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Suggestions for Preparing Archaeological Site Records and Site Maps

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INTRODUCTION

CAL FIRE has identified a need for an instructional manual for the preparation of Archaeological Site Records. Since I have conducted numerous archaeological field surveys, project reviews, and site recording projects for CAL FIRE during the past several years and am familiar with common problems observed by CAL FIRE during their review of site records, I was asked to prepare this manual. CAL FIRE has played an important role in the development of the archaeological site recording procedures currently employed in California. This agency has also been a strong supporter of programs and policies leading to improvements in the overall quality of site records being produced in our state. This site recording manual was prepared for use in CAL FIRE's Archaeological Training Program. It is also published in the CAL FIRE Archaeological Reports series and posted on the CAL FIRE Archaeology Program Web Site to reach a broader audience including professional archaeologists. We believe this information may prove to be useful to anyone responsible for recording historical resources.

The California State Office of Historic Preservation (OHP) has established a unified system for documenting the full range of historical resources that can be found within the state. This system employs a variety of forms beginning with the Primary Record, which is used to collect fundamental information on all types of resources. Additional forms are then utilized depending on the type of resource being recorded such as the Building, Structure, Object Record, the Archaeological Site Record, and the District Record. Optional attachments to these forms including the Linear Feature Record, Milling Station Record, Rock Art Record, Artifact Record, and Photograph Record, can then be utilized as necessary. OHP has provided a manual entitled Instructions for Recording Historical Resources (1995) that establishes criteria on the kinds of resources that should be recorded and the different levels of information that may be appropriate to gather on any specific type of resource. This manual also provides detailed step-by-step instructions for completing the various forms. The OHP manual should be referred to for the specific requirements needed to complete these forms and all records should be filled out in accordance with these instructions.

The OHP manual does not, however, provide any instructions for acquiring the information needed to complete these forms. The instructions in the OHP manual are directed primarily at the experienced field-worker, and assume a basic knowledge of archaeological field techniques. The intended purpose of the current presentation is to provide guidelines and technical assistance for conducting the actual fieldwork necessary to gather this information, and then transforming this information into a completed site record. This presentation focuses on the completion of the Primary Record and the Archaeological Site Record. Special emphasis has been placed on the preparation of archaeological site maps. This presentation does not cover the other types of resource documentation forms. It is the goal of CAL FIRE to provide the assistance necessary to enhance the efforts put forward in archaeological fieldwork towards the completion of professional quality Archaeological Site Records.

There are a great variety of methods that can be employed in the recording of archaeological sites. Some of these techniques do not require any special knowledge or expensive equipment. Some of the topics that will be covered in this presentation include useful equipment and supplies, methods of measurement, site survey strategies, designation of site boundaries, site descriptions, location information, environmental observations, site naming conventions, site mapping techniques, and the completion of the final site record forms. A completed site record for a fictitious archaeological site is included as an example of the results that can be attained by following the techniques described here. Some of the information in this presentation may seem rudimentary, but it has been included for the

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benefit of those who may be undertaking archaeological fieldwork for the first time. Regardless of your level of expertise, hopefully some information can be found here that may prove helpful to anyone recording archaeological sites in California.

ARCHAEOLOGICAL SITE RECORDS

The Archaeological Site Record represents the most basic and fundamental means of obtaining and preserving information on archaeological sites. Essential components of any site record should include a site name, identification number, location, description, size, type, constituents, environment, integrity, significance, landowner, name of recorder, recording date, and references (Feder 1997:68). It is not unusual for a site record to be the only documentation that will ever be available for a site (OHP 1989:2). You might be the only person to have an opportunity to investigate a particular site, and your record might be the only documentation of that site that is ever prepared. The Archaeological Site Record and in particular the Site Map, are vital tools for implementing successful site protection measures during project operations. These are just some of the reasons why it is critically important that complete Archaeological Site Records be prepared for all sites when they are encountered.

A variety of definitions can be cited as to what exactly constitutes an archaeological site (Feder 1997:42; Foster and Dillon 1999:3; Heizer and Graham 1967:14; King 1978:2-3; National Register Bulletin 1997:15; OHP 1995:3; Thomas 1998:95). Generally, these definitions can be summarized as any specific location where physical evidence of past human activities can be identified. Sites can contain various forms of evidence including cultural features, artifacts, or anthropic soils. Some common prehistoric site types include villages, temporary campsites, rock shelters and caves, quarries, bedrock milling features, and petroglyphs. A considerable number of historic site types can also be encountered, largely depending on the types of historic activities that occurred in any particular region. Some of the more common historic site types found on forested lands in California include habitation areas, structural remains, trash scatters, privy pits, mines and tailings, sawmills, railroad grades, wooden log chutes, roads, trails, ditches, rock walls, fences, and cemeteries. The following guidelines represent a systematic procedure for gathering the necessary information to prepare complete Archaeological Site Records for some of these types of resources.

EQUIPMENT AND SUPPLIES

Before undertaking any archaeological investigation, the field-worker should be outfitted with the necessary tools and materials to carry out the intended project. The following list provides a brief discussion of some equipment and supplies that can typically be employed during the recording and mapping of archaeological sites. Many of these items are based on individual techniques and personal preferences. A plethora of modern high-tech equipment is available that could be used in site recording activities, but I have focused instead on some simple methods that can be carried out by anyone with these basic tools.

USGS Map: The appropriate USGS 7.5' quadrangle maps covering your project area are essential for both archaeological survey and site recording work. Original map sheets should be used whenever possible. Details of map features that can be important aids in plotting site locations are lost on black and white photocopies. If maps are to be used over an extended period, it is a good idea to carry them in a flexible vinyl case such as those available for aerial photographs.

Compass: One of the most important tools for fieldwork is an accurate compass. The mirror-sighting base-plate compass is widely used by field archaeologists. Good quality instruments are available from Silva and Suunto. The base-plate compass combines the functions of a compass, protractor, and straight edge, which can be extremely helpful when drafting site maps in the field. Many of these compasses can also be adjusted for declination.

Measuring Tape: A retractable steel tape is necessary for measuring individual finds. Metric measurements are required when recording prehistoric archaeological sites. Tapes which combine both the English and Metric systems are available from Stanley and Lufkin. A longer fiberglass tape can be useful for measuring large features or precise distances to important finds.

Flagging: Bright fluorescent-colored flagging can be used for marking the location of individual features and artifacts as they are encountered. Other specially marked flagging, such as "Special Treatment Zone" or "Equipment Exclusion Zone" are often used for designating site boundaries.

Sharpie: A waterproof marking pen, such as a Sharpie, can be used to label flagging that designates individual features and artifacts.

Pencils: All field notes and drafting should be executed in pencil. Berol Turquoise is a quality brand of drafting pencils with good consistency in lead weights and non-smearing properties. The standard 2H lead weight is good for taking notes. A harder 3H will hold a sharp point longer for drafting maps. The softer H lead weight may be needed under extremely humid conditions. A lead holder is a versatile way of employing different lead weights.

