REQUIREMENTS FOR SUBMITTING A COLLECTION TO THE ARCHAEOLOGICAL RESEARCH CENTER

SOUTH DAKOTA STATE HISTORICAL SOCIETY

DEPARTMENT OF TOURISM AND STATE DEVELOPMENT

Revision of May 20, 2009

South Dakota State Historical Society
Archaeological Research Center
P.O. Box 1257
Rapid City, SD 57709-1257
ph. 605-394-1936

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Archaeological Research Center

Acknowledgements

Although the guidelines for submitting collections to the repository have evolved over a number of years with the input of several people, I would like to recognize the most recent contributors to this revision. Jane Abbott kindly allowed me to use the section on plaster jackets and spray foam encasement for fragile objects which she originally prepared for a field project. She also created the illustrations in that section. Juanita Short created all the other illustrations for the guidelines, which I think clarify the text on cataloging and storing artifacts and photographic media. Juanita also prepared some of the forms which appear in the body of the report and in Appendix A. Both Jane and Juanita contributed valuable editorial comments, which improved the last version of the guidelines. Robyn Sedustine patiently helped me solve the formatting errors and prepared copies for printing and binding. I would also like to recognize Cara Dale, who created the original figures in the photographic media section for a training handbook. With a few alterations, these figures were an important addition to the guidelines. The efforts of all those involved are much appreciated!
—Renee M. Boen, Repository Manager

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Chapter 1

POLICIES, OWNERSHIP, FEES, AND DEFINITIONS

1.1 Policy Statement

The South Dakota State Historical Societys Archaeological Research Center (most commonly known as ARC) is currently the largest repository for archaeological collections in South Dakota. ARC's mission is to preserve, excavate, research and exhibit the state's archaeological resources in a coordinated and organized manner, and educate the public with regard to the history and prehistory of South Dakota and the surrounding Great Plains. To facilitate these goals it is necessary to provide optimum environmental and organizational control over stored collections. These guidelines standardize methods of packaging, labeling and organizing all collections received at ARC without interfering with the research goals of project directors.

South Dakota would like to maintain its collections and associated documentation at repositories within its political boundaries. The importance of this is immediately apparent access. Several federal agencies own or manage property within the boundaries of South Dakota, including the Corps of Engineers, National Park Service, U.S. Forest Service, Bureau of Land Management, Bureau of Reclamation, and Fish and Wildlife Service. Currently, these agencies retain ownership of all collections from their respective properties but have, in most cases, stored them at ARC. This insures the researcher that collections from large tracts of federal land in the state are accessible. If these agencies are going to continue using our repository, federal standards for handling and storing collections must be met (See 36CFR79, on the web at http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title36/36cfr79_main_02.tpl). This document presents the changes necessary to meet those standards.

1.2 Ownership of Collections

All collections received at the repository will fall under one of two categories: state-owned or federally-owned.

1.2.1 State-owned Collections

All collections derived from state-owned lands remain the property of the state according to South Dakota Codified Law (SDCL) 1-20-25 (note: SDCL 1-20 and its subsections can be found on the web at http://legis.state.sd.us/statutes/DisplayStatute.aspx?Type=Statute&Statute=1-20). If an

archaeological collection from private land is submitted to the repository, it must be accompanied by a consent form signed by the landowner (SDCL 1-20-36). The consent form (Figure 1.1) must give clear title to the State of South Dakota in perpetuity. A new form may be developed as long as it states the year collected, the institution responsible for collecting the materials, that title to the collection is given to the State of South Dakota, and that the materials will be deposited at the ARC repository in perpetuity. A list of site numbers and accession numbers assigned to collections from the landowner's property are written at the bottom of the form to facilitate record keeping for each collection. Free and clear title must also be obtained for private donations (ARSD 24:52:01:03), although these will be handled separately.

1.2.2 Federally-owned Collections

Ownership of collections from federal lands is generally retained by the United States government. Permits for conducting the archaeological work must be submitted with the collection.

1.3 Curation Fees

The cost of storing a collection received at the repository is based on staff processing time and storage space measured by box sizes in inches. These rates are set in South Dakota administrative rules: ARSD 24:52:05:02:10 (http://legis.state.sd.us/rules/DisplayRule.aspx?Rule=24:52:05:02). For further details, contact the repository staff.

1.4 Complete Collections

Readers are referred to 36CRF79.4 for definitions of terms used in these guidelines. For continuity, the definitions apply to federal and non-federal collections stored at the repository.

The repository will only accept complete collections as defined in 36CFR79.4a: "Collection means material remains that are excavated or removed during a survey, excavation or other study of a prehistoric or historic resource, and associated records that are prepared or assembled in connection with the survey, excavation or other study." Unless stated otherwise, the originals of all documents should be deposited at the repository and the researcher should retain copies of documents he/she wants. Exceptions may occur if the originals have been copied onto higher quality paper for preservation purposes. A complete collection may include, but is not limited to, the following (adapted from the Central Arizona Project Repository Requirements for Preparation of Collections):

- Completed state of South Dakota site form for a new site or when revisions are made for a previously recorded site. For a new site this form is sent prior to assigning a site number and will be on file before the rest of the collection is received.
- All artifacts and other cultural and environmental materials from the collection. Incomplete collections will not be accepted.
- Permits and/or contracts issued for the work
- Pertinent correspondence and administrative records
- All survey and/or excavation records

LANDOWNER CONSENT
TO COLLECT ARCHAEOLOGICAL MATERIALS

I do hereby consent to the removal of archaeological materials from the __x__ surface and/or _____ subsurface of my property by the employees of the SD State Archaeological Research Center for the purpose of scientific research. The State of South Dakota is given free and clear title to these materials which will be deposited at the State Archaeological Research Center's repository in perpetuity. This consent applies to the archaeological activities to be conducted during the year of 1994.

Robert Johnson	1 July 1994
Landowner	Date
John Doe	1 July 1994
Researcher	Date

List of archaeological collections given to the State of South Dakota under this signed consent form.

Site No.	Accession No.	Site No.	Accession No.
39PN1	94-0001	39PN3	94-0003
39PN2	94-0002	39PN4	94-0004

Figure 1.1: Collections from private land submitted to the repository should be accompanied by a signed release form transferring artifact ownership to the state.

- All field logs and/or journals
- All project-generated maps
- All laboratory analysis records
- Copies of any manuals of field or laboratory procedures
- All specialized analysis reports and data

- Copies of any archival or historical maps or materials copied or obtained in researching the project
- Copies of professional papers derived from and generated during a project
- All photographic negatives, prints, contact sheets, slides, transparencies, films, videotapes etc.
- Computer-readable data, final analyses, and inventories that provide supporting documentation for project reports

Chapter 2

DESCRIPTION OF THE REPOSITORY

ARC stores archaeological collections from numerous federal, state, and private organizations and individuals. Among the federal agencies are the Black Hills National Forest, Custer National Forest, Bureau of Land Management, Bureau of Reclamation, U.S. Army Corps of Engineers, Bureau of Indian Affairs, Federal Highway Administration, and National Park Service. Among the state agencies are the Department of Game, Fish, and Parks, Department of Transportation, and State Historical Society. There are also a few collections donated by private citizens.

2.1 Material Remains

ARC manages approximately 8,000 accessioned collections encompassing over 10,000 cubic feet of space. Although most of the collections originated in South Dakota, a small number are from other states and countries. In addition, educational and comparative collections are available for outreach programs and research. Comparative collections include lithic raw materials, faunal remains, and ceramic types from South Dakota and surrounding areas.

2.2 Records

ARC maintains archaeological site and survey data, accession records, photographic media records and report references on the Archaeological Resources Management System (ARMS), an application built around Microsoft Access. The catalog records are also being added to the database. Two workstations linked to the network are available to researchers at ARC. An online version of the ARMS database is also available at http://hawken.sdsmt.edu.

The County Files are organized by county and site number. These contain paper records related to the site, such as field notes, excavation forms, National Register of Historic Places (NRHP) forms, radiocarbon dates, correspondence and project maps. Two sets of site records from the Smithsonian Institution River Basin Surveys (RBS) are also available to researchers.

2.2.1 Maps

Map data for sites and surveys are stored in a Geographical Information System (GIS). This data is available on workstations at the Center. While USGS topographic maps are still on file, the data is no longer updated for them.

2.2.2 Library

The library contains South Dakota excavation and survey reports, anthropological and archaeological periodicals and a variety of reference materials. The excavation and survey reports are organized either by county or by physiographic area in the case of multi-county reports. Most of the library materials have received archive numbers, which are also available as a menu option from ARMS.

2.2.3 Photos, Negatives and Slides

The photographic records for archaeological sites includes 35 mm black and white negatives, prints, color slides and video tapes. These are accessioned by project and stored sequentially in binders and boxes. The photos and negatives from the RBS were recently transferred to ARC and are stored by their original numbering system.

Chapter 3

INITIAL PROCEDURES

3.1 Curation Agreements

A curation agreement (Figure 3.1) is necessary in order to deposit archaeological collections at the repository for permanent storage. Agreements are made for up to two years, until the end of the state fiscal year following that year in which the agreement was made (e.g. to June 30, 1991 for an agreement issued in September 1989). Curation agreements are renewable and may be canceled on 30 days written notice by the repository.

Curation agreements are issued to individuals who meet the Secretary of the Interior's Standards and Guidelines for professional archaeologists as set forth in the Federal Register Vol. 40, No. 190, p. 44739. The agreement in no way can be taken as an endorsement of an individual's qualifications or ability to meet contractual obligations. Individuals are responsible for contacting the repository to request or renew an agreement.

Curation agreements between the repository and a Federal agency will be handled with a memorandum of understanding. The memorandum of understanding will closely follow the example provided in 36CFR79 in Federal Register Vol. 55, No. 177, Appendix B, p. 37638–9. The agency will be responsible for seeing that collections deposited with ARC meet the requirements stated in these guidelines. The agency is responsible for contacting the repository in order to renew a memorandum of understanding between the two parties.

3.2 Site Numbers

ARC is required by law to maintain the state's archaeological records. This is done by using the trinomial site designation system devised by the Smithsonian Institution in the 1940s. The system identifies each unique site by state, county, and a sequential number. In this system each state has been assigned a number (South Dakota's is 39) and each county within the state has a two-letter identification code (e.g. PN for Pennington County). Sites within each county are assigned numbers sequentially.

Site numbers are assigned by the repository staff. A nearly completed site form, missing only the number (temporary or field numbers are permissible in the site number blank), must first be submitted. A check of the location and site records is then made. If there are no problems such as a previously recorded site, a new number is issued. If the person receiving the site number is doing the work under contract or for a federal or state project, a completed site form, including the number, must be submitted along with the report.

Expiration Date: 30 June 1996

COLLECTION CURATION AGREEMENT

I, John Doe for and on behalf of Archaeological Resources, Inc. hereinafter called the Firm, agree to deliver archaeological materials which are collected by the Firm within the State of South Dakota to the State Archaeological Research Center, South Dakota State Historical Society, Department of Education and Cultural Affairs, hereinafter called the Center, for curation.

