.
2. If resources were previously reported or anticipated but were not located, discuss the possible environmental and cultural factors that may have hidden or destroyed the resources.
3. Archaeological resources identified.
 - a. Provide information regarding the archaeological resources that were observed and recorded, including:
 - i. prehistoric archaeological sites (i.e., primarily surface and subsurface properties);
 - ii. historic archaeological sites;
 - iii. isolated artifacts.
 - b. Recent or contemporary resources (e.g., modern roads, power lines, structures) noted but not formally recorded might also be discussed and included on a map, although such information may not be appropriate or necessary, and is usually not confidential.
 - c. The following maps should generally be included in a report on the results of inventory. Maps depicting archaeological site locations should not be included in reports that will be publicly circulated. The following types of maps might be placed in a separate appendix:

- i. if not already presented (see section VIII.B.2.) area(s) subject to investigation in relation to the Area of Potential Effects (APE) and project boundaries on appropriate U.S.G.S. quadrangles (7.5 or 15 minute series). For survey reports, depict areas surveyed, not surveyed, or surveyed using various strategies. Larger scale maps may also be appropriate to convey information regarding the nature of the investigation.
 - ii. U.S.G.S quadrangle maps showing archaeological resource locations recorded during survey.
 - iii. archaeological resource sketch maps (if the report involves survey) consistent in content and quality with the standards established in the California Archaeological Inventory Handbook for Completing an Archaeological Site Record distributed by the California OHP. If archaeological site records are provided in a detachable appendix to the report, sketch maps may be included with the site records.
 - iv. archaeological site contour maps depicting topographic and archaeological details, and surface and subsurface study locations should be provided, if available, although such maps often are not prepared for inventory reports.
- d. Describe archaeological resources. Provide a description of each resource listed under "Archaeological Resources Observed."
- i. For each archaeological resource, complete a California Archaeological Inventory form (DPR 422A), using the California Archeological Inventory, Handbook For Completing An Archeological Site Record available from the OHP. Insert forms in a confidential Archaeological Resources appendix. Prior to completing the report, submit two copies of each form to the appropriate Information Center of the California Archeological Inventory, requesting state trinomial numbers for each recorded site.
 - ii. If isolated prehistoric resources are recorded, complete one copy of the California Archaeological Isolated Artifact form (DPR 422H) and insert in a confidential Isolated Resources appendix. The OHP encourages the recording of isolated artifacts.
 - iii. Provide a master map (photocopy of appropriate USGS quadrangle) depicting the locations of all archaeological resources. It may not be appropriate to include maps of archaeological resource locations in the body of the report if the report is available to the general public. Archaeological resource locations should appear only in confidential appendices (see Section IX.A.3.c.).

B. Archaeological Excavation Reports

Excavation can occur during any phase of archaeological investigation, including inventory. The description of excavation during these various phases should be scaled to the size of the excavation, the importance of the information to the objectives of the study, and the abundance and quality of information resulting from the excavation. In

terms of data presentation, no distinction is made here between excavation conducted for evaluative purposes and excavation performed as a data recovery or mitigation phase. Data and interpretation should be presented separately when possible. Summarize the results of lengthy, appended special studies.

1. Describe the physical context of the archaeological deposit, including:
 - a. site topography and geomorphology (if not addressed in Setting)
 - b. soil type, structure, chemistry, stratigraphy and their relationship to surrounding soils. Summarize results of special studies such as particle size analysis and soil chemistry, and include a copy of special studies reports in an appendix.
 - i. non-cultural soil constituents (floral, faunal). Include a summary of special studies and insert reports in an appendix;
 - ii. anthropic soils and stratigraphic relationships.
 - c. profiles of excavation units, trenches, or auger borings, as appropriate,
2. Describe archaeological features. Functional ascriptions/interpretations, such as hearth, oven, housepit, may be unavoidable at this level of data presentation. It may be appropriate to discuss the relationship between feature and non-feature archaeological material distributions (e.g., the relationship between midden deposits and ovens or housepits).
 - a. Describe physical evidence including location, dimensions, attributes, and associations.
 - b. Provide or reference illustrations and photographs of features.
 - c. Either present in full or summarize the results of special studies related to features (e.g., radiocarbon, flotation, micro-constituent analysis, chemical analysis).
3. Enumerate and describe artifacts by material type and artifact class (e.g., flaked-stone). Avoid typological ascriptions that impose or imply function or chronological association in the initial description. For example, biface, uniface, or modified flake is preferable to knife, scraper, or used flake. Such interpretations can follow in a separate subsection, as described below.
 - a. Discuss typological consideration of artifacts such as stone tools, beads, bone and groundstone tools, and historic materials.
 - b. Include illustrations/photographs of formal artifacts. These can be included in an appendix.
 - c. Present the results of analyses of artifact manufacture and use (e.g., flaked-stone manufacturing technology, use-wear studies, pottery analysis, basketry identification). Extensive and detailed analyses may be included in appendices. A summary of the results of these studies should be presented in the body of the