Pencil Sharpener: A small hand-held pencil sharpener can be handy. If a lead holder is used, pocket-sized lead pointers are available that are good for keeping leads sharp when drafting maps.

Erasers: Some pencils come with attached erasers, but these are not usually of drafting quality. Erasers that can be slipped over the end of a pencil are a good alternative for use with drafting quality pencils. A Pink Pearl is good to have on hand for large mistakes.

Ruler: A small plastic combination ruler (6"/10 cm) can be used when drafting site maps.

UTM Calculator: The clear plastic UTM calculator can be used for scaling measured distances directly onto USGS topographic maps, as well as calculating the UTM coordinates. Some compasses now come with a UTM scale.

Trowel and Whisk Broom: These standard archaeological tools are most useful during site recording for exposing features such as bedrock mortars and milling slicks that will be included as part of the site record.

Vest: The equipment listed above can be organized and conveniently carried in a field/cruiser vest.

Clipboard: A standard clipboard can be used when drafting site maps and for filling out site record forms.

Graph Paper: Graph paper with horizontal and vertical ruling is very convenient for drafting site maps. Graph paper ruled in metric increments should be used whenever possible.

Forms: A supply of blank site record forms should be taken into the field. A set of forms has been developed by CAL FIRE specifically for this purpose. Lines have been provided so that the forms can be filled out while on the site. These forms include the Primary Record, Archaeological Site Record, Rock Art Record, and Linear Feature Record. Copies of these forms are attached to this manual.

Notebook: Some field-workers prefer not to fill out prepared forms, in which case it is a good idea to compile your observations in a bound notebook to prevent the loss of loose pages. A notebook with grid pages is a good place to compile measurements and to draft site maps and artifact drawings.

Photographic Equipment: A photographic record can be an important component of a complete site record. The camera of your choice, and a selection of print films should be on hand when doing site recording. Black-and-white photographs are required for records of historic buildings, structures, and objects. If your camera requires a battery for any of its functions, it is a good idea to have an extra one when going out into the field.

Map Wheel: A map wheel can be used to calculate a mileage log from the USGS quadrangle map as part of the site location information.

Drafting Equipment: After returning from the field, a few drafting tools that can be used for preparing site maps include a drawing board, light table or portable tracing box, T square, triangles, protractor, drafting tape, triangular metric scale, pencils, erasers, and technical ink pens.

FIELDWORK

Archaeological fieldwork typically begins with a site survey which is intended to provide information on the number, location, and nature of archaeological remains in a specific area. When properly executed, the survey can provide the basis for a preliminary characterization of the archaeology of a region. One of the principal sources of information for the archaeological survey is the physical inspection of the terrain by the field-worker (Heizer 1953:1-2; Heizer and Graham 1967:14). Survey methods and the rationale behind them are discussed in detail by King (1978). A survey can be accomplished by simply walking over the surface of a region and visually inspecting the ground for evidence of archaeological sites (Feder 1997:54). Some basic archaeological survey strategies that should be employed for CAL FIRE projects are described by Foster (1999:316-321). This level of survey is defined as a reconnaissance survey (Derry et al. 1985:12-13; OHP 1995:Appendix 6). The reconnaissance survey should provide a general impression of the archaeological resources of an area by identifying obvious or well-known sites, checking the existence and condition of sites identified by background research, and identifying areas where certain kinds of sites are likely to occur (Feder 1997:43-44).

Once the survey of a project area has been completed and the cultural resources located within that area have been identified, the extent of site recording needs can be determined. The potential impacts to sites and the protection measures that may be necessary are important factors in determining the level of site recording that must be undertaken. The completeness and adequacy of previous site records will also need to be evaluated. Other considerations include the complexity of the archaeological remains, their visibility, and the time and resources that are available (Heizer and Graham 1967:14). When these determinations have been made, you are ready to begin the actual site recording process.

MEASUREMENT METHODS

Before beginning the site recording fieldwork, a few technical issues need to be addressed concerning the methods to be used in gathering information and the level of accuracy necessary to accomplish your recording needs. The fundamental requirement in site recording is a systematic method of measuring the location of individual finds. It is essential to establish a controlled system of recording the exact location or provenience of features, artifacts, and other phenomenon (Napton and Greathouse 1997:208). The procedure that will be described in this presentation is known as the radial method (Joukowsky 1980:95; Napton and Greathouse 1997:204-205). This method consists of measuring distances and directions from a specified control point known as the site datum.

Measuring horizontal distances can be accomplished by a variety of techniques including pacing, taping, chaining, the transit-stadia method, and electronic distance measuring devices (Joukowsky 1980:96). Pacing is a widely accepted method of measurement in site recording fieldwork. While not always the most accurate method, particularly over steep and irregular terrain, pacing is usually adequate for basic site recording purposes. If you plan to use pacing as your method of measurement, the level of accuracy can be improved by determining the length of your pace. Before going out into the field, measure out a fixed distance on level ground with a measuring tape (at least 50 meters). Pace this distance with a natural stride, counting your paces as you go. Then divide the distance by the number of paces to determine the length of each individual pace. This will provide a multiplication factor for converting paced distances to meters.

Distances on prehistoric sites should always be measured in meters. The English measurement system can be used for the historic components of multicomponent sites, but the overall site dimensions should still be taken in meters (OHP 1995:12). Some of the other measurement methods mentioned above are definitely more accurate than pacing, but the extra time, effort, and expense is not typically warranted for most site recording purposes. For documenting some important finds, however, a taped measurement should be considered.

DIRECTION AND DECLINATION

Directions are determined by measuring a bearing or azimuth with a compass. A bearing is the direction or degree reading from one object to another. As with measurements of distance, directions will also be measured from the site datum. Prior to beginning fieldwork, another important but sometimes overlooked step is to set the declination on your compass. Declination is the result of the discrepancy between the location of the Magnetic North Pole and the geographic North Pole or pole of rotation of the Earth. This angle varies depending on your location. Whenever you are using a compass in conjunction with a USGS map, an adjustment should be made to allow for this discrepancy. The declination diagram along the lower margin of USGS maps will indicate the approximate

declination angle for a particular area. On many compasses the dial can be adjusted to compensate for declination. The compass instructions should explain how to make this adjustment.

SURVEY

The first step in recording an archaeological site is to conduct an intensive survey of the site area and the immediate surroundings to determine the full extent of the site and its constituents. A visual inspection of the entire ground surface should be carried out. In areas with limited ground surface visibility such as forests with heavy duff accumulation, or areas with other types of vegetative cover, periodic surface exposures should be employed in order to search for cultural materials. The level of survey intensity should be more thorough than typically employed for the entire project area, and should result in the identification of all surface features within the site and a sampling of artifacts that will provide a characterization of the site type. As the survey of the site area is being carried out, each individual find should be marked with flagging and given a specific designation. For example, each feature should be given a sequential number as it is encountered, with the flag labeled accordingly. The location of important artifacts should also be marked with flagging. Small artifacts can sometimes be difficult to relocate if they are not marked when initially observed. These flags will help to visualize the full extent of the site area and will be useful markers during the site mapping process. The flags should be removed when the site recording fieldwork has been completed.