I have read and understand *Requirements for Submitting a Collection to the State Archaeological Research Center* and agree to comply with its terms when delivering materials for curation. I am a qualified professional as stipulated in the Secretary of the Interior's standards and guidelines (published in the *Federal Register*, vol. 48, No. 190, p. 44739, Sept. 29, 1983). I furthermore certify that the collections were obtained under conditions and methods which conform to generally accepted archaeological methodology.

Special Provisions:

Entered into this 20 day of August, 1994. This agreement will terminate on the last day of the state fiscal year following the fiscal year in which it is signed. It can be canceled upon 30 day's written notice by the Center.

For the Firm:	For the Center:
John Doe	Mary Smith
Title: President	Title Curator

Figure 3.1: Researchers need to enter into an agreement with the repository in order to submit collections for permanent storage.

It is the policy of ARC that nearly all archaeological resources will be assigned a site number. No separate record keeping system is employed for ephemeral resources such as isolated finds. Any site having artifacts or features older than 50 years should be considered an archaeological resource. The only exceptions are in rare cases of extremely ephemeral remains such as isolated glass fragments. When there is any doubt as to whether a set of remains constitutes a site, ARC should be consulted.

Site data are initially entered on the state site form by the person who first records the site or files new data regarding the site. The form consists of two pages printed front-to-back plus any necessary continuation pages. This form should be filled out completely and accurately following the guidelines in The Archaeological Research Center Field Site Form, which is available from ARC.

3.3 Accession Numbers

Artifact collections are managed at the ARC repository by the use of an accession system. The accession number, assigned as a collection control number, consists of two digits for the calendar year the material was accessioned followed by a four digit number (e.g. 79-0133, 84-1392). An accession number can be obtained by contacting the curator at the repository. Please have the following information ready when you call: site number, site name (if any), owner of the collection, date collected, project name and/or identification number, researcher/collector, and institution represented or address. In addition to this information, the accession records indicate the collection's loan and conservation status, a description of the contents, the storage box number(s), and the number of items in the collection.

Chapter 4

REPOSITORY LOANS

Most collections at ARC are available for long or short term loans to qualified professionals or institutions. There is a limited amount of space available for researchers to study the collections on the premises for an extended period of time. Please schedule this time in advance with the curator.

4.1 Long-term Loans

The repository loans collections to qualified professionals or institutions for research, exhibits, educational programs, and ceremonial purposes. A limited number of reports, slides, negatives and photographs are available for loan. In most cases, the borrower must pay for copies of these items and then retains ownership. For further information regarding collections available and loan regulations, please contact the curator.

4.2 Short-term Loans

Collections are available for study on the premises for a one-day loan. A researcher should contact the curator prior to arrival to verify that a particular collection is available and to schedule the visit.

Chapter 5

FIELD TREATMENT OF ARTIFACTS

In order to maintain the stability of an artifact and increase its chances of preservation during long term storage, proper treatment must begin in the excavation/collection stage of a project. Proper field techniques and materials will help stabilize an artifact and slow down or halt deterioration often caused by changes in light, oxygen, humidity and/or temperature during field collection. This section will provide the field archaeologist who intends to submit a collection to this repository with general guidelines as well as information regarding conservation, packaging and packaging materials, cleaning, removing and handling. For greater detail on these subjects concerning specific material types two references are recommended: *A Conservation Manual for the Field Archaeologist* by Catherine Sease, and *First Aid for Finds* edited by David Watkinson (See Appendix B for additional references). Archaeologists are encouraged to call the curator at ARC with any questions or concerns they have regarding treatment of artifacts in the field or lab or preparation for final storage.

5.1 General Guidelines

The following are general guidelines for treatment of all artifacts in the field and/or lab.

1. Immediately following excavation, maintain an environment around the artifact as similar to its burial environment as possible. Excavation introduces changes in temperature, humidity, light and oxygen, upsetting the equilibrium of the burial environment and promoting deterioration. This deterioration can be slowed by proper packaging in the field.

2. The less done to an artifact the better. Conservation methods and lifting techniques involving chemicals are a last resort. Sease (1987) describes a series of techniques for removing fragile artifacts from the ground that should be considered before using consolidants or other chemicals.

3. All techniques must be reversible. Washing artifacts is an irreversible cleaning technique. Alternative cleaning methods are discussed below. Consolidants are reversible but are best managed by a trained conservator for proper application.

4. Handling an artifact should be kept to a minimum. It is safer to place the artifact in a box with support, such as tissue, so it can be viewed without actually picking it up. This also avoids introducing oils and salt from the skin.

5. Most chemical treatments for cleaning (such as acid baths for salt problems and consolidants for stabilization) render the artifact useless for most analyses. This is an important consideration before doing anything to an artifact. When possible, a "raw," untreated sample should be set aside for future analysis.

6. Document everything done to an artifact and keep it with the object. It is often time consuming and difficult to locate this information after the artifact has been brought to the lab. Without this information a conservator cannot treat an artifact properly. There is also the possible problem of toxic affects caused by chemical treatment of an artifact when it is deposited for permanent storage. Items lacking such documentation will not be accepted at the repository.

7. Anticipate field conditions and types of materials you expect to encounter, and respond to these needs by preparing a conservation kit for the project. In some cases it may be wise to consult with or have a conservator on call if you anticipate problems. Planning ahead for field conservation is discussed below.

5.2 Field Conservation

Anticipating field conditions and preparing an appropriate field conservation kit will probably cover most problems encountered with unstable and/or fragile artifacts. Climate, soil type, topography, access, length of field season, storage, availability of water and electricity, and budget are some of the considerations to be taken into account when planning a field conservation kit.

Although a conservator is not always an affordable expense in the budget, it may be wise to consult with one if specific problems are anticipated. If a conservator is not included in the budget it is recommended that one crew member be responsible for preparation of the kit and for applying proper conservation techniques needed on the project. This helps ensure standardization of methods and the documentation of those methods. However, each crew member may want items such as brushes and wooden tools in their personal dig kit. Sease (1987) is a good source for materials and methods acceptable to most conservators and this repository. The curator at ARC is also available to help archaeologists solve problems encountered in the field and lab as well as determining if a conservator is needed or not. The following list of items may be useful in a field conservation kit.

Acid-free nonbuffered tissue	Acryloid B-72
Brushes variety	Cardboard
Cotton Swabs	Dental Tools
Foil	Fungicide
Hand Lens	HMG Adhesive
Humidity Indicator Cards	Indelible Markers
Jars	Magnets
Paper envelopes	Plaster Bandages
Plastic Wrap	Plywood Boards
Polyethylene Foam	Polyethylene Bags
Scalpels	Scissors
Silica Gel	Tags, acid free paper & Tyvek
Tape Measures, Cloth and Metal	Tweezers
Wooden Tools, variety	

Although this is a limited discussion on field conservation it is appropriate to mention some of the commonly used materials that are and are not acceptable to conservators. Super glues, white glues, carpenter's glue, etc., are unacceptable for conservation. They contain plasticizers and stabilizers to extend their shelf life, which eventually will cause chemical changes or cross linking, making the repair irreversible. If reconstruction is absolutely necessary, it is always recommended that a conservator is consulted because the appropriate adhesive choice depends on the material make-up of the artifact, its rate of deterioration, etc. Cellulose nitrate, trade name HMG, is one of the better choices for an adhesive because of its stability and non-yellowing qualities. Although its quality is not as high, Duco Cement may also be an acceptable adhesive for some materials. Again, consult with a conservator before applying adhesives.

Consolidants should be used only if necessary and only with extreme caution. An acrylic resin, trade name Acryloid B-72, is a good choice for use as a consolidant. It can be purchased in solid form and dissolved in acetone for field use as needed. Another consolidant acceptable to conservators is a poly vinyl acetate, trade name UHU. It has the disadvantage of softening and running in hot climates. However, because many of these substances are toxic and flammable, it cannot be stressed enough that-before using these or any other chemicals or conservation techniques in the field-the individual become familiar with safety precautions and techniques related to mixing, applying, storing, and discarding chemicals (see Chapter 6 for further discussion on reconstruction and conservation).

5.3 Packaging Materials

All packaging materials and means must be chosen to protect the artifact from environmental fluctuations, abrasion, deterioration caused by the packaging materials themselves, and other damage. Packaging materials must be made from inert, stable plastics free of polyvinyl chlorides (PVC) or acid-free, nonbuffered paper and cardboard products. The acids in paper products and the chlorine gas given off by PVC products react with many types of artifact materials, slowly causing deterioration of the artifact. PVC is commonly found in cellophane and colored plastics. By providing optimum storage containers the long-term preservation of an artifact is enhanced. The acceptable materials listed below are some of the most common items used for packaging. The project director should use this list as a guide to planning packaging needs for the field. The unacceptable materials should be avoided for the reasons discussed above, although in some cases they may be used for cushioning artifacts during transport provided there is a barrier between the artifact and the material. These lists are not all-inclusive but they should provide a basis for judging the acceptability of other types of materials.

Acceptable Materials

- Clear, self-closing plastic bags without pleats
- Clear plastic containers (no PVC)
- Nonbuffered, acid-free cardboard boxes, various sizes
- Nonbuffered, acid-free tissue paper
- Polythene or Polyether foam
- Polystyrene

- Gortex ®
- Unbleached muslin, washed 5 or 6 times to remove the sizing
- Bubble pack without PVC (but only with a barrier between it and the artifact as it may leave impressions on the artifact)
- Silica gel (packaged)
- Humidity indicator cards
- Natural fiber cloth bags with string closures and attached label

Unacceptable Materials

- Colored or clear plastic bags with pleats and/or twist ties
- Colored plastic containers
- Plastics containing PVCs
- High acid content or buffered cardboard boxes
- High acid content or buffered tissue paper
- Paper towels
- Newspaper
- Any acidic paper products
- Glass containers (except for $_{14}C$ samples)
- Rubber bands
- Pressure sensitive tapes (scotch, masking, strapping, etc.)
- Bubble pack with PVC ask the manufacturer

A list of suppliers of archival quality materials is available in Appendix C. This is not to be taken as an endorsement for these over other suppliers, it is merely a starting point for locating the proper materials. One should always read the product descriptions carefully or call the manufacturer for specifics if the information is not available in the catalog. Not everything listed as archival meets archival standards. The project director should not rely on local sources for archival quality packaging materials, unless the item is quite common, such as self-sealing bags. It is better to purchase the packaging materials in advance to insure quality.

5.4 Field Cleaning and Removing

Choosing one of several methods of field cleaning (if necessary) and removing an artifact will depend on a number of factors. It is important to identify the material composition of the artifact first, then assess its condition. Besides assessing the stability of the artifact one should also note if it is dry, damp, wet or waterlogged, as this will affect methods used for removing, cleaning and packaging for temporary field storage. It is better to err on the side of being too cautious than to assume stability. Photographing in situ is always recommended. Should the item fall apart, a photo may be the only record of its original shape. Substituting small wooden tools such as modified popsicle or bamboo sticks and potters tools for metal tools such as dental picks will help prevent damage to an artifact while exposing its shape and size prior to removal. Local hobby stores often carry a variety of inexpensive, wooden tools.