report. Such studies should define analytic methods and distinguishing traits of analytic categories. For example, if a flaked-stone analysis involved the identification of different types of flakes, then the attributes that define such flake types should be reported. References to previous analyses should not supplant basic descriptions of methods and analytic categories.

- d. Present the results of analyses such as radiocarbon dating, obsidian source and hydration studies, thermoluminescence dating, geomagnetic studies, pollen analysis, blood protein analysis, and others.
4. Describe non-artifactual archaeological material that reflects past human activities (e.g., burned seeds, charred animal bone), and materials that provide information on past environments or exploited resources (e.g., pollen).
 - a. Include identification studies for floral and faunal remains, with interpretations regarding the kinds and amounts of resources used, consumed, etc.
 - b. Present the results of physical analyses such as pollen, microconstituent analysis (flotation, coprolite studies).
 5. Describe the context of discovery, examination, and disposition of human remains, if any. Given the often sensitive nature of human remains, examination and treatment of such remains will depend on the outcome of consultation with appropriate Native American representatives and the decisions of land owners regarding the disposition of human remains. Therefore, whether and how human remains and associated grave goods are examined may vary greatly. Similarly, the nature and extent of reporting on the treatment of human remains may vary with the nature of Native American concerns. It may not be possible or appropriate to maintain rigid reporting standards. In general however, the following information is desirable from an archaeological and management standpoint.
 - a. Describe the context of the discovery of human remains. For example, describe if a human burial discovered during excavation was expected, based on consultant information or archaeological indicators.
 - b. Describe measures taken pursuant to state law, local ordinance, agreement, and/or agency policy regarding human remains.
 - c. Describe efforts to consult with the Native American Heritage Commission, appropriate Native American representatives or living descendants, county coroner, landowners, etc.
 - d. Describe outcome of discussions regarding disposition of human remains.
 - e. Describe actions taken with regard to the study of human remains, i.e., exposure, exhumation, analysis, reburial in-situ, reburial after exhumation.
 - i. Describe the location, physical position, orientation, and nature of the remains (e.g., primary inhumation, cremation). Include a description of grave associations and the physical/contextual relationships between human remains and associated artifacts. For example, describe if artifacts were

overlying or underlying the human remains in a patterned arrangement, or were found within burial pit fill.

- ii. Report the results of analyses, including specialists' reports in an appendix. Description of the remains and reporting the results of any analyses may occur under the reporting of archaeological features (Section IX.B.1.g.).
 - iii. Include photographs and illustrations.
 - iv. Record/report the reburial location on a New Deposit/Redeposit Record (DPR 422I). Such information should be included in a confidential appendix and treated in a manner sensitive to the desires of the most likely descendants of the human remains.
6. Describe the spatial distribution and patterning of cultural material by class (e.g., flaked-stone, bone). Present data on the intrasite distribution of cultural materials, i.e., vertical and horizontal stratigraphy, assisted by data tables.

X. Discussion/Interpretation

Descriptive data presented above should be discussed and interpreted with explicit reference to the research design or study objectives defined earlier in the report. In addition, unanticipated data recovered during the study may warrant discussion of additional research topics not included in the research design.