BOUNDARIES

One of the principal results of the site area survey should be the identification and designation of site boundaries. The establishment of the site boundary is an important consideration because it should encompass all of the resources that contribute to the significance of a site. The site boundary has legal and management implications as it specifies the area that will be subject to regulatory control (Seifert 1995:1). The designation of the site boundary is a judgment that will be based on a number of criteria. The National Register Bulletin (1997:56-57) lists the following techniques for obtaining evidence to justify site boundaries:

1. Surface observations of site features and cultural constituents.
2. Subsurface observations in areas of previous ground disturbance.
3. Observations of topography and other natural features.
4. Observations of impacts and alterations that may have affected the integrity of the site area.
5. The study of background information such as ethnographic accounts and historic documents such as maps and journals.

The observed distribution of cultural features and artifacts is the primary criterion for establishing the site boundary. Other factors that should be taken into consideration include the adequacy of the survey coverage, the extent of observational limitations, the physical characteristics of the site, the environmental setting, geographic features, and site integrity. Some boundaries can be determined by the direct observation of surface remains, but others must be identified on the basis of background research. Many of the constituents of archaeological sites are not easily recognized in the course of surface survey. In fact, in many cases most of the cultural materials at a site are not exposed on the surface at all. These circumstances need to be taken into consideration when establishing site boundaries. An absolute boundary definition is often not achievable. The designation of a site boundary usually represents a compromise between surface observations, characteristics of the physiographic setting, and the most reasonable expectations as to the full extent of the site area. Boundaries should include surrounding land that contributes to the significance of a site by providing an integrity of setting. Consideration should be given to the extent of the landform that contains the site. Features of the landscape may be included when they contribute to the natural setting of the site. Natural features such as a shoreline, terrace edge, tree line, or erosional scar, when they serve to delimit a site, can serve as justifiable boundaries. Geographic features such as contour lines, or section lines on USGS maps can also be used to define boundaries of large sites (Seifert 1995:1-3). Observations of topographic and other natural features can provide evidence for logical and defensible boundaries (1995:52). The boundary should define the limits of the site and include all of the elements, both cultural and natural, that contribute to its significance. The techniques used to establish the site boundary will be described on the final site record form.

When the site boundary has been determined, a flag line can be placed around this perimeter. Place the flags at frequent enough intervals so that the site will be easily recognized during project operations. Flagging available with labeling such as "Special Treatment Zone" and "Equipment Exclusion Zone" is often used for marking site boundaries. Site boundary flagging can be one of the most effective site protection measures. Remove the flags at the conclusion of project operations so that attention is not drawn to vulnerable resources in the future.

DESCRIPTION

Once the extent and content of a site has been ascertained, a description of the site can be prepared. The site description provides a summary of the components of the site including the physical characteristics, appearance, site type, size, condition, physiographic and environmental setting, and a list of the cultural constituents. Detailed specifications for the development of site descriptions are provided in the OHP Instructions (1995:6-7). An important part of the site description is an enumeration of the features that may be present within the site. A feature can be defined as a large stationary object such as a bedrock mortar, house pit, petroglyph panel, structural remains, or an association of portable artifacts such as a lithic concentration or trash scatter. Each feature should be given a specific designation such as a sequential number as they are identified. Describe the features in terms of type, important characteristics and materials, associated artifacts, and measure them for length, width, and height. Include a summary of the cultural constituents in the site description. Cultural constituents is the term used to refer to any cultural materials found on a site such as artifacts, ecofacts, and other residues of human activity that are not associated with a specific feature (OHP 1995:13). Describe these materials in terms of material types and quantities of items present such as numbers of lithic waste flakes or historic metal cans. Make special note of any temporally diagnostic forms. In general, try to make the site description as complete and detailed as possible, particularly if only a Primary Record is being prepared.

DATUM

The datum is a permanently fixed control point from which the measurements of the site will be taken (Heizer 1953:13; Joukowsky 1980:115). This datum will be the central reference point for mapping the site and will be used to tie the site into the outside world by locating its position in relation to a larger geographic context. The datum will also serve as a reference point for the future identification of the site and as the terminal point for directions to guide future workers back to the location (Heizer and Graham 1967:34; Napton and Greathouse 1997:202-204).

Establish a site datum in a strategic location, preferably near the center of the site, with good visibility of the surrounding site area if possible. The datum should be a relatively permanent object such as a prominent natural or cultural feature of the site. A large rock, or boulder, a bench mark or survey monument, or the corner of an existing structure can make a good datum. A distinctive tree or stump can serve as a datum, and while these may not be the most desirable, sometimes they can be the only recognizable feature within a site. If a tree is selected as the datum, make sure that it is retained during any timber harvest operations. Datum points are sometimes marked with a metal tag or other marker for future identification.

One method used by archaeologists is to install a permanent datum point by placing a metal rod or fence post in the ground. This type of datum should be readily identifiable, but not so conspicuous that it defaces the site or attracts undue attention (Napton and Greathouse 1997:204,208). A description of the datum must be included on the site record and should be explicit enough in detail, measurements, and location to allow future researchers to relocate this important point. Clearly label the datum on the Site Map (See Figure 1, Map Symbols). If you are recording a very large site, or a site with restricted line-of-sight visibility, it may be helpful to establish more than one datum. Additional datum points should be designated sequentially, and their locations specified in relation to the primary datum by distances and bearings (Heizer and Graham 1967:34).

COORDINATES

Once the site datum has been established, the next step in the site recording process is to compile a list of coordinates to the individual finds. These coordinates will consist of directions and distances measured from the site datum. As previously discussed, the directions can be determined by measuring bearings with a compass and the distances can be measured by pacing. Starting from the site datum, compile a list of direction and distance measurements to the components of the site that were flagged during the site area survey. Bearing measurements are obtained by sighting across the body of the compass towards a specific object, then turning the dial until the orienting arrow is aligned with the magnetic needle. The bearing to the specific object is the degree reading on the compass dial indicated by the index pointer. Pace the distance to the specific object and then make note of these distance and bearing measurements. Repeat this process until the various components of the site have been measured including cultural features, artifacts, prominent landscape features, and the site boundary. It is a good idea to measure distances to at least four points on the site boundary. These distances can be at the cardinal directions or at points that provide the best indication of the overall extent of the site area. The flags placed at the individual finds and along the site boundary during the site area survey should serve as helpful visual references in compiling these measurements. Other important coordinates that should be taken are to the nearest permanent water source and fixed reference points on the USGS quadrangle map. Make sure that coordinates are taken to several permanent features of the surrounding landscape. If the datum should become obscured or destroyed for any reason, this will enable future researchers to reconstruct its approximate location. This list of coordinates will be used later to construct the Site Map.