If field cleaning is absolutely necessary, remove only the superficial dirt. Various methods include dry brushing with a soft-bristled brush, dabbing with a damp sponge, blowing, or gently rolling damp cotton swabs over the artifact. Use as little water as possible none at all is best particularly with metals. Water can initiate corrosion of dry metals.

If water is used for field cleaning always dry the artifact slowly and evenly out of direct sunlight. Raised, non-metal screens promote air circulation for even drying. If paper has to be used, turn the artifacts frequently to promote even drying. Although they may have to be used out of necessity, newspapers are highly acidic and are not recommended as drying paper.

Fragile objects that do not require special lifting techniques to provide support when being removed should be placed in a box or appropriate container with support such as tissue. The artifact can be viewed in this way without being handled. Often, an apparently sound object can become unstable as the affects of being removed from the burial environment take their course.

After identifying the material type and condition, one can decide upon the appropriate method of removal. A typical series used for increasingly unstable objects might include lifting, dry bandaging for extra support, plaster bandaging, backing (various methods), block lifting (various methods), and consolidation. Sease (1987) provides detailed descriptions of these methods. Plaster bandaging, one of the more common methods for removing unstable objects, and using spray foam insulation are the only methods discussed.

5.4.1 Methods for Removing Fragile Objects

Three methods of securing fragile objects for transport back to the lab are discussed in this section. Because fragile bones and fossils typically receive support, they are used as the example. However, these methods can be used for ceramics, historic objects, etc. First is the standard plaster jacket for matrix that pedestals well. The second is for large or long objects in matrix that does not pedestal well. The third briefly discusses the use of spray foam insulation with a reference to an article which discusses the technique in detail.

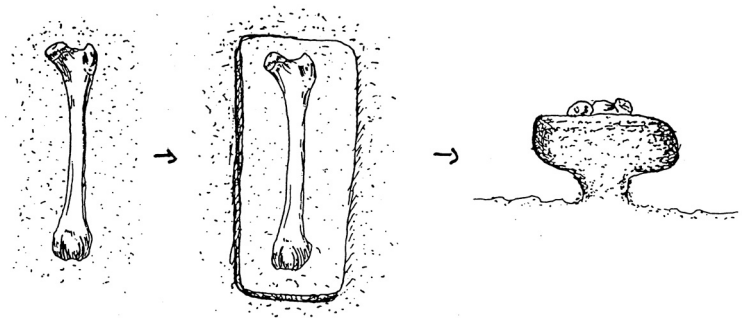
Standard Plaster Jacket

1. Collect and save all bone fragments found near the bone or fossil; it may be possible to reattach them to the specimen later. Note: the fragments can be placed in a plastic bag and placed in the jacket before it is capped (see Step 9).

2. Apply appropriate glues to the bone, if necessary, to stabilize the bone. Glues such as glyptol or butvar are commonly used to consolidate fossils as they can be dissolved in acetone. Glues

should be used only if they can be removed without damaging the specimen. The use of glues also destroys the value of the specimen for use in dating techniques.

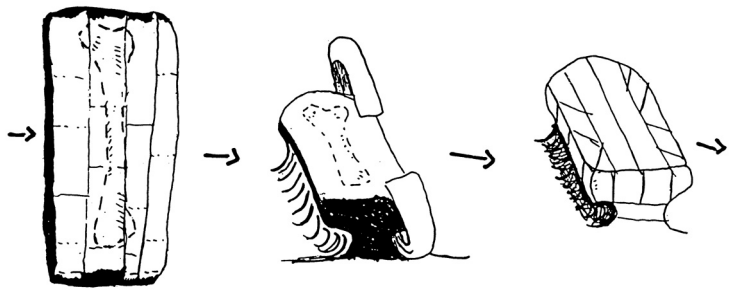
3. Isolate the bone and its surrounding matrix from the rest of the surrounding soil or rock. Trench down and around the specimen using hand tools, such as ice picks, trowels, or chisels. Leave the bone sitting atop a pedestal with at least an inch of soil/rock surrounding the specimen if possible. This layer protects the bone when the jacket is later opened using saws or knives. Try to expose as little of the bone as possible; the matrix protects the bone from damage. Do not leave too thin a pedestal as the supporting rock/soil could collapse, destroying the specimen.



4. Next, cover the exposed bone and adjacent soil on top of your block with a layer of moistened tissue paper, toilet paper, paper towels, or newspaper (the dyes in newsprint can bleed through into the specimen). If the paper is not damp at the time of casting it can absorb moisture from the bone, causing the bone to adhere to the walls of the cast. Use a wet paint brush or a spray bottle to make the paper conform to the shape of the block; the less space there is around the bone, the less jostling there will be to the specimen inside the cast. Always place a layer of paper between the bone and plaster. The plaster will stick to the bone and will cause great damage to the specimen when the cast is opened and prepared.

5. Place one or more rolls of preplastered bandages in a basin of water. Precut lengths of preplastered bandage can also be dipped in the basin as they are applied. Dampening the matrix on and under the pedestal will help the bandages wrap more easily. Strips of burlap can also be cut, soaked in water and then dipped in mixed plaster. Any left over plaster can be used to smooth out the jacket. Prepackaged bandages are easier to use but are much more expensive. Burlap can also be cut to the widths or lengths needed for a particular job.

6. Start at one end of the block and wrap a wet bandage under the undercut, bringing the ends up and over the top of the block. Continue until the top and bottom of the block is fairly well covered. Start the next layer in the opposite direction from the first layer, criss-crossing the layers to add strength to the jacket. Press the bandages around the block as you do each layer to make the bandages conform to the shape of the block. Add bandages until the block is fully supported. It can be difficult judging how much bandaging is necessary. Too few bandages and the cast may flex and break; too thick of a cast and damage can be caused to the specimen by the preparator trying to open such a thick, hard package. Just remember, casts do not need to be thick enough to survive an atomic bomb blast at ground zero, usually a few layers for small objects is sufficient. Further support can be added to the jacket by plastering in small wooden splints or even large wooden planks, depending on the size of the jacket, the fragility of the specimen and the distance and conditions under which the specimen will be moved.

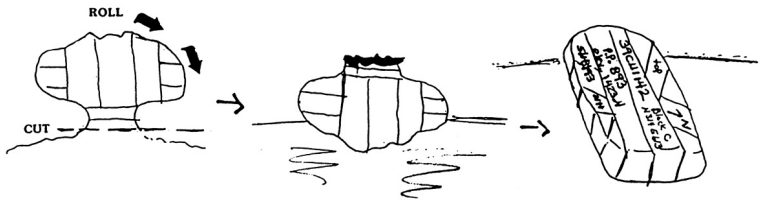


7. Allow the jacket to dry and harden. This can take from approximately 10 minutes to an hour (or more), depending on the size of the plaster jacket and the weather. If burlap and plaster is used the drying time can be longer.

8. Under cut the pedestal, allowing for a smooth break. Roll the block over in one quick movement so as to not allow any of the contents of the jacket to fall out.

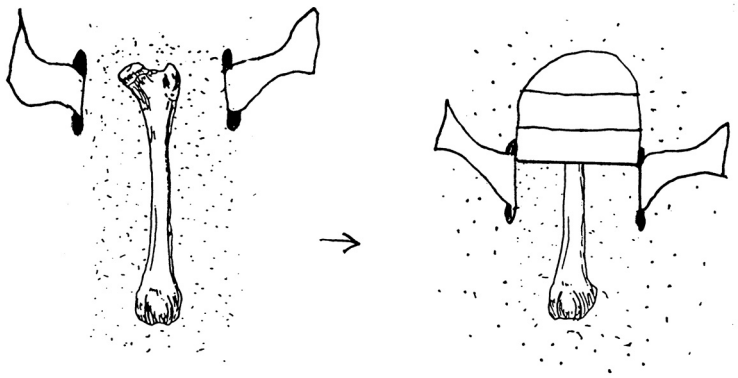
9. At this stage any excess soil/rock can be removed to lighten the jacket. Cap the opening with a layer of wet paper and bandages to seal the opening and allow it to dry.

10. Label the jacket with all pertinent information (site number, unit, level, person, date) using an indelible marker and label the 'top' of the cast. Arrows on the cast can be used to show the bone orientation (North arrow or strike and dip). It can also be very useful to the preparator to label the cast or bag as to what the bone is (rib, limb fragment, tool) and/or the condition of the bone (very fragile, complete, etc.).



Plaster Casts for Sandy Soils

This technique is useful for large or long objects or specimens in matrix that does not pedestal well.



1. Dig a tunnel under the specimen, deep and far enough away so the bone and surrounding matrix will not collapse, wide enough to get a plaster bandage through.

2. Cover the bone with damp paper as in the above technique and then wrap the wet plastered bandages around the bone using the tunnel.

3. Fill in the first tunnel and begin another tunnel, bandaging along the specimen. When you are done the entire object should be wrapped in plaster; let it dry and label the cast.

Spray Foam Encasement for Wet or Humid Conditions

Some paleontologists and archaeologists are now using cans of spray foam insulation to jacket specimens instead of plaster and bandages. In the last few years whole dinosaurs have been removed from the ground using this type of cast and some schools and universities now use only this technique. The method was developed for use in a cave with 95% humidity after standard plaster jackets failed to dry. Although now, it is used in all types of environments because it is quicker, both in terms of casting time and exposure time of the specimen to the elements. The resulting jackets are also much lighter in weight and are, obviously, well insulated for transport. Draw backs include: the greater expense of the spray foam, the degassing of formaldehyde by the jackets and the possible shorter "shelf life" of the casts.

The foam is sprayed uniformly over the specimen (no barrier between the foam and the bone is needed), allowed to dry, and then rolled and sprayed on the underside. The jacket is allowed to fully dry and then labeled as to provenience. The reader is referred to Bement (1985) for greater detail of this method of bone encasement.

5.4.2 Transporting a Cast

The casts are now completed, dry, labeled and ready for transport and can be loaded into a car or truck. If the casts are to be transported in an open truck bed or trailer use tarps or plastic to protect the plaster jackets from the elements. Large casts can be placed on foam or old tires to cushion the ride. The jackets, if properly done, can last for a great number of years, so do not need to be opened immediately; 30+ year old jackets are not unknown or uncommon in the storage rooms of museums. The casts should be stored where they will not be exposed to moisture and protected from dirt and dust which can obscure or erase the labels. The specimen will be stable until the jacket is opened and exposed to the air. Once a cast is open the specimen should be prepared as soon as possible to prevent deterioration and damage. Plastic can be used to protect the opened cast from dust and moisture.

5.5 Packaging

Field packaging should aim to protect the artifact from environmental fluctuations, provide support, and prevent abrasion or damage to the artifact. Choosing the appropriate packaging materials for an artifact will depend on its material composition, condition, and the amount of moisture in the artifact. In this section general packaging guidelines are presented (Figure 5.1), followed by guidelines aimed at more specific conditions based on material composition and moisture content. Again, Sease (1987) and Watkinson (1987) provide detailed packaging guidelines for a wide variety of artifact types in various conditions.