- A. Discuss results of the investigation as they relate to specific topics and questions presented in research design. Preferably, organize the discussion according to the structure of the research questions, hypotheses, and test implications presented in the research design.
- B. Discuss the results of the study in terms of the general research objectives of the study (e.g., settlement patterns, subsistence, change through time). This discussion should place the investigation in a regional context, noting its role or contribution to an understanding of local, regional, state, or national history or prehistory.

XI. Management Considerations

The discussion of management topics should address the management goals of the study in a manner that is consistent with the specific regulatory process relevant to the ARM study. For example, an inventory report should discuss how complete the study was, the likelihood that additional resources are present in an undertaking APE, and measures that would be necessary to identify such resources. Unfortunately, terminology for similar procedures varies among local, state and federal guidelines or regulations. For example, an archaeological site might be considered National Register eligible under the Section 106 process and significant under the Appendix K Guidelines for CEQA. The terms used in an ARM report should be consistent with the terms defined in the relevant guidelines or regulations.

A. Inventory Reports

1. Identify the management status of resources identified during the study. For example, list archaeological properties that have been determined National Register eligible, important, unimportant, and those that have not been evaluated. If previously recorded and/or evaluated archaeological resources were identified, provide a list of these resources.
2. Describe the completeness of the study and the likelihood that additional, unidentified resources may be present.
3. Outline needs for further management action, such as additional field survey, evaluation of resources, or no further study.

B. Evaluation Reports

Resource evaluation is the cornerstone of the current ARM environment. The outcome of evaluation determines which resources will and will not be protected or considered further. Thoughtful evaluation also establishes the importance of archaeological resources and influences the type of consideration they are afforded.

1. Provide a detailed discussion addressing the significance or uniqueness of each archaeological resource using the criteria for evaluation employed in CEQA: California Environmental Quality Act Statutes and Guidelines, Appendix K or 36 CFR 60.4, as appropriate. Critically consider the full complement of potential reasons (criteria) why a property might be considered important, not simply the most obvious or prominent.
 - a. Consider the role of setting as a contributor to the importance of the resource. Archaeological resources can be eligible for the NRHP under 36 CFR 60.4(a) for their association with events that have contributed to the broad patterns of history or prehistory, under 36 CFR 60.4(c) because they embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value. Under these criteria, setting may contribute substantially to the importance of the resource.
 - b. Describe the integrity of each archaeological resource including an estimate of the percentage of the resource that is disturbed or remains. A consideration of integrity should relate to the reasons a resource is determined important. Thus, the environmental setting or surface of an archaeological site can be completely destroyed or disturbed yet the site may retain integrity if it is important only for the information its subsurface component contains.
 - c. Identify the characteristics and areas of a resource that do and do not contribute to its importance. If the resource is a National Register district, identify the contributing and non-contributing properties within the district and describe the nature of their contribution, to the extent known.

- i. Present clear evidence that information from the resources can address or contribute to the resolution of important, specific research questions outlined in the research design.
- ii. Summarize or reference, as appropriate, the evidence that indicates the resource contains in appropriate contexts and in sufficient quantity and quality, the material needed to meet the data requirements of the stated hypotheses or research questions documented in Sections IX and X above.
- iii. Evaluate each resource in terms of its overall potential to address important questions or fill data gaps. Compare the resource to others in its local or regional context to determine how much it can help to achieve stated research goals.

C. Assess Effects.

Determining the nature of an undertaking's effects on an archaeological site depends on knowing what makes an archaeological resource important, and what specific ground disturbances or other physical changes are proposed.

For example, two projects may both involve grading. In one case, grading will disturb an archaeological resource important because of the information that it contains. In the other case, grading will disturb an archaeological resource important because it visibly represents a particular human adaptation to specific environmental challenges. In the first case, the assessment of effects might conclude that the information can be acceptably recovered through archaeological excavation. In the second case, there is no way to preserve the association between the site and its surroundings if grading occurs, and the effect of the grading might be considered adverse. The difference in the effect determination is due to the different reasons the archaeological sites were determined important.

The focus of an ARM report (inventory, evaluation, etc.) and what phase of the undertaking is involved will largely determine whether or not an assessment of effects can be included in the report. Lack of project design information or unevaluated resources are just two of many factors that could preclude an assessment of effects.

