CONSERVATION ASSESSMENT PROGRAM SURVEY
The Center for Sacramento History
and the Sacramento History Museum

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EXECUTIVE SUMMARY

This report contains a variety of information, which resulted from my visit to the Center for Sacramento History (CSH) and the Sacramento History Museum (SHM). In this report, I will refer to the two institutions separately as the CSH or the SHM. The relationship of these two institutions should be clarified from the beginning. As part of the grant application, it was necessary to clarify the relationship for the two agencies.

This grant was submitted in the name of the Center for Sacramento History, a public agency that is jointly funded by the City and County of Sacramento (formerly the Sacramento Archives and Museum Collection Center), and the Sacramento History Museum a non-profit museum which also receives separate joint funding from the City and County of Sacramento (formerly known as The Discovery Museum Gold Rush History Center).

The Center for Sacramento History (CSH) manages and houses all of the collections (both artifact and archival) and serves as a research facility. CSH is the lead agency in this grant. It should be referred to as, the History Center or CSH; the Sacramento History Museum is SHM or Museum. SHM serves as the display area for the collections housed at CSH. The Historic Old Sacramento Foundation is the governing board, which operates the non-profit SHM. The building in which the museum is housed is owned and maintained by the City of Sacramento, as are the majority of collections on display. The City and County both fund the museum jointly contributing 80% of the museum’s overall budget. The remaining 20% is from admission and gift shop revenue, as well as other fundraising efforts.

A City employee, Marcia Eymann, who serves as the History Manager for the CSH and the Executive Director of the SHM, manages both the CSH and the SHM. The CSH staff also provides all of the curatorial and content support to the SHM. These institutions are tied to each other
through funding sources and staff but the center is a public agency, and the museum is a non-profit supported by city and county funding. In the grant, I have listed both agencies and their staffs.

*Figure 1. Sacramento History Museum*

The relationship between the two agencies is unique and complicated. To add to this complication, both the History Center and the Museum have had a name change in the last year. The Center for Sacramento History was formerly known as the Sacramento Archives and Museum Collection Center (or SAMCC), and the Sacramento History Museum was known as The Discovery Museum Gold Rush History Center. (Figure 1)

Pfeiffer Partners Architects made a major study of the operations, buildings and collections with the input of Lord Cultural Resources and Leighton and Leighton in 2007. This report, the Pfeiffer Partners Concept Master Planning Study, covered all of the facilities described in my report and functions adequately as would the usual accompanying CAP architectural site report. Reference will be made to this Pfeiffer report in various places in my report, and will be referred to as the CMPS report.
While this report is structured as a typical CAP survey for institutions like museums, archives and historical societies, is has been expanded because of the unique character of the two institutions, their separate histories and current collections, enterprise and plans.

Executive Summaries are designed to present the most important information in outline form for the leadership of the institution. It has been found in recent museum studies that such outlines provide an effective and efficient means for developing plans for improving museum operations related to collections care. My Conservation Survey Introduction sent prior to my arrival, summarizes the history of CAP reports and shows how museums that followed the recommendations make substantial strides, for example in grants, fundraising and accreditation.

CAP reports are designed to function as tools to provide materials and direction for institutions to achieve goals, which usually include accreditation and fundraising. Progress is believed to be the essential element in institutional history. Bigger was not always deemed better by many organizational scholars after Harvard Business School professor, Rosabeth Moss Kanter’s 1989 book, *When Giants Learn to Dance*, criticized middle management and growth projections as central or desirable goals. On the other hand, Theodore Levitt, also a Harvard Business School professor has demonstrated that the UK’s Department of Trade data show that about 70% of all companies is in stasis; neither growing nor shrinking. Still, it is generally assumed that ongoing improvements indicate an institution that is assessing and correcting deficiencies is effectively managed.

While it seems that new books on business management come flooding out every year with new gurus and trends, some of the most useful, like *Six Sigma*, that focus on approaches to problem solving (devised to combat Japanese corporate success using Total Quality Management or TQM in the 1980s) actually rely on such well established recommendations as those created by John Rustin in the 1850s.
The central theme told repeatedly is that “every person (has) leadership responsibilities and potential.” Energized by this rediscovery, HSBC chairman, Stephen Green, in his book, *Good Value*, restates Ruskin’s view as “focusing on core competencies” of staff. Seeing where everyone can make contributions and allowing these to take hold has come to be a simple definition of the good manager and staff member.

**Change or Continuity?**

This will often involve a change in focus, especially today where museums have sustained a dramatic change in audience, and today’s forms of media are generally what an audience of the 21st century expects in their entertainment. I say “entertainment” here as the idea that leisure time experience has changed significantly for the general public.

The group, Museum Audience Insight (Reachadvisors website for August 10, 2010), argues that museum visitors make up a different segment of any population from a museum’s “audience.” A museum visitor may never return after one visit, may buy nothing, and never donate or become a member. The museum audience usually includes people (a group often called “core visitors”) who have visited the physical building (though not in all cases), often become members, and may donate and consider themselves connected or invested in the museum in complex ways.

A June 14, 2010 article in the *New York Times* by Robin Pogrebin, describes how the Brooklyn Museum spent significant time and money to reach out to new, younger audiences. After six years of effort, attendance had dropped by 23%, while other institutions in the New York area experienced stable attendance. The museum had attempted to bring people in the door as visitors for specific events, which detracted from their core identity. This failed to sustain the expected new “visitors” and at the same time undermined the commitment of core audience members.

A recent Reachadvisor survey found that more moms (79%) than dads (23%) go to museums and that the dads were older and had specific
reasons for attending with their older children. Though they include a group of the moms, they are all the “ultra curious moms” who reflect the specific interests of the dad group but go deeper with their interests and are a larger group in numbers (18% of moms). A recent AAM webinar focused on the theory that early experiences in a museum environment can create a lifetime of a person’s “stages” of visitorship. Generally the idea is that people who visit a museum on a free day or when on vacation are unlikely to invest in museums as a member of a museum “audience.” The Wallace Foundation funded a number of studies in the past two decades to find means of attracting new audiences to museums. Their initial campaign resulting from this urged museums to become more “visitor-centered.” However, as the experience of the Brooklyn Museum indicates, these efforts may simply confuse people as to the role of the museum and alienate core visitors and supporters. A 1999 Wallace study, however, focused on how permanent collections can be used to create regular visitors and make them into audiences. Wallace Reports and studies can be accessed on their website at www.wallacefoundation.org.