Do not over-pack individual containers or boxes. Abrasion or breakage can result due to the weight of the other items in the container. It also makes it difficult to find individual items in the container.

Do not "cocoon" an artifact in packaging material. One cannot tell what is inside, whether it is fragile, its size, etc., and damage may result when being unwrapped. Instead, create a nest of tissue overlaid with a smooth piece of tissue to lay the object on and cover it with a protective layer that can be lifted off without holding or touching the artifact, only the container.

If bubble pack is used, make sure it is free of PVC and never comes into direct contact with an artifact. It can leave impressions on the artifact. Do not rely on it for air transport because it tends to pop under the pressure. A layer of tissue can be placed between the bubble pack and the artifact to act as a barrier.

Packaging should prevent movement of an artifact within a container without creating a tight fit.

Silica gel is a desiccant that can be used to control humidity fluctuations in a sealed container. Used properly, it can create a stable micro-environment to prevent further corrosion of metal artifacts. Silica gel should never be used with organics. A few blue, moisture indicating silica gel beads can be mixed with the cheaper white silica gel beads and placed inside a self-sealing bag with pinhole perforations. A layer of tissue can be used to create a barrier between the bagged silica gel and the artifact. Direct contact between the artifact and the silica gel can cause damage to the metal.

Figure 5.1: A general guide for packing and storing artifacts.

The artifact itself should also be placed in a perforated plastic bag to prevent moisture accumulation and allow the silica gel beads to absorb excess moisture. Humidity indicator cards can be placed inside a clear, sealed plastic container with the silica gel beads to provide a quick humidity reading without breaking the seal. If containers with tight seals are unavailable, dry metal objects can be double bagged. The perforated bags containing the artifact and the silica gel are simply placed in another self-sealing bag. Approximately 0.2 lbs. of silica gel should be used per 240 cu.

inches. When the blue beads turn a pale pink the beads need to be regenerated in an oven to be effective. Please remember to use caution and follow the manufacturer's directions for proper use and disposal when using a chemical such as silica gel in the field or lab.

Acidic packaging materials should only be used if proper materials are unavailable or if a barrier is placed between the packaging material and the artifact. Cotton, placed in a sealed self-sealing bag so it will not come into contact with the artifact, will create a soft pillow for fragile artifacts. Newspapers may be used for filler inside larger boxes of artifacts if the artifacts are sealed inside plastic bags. Although these measures may need to be taken in the field for safe storage and transport, they will not be acceptable for artifacts turned over to the repository for long-term storage. At that time all packaging materials must be of archival quality.

Although the moisture content of an artifact may seem obvious and not need defining, it is important to recognize those artifacts that will need the special attention of a conservator in order to survive the seemingly simple process of drying out. Whether an artifact is dry, damp, wet or waterlogged will affect its treatment and method of packaging after removal from the ground. Guidelines for these various conditions are provided below only as an introduction. The project director should familiarize himself/herself with a variety of techniques for packaging artifacts with varying amounts of moisture.

5.5.1 Packaging Dry or Damp Artifacts

Dry artifacts will have little or no apparent moisture if held in the hand or touched while in the ground. It is always recommended that dry artifacts remain dry. Introducing water to a dry metal object will initiate corrosion and create a problem that was not present when the artifact was first exposed and removed. Introducing water to porous materials such as bone or wood causes expansion then contraction while drying occurs, possibly causing fissures or weak points in the material. Water used on stone artifacts or pottery may remove dried blood or food residues that can be detected through certain types of analysis (Thompson 1988; Loy 1983).

Self-sealing bags can be used for most dry artifacts. Do not leave a bagged artifact in direct sunlight; try to place it in the shade, because even apparently dry artifacts may contain small amounts of moisture. Sealed bags should be checked periodically and opened if moisture has accumulated in the bag. Dry metal artifacts should be packaged as described above with silica gel to maintain a constant humidity level in the container.

Artifacts are defined as damp when moisture can be felt on the hand holding it. Damp artifacts should not be sealed in bags until they are thoroughly dried. Moisture trapped in a sealed bag may be absorbed back into the artifact, causing cycles of swelling and shrinking that may damage the artifact.

Damp artifacts should be allowed to dry out slowly and evenly out of direct sunlight. Non-metal mesh screen, such as nylon, can be attached to a wooden framed and raised to allow air circulation around the artifacts for even drying. If bone or similar items have to be laid out on paper to dry turn them frequently to promote even drying which will prevent splitting. Paper bags or plastic bags left unsealed may be used for damp bone until properly dried. Once dried, these artifacts can be packaged the same as dry artifacts, checking sealed bags periodically for trapped moisture.

If artifacts bagged at the end of the day have not had proper drying time, unsealed plastic or paper bags may be used temporarily. The artifacts should be properly dried as soon as possible and bagged as described above.

5.5.2 Packaging Wet or Waterlogged Artifacts

Wet burial environments can cause special problems for some materials after exposure. In some cases the water in an artifact provides structural support, possibly having replaced part of the organic structure. Drying out wet or waterlogged materials can result in permanent damage such as causing wood and bone to collapse or leather to shrink and distort. Corrosion of metals will have halted once an equilibrium was reached in the wet burial environment, but will be initiated again after exposure to air. Wet and waterlogged materials should always be referred to a conservator for treatment as soon after excavation as possible. Proper packaging will prevent drying out until the items can be evaluated by a conservator.

A wet artifact is defined as having more water than a damp artifact, but there would be no standing water if it was set on a table. A waterlogged artifact would leave water standing if set on a table. Packing wet or waterlogged materials requires sealed containers such as self-sealing bags or plastic boxes with sealed lids. Colored boxes or bags should always be avoided because of the possibility of dyes bleeding and contaminating an artifact.

If an artifact is wet but not waterlogged, a piece of damp foam (or other inert material that will hold water but not deteriorate) placed in the sealed container with the artifact may provide enough moisture to prevent the artifact from drying out. It should be checked periodically and water added as needed. To wet-pack waterlogged artifacts completely submerge them in a plastic container or bag filled with water. Be sure all the air is out before sealing to avoid bacterial or fungal growth.

Fungal growth can be inhibited by storing in a cool environment such as a refrigerator in the lab or even a cooler on the site. Never freeze a wet or waterlogged artifact because the water will expand and possibly damage the shape or structure of the artifact. Fungicides to inhibit bacterial or fungal growth can be added to the water, if absolutely necessary, according to manufacturer's directions. If a fungicide is used be sure the artifact label includes the brand name, contents of the label, the amount used (it usually only takes a drop or two in a gallon of water), etc. This information is necessary to prevent improper handling by individuals unaware that a fungicide has been added. Again, refrigerating the artifact and changing the water every few days may obviate the need for a fungicide. Permanent ink on a Tyvek label works well with wet or waterlogged materials.

5.6 Storing Artifacts in the Field

Temporary field storage should strive for cool, dry, secure conditions which are free from bugs and rodents. If a field lab is set up, these same considerations apply.

5.7 Transporting Artifacts to the Lab

Proper packaging provides support for artifacts and cushions them from other artifacts and the vibrations of the vehicle to prevent unnecessary damage while transporting to the field lab and home station. Heavy stable items should always go on the bottom of a box with other stable, lighter items on top. These boxes should make up the bottom row of boxes that are stacked. For transporting, newspapers are acceptable materials for providing filler and cushion to packages within a box.

Fragile items require greater care when packaging to insure that they arrive safely. Good labelling methods on the outside of each box will identify the contents, including fragile items. This will prevent damage caused by stacking heavy boxes on top of boxes containing fragile items. The proper label will also lessen the need to reopen boxes to find a particular artifact or to organize the materials when they reach the lab. A simple label inside the box can indicate what is in the first,

second, or additional layers and describe any special packaging techniques used. This will help prevent damage if different personnel unpack the boxes.

Chapter 6

LABORATORY METHODS

The lab methods presented in this section will provide standards for cleaning, sorting, cataloging, conserving, packaging and organizing collections prior to submitting them to the repository. Standardizing these methods will insure compatibility with ARC's system, enhance the long term preservation of the artifacts and save processing time prior to permanent storage. Retrieving collections or specific artifacts within the collection will also be easier using standardized methods of packaging and organizing.

6.1 Cleaning

As mentioned under field techniques, cleaning artifacts should be kept to a minimum. The research goals should guide the cleaning methods used in the lab. Washing should only be undertaken if it is a necessary step for artifact analysis, illustration or photographing. Dry brushing, blowing or rolling cotton swabs moistened with a small amount of water over the artifact may be a sufficient cleaning technique.

If artifacts must be washed, use as little water as possible. Avoid soaking artifacts in water. Instead, artifacts may be placed in a mesh bag or screen and dipped in water to loosen the dirt. Soft brushes should be used to avoid abrading artifacts such as bone or ceramics. Chemical cleaning methods are never recommended, unless absolutely necessary for analysis.

It is recommended that metal artifacts never be washed. Washing can initiate corrosion of stable metals. A dry brush should be used instead to remove as much dirt as possible.

6.2 Reconstructing

Reconstructing artifacts in the lab should only be undertaken if absolutely necessary for analysis, report photographs or items intended for display. Otherwise, reconstruction is not recommended for several reasons. First, the items use more storage space and are more fragile, requiring additional support. Second, because none of the adhesives currently available will last forever (they may yellow, lose strength or become irreversible over time) reconstruction may create problems that originally did not exist for the artifact. Third, joins are often ill-fitting because of abrasion along the edges of fragments or distortion caused under burial conditions on items such as unglazed pottery, resulting in a reconstructed object that does not accurately represent the original shape of the object.

If reconstruction of an artifact is necessary, it is always advisable to contact a conservator who can suggest the most appropriate adhesive for the material involved. Documentation must accom-

pany reconstructed artifacts detailing exactly what chemicals were used should reversing the joins ever be necessary.

6.3 Conserving

Artifacts requiring the care of a professional conservator may be recognized during field excavation or laboratory examination. In either case, the owner of the collection is responsible for any conservation treatment that the collection requires prior to submitting it to the repository. The documentation of any such treatment must accompany the artifacts when submitted for storage. Guidelines for selecting a conservator are available through the Institute for Conservation of Historic and Artistic Works (See Appendix B) or call the curator at ARC for information..

Any treatment carried out in the lab without the guidance of a professional conservator must follow the manual by Sease (1987) and/or Watkinson (ed., 1987). Again, documentation of all conservation techniques applied to an artifact must accompany the collection to the repository.

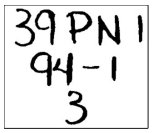
6.4 Sorting

Methods of organizing artifacts prior to labeling and cataloging will reflect the researcher's goals. The repository requires all diagnostic artifacts, such as projectile points, rim sherds, bottles with maker's marks, etc., as well as patterned tools, be given individual catalog numbers and should be sorted with this in mind. Groups of materials with common attributes and the same intra-site provenience, such as fire-cracked rock, unmodified flakes of the same lithic material or body sherds, may be given the same catalog number. Under no circumstances should materials with common attributes from different proveniences be grouped under one catalog number.