LOCATION

One of the most critically important operations in any site recording effort is the accurate plotting of the site location on the USGS quadrangle map. One of the best methods for accomplishing this task is to measure a distance and bearing from the site datum to a recognizable fixed reference point on the USGS map. Established survey points such as bench marks or section corner monuments can sometimes be found in the vicinity of sites. If this type of survey marker can be found within a reasonable distance, this makes an excellent reference point for locating the site (Napton and Greathouse 1997:208). Other types of reference points that can be employed include road junctions, modern structures, stream confluences, closed contour summits, and other recognizable landscape features. If possible, take measurements to more than one reference point. These coordinates will allow you to physically construct the precise location and configuration of the site area directly on the USGS map. The UTM calculator can be used to scale measured distances directly onto these maps. If the site is not within a measurable distance to a recognizable reference point, another method to locate the site is known as triangulation. Take bearing measurements to at least two or more distant points that can be seen from the site area such as mountain peaks or recognizable cultural objects. Draw these bearing lines on the USGS map through the identified points. Where these lines intersect should be the approximate location of the site. While this method is much less accurate than the preceding one, in some cases it can be the only means available. Once you have accurately plotted your site on the USGS map, the locational information that needs to be included on the site record form can be determined directly from the map in the office. It is unnecessary to spend time in the field making these calculations.

With the proliferation of Global Positioning System (GPS) units, many people are now using this system to determine locational coordinates. While this is an effective means of acquiring locational data, a caution is in order. If a site location is plotted based on GPS coordinates, this location should be ground-truthed to make sure that the map plot corresponds with the actual physical setting of the site. Until the USGS maps have been corrected to the GPS coordinates, a map plot based solely on GPS coordinates could provide a false impression of the geographic context of a site.

Another valuable form of locational information consists of directions. From a well-known geographic location, make note of turning directions and mileage distances along specific travel routes leading to the site. This can be accomplished either in route to, or returning from the site. This information can later be composed into a directional narrative that will serve to guide others to the site.

ARTIFACTS

During the site area survey, place flags at the location of important artifacts. Number each artifact sequentially as it is identified and label the flag accordingly. Artifacts are considered important that have temporally diagnostic characteristics or if they will help to classify the site type. If time permits, it is highly desirable to provide illustrations of individual artifacts. This is particularly important for items such as diagnostic projectile points and lithic formed tools. Even simple outline drawings of artifacts can provide valuable information for interpreting a site. An artifact illustration can be quickly drafted by simply placing the artifact on a sheet of paper and tracing around the edge. Examples of simple artifact drawings are included in the attached site record.

ENVIRONMENT

Although much of the environmental information that was formerly required on site records is now considered optional, this can still provide an important contribution to a complete site record. Ground surface visibility conditions should be described, as well as any other factors that may have affected the accurate recording of the site. Describe the current condition of the site with observations of disturbances or impacts that may be diminishing the integrity of the site. Include a description of the closest natural source of fresh water and measure a distance and direction from the site datum. Compile a list of plants in the vicinity of the site that can later be used to determine the vegetation community. Make note of the color, texture, and consistency of the soil within the site area. Pay particular attention to any indications of cultural modifications to the soil that may be an indication of a midden deposit. Any rock outcrops or other indications of the local geology should also be noted. The physiographic setting of the site can be described in terms of the landform, slope, aspect, and exposure.

PHOTOGRAPHY

Photographs of a site are considered an integral component of a complete site record. Make an effort to obtain good overviews of the site area as well as general views of the surrounding terrain. Useful subjects for photographs can also include the site datum, any recognizable features, and important artifacts. If a record is being prepared for a building, structure, or object, an original black-and-white print must be attached to the Primary Record. Make note of each photograph as it is taken, and include the frame number, time of day, description, and direction of the view.

SITE NAME

Every site that is going to be recorded must have a specific designation. Archaeological sites are often referred to by site numbers, but may also be given site names. During the initial fieldwork, any convenient designation can be used (Heizer 1953:3). A common archaeological practice is to number sites sequentially as they are located during the course of a survey for a particular project. This practice can, however, lead to a certain amount of ambiguity and confusion in the future. Therefore, it can be very helpful to assign specific names to each site. One small reward of conducting archaeological work is the naming of your discoveries (Thomas 1998:241). Even if a site is well known to the landowner, locals, or other persons, if it has not been previously recorded, you are the scientific discoverer and have the right to name it. Sites are often given a local name or the name of some geographic feature nearby (Hole and Heizer 1973:177). The site name should be derived from some aspect of the cultural significance, current ownership, location, or geographic features of the site (National Register Bulletin 1997:8). Sites are often named after property owners, prominent landmarks, or a feature of the site. Geographic terms are preferred since they are unlikely to change in the near future. Sites are sometimes given invented names based on the personal impressions or experiences of the recorder. Overly complex and lengthy designations, or names which offer unfounded interpretations of the site should be avoided. A good justification for naming sites is that they are much easier to refer to in print. If many sites are discussed in a report, site names are much easier to relate to than site numbers (Sanger and Meighan 1990:77).

FIELD RECORDING CHECKLIST

In the course of my own site recording experiences, I have found that it can be constructive to refer to a site recording checklist. While working through the site recording process, particularly when nearing completion, it can be helpful to review this checklist to make sure that all of the necessary information has been acquired. It can be very frustrating to return from a site in a remote area, or begin preparing your final site record sometime after the initial fieldwork, and find that some critical piece of information was overlooked. This checklist is organized to follow the sequence of categories on the site recording forms.

Primary Record:

1. Site designation.
2. Plot the location on the USGS map.
3. Compile a mileage log.
4. Prepare a site description.
5. List the people contributing to the recording effort.
6. Date of the field recording.

Archaeological Site Record:

1. Establish a site datum (measure and describe).
2. Describe ground surface visibility conditions.
3. Designate features (describe, measure, and take a distance and bearing to each).
4. Designate individual artifacts (describe, measure, and take a distance and bearing to each). Quantify material types.

5. Describe the site condition and list disturbances.
6. Take a distance and bearing to the closest fresh water source.
7. Prepare the Site Map. Include the site boundary, features, artifacts, surrounding terrain, legend, scale, and north arrow.
8. Compile a list of plants.
9. Note landform, slope, aspect, exposure, soils, and geology.
10. Take photographs. Note frame number, time, description, and direction of view.