In this regard, CAP reports present areas for change and improvement, which can guide a museum to achieve its goals, especially those related to collections management and conservation. No institution can be expected to implement all the recommendations listed in any such survey or, for that matter, to accept them completely without due consideration. In many cases, institutions utilize recommendations as starting points for planning and grant writing, or as themes for fund-raising. I urge you to read the entire document before undertaking any recommendation. The approach of the CSH & SHM will most likely be quite different from how most institutions approach the assessment since most institutions are attempting to serve different audiences. In general, a museum or historical society, park, archive or zoo will have one central mission and a well identified audience. The CSH & SHM have a multiple mission and serve a quite varied audience. Most institutions are engaged in CAP to acquire recognition of their operations by the award of accreditation by organizations like the American Association of Museums or to use the survey to achieve fund raising goals from public or private sources. Each
institution has its own mission and separate governing bodies and at times serve similar audiences. The goal for CSH & SHM in this grant is to achieve fundraising goals from public and private sources and to eventually lead the museum to accreditation. CSH utilizes SHM as its main display area. The CSH also provides interpretive research for the City Cemetery and Old Sacramento. CSH is a research facility that is utilized by scholars, students, the general public, and both city and county agencies. All of these uses fall under the scope of CSH.

Your relationship to provide objects for exhibition seems to extend to a number of other institutions with whom you have no funding supplied for services, like the SHM and CSH as related in the Pfeiffer Report. The Report also indicates you provide services or expertise to the Old Sacramento Cemetery and the historic district.

**Quantification of services provided should be a major task to identify the vital role played by the CSH & SHM.**

The survey for the CSH & SHM will be most valuable in addressing the following:

- Current problems in housing the collections
- Collections use as a resource for different audiences’ needs
- New experience products for exhibition display
- Online access of collections and programs
- Other kinds of intellectual property and innovation provided to the public as a unique venue to visit in person, or as an online experience for purchase (catalogues, images, film footage, etc.)
- Collections use and programming as vehicles for donors, grants and other support.

As mentioned in my pre-visit summary, the CAP assessments grew out of a concern in the 1960s that the nation’s cultural heritage was deteriorating rapidly. At that time, there were no uniform practices for their care, or national standards for assessing condition and needs for preservation. In the next three decades, several national surveys of the nation’s public and
private museums were undertaken to develop these needed practices and standards. Public and private funds had been spent to purchase, preserve, and display objects that were found to be in seriously degraded condition. Findings strongly suggested the establishment of guidelines for collections care and museum practices in order to assure the continued use of collections and to preserve them for future generations.

The CAP assessments are a means to determine these conditions and to recommend improvements so that future expenditures can be responsibly placed to achieve these goals.

The central areas of concern in this report fall into the following categories.

1. Funding.

**Both CSH & SHM are seriously underfunded.** Every aspect of your operations is under strain due to a chronic understaffing. Existing staff is working beyond 100% of salaried time. The simple fact noted by the Pfeiffer Report that there has been no registrar for several years is a certain red flag that the institution is not functioning at accepted professional level of staffing. There has been some improvement as Ms. Prince, Curator of History, is acting as registrar as part of her incredible list of other duties. Given the current cutbacks and budgeting problems of most municipalities, the situation at CSH is an urgent problem. The strategy of the CSH taking on operations of many services at SHM may have averted layoffs, but must be seen as a temporary fix. Just as any business cannot survive where it cuts service to customers to the point where purchases are frustrated, so is the product CSH & SHM provide to the public. Already this is apparent given the problems in storage. Volunteers cannot replace the training and dedication of professionals. One could not expect a well-meaning volunteer in a hospital to replace a doctor than to replace a historian. They can act a valuable adjuncts but the degradation of our institutions is already apparent from more than two decades of neglect and underfunding. A society with decaying institutions, as Gibbon remarked in his *Decline and Fall of the Roman*
Empire, can only look back with nostalgia, and not forward with confidence. Sacramento is certainly not alone in this, other cities and towns, especially in California, are in a similar condition.

2. Collection storage.

Your storage is inadequate for the size and quality of your collections. “Inadequate,” really understates the problem, you are in crisis. As a valuable resource, your collections can return a substantial service to the public and potential revenue if organized efficiently, and can be used more effectively rather than intensively. Usually “intensive use” indicates that only a small section of the collection is inventoried and accessible, and is constantly used for exhibits and paged by the public. Your staff has done a miraculous job working with existing storage furniture and space that is now beyond its limits. Every view shows a professional care (Figures 2 & 3) making outdated and overused storage racks, shelving and cupboards serve to their limits. Work areas are impacted by temporary storage and walkways show crowding as do shelves and drawers. Even the rolling compact storage needs servicing or replacement. Your staff is showing great adaptability and skill in making things work, but at a cost as density uses up more time to move and relocate adjacent items with the danger of damage.

The overcrowding factor (density ratio) discovered by the contractors in the Pfeiffer Report is similar to that which I found in sampling of storage. They produce two estimates of overcrowding, one at 200% of capacity and another, a more comprehensive factor based on moving the collections to a new facility at 1.25 or that the collections need 25% more space. Their projection of needed new storage space is reasonable given past collection activities. Overcrowding reduces efficiency and usefulness of the collections. One only needs to imagine trying to run a profitable parts business with a large inventory where every order required the movement of dozens of other boxes to gain access to the one needed. David Thickett, a conservator at the British Museum, studied the relationship between object density and damage. He published his results
in the 13 Triennial Meeting of the ICOM (2005), which support reducing object density to reduce damage.