6.5 Labeling

All labels written directly on an artifact must be reversible and legible. When a paper label is directly attached to an artifact, the materials composing it must be acid-free and nonmetallic. No labeling method should harm the artifact by abrading, corroding, or soaking into porous materials, nor should labeling hinder analysis because of its location. The following guidelines are provided for labeling artifacts.

6.5.1 What



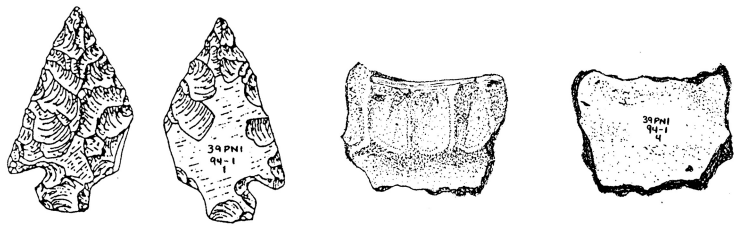
All artifacts large enough to be labeled should include three numbers written one below the other in the order listed: site number, accession number, and catalog number.

Additional information related to the artifact, such as provenience, date collected, description, chemicals used for conservation, etc., should be included on an acid free label inside the bag or container, if desired. If chemicals were used on the artifact, it is important to keep that information with the artifact. Lab personnel may not have access to field notes identifying the chemicals used, which often require special handling procedures to insure safety.

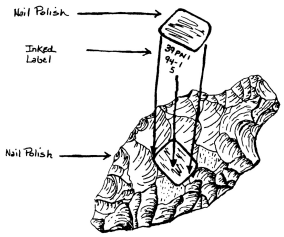
Clear nail polish or lacquer (such as a 10% solution of Acryloid B-72 and acetone) and indelible black or white ink are the only acceptable materials for labeling directly on an artifact. Kohinoor, Pelican and Higgins all make white ink but they may need to be special ordered.

6.5.2 Where

Always put the label in the most inconspicuous spot. Never place a label on the retouched edge of a lithic tool, the exterior surface of pottery, or the maker's mark or other diagnostic feature of an artifact. Try to keep the label near the center of the artifact. Always try to label the ventral (smooth) face of a flake or tool. For bifacial lithic items, and for all items where there may be a question, try to label the least photogenic surface.



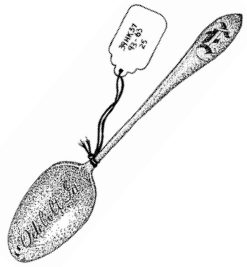
6.5.3 How



Using the materials listed above, the label should be applied using a "sandwiching" technique. First, a layer of lacquer is applied to prevent the ink from soaking into the artifact making the label irreversible. Second, the three numbers are legibly written on the dried lacquer. Third, another layer of lacquer is applied on top of the number to keep it from rubbing off.

All labels should be small and not vary with the size of the artifact. Do not substitute "white-out" or similar materials for permanent indelible ink.

6.5.4 When



When a label cannot be directly written on an artifact, other methods of labeling are suggested. If a label is to be directly attached to the artifact white cotton string should be used. No metal, which may abrade or corrode, should be a part of the label or its attachment. Even permanent ink can rub off the outside of a plastic container or bag. This form of labeling, used alone, is not acceptable. If an acid-free box is used for small fragile items, the outside of the box should be properly labeled with permanent ink in order to identify the contents. An acid-free label should also be placed in the box.

For small items, place them in an appropriate container with an acid-free label inscribed with permanent ink. Several types of labels and pens are available for this. The labels may be ready-made or cut to size from large sheets of acid-free paper. Pens include permanent, water resistant markers, disposable drafting pens, and reusable drafting pens with permanent ink.

Paper labels inside bags containing botanical samples may be enclosed in separate bags to keep them dry. Tyvek is a good label material to use with damp botanical samples as it will not deteriorate and permanent ink will not run.

6.6 Cataloging

6.6.1 Format

The Hierarchical Archaeological Cataloging System (HACS) is a Microsoft Access cataloging utility developed at ARC to standardize the artifact inventory. It is available from ARC at no charge. An example of the HACS format for catalog entry is provided in Figure 6.1. Although the handwritten Specimen Catalog Sheet (Figure 6.2) can be submitted, the researcher will be assessed the cost of data entry. Both the HACS and the Specimen Catalog Sheet record the following information: catalog number, description, material type, unit, location, depth, date collected, identity of cataloger, date cataloged, accession number, and comments. In addition the Specimen Catalog Sheet includes the site number, county, and owner fields.

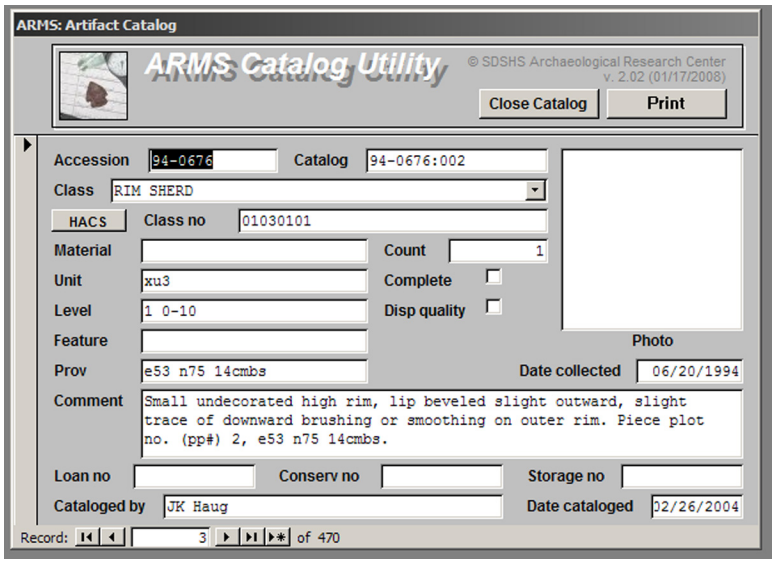


Figure 6.1: Data entry form of the Hierarchical Archaeological Cataloging System (HACS).

6.6.2 Numbering

If special numbering systems are used besides sequential numbering a brief explanation must be included with the catalog record on a separate sheet. This will be filed with the catalog records.

6.6.3 Data

If the Specimen Catalog Sheets are used the data recorded must be legible and complete. Abbreviations that are not self-evident must be keyed in on the last page. Any special artifact codes or typologies discussed in the report must be recorded on the catalog records or analysis records submitted to the repository. If the HACS system is used researchers can submit both the disk and the paper copy, however, only the disk is required.

6.7 Organizing Collections for Storage

Collections are to be organized by the researcher prior to submission to the repository. The specific organization should take into consideration such factors as stability, composition, provenience,

State of South Dakota Archaeological Research Center

SPECIMEN CATALOG SHEET

Catalog No.	Description	Unit	Location	Depth	Date	Comments
1	corner notched projectile point, chert		Feature 3	surface	7/7/94	roadcut
2	biface tip, chalcedony		outside F. 3	"	"	"
3	drill midsection, chert		6m N. F.3		"	"
4	8 bodysherds		9m W.F.3	0.25m	"	cutbank
5	16 chert flakes		"	"	"	"
	Last Item					

Cataloged by Sam Jones Date 7/8/94 County Pennington

Page 1 of 1 Owner Black Hills National Forest Site No. 39PN1

Project Federal Highway Administration/Hill City to Custer Road/Contract #342L994 Accession No. 94-0001

Figure 6.2: Paper catalog form.

future research needs and special needs of fragile and unstable artifacts. Grouping artifacts of like composition makes it easier to meet their environmental needs within the package and at the repository. The following list, reprinted from a draft of the *Idaho State Archaeological Survey Curatorial Standards and Guidelines*, provides a reference for grouping artifacts from greatest to least stability.

Group A
- Stable fired ceramics and stone (no salt problems)
- Stable inorganic architectural materials (plaster, brick)
- Stable glass objects

Group B
- Stable metal objects
- Bagged dry pollen, floatation and soil samples
- Bagged faunal remains (bone, antler and shell)

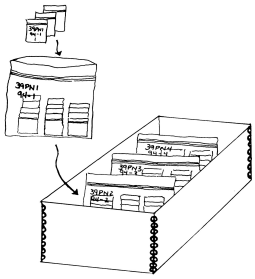
Group C
- Worked bone, antler and shell
- Botanical specimens
- Textiles
- Wood, bark and basketry

Group D
- Skin, hide, leather and fur
- Feathers
- Horn

Group E
- Unstable (salt-contaminated) ceramics and stone
- Unstable glass

Unstable metal
Mummified animal remains
Composite objects

A final consideration should be materials used for illustrations or photographs in reports. These materials should be boxed separately and clearly labeled on individual containers inside the box as to plate or illustration number for easy reference.



Using archival quality packaging materials and the suggestions for organizing materials place the items in storage boxes provided by the repository (please contact the curator for details). Small acid-free boxes or self-closing plastic bags may be used to keep several smaller bagged items organized within the box. In this way small collections from several sites can be stored in the same box or items from the same site that share provenience, material type, or other characteristics will be easy to retrieve. Over-packed boxes make it difficult to retrieve items and will be reboxed at the researcher's expense. Please call the curator if you have any questions concerning boxing.

Chapter 7

ASSOCIATED DOCUMENTATION

All associated documentation, as defined in 1.4, must be submitted with the material remains. In order to enhance the long-term preservation of supporting documentation it is important to use high quality, archival materials for recording data. It is equally important to submit the documentation in an organized fashion.

7.1 Paper Records

7.1.1 Field Treatment

Although it is difficult to keep records clean and dry while in the field, every effort should be made to minimize damage to paper records and maps. By keeping records out of direct sunlight, deterioration of the paper and fading of ink will be minimized.

Humidity fluctuations can cause structural damage in paper by repeated expansion and contraction of its cellulose fibers. In a field lab with extreme relative humidity, some corrective measures may help the situation. Silica gel placed in a closed container with field records, although not in direct contact, can help stabilize them when high humidity is a problem. If the problem is low humidity, pans of water placed near records may help correct the situation.

7.1.2 Paper and Ink

High quality paper and ink should be chosen for site documentation. The created documents are considered archival and the extra cost of high quality materials is small compared to conservation measures required to preserve low quality paper records.

Acid-free permanent inks and permanent inks used for drafting are both good choices for record keeping. If a pencil is preferred, a No. 2 lead is recommended. Ball point ink and felt tip pens can fade or run and are not acceptable for archival records submitted to the repository.

High quality paper should be 100% rag or acid-free. If a low quality paper is used, legible machine-made copies on high quality paper should be submitted instead. Machine-made copies should not routinely be sent as a substitute for originals. The repository is the archive for records accompanying the material remains from a site; originals should be available for future research.

7.1.3 Pressure Sensitive Tapes, Fasteners and Glues

Nonarchival quality pressure-sensitive tapes (e.g. scotch, masking, strapping), fasteners, and glues should never be used on documents. Any material in contact with paper records should be of

archival quality, reversible, nonyellowing and not cause damage to the paper.