1. Discuss or reference a previous discussion of the general undertaking (see Section V-D). Discuss the likely effects the undertaking may have on each important archaeological resource. Use appropriate regulatory language and reference the local, state, or federal regulations or guidelines under which the effects of the undertaking are determined. Explain each determination.
 - a. Discuss anticipated direct and indirect impacts to archaeological resources. Direct impacts include destruction, alteration, and isolation of the property of its setting, when setting is a characteristic contributing to the importance of the resource. While 36 CFR Part 800 does not distinguish between direct and indirect effects, anticipated indirect impacts of an undertaking should be presented. Indirect impacts could include growth inducement, increased public use, erosion of resources outside the undertaking area. It is also appropriate to discuss beneficial effects in addition to adverse effects.

2. For reports involving multiple resources, include a table listing all resources. Provide your opinion on the importance of each resource and identify the effect of the undertaking on each (e.g., no effect, effect, no adverse effect, adverse effect).

D. Consider Alternatives and Propose Management Actions

1. For each significant or unique resource that may be affected, discuss a range of possible measures to avoid or minimize an adverse effect. Examples include:
 - a. relocation or redesign of the undertaking;
 - b. preservation measures (e.g., site burial, erosion slope stabilization, vegetation cover, signing, public access restrictions, site monitoring);
 - c. data recovery for portions of selected resources; and
 - d. no undertaking.
2. Discuss the preferred alternative offering a rationale for this preference. This discussion may address the merits of the undertaking, the mission and needs of the agency, etc.

E. Recommendations/Proposals

Recommendations and proposals for further action can take a wide variety of forms depending on the nature of the ARM study and the undertaking.

1. Inventory Reports

- a. Inventory complete. Inventory reports may conclude that efforts to locate archaeological resources have been sufficient. The inventory may lead to one of the following conclusions and recommendations:
 - i. No resources were identified. The proposed undertaking does not involve or affect archaeological resources.
 - ii. Resources are present. Depending on the type of resources involved and the type of undertaking proposed, one of the following recommendations may be appropriate:
 - Only unimportant resources are present. No further consideration is necessary.
 - Archaeological resources are present but because of preventive measures, will not be affected by the undertaking.
 - Archaeological resources are present. Evaluation of these resources is necessary.

- Sufficient information exists to evaluate resources. Offer recommendations regarding the importance of the resources. Often this is not possible for archaeological deposits on the basis on surface inspection alone.
 - b. Inventory incomplete. An initial effort to locate archaeological resources may reveal that a different level of effort or additional inventory work is necessary. This section should identify the constraints, limitations, or rationale behind the recommendation for additional work and offer specific recommendations for additional inventory.
2. Evaluation Reports
- a. Evaluation results are summarized and conclusions or recommendations regarding the importance of archaeological resources are presented. When necessary, insert the following sorts of items in a confidential appendix:
 - i. State Historical Landmarks nominations.
 - ii. National Register of Historic Places nominations.
 - iii. National Register eligibility opinions.
 - iv. Opinions on the importance of the resources under CEQA.
 - b. Provide conclusions regarding the effect of the undertaking on important archaeological resources (e.g., no effect, no adverse effect, adverse effect). Recommend further studies or actions such as mitigation or other treatment for identified effects.
3. Treatment Reports
- a. After mitigation, such as data recovery, has been completed, state whether the resource retains significance and propose additional measures needed to protect the resource or to recover additional significant information.
 - b. Discuss how effectively the treatment program met expectations.

XII. References (Use of American Antiquity format is encouraged).

XIII. Appendices

Depending on the type and purpose of the archaeological report, some of the following information may or may not be appropriate. In addition, investigators preparing archaeological reports for publication or wide distribution in addition to regulatory review, may wish to exclude some of the administrative information from the body of the report and instead include such information as a detached appendices or attachments.

- A. Personnel qualification statements, briefs, or resumes.