Figure 2. CSH Storage

Figure 3. CSH Storage crowding
3. Collections Care.
It is clear your organization dedicates an inadequate amount of funding and staff resources to the maintenance of the collection. The collection, like any inventory for any private business, requires modern accounting (in the case of museums this includes cataloging and condition reporting), advertising (which in museums means research and catalogue generation as well as other public relations and education efforts), and maintenance (which in the museum means conservation). The low percentage of inventoried items of the collection limits your ability to derive maximum return on the value of the collection in loans, purchase of images, and other derived experiences.

Your staff is constantly involved in tasks that include all these aspects and yet the collections are too large and differentiated for them to address effectively all the needs of such a valuable and densely stored inventory. The level of service your staff is providing to the public for direct access to objects and information, and their care for collections, especially new acquisitions, is incredible. Additionally, given the new duties and responsibilities with the SHM, they are obviously overburdened. Given the size and complexity of the collection and the public demands on it, your current Director is doing a tremendous job of keeping up with the situation, motivating staff, and utilizing creative ways of dealing with the lack of funds. In 40 years of museum work I cannot imagine anyone else dealing so successfully with this ongoing crisis.

4. Staff development and Skills
Your staff is quite diverse in their background and talents, but little is being invested in staff training. The best managed American companies, like Proctor and Gamble, General Electric, and Intel all invest in both outside training, conferences, and inside training experiences. The CSH & SHM need to develop and implement a staff education and training program. Your present staffs are doing a superior job in maintaining and operating the facilities. To increase the CSH & SHM’s effectiveness in attracting audiences, especially in the wake of the current economic downturn, investments must be made in staff development.
These are the most cost-effective investments an institution can make. Staff can be conduits to new sources of income, both in terms of uses of collections, new exhibits, and in development of grants and funding initiatives.

Figure 4. Looking South from the Sacramento History Museum in the Historic District

5. Locations and Facilities
The main building of the SHM (Figure 1) is laid out within a multi-acre site containing other historic buildings, including the Sacramento Railroad Museum, and a historic street with reproduced structures dating from the mid to late 19th century (Figure 4). The building is well suited for a museum (see Maps 1-3) and its location allows for it to profit from visitors drawn to the other historic sites in the immediate area. A major drawback is the lack of adequate signage at the immediate site and any concerted effort on the city streets to direct people to historic areas. Even the airport is bereft of information on tourist sites and information. While there are a number of facilities for people to visit in the plaza in addition to the SHM and the Railroad Museum, there is no
focus to the area. A designer like Peter Ackroyd or Iain Sinclair might refer to Walter Benjamin’s work and argue that there is no sense of engagement, no liveliness. This does not mean pushcarts and barkers, but instead the sense of activity and promise that a community possesses. At present, it is more “Tombstone” at high noon than a relaxing space or attractive historic center. While the economic and political situation in the state may be described as stagnation that does not mean that its institutions have to reflect it. Even some minor landscaping with some desert plants or native species that do not need much care or water would demonstrate a modicum of concern and care for the area. It is true, however, that SHM is located in the 28-acre National Historic Landmark District and State Historic Park. SHM has no control over the landscaped area and since the area has archaeological interest and numerous features, it is unlikely that major landscaping can be done.

The current layout of SHM (See Maps 1, 2, &3) has been substantially changed recently resulting in the opening up of the first floor, presenting a much more dramatic face to the public. Some of the older exhibits have been removed or updated, and staff summarized current plans to upgrade or replace the remainder. A full discussion of the exhibits will be presented below under that topic for this museum.
The location of the CSH building is quite different. It is a one story concrete and steel structure housing different facilities for storage for its collections, as well as some of the Crocker Museum’s, and a section occupied by the Police Department (Figure 5, Map 4). The area around the CSH is mainly industrial. The presence of this storage is problematic, for both the CSH and the Crocker Museum. The impact of this storage on the CSH is loss of space and the inconvenience of its necessary costs of curation, environmental control and maintenance, staffing, and security. For the Crocker Museum, it must have a significant detrimental effect. No major museum has all or a substantial portion of its collections off site, although a few have some of their collections of minor import in temporary storage or special collections in support services housing nearby research centers. An exception to this is the Smithsonian museums where a vast research center and storage facility is located in Virginia, quite a distance from the Washington museums they service. This situation is supported, however, by a substantial federal outlay for labor and is rationalized in part by the theory that the collections are less
vulnerable by being divided in this way, for example, from natural disaster or terrorist attack. The National Park Service Handbook, Part 1 (2001) assesses the institution’s needs and the security of the off-site storage and costs. The location and type of storage area is not adequate for the materials stored, the materials’ needs, or the specific furniture. The CSH could become like the Smithsonian storage facility as a regional center for art storage, but that would require a safer location from flood, a more secure building, and more staff.

![Figure 6. CSH Storage](image)

The number of efficiencies in the organization of the storage is remarkable. The staff has been quite creative in using space and maintaining equipment that has long passed its service predictions. Many of these are staff-designed and generated, demonstrating the resourceful, creative, and innovative abilities of the current staff. Since the building is generally an open shell, the space has been filled with typical storage shelving and compact storage units that are at least 2 decades old (Figure 6). There are sectioned-off offices and work areas at the front and back of
the structure. In back, the loading area just inside the roll up exterior door should be dedicated to loading, unloading, and packing but has machinery in it for woodworking and other fabrication tasks. An ingenious application of versatility was applied to the machinery by placing wheels on them so they could be removed temporarily allowing for the entire space to be used for packing, etc.

At the back of the building just outside of the roll up door is a loading area with some storage (Figure 7). A storage container resides near the back and was filled with industrial artifacts and other objects. Current staff dedicated significant resources to clean up this unit and provide access to the artifacts and materials, If one compares an “after” photo to the

Figure 7. CSH, south side and rear of building
“before” of this area it is typical of the dedication and determination of the staff (Figures 8a & 8b).