Archival quality document repair tapes have a neutral pH and are nonyellowing, reversible, transparent, and easy to use. Plastic paper clips are acceptable; stainless steel clips are not because they tend to cut into the paper. Rubber bands, string, and staples are not recommended for the same reason. If staples have to be used, they must be stainless steel. Most glues are acidic and lose their adhesive ability over time. For attaching photos to paper, use archival quality photo corner mounts.

7.1.4 Organization and Preparation for Permanent Storage

While in use paper records should be kept in the most stable environment possible. Try to keep them clean and avoid overstuffing notebooks or file folders. Although it goes without saying, all documents should be legible.

In preparation for submitting paper records to the repository, organize all the materials into acid-free file folders, with separate folders for each site. Records not received in these will be transferred and re-labeled at the researcher's expense. Records that are project-specific but not site-specific should be organized in a separate folder(s) as well.

Although the project manager may devise a more logical manner of organizing the paper records, one order is suggested here.

- Revised site form, if needed (the original should already be on file at the repository)
- Pertinent correspondence and administrative records, permits
- Field log or journal; if several sites were recorded in the same journal, submit machine-made copies of all pages referring to that site and properly identify the journal from which it was copied. Journals containing notes from several sites are kept in a separate file at ARC
- Survey records, organized by date
- Excavation records, organized by unit, then date, or other logical manner
- Maps 8 1/2 x 11" or smaller
- Lab analysis records, logically organized
- Lab manual, if not ARC's
- Specialized reports, data, etc.
- Archival records
- Professional papers generated by project
- Maps larger than 8 1/2" x 11"

These records shall be placed in file folders (do not overstuff) and labeled as to county, site number, project name, number and manager, and contents (be brief). The folders are to be numbered 1 of ___, 2 of ___, etc. The same information shall be repeated on the back of any oversized maps or documents submitted for storage because they are usually stored flat, separately from the standard-sized paper documents. For transporting to the repository oversized items can be rolled but should not be folded.

Chapter 8

MACHINE-READ DATA

If machine-read data are submitted as part of a collection they must be properly identified as to file format, codes, etc. in order that the information can be retrieved. The type of software and hardware necessary to run the data must also be recorded.

Chapter 9

PHOTOGRAPHIC AND AUDIO MEDIA

The photographic records from an archaeological project serve as a mnemonic device to researchers, providing an accurate visual aid to interpretation of the written documentation. Using high quality film and photo processing, keeping complete, detailed records, and using archival quality storage materials will increase the value and longevity of these records. The following will provide information on the types of film, processing and storage materials to ensure long-term preservation as well as describe the methods of photo recording and cataloging required by the repository.

9.1 Film

Increasing the chances of long-term preservation of the photographic record begins with the choice of film. Black and white prints at the lowest speed (ASA/ISO) possible for the lighting conditions preserve better than color prints or slides. Black and white prints should provide the main form of documentation for a site, with color slides or prints used only as a supplement. Ilford brand film is a high contrast black and white film frequently available at stores that specialize in camera equipment. Choosing the proper slide film will depend on the purpose of the slide record. If the color slides are intended as a supplement to the black and white print record, then Kodachrome is recommended because it stores well. If the slides are to be mainly used in a projector, Ektachrome will withstand heat better than Kodachrome. Archaeologists have been using video tapes more frequently to supplement the traditional methods of field documentation. Again, high quality tape should be used to increase the lifespan of the recording.

Regardless of the film type, the lifespan will be increased if it is kept in cool storage conditions, even if this only means the shade while in the field. Keeping camera equipment clean will help prevent scratches on film due to dust as well as prolong the life of the camera.

After processing, it is recommended that cataloging and handling the materials be done in a separate room away from the artifact lab to keep them as clean as possible. All photographic materials should be handled with clean 100% cotton gloves to avoid transferring oils and salt from the hands to the materials. Photographic media should be stored in a clean, cool environment until submitted to the repository.

9.2 Film Processing

The quality of photo processing techniques affect the preservation of photographic materials. "One-hour" processing labs should be avoided because they do not take the time to wash film thoroughly to remove destabilizing chemicals. Prints or slides developed at the "one-hour" labs will not last as long as those properly processed. If "one-hour" processing is imperative for field interpretation or other reasons, it is recommended that copies be made at another lab when time allows.

The project director is responsible for having copies made of any prints or slides he/she may want to keep for slide programs or other uses. The repository has restricted the use of its slides, negatives and prints to duplication purposes only. The originals are no longer available for loans.

9.3 Records and Cataloging

Before going into the field, it is recommended that the project director call the repository and request an accession number for photographic records. This will simplify field record keeping and later cataloging in the lab. Unlike accession numbers for artifact collections, a photo accession number is not site specific. In fact, the same photo accession number can be used by a project director for the entire field season on one or several projects because it identifies each exposure individually. The following explains what photo accession #9423A2–1 means:

*94*23A1–1	1994, the year the materials are accessioned
94*23*A1–1	23rd photo accession number assigned that year
9423*A*1–1	A = color prints, B = black and white prints, C = color slides, D = video tapes, E = motion picture film, F = audio tapes, R = digital photo
9423A*1*–1	1 = first roll of that film type from the project; each additional roll of the same film type used would be numbered sequentially (2, 3, etc.)
9423A1–*1*	1 = first exposure on that roll, each following exposure would be numbered sequentially (2, 3, etc.)

As photographs are taken in the field and recorded on the photographic record form, the accession number can be written in the right-hand column of the form. If a photograph or slide does not turn out simply make a note to that effect on the record form, instead of re-numbering the exposures following it. It is also useful to write the accession number on the film canister (9423B1 or 9423B2) when the roll is completed. Following through with this number on the film processing envelope when it is sent to the developer helps the cataloger match up the film with the right photographic record sheet later. This is particularly useful when several rolls of film are used during the course of a project.

Any print or slide is only as useful as the record kept to identify it. Although the project director may recognize the print or slide a future researcher may not. The repository currently uses two different forms, one for prints and slides and the other for videos (Figures 9.1 and 9.2). Project directors may create their own forms as long as the following information is recorded: project name, project or contract number, film type and speed, date of photograph, name of photographer, exposure number, subject description (identify all individuals in the photograph), direction faced, and photo accession catalog number. This information should be recorded immediately after each frame is exposed instead of relying on memory to fill out the form later.

The form should be printed on acid-free or 100% rag paper 8 1/2" x 11" with holes punched for a three-ring binder on the left hand side of the page. Always use legible handwriting on the forms

and keep them as clean as possible. Permanent ink (preferred) or a No. 2 lead pencil should be used to fill in the form. Submit a completed form for each set of negatives, prints and slides because these are all stored in separate locations.

PHOTOGRAPHIC RECORD
STATE ARCHAEOLOGICAL RESEARCH CENTER

Project Name/No. Federal Highway Administration/Hill City to Custer Road/#342L994

Color Slides ( ) ASA_____ Photo Accession No. 9423B1
Black & White Prints ( ) ASA_____
Color Prints ( ) ASA_____

7/7/94	Sam Jones	1	39PN1 site overview	N	9423B1-1
7/7/94	"	2	39PN1, Fea. 3	W	9423B1-2
7/7/94	"	3	39PN1, Fea. 1 & 2	SW	9423B1-3
7/8/94	John Doe	4	39PN3, site overview	W	9423B1-4
7/8/94	"	5		E	9423B1-5
7/8/94	"	6	39PN2, TU 1	NW	9423B1-6
7/8/94	"	7	39PN2, TU2	SE	9423B1-7
7/9/94	"	8	39PN2, site overview	E	9423B1-8
7/9/94	"	9	39PN4, TU2	W	9423B1-9
7/9/94	Sam Jones	10	39PN4, TU1	SW	9423B1-10
7/9/94	"	11	39PN4, site overview	S	9423B1-11
7/9/94	"	12	39PN4, TU3	W	9423B1-12

Figure 9.1: Example photo record form.

9.4 Storage Materials

Only archival quality storage materials, including Mylar, triacetate, polypropylene polyethylene, or acid-free paper, are acceptable for storing photographic media. Unacceptable choices are paper with acid, glassine, which may become brittle or cause ferrotyping, vinyl, which contains polyvinyl chlorides, and envelopes with glued seams, which may damage a photograph if the glue migrates. The repository uses 8 1/2” x 11” clear sheets of archival plastic to store photographs, negatives and

State of South Dakota — Archaeological Research Center

Video Record

Project Name Federal Hwy Administration Hill City to Custer Road/#342L994 — Project Director John Doe

Site 39PN1, 39PN2 & 39PN3 — Photographer Sam Jones

Accession/Catalog Number 9423D1-1 to 6

Date	Scene	Time Hr/Min/Sec	Accession #
7/7/94	39PN1, site overview, Dry Creek in backgraound	0-00924	9423D1-1
7/7/94	39PN1, Feature 3, trash midden excavation	00924-01605	9423D1-2
7/7/94	39PN1, Feature 1, hearth excavation	01605-02123	9423D1-3
7/7/94	39PN1, Feature 2, cache pit, mapping	02123-02941	9423D1-4
7/8/94	39PN3, site overview, two-track trail runs through middle of site	02941-03822	9423D1-5
7/8/94	39PN2, site overview with spring in foreground	03822-04500	9423D1-6
	End of Tape		

Figure 9.2: Example video record form.

slides. We will provide boxes for video tapes submitted. If photographic media does not fit the standard 8 1/2" x 11" sheets then call the curator for advice on storage materials. Archival quality storage materials for negatives and photos may be found at local outlets or are available from several sources listed in Appendix C.

9.5 Labeling

9.5.1 Negatives

The negatives are placed in a negative storage sheet with the project name/number, month/year, and accession number written at the top of the page. The corresponding negative catalog number is written below the proper frame on the sheet for easy reference (Figure 9.3). No other information should be written on this sheet or on the negative itself.

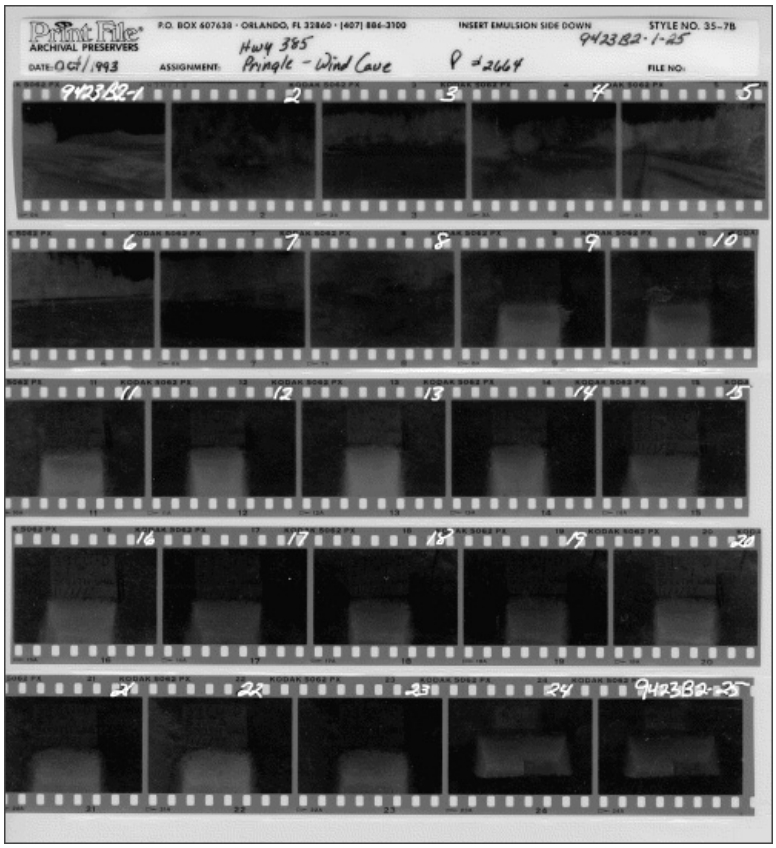


Figure 9.3: Labeling a plastic negative sleeve. Although white ink was used for this example in order that it could be read, black ink is typically used.