- B. Record search results.
 - 1. Provide a copy of the Information Center record search, if conducted by Information Center staff.
 - 2. If a records search is conducted at an Information Center by a qualified consultant, provide a copy of a receipt or evidence of such a search as well as a report of the results of that search, if not already included in the report. Archaeological site locations must not be disclosed in documents accessible to the general public. Confidential appendices that report site locations should contain statements requesting that their distribution be carefully controlled (see Section XIV).
- C. Repository agreements.
- D. Reviewer comments/agency correspondence.
- E. Artifact/Collection catalog.
- F. Artifact illustrations (if not in body of text).
- G. Photographs and photo records.
- H. Native American observer or monitor agreements.
- I. Maps (non-confidential) and undertaking plans, drawings, etc.
- J. Special studies/technical reports.

XIV. Confidential Appendices

Archaeological and sensitive Native American site locations and maps should not be included in copies of reports for general distribution. Archaeological site locations are exempted from the California Freedom of Information Act, as specified in Government Code 6254.10. However, review and regulatory agencies often need such information for management purposes. The placement of such information in a Confidential Appendix fulfills that need.

- A. General Historical and Archaeological Resource Location Map (depicting locations of all properties within a study area).
- B. Resource Inventory Records.
 - 1. Historic Resources Inventory forms and maps (consistent with DPR 523).
 - 2. Archaeological Site Record forms and maps (consistent with DPR 422).
 - 3. Isolated Artifact forms and maps.
- C. Native American sacred site location maps or descriptions, if regarded as sensitive. If not obtained from the Native American Heritage Commission (NAHC), disclosure of such

information should occur only after coordinating with the NAHC and with appropriate groups and individuals recommended by the NAHC.

D. Heritage Nomination Forms.

1. National Register of Historic Places forms.
2. National Historic Landmark forms.
3. Registered State Historical Landmark forms.
4. State Point of Historical Interest forms.

XV. Further Reading and Guidance - Selected References

The following references are recommended for further information and guidance. Copies of many of these references, or information on their availability, can be obtained from the California Office of Historic Preservation, P.O. Box 942896, 1416 Ninth Street, Sacramento, California 94296-0001, (916) 445-8006.

Laws and Regulations

National Historic Preservation Act of 1966. Public Law 89-665; STAT. 915; U.S.C. 470, as amended by Public Law 91-243, Public Law 94-458, Public Law 96-199, Public Law 96-244, and Public Law 96-515.

Protection of Historic Properties (36 CFR Part 800). Federal Register, Vol. 51, No. 169. September 1986.

National Register of Historic Places (36 CFR Part 60).

National Register of Historic Places (36 CFR Parts 60 and 63). Proposed Rule. Federal Register, Vol. 51, No. 150. August 5, 1986.

Curation of Federally-Owned and Administered Archeological Collections (36 CFR 79). Proposed Rule. Federal Register, Vol. 52, No. 167. August 28, 1987.

Uniform Rules and Regulations: Archeological Resources Protection Act of 1979 (43 CFR Part 7). Federal Register, Vol. 43, No. 4. January 6, 1984.

CEQA: California Environmental Quality Act Statutes and Guidelines. Office of Planning and Research, Office of Permit Assistance, Sacramento, California, 1986.

California Health and Safety Code, Section 7050.5.

California Public Resources Code, Section 5097.

Department of the Interior Guidance

Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation. Federal Register, Vol. 48, No. 190, September 29, 1983.

Guidelines for Federal Agency Responsibilities under Section 110 of the National Historic Preservation Act. Federal Register, Vol. 53, No. 31. February 17, 1988.

The Section 110 Guidelines: Annotated Guidelines for Federal Agency Responsibilities under Section 110 of the National Historic Preservation Act. Jointly issued by the Advisory Council on Historic Preservation and the National Park Service, U.S. Department of the Interior, Washington, D.C. 1989.

The Curation and Management of Archeological Collections: A Pilot Study. Alexander J. Lindsay, et al. Cultural Resources Management Series. U.S. Department of the Interior, Washington, D.C. September 1980.

Archeological Survey: Methods and Uses. Thomas F. King. National Park Service, U.S. Department of the Interior, Washington, D.C. 1978.

Using UTM Grid System to Record Historic Sites. Heritage Conservation and Recreation Service, U.S. Department of the Interior, Washington, D.C. 1980.