*Figure 8a. CSH, rear yard – “BEFORE”*
In the front of the building, we find another set of partitioned areas dedicated to offices, a reading room and public gathering area. As elsewhere in the building one is presented with a professional and organized space where ongoing activities serve the public’s need to access the collections and where staff carry out research and collections management tasks (Figure 9). The collection is really the epitome of the multi-media center with staff or trained volunteers making special arrangements to present materials to the public or better preserve them. This includes a lab for sound and film as well as video materials. Slides and other photographic materials are processed and preserved in accordance with current standards.
A significant problem with all the buildings, mentioned by the Pfeiffer Partners Concept Master Planning Study of 2007, is the fact that they are all located in a flood plain. As CAP usually puts a conservator and an architect together on the survey, I can use the Pfeiffer report as an architects’ review for this case. I agree with the findings of the Pfeiffer report and especially the environmental controls problem (see below on analysis of dust) and on the issue of the integration of archives and museum collections.

In the presence of the historical collections could be a source of contamination of the archives material. The historical objects have materials that off-gas, like grease, oil, and some pollutants, like asbestos. Ethnographic collections have been found to possess arsenic, DDT and other residues of pesticides (see Collection Forum issues volumes 16, 17
Residues and particulate can enter the airflow in storage and be absorbed by paper as has been reported in libraries with acid migration. (See my article in Museum Management and Curatorship, 1993, v. 12:387-400).

Light is well controlled at the CSH and the Director has made some alterations of the entry of the SHM that seem to have minimized light. At CSH, lights are fitted with UV covers to reduce damage. Other windows and glassed areas should be fitted, with some internal or external screening (at CSH the front windows are covered with UV film) or other methods to diffuse or deflect light. The current situation exposes objects to daily light and dramatic changes in heat and humidity over a year’s seasonal change. As none of the buildings are fitted with foyers that can function to buffer outdoor-indoor environmental gradients, weather changes must induce significant effects on objects in adjacent areas. Investment in foyers would reduce heating and cooling costs.

**McClellan Park Off-Site Facility (CSH)**

There is an additional building where collections and materials are stored. **This is on the McClellan site, a former Air Force base (Figure 10).** This facility is used to store a diverse amount of materials – from building signs to archives of local businesses and institutions. It lacks climate controls for most of the building used by the CSH but there is one large area that is subject to a measure of treatment. Exposure to light for much of the space is much too great (Figure 11), while some of the space is protected by lowered ceilings. Some space is shared with other groups, but access seems to be controlled by (CSH) staff. **A large processing area is set up at present but staff time is severely limited and no considerable archival work can be done at the present.** Given that only 20% of the collection is inventoried, it is obvious that an efficient use of the collections cannot be accomplished. This is another example where staff resources are underfunded yet the responsibility of the institution for
care of collections is not only expanded beyond staff levels, but more collections are being taken on. This is not sustainable.

![McClellan Off-Site Facility](image)

**Figure 10.** McClellan Off-Site Facility

The McClellan site houses a vast variety and number of objects that are of obvious importance and value to the institution. The location seems secure with a variety of surveillance systems in place. **Again, off-site storage can be a cost effective means of dealing with certain collections or temporary situations, but it needs to be coupled with sufficient funding to provide staff for proper collections care.**

All the buildings (CSH & SHM) are constructed with some glass as a main design element. This is especially true of the McClellan site at the ceiling level where a tremendous amount of heat can raise the temperature of the building and cause light damage as well (Figure 11).
The current arrangement seems to provide a rational relationship between the three buildings. The Museum building serves as the display center while the CSH serves as main storage and study center for scholars and the general public, while the McClellan building is for special collections of large size, some archives, and unprocessed collections. The McClellan site also has been greatly improved recently with an enormous change from a disorganized depot seen in Figure 12 as an example before the clean up and the after in Figure 13.
Figure 12. McClellan Off-Site Facility, “BEFORE”
The partial HVAC in the McClellan site should be monitored as the other sites are so that annual records can be compared for variations, and to show lenders and funding agencies that you do have some treatment. A “zonal” approach to HVAC is becoming more popular as a “green” method reducing overall costs, but focusing energy into those storage areas whose contents require certain limits.

The separation of the buildings is a concern as the travel time and dispersed security and other resources must be significant. Given the size of the collections, their use, and the history of growth, the amount of space that McClellan adds would seem to be appealing, given the crowded nature of the CSH. Still, it would ultimately be more efficient to have all
the collections in one building that you owned rather than have them separated and have the uncertainty of a rental arrangement.

Provisions for loading and access to CSH and McClellan are ideal for moving large objects and quantities of materials. The handling of special sized objects, like the jail at McClellan, using a variety of moving equipment demonstrates this fact as does the ability to use a forklift at both CSH and McClellan. Processing has been well organized to deal with the massive amount of materials present and that arrive in significant amounts at this time. Some collections are still on pallets, others are being stacked due to the lack of shelving (Figures 14 & 15).
None of the buildings are of historic interest. The problems associated with raising money for a new building and then designing one to fit the community are always daunting. Nevertheless, there would be obvious benefits to have all the collections under one roof and have a building for CSH that would function as an exhibit space as well. The collections deserve such routine exposure and the community that pays for its housing deserves access to it.

I would suggest monitoring the exhibition rooms at SHM to determine what kinds of stresses the change in environment may be on collections exhibited in the rooms given the traffic of visitors, windows, and changes in climate over the year. Conditioning air can affect the moisture content of a room, change the normal patterns of
airflow and create micro-environments that can have significant affects on collections s well on some kinds of building materials.

All the rooms at CSH & SHM, whether offices space away from the public, or those work areas exposed to public view, are well organized, clean, and project a professional attitude. Many collections items and exhibits are at levels where children can touch them and are unprotected at SHM (Figure 16), but I understand these are in the process of redesign or the objects are facsimiles. This is, in most cases, a planned use and the objects are chosen for this purpose.