9.5.2 Prints and Contact Sheets

Prints are stored in plastic sleeves with the accession number written in the lower right -hand corner and individual exposure numbers written on the plastic in the upper-right hand corner (Figure 9.4). Acid-free or permanent ink, such as a Sharpie, is used on the plastic sleeve. If the photograph has a white border, the number should be written small enough so that it does not cover any portion of the image. The ink can, over time, migrate through the protective sleeve. The photographs should be organized numerically by photo accession number in the sleeves.

Using a No. 2 lead pencil or permanent ink, the following information is written in the upper right corner on the back of each print: photo accession number, site number, and date photographed (Figure 9.5).

Keep additional locational information to a minimum, especially if it appears on a photo board in the print or slide.

A contact sheet in lieu of individual prints submitted with the negatives is an acceptable practice, although the cost for contact sheets is no longer much less expensive than prints. The contact sheet should be placed in a clear protective sleeve with the accession number written on the contact sheet below each print (Figure 9.6).

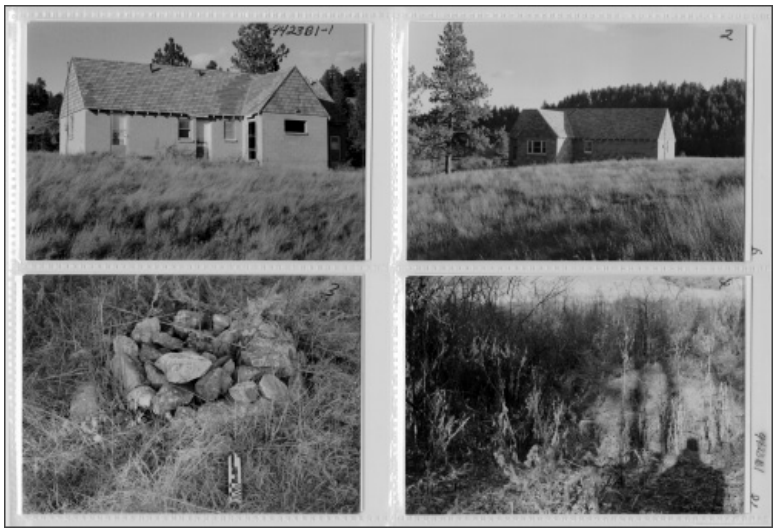


Figure 9.4: Labeling a plastic print sleeve.

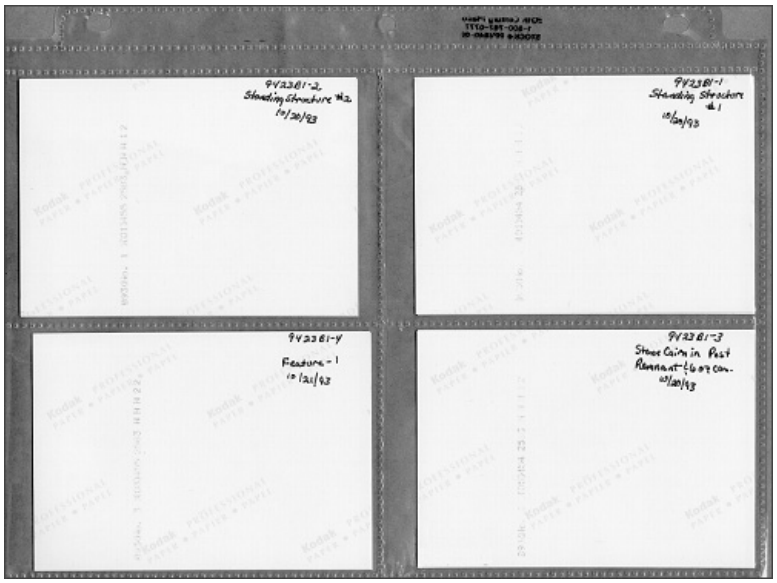


Figure 9.5: Labeling the back of a print.

9.5.3 Slides

The label for slides is written on the border of the nonemulsion side (Figure 9.7). The accession number is placed in the upper left-hand corner and the site number is placed in the upper right-hand corner. An acid-free or permanent ink should be used to label the slides.

The slides are placed in protective sheets with the project name/number, month/year, and accession number recorded at the top of the page. The slide catalog number is written below the corresponding slide on the sheet (Figure 9.8). If a sheet is not completely filled by one roll, the next roll with the same accession prefix can be put in the sheet as long as the proper numbers are indicated at the top of the sheet (e.g. 9423C1–1 through 14 and 9423C2–1 through 6).

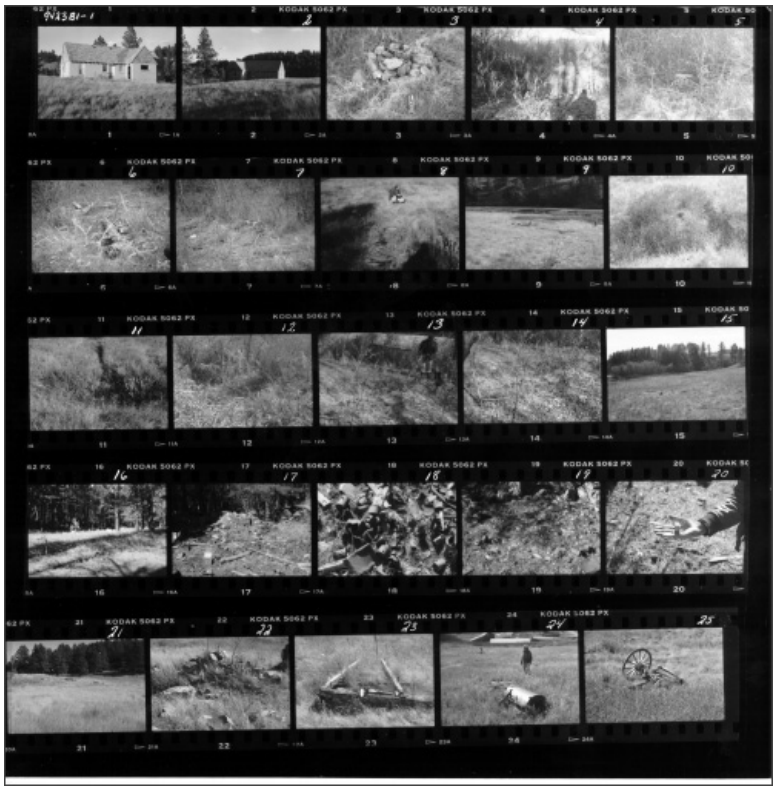


Figure 9.6: Labeling a contact sheet using white ink.

9.5.4 Videos

Video tapes are labeled with the accession number and site number on a foil-backed paper label on the "spine" of the tape (Figure 9.9). If several sites are recorded on the tape, then only the accession number is necessary for labeling. The repository will provide a storage box for videos submitted for curation.

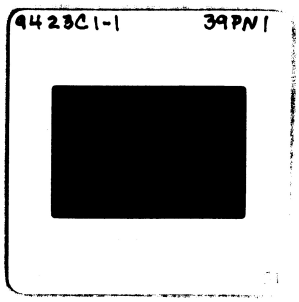


Figure 9.7: Labeling a slide.

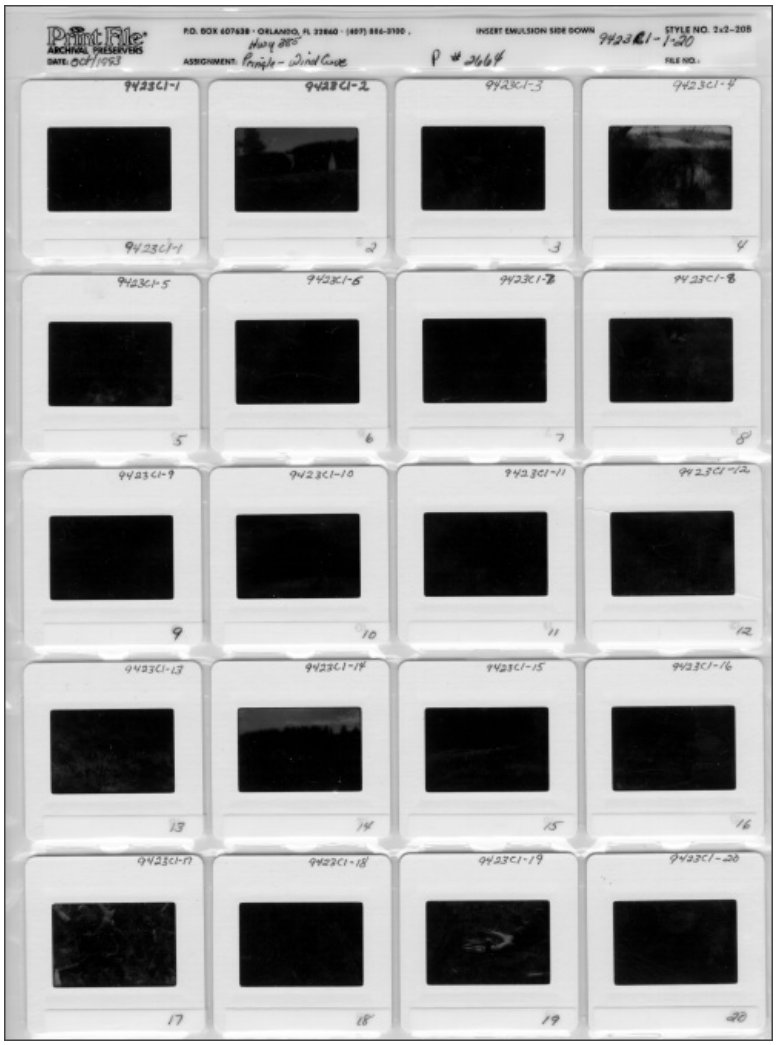


Figure 9.8: Labeling plastic slide sleeves (the lower number) and the slide (the upper two numbers).