SITE MAPS

Preparing an accurate Site Map is a vital part of the site recording process. The Site Map plays a crucial role in defining the extent of the site area, locating individual finds within the site, and providing information towards site interpretation. A map can be defined as a conventionalized picture of a portion of the landscape as seen from above, but represents what is known about an area rather than what can actually be seen. The cartographer is both scientist and artist, and must omit or include information according to the scale and purpose of the map (Raisz 1948). Consequently, a map should be considered a generalization of reality intended to assist in the visualization of archaeological information. Maps prepared specifically to be included in Archaeological Site Records are often called sketch maps, and in the past were little more than hastily drawn sketches. It is becoming increasingly important that site maps conform to basic cartographic principles. Satisfactory site maps can be drafted in the field using simple techniques and basic equipment with a minimum of time and effort. These maps document the results of archaeological investigations, and form an important part of the archaeological record (Napton and Greathouse 1997:177-234). Archaeological Site Records must be accompanied by detailed Sketch Maps (OHP 1995:12). Site mapping skills are, therefore, a fundamental prerequisite for conducting archaeological site recording. This section is intended to provide basic techniques for drafting site maps that will fulfill the need for the graphic documentation of archaeological sites.

While authors often profess the importance of preparing archaeological site maps (Armstrong 1985; Dillon 1982; Whitley 1982), information directly relevant to drafting a Site Map is not generally provided. Archaeological textbooks and manuals usually cover site maps (Heizer 1953:13-22; Heizer and Graham 1967:31-40; Hole and Heizer 1973:190-193; Joukowsky 1980:65-131), but these discussions are oriented towards mapping sites in preparation for excavation. The primary function of these types of maps is to show the configuration of the site before excavation and to plot the location of units and subsurface features. These mapping techniques are not particularly applicable to the preparation of a site record Site Map. One of the few presentations that recognizes the importance of site maps is the chapter by Napton and Greathouse (Hester et al. 1997:177-234) which offers a comprehensive treatment of various site mapping techniques. Additional information on site mapping can be found in Bryant and Holz (1966), National Register Bulletin (1997:62), Sanger and Meighan (1990:81-85), and Thompson (1989:37-45).

The methods of measurement and level of accuracy needed to prepare an Archaeological Site Record have been previously discussed. These considerations also have important implications for the preparation of site maps. Recognition of your mapping needs and the required level of accuracy is an important consideration in any mapping project. Decisions must be made with regard to the level of detail that can be included on the map (Thompson 1989:37). The precision of measurement is dependent on the subject and the scale to which it will be drawn. The limitations imposed by the reduction of mapping data to site record page size will determine the level of accuracy that should be attempted. As mapping data are reduced in size, each symbol on the map occupies a proportionally larger amount of space, therefore accuracy becomes a function of the amount of detail that will fit on the map. There comes a point where an obsession with accuracy can be counterproductive. Regardless of the accuracy obtained in the field, you will always be constrained by the limitations of final draftsmanship (Whitley 1982:15-19). Sophisticated surveying techniques are sometimes employed by archaeologists (Joukowsky 1980:65-131; Leach 1994; Napton and Greathouse 1997:215-223) but the accuracy obtained by these methods is unnecessary for the preparation of typical site maps. There is no point in taking measurements to a level of accuracy that cannot be shown on small-scale drawings (Leach 1994:3). The level of resolution that can be attained within the site record format does not justify the use of complex and time consuming survey techniques.

The Site Map should show the relationship of the site to its physiographic setting, the location of site features and major site constituents, and a site boundary. The quality and usefulness of any map is predicated on the use of a few basic cartographic principles (Bryant and Holz 1966:186). Some of these principles will be discussed as follows: Format, Orientation, Scale, Coordinate System, Symbols, and Lettering. A good map should be enclosed within a border or margin. A title block should be included that contains the site name, number, name of the person drawing the map, and date. The orientation of the map should be indicated with a north arrow. The scale of the map should be indicated with a bar scale in meters. The map must be constructed with a systematic method of location and measurement. The map should contain a legend explaining the symbols that have been used. Lettering should be used to label the features of the map. These principles will be covered in more detail below and then a method for drafting the map will be outlined.

Format

Before beginning any mapping project, it is important to think ahead to the final format of the map. In order for the Site Map to be conveniently incorporated into the site record, it is most practical to use 8 1/2" by 11" paper. The attractiveness of any map is greatly enhanced by a rectangular border or margin. A heavy inked line ruled 1/4" to 1/2" in from the edge of the paper forms a nice border. A title block should be enclosed within the border, usually across the top of the page on site maps. The title block should include a title, the pagination, name of the person drawing the map, the date of composition, the site or resource name, and any identifying numbers such as the Primary Number, Trinomial, HRI Number or agency designations. A pre-formatted Sketch Map page is included with the OHP Instructions (1995) as form DPR 523K.

Orientation

Cartographers exercise considerable variation in map orientation, but the most natural and widely employed method is to have north at the top of the page. USGS topographic quadrangle maps are printed so that true north is at the top of the sheet. Since site records must include a Location Map consisting of a copy of the USGS map, it is a good idea to construct site maps with this same orientation. Maintaining consistency in orientation between the different maps helps to avoid confusion when reading these maps in the field. The orientation on all maps must be indicated by a north arrow. The north arrow must specify whether it represents true north (TN) or magnetic north (MN), and must be labeled accordingly. If your compass has been adjusted for declination, true north will be the correct designation.

Scale

One of the first steps in preparing a Site Map is determining the scale at which the map will be drawn. Scale can be defined as the proportional relationship or ratio between the map size and the area that is represented (Raisz 1948:54). The scale will indicate the standard of measurement that is being used so that the relative size of elements on the map can be determined. Once the extent of the site area has been determined, make an estimate of the overall dimensions of the site, i.e. length and width. Then determine an appropriate scale that will allow you to fit the site within the margins of the Site Map page. Be sure to allow sufficient room to show important surrounding environmental features and a legend. Triangular rulers that are scaled in metric increments and have several different proportional ratios are extremely helpful in choosing a scale. When an acceptable scale has been selected, it should be indicated on the map with a bar scale. The use of a bar scale will insure that the correct proportional relationship between the elements of the map and the scale will be maintained if the size of the map is changed. If a description or ratio is used, the scale will no longer be valid if the map is reduced or enlarged (Armstrong 1985:45).

Coordinate System

The most fundamental principle of cartography is the establishment of a coordinate system to which each point on the map can be related (Raisz 1948:57). The procedure of site mapping described here is known as the radial method (Joukowsky 1980:95; Napton and Greathouse 1997:204-205). This method consists of plotting a series of measured distances and directions from a specified control point known as the site datum. If this point in the site recording process has been reached, a site datum will have been established and a list of coordinates compiled. These coordinates can now be used to construct a Site Map. A series of rays will be drawn extending out from the datum to the various measured points. The distance and bearing measurements will be entered along these rays which end in arrows indicating the direction of the compass sighting (Thompson 1989:38).