How to Apply the National Register Criteria for Evaluation. (Bulletin 15). National Park Service, U.S. Department of the Interior, Washington, D.C. 1982.

National Register Bulletin Series. National Park Service, Department of the Interior, Washington, D.C.

Quantifying the Present and Predicting the Past: Theory, Method, and Application of Archaeological Predictive Modeling; Bureau of Land Management, U.S. Department of the Interior, Washington, D.C. 1987.

Advisory Council on Historic Preservation Guidance

Section 106, Step-by-Step. Advisory Council on Historic Preservation, Washington, D.C. 1986.

Treatment of Archeological Properties: A Handbook. Advisory Council on Historic Preservation, Washington, D.C. 1981.

Fact Sheet: A Five-Minute Look at Section 106 Review. Advisory Council on Historic Preservation, Washington, D.C. 1988.

Fact Sheet: Programmatic Agreements under Section 106. Advisory Council on Historic Preservation, Washington, D.C. 1988.

Fact Sheet: Section 106 Participation by Applicants for and Recipients of Federal Assistance, Permits, and Licenses. Advisory Council on Historic Preservation, Washington, D.C. 1988.

Fact Sheet: Section 106 Participation by Indian Tribes and Other Native Americans. Advisory Council on Historic Preservation, Washington, D.C. 1988.

Fact Sheet: Section 106 Participation by Local Governments. Advisory Council on Historic Preservation, Washington, D.C. 1988.

Identification of Historic Properties: A Decisionmaking Guide for Managers. Advisory Council on Historic Preservation, Washington, D.C. 1988.

Public Participation in Section 106 Review: A Guide for Agency Officials. Advisory Council on Historic Preservation, Washington, D.C. 1989.

Preparing Agreement Documents. Advisory Council on Historic Preservation, Washington, D.C. 1989.

Federal Historic Preservation Case Law -- A Special Report. Advisory Council on Historic Preservation, Washington, D.C.

Recommended Outline: Ideal Data Recovery Plan. Advisory Council on Historic Preservation, Washington, D.C.

Where to Look: A Guide to Preservation Information. Advisory Council on Historic Preservation, Washington, D.C. 1983.

Miscellaneous Guidance and Readings

Appendix K, Archaeological Impacts. In CEQA: California Environmental Quality Act Statutes and Guidelines. Office of Planning and Research, Office of Permit Assistance, Sacramento, California, 1986.

Scholars as Contractors. William J. Mayer-Oakes and Alice W. Portnoy, editors. Cultural Resource Management Studies. National Park Service, U.S. Department of the Interior, Washington, D.C. 1979.

Scholars as Managers, or How the Managers Can Do It Better. Alice W. Portnoy, editor. National Park Service, U.S. Department of the Interior, Washington, D.C. 1979.

Guidelines for Cultural Resource Management (CRM) Reports. San Bernardino County Archaeological Information Center, San Bernardino, California.

California Archaeological Inventory Handbook for Completing An Archaeological Site Record. California Office of Historic Preservation, Sacramento, California. 1989.

California Archaeological Site Inventory Information Center Procedural Manual. California Office of Historic Preservation, Sacramento, California.

California Archaeological Resource Identification and Data Acquisition Program: Sparse Lithic Scatters. California Office of Historic Preservation, Sacramento, California, 1988.

Checklist for Preparing and Reviewing Archaeological Resource Management Reports

Name of Undertaking:

Name of Report:

Reviewer/Agency: Date:

- I. Cover Letters (see page 1 of ARMR Guidelines)
 - A. Provide the undertaking's name and location, and any identifying number.
 - B. State agency name and where applicable, district, region, section, or branch.
 - C. Briefly describe the undertaking (type, acreage, components, scheduling).
 - D. Describe the point that compliance with historic preservation law has reached.
 - E. Describe the phase and/or type of investigation addressed by the document.
 - F. Describe the results of the investigation.
 - G. Indicate what compliance action is being requested under applicable laws.
 - H. Name agency contact person administering, or most familiar with the undertaking and study.