![Figure 16. Sacramento History Museum, California Gallery & temporary programming room](image)

**Current collection storage at CSH**

Storage needs to be kept on a level of easy access to avoid accidents to staff and objects and should be organized so that sufficient space exists between objects to prevent damage when any one object is moved. Current collection storage at CSH is 18,000 sq. ft, of an “as built” 50,000 sq. ft. as given in your answers to the CAP survey questionnaire. The
quality of the collection, especially the works on paper, the historical collections and photographic materials requires at least another 15,000 square feet more than presently available to relieve the density of collections storage, but also to reduce the way operations impact storage at the rear of the storage area. This would not accommodate new acquisitions and the rate of collections growth in the past seems to indicate (as does the backlog at McClellan), another 15,000 sq. ft. needed, for a total of an additional 30,000 sq. ft. for sufficient storage space.

McClellan & CSH
The separation of storage from the CSH does not have to be a problem. Operating off-site storage of collections has become an option where space is a premium, but it can also be a cost saving measure to reduce insurance and security budgets, if contracts can be negotiated with large private organizations that provide such services. Most private storage facilities provide computerized entry and exit records and itemized barcode reports. Such potential savings have to be judged in the context of travel to and from the facility, and registration interface.

As collections and archives function as a resource for designers, advertising staff, and retail operations, as well as exhibitions curators, the storage functions today have changed dramatically, becoming de facto study centers, and shipping facilities. The CSH and McClellan buildings lack, however, both a dedicated area for packaging and receiving and a dedicated area for incoming isolation. Most museums today have developed such dedicated areas as a means of ensuring inventory control and collections integrity from contamination.

Reference to the layout of the CSH facility is diagrammed in Map 4 and shows the relationship of the various facilities at CSH to storage. The blank central area is main storage. A new building (Figure 17), as proposed in the plans shown me on my visit, would go far to resolve many of the problems of space and separation the CSH and McClellan (see Map 5) now have in addition to the instability of leasing facilities. It is the proposed Sacramento Archives and Museum Collection Center (SAMCC),
with about 90,000 sq. ft. dedicated to the facility (the former name of the CSH).

![Figure 17. New building plans per Pfeiffer Study (CMPS Report)](image)

This ends the Executive Summary. What follows is a detailed examination of the operations and condition of the collections and the facility as specific areas impact collections and exhibits.

**Operations and Conditions**

**Addressing the Public as a Museum in the 21st century**

In the 20th century composite entities like the CSH & SHM faced difficult choices in competition for the public’s attention and recreation dollars. While most museums still maintain a core mission element of educating the public, often the most successful fund raising activities are organized
as entertainment. When I first came to work at the California Academy of Sciences in 1970, its mission was much like traditional natural history museums parallel with that of the Field Museum in Chicago and institutions like the Glyptotek in Copenhagen. These combined the education of the public established in the Enlightenment with the scientific responsibility to maintain live collections with those of preserved specimens, historical and often archaeological in nature. Departments of these institutions were directed to conduct research on the collections and to make them comprehensive in nature as defined by the specific collection strategy of the institution. In the past 40 years all this has changed.

Your institution seems to have taken the role of conveying to the public the interplay of the settlement of the area in all the various forms we find it: art, technology and records of every kind. In the SHM exhibits, you blend artistic presentation of educational experiences and interactive engagement of children, as with the “Bee” print shop exhibit (Figure 18). Some cities, like San Jose, have mixed city buildings with parks and outdoor art and artists’ interpretations of natural settings like earthworks, and drainage areas with plants and mazes. A variation of this is seen in the Getty Museum grounds. In some cases the effects of weathering are designed into the artistic statement as well as graffiti plant volunteers and animal intrusion as in the case of gophers. As mentioned above, the exterior appearance of the SHM could be improved, but some concern should be made of the immediate environs of the museum and its future identity.

The modification of the current structure, or building of a new structure as a museum should include investigation of how HVAC might affect visitors and collections. There may be some danger as cycling of temperature and
humidity can have very destructive effects on building materials and artifacts. I have referenced one of Hugo Stehkmper’s articles on “natural” air conditioning strategies that some museums and archives have introduced to reduce structural problems and energy costs as well as potential damage to collections.

In a more dramatic and concentrated attempt to place the processes of technology in a context, Colonial Williamsburg recreates the buildings of the time with costumed actors all continuously restored to the most accurate historical context. Many of your exhibits today reproduce historical events or typical period industries and lifestyles (Figure 19). How a new museum could be organized with today’s technology and yet utilize original objects in an interesting and engaging way is the challenge
of contemporary museology. Perhaps through a combination of the old (like some of your dioramas) with multimedia of local historical events could produce more public interest. Local families can sometimes supply artifacts and documentation to build a continuous stream of stories to widen both local interest and regional involvement.

With regard to exhibition of new art or children’s art, and objects of your ethnographic and technology collection are the comments of Heinz Althofer, conservator in Dusseldorf, Germany who has had to maintain aspects of contemporary art and artifacts made of new synthetic materials. Althofer mentions, in a 1981 address, that the public often wishes to see objects in a new, or pristine state, complete and without losses, while the
object may, in fact, only retain a fragment of the original – stained and broken. This is very often true of original scientific instruments and the models of inventors. To change them alters the state in which the hand of the innovation took place. It falsifies the image of creativity. On the other hand, telling why an object is damaged or how it came to be so, is also a way tell its story, or the historical context it comes from. Ethnographic collections are made up of parts of plants and animals and showing what part came from what animal, or that your collection includes extinct animal parts with illustrations can also be educational and rewarding for children.

Another approach is that of the Baltimore Museum of Industry which focuses their didactic displays on the engineering challenge of innovation: the route the designer takes to use materials to solve a particular problem. Other museums focus on the daily routine of technology, like the Chicago Museum of Science and Industry or London’s museum of the same name. The London museum uses its exhibits as thought-provoking devices and integrates the National Railway Museum with other collections and exhibits like the Creative Planet and the Science Museum to place human activity in a long historical thread. The Science Museum’s “exhiblets” are a series of online examples of ideas that inspired people to produce something revolutionary, and they provide access to the museum’s collection to anyone with a computer. This is similar to your approach in some regards, especially areas like the farm equipment exhibits.