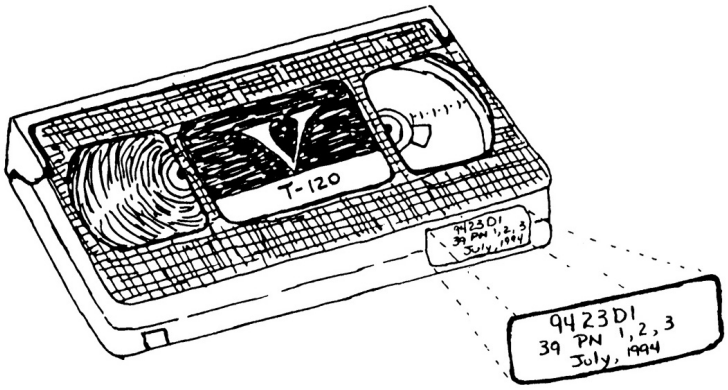


Figure 9.9: Labeling a videotape.

Chapter 10

FINAL PROCEDURES

10.1 Submitting a Collection to the Repository

After the artifacts, documents, photographic media and machine-readable data have been prepared for long-term storage according to the guidelines, schedule the transfer with the curator. It is recommended that all materials be hand-delivered to avoid loss or damage during shipping. The repository will not accept responsibility for any repairs, replacement of documents, etc. if materials are damaged during shipping. The repository will not accept responsibility for collections left with any ARC personnel other than the curator or delivered without advanced notice.

The researcher is given a signed statement (Figure 10.1) acknowledging receipt of the collection(s). However, he/she is not released of any responsibilities until an inventory has been conducted, the invoice is paid, and the release section of the form is signed.

COLLECTIONS RECEIVED FORM

DATE July 20, 1994

SITE#	ACC.#	SITE #	ACC.#	SITE #	ACC#
39PN1	94-0001	39PN2	94-0002	39PN3	94-0003
39PN4	94-0004				

The above listed collection(s) have been received from John Doe
representing Archaeological Resources, Inc.
An inventory of the collection(s) by SARC personnel will be conducted to verify the contents.
Upon completion of the inventory and receipt of payment for curatorial services, the release form below will be issued to the above individual and/or institution.

Received by: Mary Smith Date 20 July, 1994

COLLECTION RELEASE FORM

The collection(s) listed above have been inventoried and the presence of all items has been verified. At this time, none of the items appear to require the special attention of a conservator. The cost of inventorying and boxing the collection(s) at the repository has been paid by John Doe ; Invoice # 94-1036

Ownership of the collection(s) is retained by Black Hills National Forest

SARC now assumes responsibility for the collection(s), with the exception of future conservation of items not owned by SARC. SARC reserves the right to loan materials to responsible, qualified researchers at its discretion for valid research purposes, and to authorize testing of materials for scientific purposes. In some cases, this testing may be destructive. The owner will be notified of any such loans of these materials.

SARC Curator/Representative Mary Smith Date 20 Aug. 1994

Figure 10.1: Example collection received form.

Chapter 11

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Loy, Thomas H.

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Sease, Catherine

1987 *A Conservation Manual for the Field Archaeologist*. Archaeological Research Tools, Volume 4, Institute of Archaeology, University of California, Los Angeles.

Thompson, Robert G.

1988 Phytolith Analysis of Food Residues in Utilized Ceramics: A Tool for Tracing Paleodiet. Paper presented at the 1988 Midwest Anthropological Conference.

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1987 *First Aid for Finds*. Rescue/United Kingdom Institute for Conservation, Archaeology Section, London.

Appendix A

SAMPLE FORMS

LANDOWNER CONSENT
TO COLLECT ARCHAEOLOGICAL MATERIALS

I do hereby consent to the removal of archaeological materials from the _____ surface and/or _____ subsurface of my property by the employees of _____ _____ for the purpose of scientific research. The State of South Dakota is given free and clear title to these materials, which will be deposited at the State Archaeological Research Center's repository in perpetuity. This consent applies to the archaeological activities to be conducted during the year of _____.

_____ _____
Landowner Date

_____ _____
Researcher Date

List of archaeological collections given to the State of South Dakota under this signed consent form.

Site No. Accession No. Site No. Accession No.

South Dakota
State Historical Society
Department of Tourism and State Development

ARCHAEOLOGICAL RESEARCH CENTER
2425 East St. Charles Street
P.O. Box 1257
Rapid City, SD 57709-1257
Ph. 605.394.1936
Fax 605.394.1941
www.sdsmt.edu/wwwsarc

CURATION AGREEMENT

Curation Information

Agreement #: _____

Agreement Period from _____ to _____

Contact Information

Name: _____

Institution/Company: _____

Address: _____

City/State/Zip: _____

Ph.: _____ Fax: _____

E-mail Address: _____

Year Graduated: _____ Institution Name and Location: _____

Degree/Department: _____

During the term of the agreement, the signatory agrees to deliver archaeological collections that are collected by the Institution/Company within the State of South Dakota to the South Dakota State Historical Society-Archaeological Research Center, for curation. The signatory agrees to comply with the terms of the *Requirements for Submitting a Collection to the State Archaeological Research Center* when collecting, cataloging, packaging, and delivering collections to the Center. The signatory agrees to submit complete collections, that is, all artifacts, field and lab documents, photographic media, maps, disks, correspondence, and any other material related to the collection. The signatory is responsible for obtaining collections under conditions and methods which conform to generally accepted archaeological methodology.

Special Provisions: _____

Signed: _____ Date: _____
SARC Representative

Signed: _____ Date: _____
For the Institution/Company

State of South Dakota Archaeological Research Center

SPECIMEN CATALOG SHEET

Catalog No.	Description	Unit	Location	Depth	Date	Comments

Cataloged by _____ Date _____

Page _____ of _____ pages Owner _____

County _____
Site No. _____
Accession No. _____

STATE ARCHAEOLOGICAL RESEARCH CENTER
Photographic Record

Project _____ Accession No. _____ Roll No. _____

Color Slides ☐ Black-and-White Film ☐ Color Film ☐ 35mm ☐ 120 ☐ | Digital ☐

Date	Photog. Initials	Exposure No.	Subject Description	Looking Towards	Catalog No.

Appendix B

ADDITIONAL REFERENCES

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1989 Optimal Management of Archaeological Collections. *Curator* 32(1):26–33.

Bouraque, B.J., S.W. Brooke, R. Kley, and K. Morris

1980 Conservation in Archaeology: Moving Toward Closer Cooperation. *American Antiquity* 45(4):794–799.

Department of the Interior

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Hodges, H.W.M.

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1989 *Good but Cheap: Safe Materials to Use in Storage*. Ohio Museums Association Annual Conference.

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1975 A New Approach to Archaeological Conservation. Conservation, in *Conservation in Archaeology and the Applied Arts* pp. 165–167. Reprints of the International Institute for Conservation, Stockholm Congress, International Institute for Conservation of Historic and Artistic Works, London.

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Sturman, Shelley

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Webster, Laurie
1990 Altered States: Documenting Changes in Anthropology Research Collections. *Curator* 33(2):130–160.

Appendix C

ARCHIVAL SUPPLIES AND SUPPLIERS

Included in this appendix is a list of suppliers of archival materials and a copy of the order forms that are used at the repository. Over the past few years we have tried many different products from a variety of companies. Finally, we created a list of items that suit our needs from the companies that offer the most competitive price we have found. Although this should not be taken as an endorsement for these companies or their products, it can be a starting point for anyone trying to wade through catalogs and stay within a budget. We included those items ordered frequently as well as occasionally.

Suppliers	Products
Conservation Materials Ltd. 1165 Marietta Way P.O. Box 2884 Sparks, Nevada 89431	Acryloid B-72 HMG Adhesive, Humidity Indicator Cards, Silica Gel (blue and white), other conservation materials
Conservation Resources International 8000-H Forbes Place Springfield, VA 22151 (703/321-7730)	Plexiglas UF3, Plexiglas clear vinyl thin wall tubing, polyester and neutral pH paper enclosures (sleeves, folders, envelopes), alkaline reserve archival boxes and folders
E.I. DuPont de Nemours & Co., Inc. Polymer Products Division 1007 Market Street Wilmington, DE 19898 (302/774-1000)	polyester sleeves and folders for prints and negatives, polyester sheets, rolls, and webbing
Light Impressions Corp. 439 Monroe Ave. P.O. Box 940 Rochester, NY 14603 (800/828-6216: orders) (716/271-8960: inquiries)	general archival supply house (emphasis on photos)

Suppliers	Products
Pohlig Bros., Inc. Century Division 2419 E. Franklin St. P.O. Box 8069 Richmond, VA 23223 (804/644-7824)	protective housing supplies: folders, boxes (acid-free and alkaline reserve)
Talas 213 West 35th Street New York, NY 10001 (212/736-7744)	general archival supply house
Taylor Made Co. P.O. Box 406 Lima, PA 19037 (215/566-7067)	Mylar protective housing (envelopes, folders)
The Hollinger Corp. P.O. Box 6185 3810 S. Four Mile Run Drive Arlington, VA 22206 (703/671-6600)	protective housing supplies: archival folders, boxes (paper and polyester), pH testing pens
University Products, Inc. P.O. Box 101 South Canal St. Holyoke, MA 01041 (800/628-1912)	general archival supply, Water Alert

You may use the Archival Supplies Order Form to obtain supplies through ARC. It can be downloaded as a Microsoft Word 97 document, supplies.doc, or as a .pdf file, supplies.pdf, or a plain text document, supplies.txt. If you want the .pdf file, you will need the Adobe Acrobat Reader. You can obtain it from Adobe at no charge.

Archival Supplies Order Form

Date Submitted_____ by _____
Date Ordered_____ by _____
Date Received_____
Backordered_____

ASSOCIATED BAG CO.
1-800-926-6100 **ACCOUNT #:**

QTY.	SIZE	DESCRIPTION	CAT. ORDER#
POLY ARTIFACT STORAGE BAGS -- 100 per Package; 1000/ box			
_____	2"x3"	Write-on Zipper Bag, 2 mil	#77-01
_____	3"x4	" " " " " "	#77-02
_____	3"x5"	" " " " " "	#77-03
_____	4"x6"	" " " " " "	#77-04
_____	5"x8"	" " " " " "	#77-05
_____	6"x9"	" " " " " "	#77-06
_____	4"x4"	Plain Mini-grip Zipper Bag, 2 mil	#62-09
_____	10"x12"	" " " " "	#62-30
SHEET PROTECTORS -- Used for paper documents, Contact sheets, 8"x10" prints. Thumb notch at top; top loading.			
_____	9 1/2"x11 1/2" (punchable for binders)	3 mil, 1000/carton	#58-4
_____	8 3/4"x 11 1/4" (letter size)	6 mil, 500/carton	#58-511
_____	8 3/4"x 14" (legal size)	6 mil, 500/carton	#58-514
PRESS-ON ENVELOPES -- Adhesive-backed, clear plastic envelope for storage box labels.			
_____	2 3/4"x 4 1/2"	1000/carton	#45-3-40
_____	5"x 7"	1000/carton	#45-3-36
_____	9"x 6"	1000/carton	#45-3-37