Symbols

Cartographic symbols are conventional, standardized representations of natural and cultural features used to compose maps (Napton and Greathouse 1997:183). Almost every feature on a map can be represented by a symbol. Good symbols should be small, distinct, easy to draw, and provide the viewer with a visual impression of the feature they represent (Armstrong 1985:43; Raisz 1948:97). Symbols should not depict the features they represent as if they were viewed from an oblique angle. The use of symbols helps to reduce descriptive labeling that can detract from the clarity and effectiveness of a map. There is presently no universal set of archaeological mapping symbols, probably because there are so many different types of cultural and natural features (Napton and Greathouse 1997:231). Archaeologists working in different areas tend to adhere to different local traditions of graphic expression (Armstrong 1985:43). Symbols should be standardized and used consistently throughout any series of maps (Bryant and Holz 1966:197). Some of the most standard map symbols are those used on USGS maps. Symbols can be grouped in four major categories: cultural features, topography, hydrology, and vegetation (Raisz 1948:97). A list of map symbols for use on archaeological site maps has been developed for this manual (See Figure 1 :Map Symbols). This list of symbols should only be considered as suggestions that can be adapted and modified to meet specific needs. Make sure that the symbols selected for each feature on the map are unique and distinctive enough so that different symbols will not be confused with one another. The symbols that are ultimately chosen for use must be listed and explained in a legend. The legend should be a rectangular box set off from the map area by a border. It can be located in a portion of the map surface that has not been utilized for the site area or important environmental details. The symbol explanations should be kept as brief as possible, but adequate to convey an accurate definition of the symbol.

Lettering

Lettering is employed to label coordinates and to identify the important cultural and natural features included on a map. This lettering must be clearly legible and carefully positioned. The placement of labels has an important effect on the clarity and attractiveness of the finished map (Armstrong 1985:45). Freehand lettering is the most rapid and versatile method, and if well done, can provide an indication of personal style and originality to site maps (Bryant and Holz 1966:190). The appearance of hand lettering can be greatly improved by drawing light guidelines in pencil that can be erased after inking. For those who are less confident of their lettering ability, one of several mechanical lettering options should be considered. Some widely used lettering techniques include typewritten adhesive labels, computer-generated labels, transfer sheets, Leroy lettering, and Kroytype lettering (Dillon 1985:30-33; Napton and Greathouse 1997:232).

Drafting the Map

Once these basic cartographic principles have been considered, and a conception of the final map has been formulated, the actual drafting process can begin. Using a base-plate compass, graph paper, and the list of previously collected coordinates, a Site Map can be accurately drawn in the field. This preliminary map should be done in pencil so that modifications and corrections can be made easily. The drafting process has been broken down into a series of steps that are outlined below. These steps can be followed on the attached Figures 2-4.

Step 1 (Figure 2): Position the datum; Draw rays to site components and landscape features; Draw the site boundary.

Step 2 (Figure 3): Draw in landscape features and topography.

Step 3 (Figure 4): Label rays, site components, and landscape features; Construct the legend; Position the scale and north arrow; Fill in the title block.

Step 1. Determine the location of your datum point within the site area. Position the datum in a location on the Site Map page that will allow you to construct the full extent of the site at the selected scale. Orient the map so that true north is at the top of the page. Using the list of coordinates, construct the map by drawing rays out from the datum point that correspond to these distances and direction measurements. These rays can be quickly drawn in the field with the following procedure:

With the compass dial set at the desired bearing, position the edge of the base plate at the datum point, then rotate the base plate on the page until the black parallel meridian lines in the compass dial are aligned with the vertical lines on the graph paper and the letter "N" on the compass dial points towards the top of the page. Now draw the bearing line along the edge of the compass base plate extending out from the datum. Measure the distance along this line at the selected scale and mark the point of the individual find. Repeat this process until all of the coordinates have been plotted onto the Site Map. Make sure that the overall extent of the site area will fit on the map page before putting too much effort into plotting specific details. Draw rays to the site boundary at several points, preferably at the points that depict the maximum extent of the site area. When points have been established at the outer extent of the site area, a site boundary can be drawn that encompasses these points and the various site features and constituents. Additional rays should be drawn that indicate the location of each feature, designated artifacts, important landscape features, and reference points on the USGS map.

Step 2. Provide an indication of the local topography on the site map. One method of depicting topography is with contour lines. Approximate contour lines can be derived from the USGS map that covers the site area. These contours can be augmented by direct observation of the landscape. Actual measurements of elevation changes can be made in the field with a hand-sighting level. These measurements can then be constructed into contour lines. A simple but less accurate method of depicting topography is the use of slope arrows. If slope arrows are used, the direction of the slope should be indicated in the legend, i.e. up or down. Other important landscape and environmental information that should be incorporated into the map include watercourses, springs, shorelines, areas of vegetation, individual trees, rock formations and outcrops, prominent breaks in slope, and any other distinctive features that will help future investigators recognize the site area. Cultural features that should be mapped include roads, trails, utility lines, fences, modern structures, and any large scale earthworks. When they can be identified, property lines and geopolitical boundaries are extremely helpful features to include on the map.

Step 3. Finish off the map by labeling the rays, the site features, any designated artifacts, and natural features of the surrounding environment. Construct the legend by compiling a list of explanations of the symbols used on the map. Position the bar scale and north arrow in unused areas of the map page. Complete the map by filling in the title block.

PREPARING THE FINAL SITE RECORD

When the site recording fieldwork is completed, and all of the necessary data have been gathered, consideration can be given to transforming this information into a final site record. Any experienced archaeologist can attest to the fact that it takes much longer to prepare a good write-up than to conduct fieldwork (Hole and Heizer 1973:200), but with a little forethought and some practice, this process can be expeditiously completed. In the following section a few suggestions will be offered for preparing the Primary Record and the Archaeological Site Record. CAL FIRE archaeology staff members have provided observations on the problems they most frequently encounter during the review of site records prepared for CAL FIRE projects. Some of these problem areas will be mentioned and a checklist has been developed to help avoid some of these pitfalls as the site record is being prepared. Prior to filling out the recording forms, it is a good idea to spend some time studying the OHP Instructions (1995), in other words, read the directions! A great many problems could be avoided if the data fields were simply filled out with the information specifically requested in the OHP Instructions.

Format

The format of site records is largely dictated by the OHP filing system forms. Final site records must be type written or computer generated, and all graphics are expected to be clear and legible (OHP 1995:4). A set of forms has been developed for use on CAL FIRE projects that have SHPO approval. [See an example](#) of a completed site record in this format for a fictitious archaeological site attached to this manual. You may choose to utilize these CAL FIRE forms, the DPR forms included with the OHP Instructions, or develop your own customized forms, as long as they meet the criteria specified in the OHP Instructions (1995:4-5). For large projects with numerous sites, you might want to consider developing a prototype record that has all repeated data fields filled in. Many categories can be entered on the blank form that will be the same from one site to another. This can be an effective way to save time and reduce the tedium of repeatedly typing the same entries.