In the area of dealing with corporate history and museums, the American Association for State and Local History has a corporate history initiative aimed at facilitating corporations developing archives and museums as well as online presences for museum-like purposes. They also provide guidelines and advice for producing alliances between local museums and corporate entities.
The Buildings: Physical Comments

Usually on CAPs I work with an architect who makes a general assessment of the physical structure of the building(s) under examination. That is not the case here so I will point out a few issues for consideration. **While it is obvious that the buildings vary regarding the temperature and humidity they experience, each should have detailed monthly reports showing daily or at least weekly levels.** A long period of data should be made which will provide background on the operations of the heating and air conditioning capabilities of the buildings, especially as this relates to cycling of temperature and humidity and filtering of pollutants and dust as well as air flow to minimize microenvironments.

It would be helpful, and is considered good museum practice to record these levels on a routine basis. Such a record provides an objective baseline on the functioning of the HVAC units. Small digital readers are available that can be put into cases to monitor for safe conditions for a variety of objects. Taking the readings requires a minor labor investment to produce. Digital dataloggers can be purchased and integrated into your security and HVAC systems and allow for automated monitoring which can give you immediate warnings for dramatic changes, such as accidental discharge. University Products carries a variety of data logger systems. A Technical Bulletin number 4 of the SPNHC (Society for the Preservation of Natural History Collections) was written by Rachael Arenstein in 2002. It is out of date already but has some useful information about a number of the systems available today. Many people like the Hanwell product, others the Image Permanence Institute monitor system.

**The study of dust and insect collectors** like the various trapper strips can be lifesavers. You use insect traps and a record of what is found when is helpful over time to determine the effectiveness of any pest control plans. Gaylord sells a pest monitoring kit with these “sticky traps”, lures for specific insects and a full-color photographic identification chart. Samples of dust or examination of air filters can be viewed under the microscope for the amounts of dust, pollutants present (requires chemical analysis), or
unusual levels of mold. The dust samples I took from several surfaces in the storage area of the CSH showed a considerable percentage of carbon, plastic flakes, and some insect parts. The size of particulate in the air depends on the size of the pores of the filters in the HVAC system. You might want to discuss this with your person who services the filters.

Given the recent disaster in the New Orleans area, the AIC has gathered information to assess the functioning of existing emergency preparedness plans for museums and archives. The information is being distributed through Heritage Preservation.

**Present permanent storage** (see attached Map 4 for a floor plan) is **inadequate for the existing collection and the rate of growth of collections.** It also contains a tremendous variety of materials from ethnographic and archaeological items, to guns, works on paper, books, historical collections, and is quite valuable. A comprehensive inventory is in order as well as a conservation plan for maintaining the collections. At present you report that about 20% of the collection is inventoried. With present staff demands it is unlikely that that number will be increased and very likely that it will drop.

History demonstrates that cities have always built local collections with an eye to establish their cultural institutions among the great cities of the world. To use such a collection effectively it must be easy to access, inventoried, and properly cataloged. It is a great benefit to have a permanent storage space that is not crowded. Most museums are afflicted with jammed collection areas, with ill-defined accessions, poorly stored and only partially accounted-for objects.

A first comment on permanent storage is in order. Placing objects on display in offices, which you are not currently doing, is a temptation best resisted. In my experience with the Fine Arts Museums of San Francisco, public entities find it difficult to locate such loaned materials in private offices later on. The same experience occurred with San Francisco’s Art Commission loans to public offices, as well as San Jose and other
museums public and private. I just completed a study for a major American private corporation where the corporation’s art was displayed in offices prior to my visit and is now being removed to storage. Two major problems accrue to this practice, one is the loss of objects and the second is damage. All major museums are eliminating this practice or have already done so. There is one caveat to this statement. Some institutions have organized loan programs for art where art is rented to the public for a monthly or yearly fee. This requires the renter to pay an insurance fee as well as a rental fee. Some of these programs have been quite successful, especially those associated with rental to sales contracts, others have failed.

Use of collections in public spaces not designed for display is also tempting and does have some justification. You are doing this as shows to the airport and some other venues. Of course, if you had a bar code collections control system the problem would be somewhat diminished, though one might expect loss even in this situation as well as damage. The risk is too much for offices but for public spaces control can be handled in the same way as any exhibition. Usually collections are placed by cities or public entities in the lobbies of public buildings, in cases or if sculpture unprotected in free-standing display. Again, this should be avoided, unless the potential for vandalism is low or unless protective measures are taken.
CSH & McClellan
The organization of your permanent storage is well thought out and exercised (Figure 20), but as noted in the Pfeiffer CMPS report, there is
no available space or current acceptable means to expand storage. Storage is at capacity. It is crowded and one imagines that some degree of time is needed each time objects are needed. Storage has, therefore a low labor time efficiency, and productivity is limited by current inefficiencies dictated by the storage density. While it might be considered possible to relocate the large object storage at the rear of the building to McClellan to install more compact storage in its place, this would be a mistake as McClellan is not only inadequate for more collections at this time, but not environmentally controlled.

There is significant indication of the need for a temporary storage room. Storage is always a problem in any organization and it is not unusual in the museum world, though it is best to keep this “temporary” as there are always examples of “temporary” becoming permanent and the practice can become less dependant on time and more expedient, limiting access and compounding movement related to other projects. Some of your recent efforts have vastly improved temporary storage areas as shown in Figure 21 before conditions, and then in Figure 22 in after processing and reorganization.

Recently, some institutions have had donors fund “chairs” for curators and conservators where public funding was failing to support such activities. Other institutions have formed cooperative joint agreements where they fund 1/2 or 1/4 of a conservator’s time at a central location. This might be possible for your institution to join with some regional museums and/or other historical societies to create a cooperative association to fund specific needs like the Intermuseum Conservation Association, located in Cleveland, or the Upper Midwest Conservation Association at the Minneapolis Museum of Art have been created to provide.
**CSH**

Your staff shows they are well trained and up on best practices in how they monitor the storage and galleries for Rh and temperature changes, as well as interact with the specific needs of an artifact or show installation and potential problems that can develop. All staff seem dedicated and eager to learn and engage in expanding their knowledge and skills. They are well versed to the dangers of incoming loans and gifts and have concerns about infestation or infection and the need for a quarantine area for the observation of objects.