- II. Title Page (page 2)
 - A. List the authors and consulting firm.
 - B. Date the report by month and year.
 - C. Present the report title.
 - D. Identify the entity (e.g., agency, local government) submitting the report.
 - E. Identify the party to whom the document was submitted and contract number, if any.
 - F. Reference the contract number/federal agency permit number.
 - G. Cite the U.S.G.S. topographic quadrangles depicting study area.
 - H. List the acreage included in the study.
 - I. List keywords.

- III. Table of Contents (if text of report exceeds 10 pages [see page 3])
 - A. List major report sections, subheadings, and appendices, with page numbers.
 - B. Provide a list of maps with page numbers.
 - C. List figures with page numbers.
 - D. List tables with page numbers.

- IV. Management Summary/Abstract (page 3)
 - A. Describe the purpose and scope of the archaeological investigation.
 - B. List the date(s) of the investigation.
 - C. Summarize the major findings of the investigation.
 - D. If resources have been evaluated, summarize their significance/uniqueness.
 - E. Discuss how the undertaking affects significant resources.
 - F. Describe constraints on the investigation (e.g., time, finances, logistics).
 - G. Offer a summary of recommendations.
 - H. Describe the disposition of field notes, collections, and reports.

- V. Undertaking Information/Introduction (page 4 of ARMR Guidelines)
 - A. Identify the contracting institution, contract and permit numbers, etc.
 - B. Explain why the study was conducted.
 - C. Describe the undertaking (include maps).
 - D. Include a schedule for the undertaking.
 - E. Identify the geographical limits of ARM study area.
 - F. Describe how personnel were organized and list participants (qualifications in appendix).

- VI. Setting (page 4)
 - A. Natural Setting (e.g., landforms, geology, soils, flora, fauna; current land use).
 - B. Cultural Setting (include records and literature search results).

- VII. Research Design (page 6)
 - A. Discuss the theoretical basis of the proposed research.
 - B. Summarize previous research.
 - C. Present testable hypotheses or state the research goals.
 - D. Identify the test implications of the hypotheses or expected archaeological information.

- VIII. Methods (page 6)
 - A. Present definitions for archaeological resource types.
 - B. Describe the methods employed and map the areas investigated.
 - C. Indicate where collected materials, photos, etc., are curated.

- IX. Report of Findings (page 8)
 - A. Archaeological Resource Inventory Reports
 - 1. Present results (list resources present or absent).
 - 2. Include site records and location maps in confidential appendices.

 - B. Archaeological Excavation Reports
 - 1. Describe the physical context of the archaeological deposit.
 - 2. Describe archaeological features, artifacts, materials (ecofacts).
 - 3. Describe the discovery, examination, and disposition of human remains.

- X. Discussion/Interpretation (page 12)
 - A. Discuss results of the investigation as they relate to specific research design items.
 - B. Discuss results of the study in terms of general research objectives.

- XI. Management Considerations (page 12)
 - A. Inventory Reports
 - 1. Identify the management status of resources identified during the study.

- 2. Describe the completeness of the study and likelihood of unidentified resources.
- 3. Outline the need for further management actions.

- B. Evaluation Reports
 - 1. Discuss significance or uniqueness of each archaeological resource.
 - 2. Discuss the integrity of each archaeological resource.

- C. Assess Effects

- C. Consider Alternatives/Proposed Management Actions
 - 1. Discuss possible measures to avoid/minimize impacts to resources.
 - 2. Discuss the preferred alternative and rationale behind the preference.

- E. Recommendations/Proposals

- XII. References (page 16)

- XIII. Appendices (Include sections listed below as appropriate, page 16).
 - A. Personnel qualifications (provide briefs or resumes)
 - B. Record search results.
 - C. Repository agreements.
 - D. Reviewers comments/agency correspondence.
 - E. Artifact/Collection catalog.
 - F. Artifact illustrations (if not in body of text).
 - G. Photographs and photo records.
 - H. Native American observer or monitor agreements.
 - I. Maps (non-confidential) and undertaking plans, drawings, etc.
 - J. Special studies/technical reports.

- XIV. Confidential Appendices (page 17)
 - A. Historical and Archaeological Resource Location Maps
 - B. Resource Inventory Records for archaeological sites and historic structures.
 - C. Native American sacred site location maps or descriptions.
 - D. Heritage Nomination forms.

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