Primary Record

The Primary Record is a one page form designed to collect fundamental information on every type of resource and is considered the minimum level of documentation that will be accepted into the OHP filing system (OHP:1995:5). When an archaeological site is being recorded, a Location Map must be attached to the Primary Record. Locational information requested on the Primary Record includes the county, a legal description, an address (if applicable), Universal Transverse Mercator (UTM) coordinates, and directions to the site. If the site was accurately plotted on the USGS quadrangle map while in the field, this information can be determined directly from the map in the office. Detailed instructions for calculating UTM coordinates can be found in Cole (1980) and the OHP Instructions (1995:Appendix 3). Remember that if the site being recorded is larger than ten acres in size, four UTMs are required. On linear features, UTMs are needed for each end of the feature. When more than one UTM point is provided, each point should be labeled on the Location Map. If a mileage log was not

compiled while in the field, distances along travel routes can be measured directly off the USGS map with a map wheel.

When filling out the site description field, be as complete as possible, particularly when only a Primary Record is being prepared. The site description should include physical characteristics, appearance, site type, dimensions, condition, environmental setting, and a summary of features and cultural constituents. Include descriptions of specific constituents such as lithic material types and historic can types. This information can be important for determining the significance of a site. Under data field P3b, the requested attribute codes are found at the back of the OHP Instructions (1995:Appendix 4).

On the Primary Record a space is provided at data field P5 for a photograph of the resource. If a building, structure, or object is being recorded an original black-and-white print must be attached to the record in this space (OHP 1995:7-8). If an archaeological site is being recorded and no photographs were taken, or if photographs are incorporated into a different part of the record, this space can be used for continuous text entry (OHP 1995:4). This space has been constructively employed by some recorders for a small site Sketch Map.

If more than one photograph is taken, they can be incorporated into the site record by attaching them to a Photographic Record or a Continuation Sheet. However the photographs are incorporated into the record, it is important to provide original prints or copies that are of sufficient quality to be used as a master copy for future reproduction purposes.

Under data field P11 Report Citation, be sure to cite the Archaeological Addendum for the project that has resulted in the recording effort. See the example site record for a suggested format. Data field P12 is used to list any attachments to the Primary Record. If you have attachments that are not specified on the form, be sure and list them as well.

Archaeological Site Record

The Archaeological Site Record is designed to provide detailed descriptive information about prehistoric and historic sites. A Sketch Map must be attached to the Archaeological Site Record (OHP 1995:12). While the Primary Record provides basic information on archaeological sites, it is of limited utility and under certain circumstances is not allowed by the regulations. The goal of CAL FIRE is to encourage recorders to make the extra effort to complete the Archaeological Site Record whenever possible. A complete Archaeological Site Record is often required by CAL FIRE as part of the site protection measures when timber operations are planned within a site area. If the guidelines provided here have been followed in the course of fieldwork, all the necessary information should be at hand to complete the Archaeological Site Record form.

The first block of information on an Archaeological Site Record has to do with determining the size of the site area, the methods used to measure and map the site, the factors used to establish the site boundary, and any limitations on the accurate recording of the site (OHP 1995:12-13). These data fields can be completed by providing the information and observations made in the field and by identifying the methods described in this manual. Make sure that the site dimensions correspond with the area depicted on the Site Map. Provide a description of the datum that is explicit enough so that it can be relocated by future investigators. Indicate the criteria that were used to establish the site boundary. Describe any factors that may have impeded the accurate recording of the site, such as conditions of ground surface visibility or restricted access.

Data fields A4 and A5 provide an opportunity to elaborate on the observations summarized under the site description. Specific descriptions can be provided for individual features and artifacts. Locational coordinates and measurements can be included for each of these designated finds. Material types can be described, quantities of these materials can be estimated, and temporally diagnostic forms can be discussed. Most of the remaining data fields are relatively self-explanatory and can be completed by referring to the observations made in the field. In some cases these observations can be enhanced by limited background research. For example, using the plant list compiled during the fieldwork, a characterization of the vegetation community can be determined by consulting a botanical reference such as Barbour and Major (1988) or Mayer and Laudenslayer (1988). An excellent source of geologic information is the series of Regional Geologic Maps published by the California Department of Conservation, Division of Mines and Geology. Background materials are particularly helpful for summarizing historical information. Preliminary observations on the significance of a site can be included in data field A13.

Location Map

All records are required to have a Location Map. The purpose of the Location Map is to accurately locate the site on the applicable USGS topographic quadrangle map. The Location Map should consist of a clear photocopy of the appropriate portion of the USGS map with the shape and location of the site accurately plotted. If a computer-generated topographic map is used, it must be at the exact same scale and contain all of the features and information included on the USGS version of the map. The Location Map must also include the name of the map that has been copied, date of publication and revisions, bar scale, north arrow, and resource name (OHP 1995:8-9).

One of the most common errors encountered on site records is that the size and configuration of the site area as depicted on the Site Map does not correspond with the area plotted on the Location Map. It is very important to take the time to physically construct the site area with measured distances and directions directly on the Location Map. This is particularly important with large, complex sites. Small sites can be depicted with a solid black dot. Larger sites should be outlined with a heavy, solid, black line. All plots should be indicated with a label and arrow. Remember that the date requested on the title block of the Location Map is the date of publication of the USGS map, not the date of the site record.

Site Map

Archaeological Site Records must be accompanied by a detailed Site Map which should be drawn to scale and accurately depict the relationship of the site to its physiographic and environmental setting. The location of site features, artifacts, and other cultural constituents should be shown. It must also include a datum point, site boundary, legend, north arrow, and bar scale (OHP 1995:15). Using the Site Map that was drafted in the field, a finished map can be prepared for inclusion in the final site record. The field map can be lightly traced in pencil on a light table or portable tracing box, and then inked in

with technical drafting pens. The pencil lines can then be erased. Hand-drawn and lettered maps can be an appealing alternative to computer-generated maps (Napton and Greathouse 1997:229).

Checklist

When the site record is completed, it might be helpful to review the following checklist in order to avoid some of the most common problems encountered on records submitted for CAL FIRE projects:

1. Is the site description complete?
2. Were the Resource Attribute codes taken from Appendix 4?
3. Is the Archaeological Addendum included under Report Citation?
4. Do the site dimensions correspond with the area depicted on the Site Map?
5. Does the mapped site area correspond with what has been marked for protection on the ground?
6. Does the configuration of the site boundary on the Site Map correspond with the Location Map?
7. Is there an arrow pointing to the site on the Location Map?