Currently flat space seems a luxury as tables are set up temporarily in storage for specific projects and then removed at the end of the day. This is another indication that staff is adaptable and skilled at using their time.
and available resources. It also indicates a lack of space and one might expect space for rolling tables to be used in storage on a routine basis.

![Figure 22. CSH, After processing the same collection](image)

You benefit from uniquely prepared spaces for work in the front office area and a routine use of stable and sturdy carts to move objects is applied to reduce damage to objects (Figure 23). The large drawers for fragile storage are also a great plus (Figure 24). Obviously there is no room for a rolling table in the stacks, but a rolling table or lift with a support shelf would be helpful. Some units are available from library suppliers like Gaylords or more sturdy ones from Graingers (http://www.grainger.com/Grainger/wwg/search.shtml?searchQuery=rolling+table&op=search&Ntt=rolling+table&N=0&sst=subset). They
provide a large flat space on top for the examination of works and perhaps also sorting and other kinds of examination work needed in storage.

![Figure 23. CSH Office space](image)

Your use of small rolling carts in storage for transport from room to room of delicate or fragile objects is commendable. Such rolling carts can assist in the movement of heavy objects from place to place and to minimize the need to carry bulky or heavy objects. Obtaining such carts of a heavy duty nature is becoming difficult and expensive today.

**Climate and General Conditions**

A hygrothermograph (also known as a recording hygrometer) or datalogger should be kept in storage to monitor conditions. I understand that records are kept but none were available at the time of my visit. Perhaps the greatest threat is the problem of historic flooding. I noted that there is a significant amount of building going on nearby and a
hydrological report may be available from work presented in a recent EIR for one of these projects. A flood would be a terrible disaster. If the level and nature of past floods could be known, some degree of inexpensive mitigation might be applied, for example the installation of a low diversion parapet.

Figure 24. CSH – Flat files storage

I did notice many framed works of art, some in slotted frame storage with rug or other padding material at the base of the shelves. This should be standard practice for all frames to protect the surfaces of unglazed paintings, as well as the finishes of frames and to minimize scratches to
plexiglass. The same may be said for the flat storage drawers, which in some cases you have lined with ethafoam or acid-free board. Where there are flat works the shelves or drawers have permalife or lignin-free folders (available from Conservation Resources at 1-800-634-6932) or other archival quality folders (Gaylords has a report Pathfinder #2 booklet on storage materials) for the paper art stored in each drawer (Figure 25). This demonstrates “best practices” you are using. When more than one object is stored in a folder there should be an interleaving sheet of glassine or acid-free paper separating them. This is appropriate for everything from watercolors to botanical specimens that have been dried and pressed. Most objects are in folders, but not all are separated from other objects by interleaving, and not all interleaving appears to be acid-free. These measures reduce damage to fragile specimens of all kinds – prints, drawings and poster materials, minimizing folds, creasing, or tears caused by shuffling when people search through them.

I will discuss specific object types under the headings below. In general, the storage furniture is of metal or wooden type, characteristic of older facilities. It seems adequate and well maintained, though seriously crowded. The fact that gloves were used by all staff when handling objects was another demonstration of the training and dedication of staff. One problem has been noted by Catherine Hawkes of the Smithsonian at a conference held at San Francisco State University in 2000. She stated that staff there found that tests of cotton gloves even after washing, were found to be contaminated with pesticide residues if they had been used to handle well preserved Native American or other ethnographic objects. Many museum professionals have now switched to latex or nitrile gloves though this seems a pity given the waste in garbage.
Lighting is mentioned above for the individual buildings. I understand that lighting in the facility is controlled to generate as little UV as possible. Tests using a light meter to determine quantitative data on exposure would be an important reference point to establish. UV reading devices can be rented from some suppliers. A program of lighting level control demonstrates “best practices” performance on the part of your building operations. Lights should be turned off when no one is working in areas were specimens and artifacts are exposed. You do this already in your main storage. Light can be damaging to organic objects and destructive to fugitive colors causing fading. As mentioned above with caveats, UV blocking of the exterior glass doors and windows can be accomplished by placing UV blocking coatings on the windows or deflecting light by planting trees nearby or use of interior and exterior banners or architectural elements.
Security seems adequate, both in the existing security system and in the attitude of personnel dedicated to the facility. The CMPS Pfeiffer Report mentions some deficiencies. Security cameras (even if they do not work), and a monitor in the reception/office area can be a deterrent to theft or vandalism. It is also important to have staff in the museum galleries at all times which I noted at SHM, or docents should be assigned regular strolls through them. The idea to the public of a constant presence is a significant deterrent. This also should be a part of your emergency preparedness program.

**CSH building**
The CSH building has the main entrance (Figure 5) communicating to a landscaped grounds fronting on the parking area. This is a handsome presentation much better than the uninviting SHM building’s lack of landscaping. This entrance opens to an entry area, often museum entries are recessed from the walkway to form a small alcove or foyer. Each time the front door is opened the foyer reduces mixing of air with the outside though the HVAC system is compromised slightly and has to work a little harder to provide a stable environment, though not so much as it would if no foyer existed. A foyer also provides a certain degree of security for the building given that two doors must be traversed for entry or exit. Often museums install locking devices to one or both sets of such doors so that they can be remotely locked by a reception guard, or automatically lock in case of the breach of storage or an alarmed case, etc.