Record Submittal

The State of California has established a system of regional Information Centers that maintain and disseminate the archaeological records for specific areas of the state. It is the purpose of the California Historical Resource Information System to archive the archaeological site records at locations that can be efficiently accessed by those who need this information. It is the standard practice of all archaeologists working in California to submit copies of their records to the appropriate Information Center. On completion of archaeological survey reports and archaeological site records, these documents must be submitted to the appropriate Information Center. Recordors are requested to submit two copies of each site record shortly after completion of a survey (OHP 1995:5). Site record information is of little use if it is not on file somewhere and available to future researchers (Feder 1997:63). Anyone conducting archaeological investigations should always be aware of the ethical imperative of archaeological reporting. For site records prepared as part of a THP that is subject to CAL FIRE review, copies of the site records will be forwarded to the appropriate Information Center by CAL FIRE. For all other CAL FIRE projects, consult with the CAL FIRE staff archaeologist to make sure your records have been submitted.

CONCLUSION

The intent of this presentation has been to provide instructions to encourage the standardization of site recording practices and to enhance the level of quality in the final preparation of these records. There are many different methods and techniques that can be used in archaeological fieldwork. Every archaeological site is unique, therefore, the approach taken must be adapted to the specific circumstances. It is unlikely that any field-worker employs exactly the same strategy at every site they record. This presentation has covered the techniques that I have found to be most practical and efficient in my own site recording activities. These suggestions are intended to provide some basic guidelines for getting started, but are far from comprehensive. As opportunities arise to engage in site recording projects, it can be very rewarding to experiment with various different approaches. As long as the final record is accurate, legible, and internally consistent, it will be a valuable document, providing important information for future archaeological research. Complete site records are an important component of the archaeological record as well as an indispensable tool for the successful management and protection of archaeological sites.

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REFERENCES

Armstrong, Douglas V.

1985 Archaeological Map Making. In *The Student's Guide to Archaeological Illustrating*, Second Revised Edition. Archaeological Research Tools Vol. 1, edited by B. D. Dillon, pp. 35-46. Institute of Archaeology, University of California, Los Angeles.

Barbour, Michael G., and Jack Major (editors)

1988 *Terrestrial Vegetation of California*. California Native Plant Society, Sacramento.

Bryant, Vaughn M., and Robert K. Holz

1966 A Guide to the Drafting of Archeological Maps. Reprinted. *Plains Anthropologist* 11(33):186-197. Originally published 1965, *Bulletin of the Texas Archaeological Society* 36:269-285.

Cole, Wilford P.

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

Dery, Anne, H. Ward Jandi, Carol D. Shull, and Jan Thorman (revised by Patricia L. Parker)

- 1985 Guidelines for Local Surveys: A Basis for Preservation Planning. National Register Bulletin 24. U.S. Department of the Interior, National Park Service, Washington D.C.
- Dillon, Brian D. (editor)
- 1982 Practical Archaeology: Field and Laboratory Techniques and Archaeological Logistics. Archaeological Research Tools Vol. 2, Institute of Archaeology, University of California, Los Angeles.
- 1985 The Student's Guide to Archaeological Illustrating, Second Revised Edition. Archaeological Research Tools Vol. 1, Institute of Archaeology, University of California, Los Angeles.
- Feder, Kenneth L.
- 1997 Site Survey. In Field Methods in Archaeology, edited by T. R. Hester, H. J. Shafer, and K. L. Feder, pp. 41-68. Mayfield, Mountain View, California.
- Foster, Daniel G. (editor)
- 1999 Reference Manual and Study Guide for the CAL FIRE-CLFA Archaeological Training Program For Registered Professional Foresters And Other Resource Professionals. 2 vols. California Department of Forestry and Fire Protection, Sacramento.
- Foster, Daniel G., and Brian D. Dillon
- 1999 Definition of Commonly-Used Terms and Acronyms. In Reference Manual and Study Guide for the CAL FIRE-CLFA Archaeological Training Program For Registered Professional Foresters And Other Resource Professionals, vol. 1, edited by D. G. Foster, pp. 2-15. California Department of Forestry and Fire Protection, Sacramento.
- Heizer, Robert F. (editor)
- 1953 A Manual of Archaeological Field Methods, Second Revised Edition. The National Press, Palo Alto, California.
- Heizer, Robert F., and John A. Graham
- 1967 A Guide to Field Methods in Archaeology: Approaches to the Anthropology of the Dead. National Press, Palo Alto, California.
- Hester, Thomas R., Harry J. Shafer, and Kenneth L. Feder
- 1997 Field Methods in Archaeology. Mayfield, Mountain View, California.
- Hole, Frank, and Robert F. Heizer
- 1973 An Introduction to Prehistoric Archaeology, Third Edition. Holt, Rinehart and Winston, New York.
- Joukowsky, Martha
- 1980 A Complete Manual of Field Archaeology: Tools and Techniques of Field Work for Archaeologists. Prentice-Hall, Englewood Cliffs, New Jersey.
- King, Thomas F.
- 1978 The Archeological Survey: Methods and Uses. Heritage Conservation and Recreation Service, U.S. Department of the Interior, Washington D.C.
- Leach, Peter
- 1994 The Surveying of Archaeological Sites. Archetype, London.
- Mayer, Kenneth E., and William F. Laudenslayer Jr. (editors)
- 1988 A Guide to Wildlife Habitats of California. California Department of Forestry and Fire Protection, Sacramento.
- Napton, L. Kyle, and Elizabeth A. Greathouse
- 1997 Archaeological Mapping, Site Grids, and Surveying. In Field Methods in Archaeology, edited by T. R. Hester, H. J. Shafer, and K. L. Feder, pp. 177-234. Mayfield, Mountain View, California.
- National Register Bulletin
- 1997 How to Complete the National Register Registration Form. U.S. Department of the Interior, National Park Service, National Register of Historic Places, Washington D.C.
- Office of Historic Preservation
- 1989 California Archeological Inventory, Handbook For Completing An Archeological Site Record. Office of Historic Preservation, Sacramento.
- 1995 Instructions For Recording Historical Resources. Office of Historic Preservation, Sacramento.
- Raisz, Erwin
- 1948 General Cartography. McGraw-Hill, New York.
- Sanger, Kay Kenady, and Clement W. Meighan
- 1990 Discovering Prehistoric Rock Art: A Recording Manual. Wormwood Press, Calabasas, California.
- Seifert, Donna J.
- 1995 Defining Boundaries for National Register Properties. National Register Bulletin. U.S. Department of the Interior, National Park Service, Washington D.C.
- Thomas, David Hurst
- 1998 Archaeology, Third Edition. Harcourt Brace. Fort Worth.
- Thompson, N. B.

1989 Notes on Archaeological Site Mapping. Appendix VIII in California Archeological Inventory, Handbook For Completing An Archeological Site Record. Office of Historic Preservation, Sacramento.

Whitley, David M.

1982 Practical Mapping for the Field Archaeologist. In Practical Archaeology: Field and Laboratory Techniques and Archaeological Logistics. Archaeological Research Tools Vol. 2, edited by B. D. Dillon, pp. 14-22. Institute of Archaeology, University of California, Los Angeles.

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