There is no inside reception since entry is controlled by a buzzer and automatic lock. A number of other doors provide access to the building but these seem to be special use entrances or only emergency entrances. I understand they are all alarmed. These are used infrequently. The Exhibit Tech’s shop seems adequate, though a bit crowded and the process of moving power tools out of the loading area and back again seems dysfunctional. Given the degree of work and the open nature to storage the area should be possessed of a PACE Extractor for minimizing fumes and particulate from this work area. Such a device would also limit the spread of such fumes and particulate to the storage when used at the point.
of production. The presence of chemically sensitive and valuable photographic images requires some action to minimize the effects of this work. PACE makes an excellent and inexpensive unit (about $1,500). Comparison with other Exhibit Tech’s spaces in other museums would be valuable for any adaptation of the present spaces.

I cannot imagine that there are any areas not fully used. No two rooms seem to duplicate function and lead to underutilization. Since you are having talks and exhibits at CSH some more signage is in order but also more provision for the public as noted by the CMPS Report. Onsite lectures, meetings, and demonstrations by collectors, organizations, and clubs in the area can create significant allies (like the Graphic Arts Council in San Francisco for the Achenbach Foundation). As a museum, you have authenticity which scientific and preservation values provide. These are salable concepts and they bring most institutions a very different kind of loyal audience from other competitors for entertainment dollars. These activities do have security problems and can bring unique kinds of damage to collections, as when we found after the Irish show at the Fine Arts Museums of S.F., that a cigarette had been put out in a Rembrandt painting. Staff monitoring such events is always necessary.

In general, your facilities provide a generally good opportunity for the prudent storage of a collection and its exhibition and study. The buildings and their present operations give one the feeling of a well-run and organized institution, effectively focused on its primary function to preserve local information and conditions, art, history and culture, and most importantly as a venue for exhibitions. The facility provides an environment for educational opportunities for local residents and visitors and facilitates the study and preservation of material culture and art for youth. In this role, the CSH & SHM and their non-profit Board, staffs, and volunteers clearly have carried out the primary goals of the institutions.
Community and Associations
From the history of the CSH & SHM it is clear that there has been a substantial commitment by members of the community to maintain the facilities, and to enhance their role in the community. Professional associations are important, especially those within the community but also involvement with national organizations like the American Association of Museums, the Smithsonian Museums and other museum and archives and scientific organizations. All are essential for developing both local and national standing. Such national and local recognition leads to visibility and respectability. The ability to tell your story as an institution is a central component in the process. Achievements must be described in different contexts, but they help build the base that all institutions require today to succeed. Being an institution firmly rooted in the community is a necessary part of this base. A well-managed facility, with a professionally recognized staff and a staff spirit and commitment as well as the improved relations with other agencies and institutions in the area fill out this foundation. While the SHM has significant visibility the CSH seems to have less, and in a way its public role is only at present a minor one that has great potential.

The existing avenues to cooperate and implement change to facilitate benefits to all local organizations involved should be developed fully and new ones instituted. However, one must never lose sight of the fact that you are now doing an important job that is recognized by people in the community and appreciated. My informal survey both with visitors at the SHM found considerable knowledge and appreciation, but certainly more could be done to increase the visibility of the many fine services of CSH. More visibility makes fundraising, donations, and volunteer enrollment easier.

Your webpage with its links to projects and services is handsome and easy to negotiate. Perhaps videotaping some of the presentations and having them as downloads would also help. There is always a need to create a forum for dialogue and action between the artists, the business community, the city government, libraries, schools, historical societies,
and museums. In general, there are differences of focus and emphasis, which should be worked into common agendas and responsibilities.

Together with the development of a new consolidated location for CSH & McClellan, and a museum component for CSH, the CSH & SHM should develop a 5, 10 and 15 year plan focused on collections care, collecting needs (how the collection should grow and plan for space and preservation needs), and staff growth and development. As the CMPS Report sets out the new facility, its services should be planned for the location, which the report sketches out quite well. Such a plan should center the role of the museum within the context of the present operations and its projected growth so that both the museum and its programs can be poised to serve the community as it changes. A conservation and collection preservation plan begins with a survey of the condition of the entire collection and an analysis of how the collection is used and how it is planned to be used in the future. This delineates a conservation plan that would prioritize conservation efforts. Grants are available for this process.

Most museums, even public ones, have endowments and a successful endowment campaign is worth the effort especially if it can be combined with a matching grant promised by a local corporation, individual, or foundation. A number of the individual collections, could be “adopted” by local businesses for its preservation and education costs.

Records of any conservation work will be valuable in applying for conservation grants as well as exhibition grants that request conservation funding. Such activities should always be documented, as they are evidence that your institution is actively involved in conservation work and in prudent action in the case of damage or change in art works. Numerous objects need immediate care and I made recommendations for treatment on a number of items. Re-housing is an important goal, with the removal of all acidic materials as the prime outcome. Secondly, re-housing should address the issue of crowding, which is significant now, but by planning for efficient use of space, crowding can be avoided or minimized.
Organizational diagrams are sometimes useful in understanding the culture of an institution, I assume a new one exists for the present operation of the CSH & SHM. The non-profit foundation that has been inactive can become a central source of funding and volunteer action. They seldom accurately reflect how an organization operates, but in general can provide clarity to how authority and responsibility function and are shared among personnel. It should be kept in mind that many organizations today are becoming more “horizontally” managed, though this can lead to reduced responsibility in immediate governance. While your staff is quite versatile, a clear chart of authority is often useful.

Communities of Interest
Since you are really three main kinds of organizations in one (a museum, a storage facility and a research center) your versatility is incredible. There is also considerable interest in the geography and history of the area, which you are doing well with an integrated approach of telling the story of local history and ecology at SHM that came out of my interviews. I wondered how often surveys of the local population are done to develop public relations strategy. As I was not able to meet with the non-profit’s board members, I could not ascertain their interests and motivations. The American Association of Museums has a number of publications for educating Board members about their roles and how to develop their participation. These might prove useful.

Some volunteer committees exist in some museums and historical societies with specific duties, which address the needs of the organization as a whole. Such committees often help focus work and add in recruitment. Such volunteer committees can act as community organizers for the institution. Here local businesses are encouraged to “adopt” a work of art in need of conservation, (or support a breeding program) which a volunteer organization can spearhead through their membership in local organizations like a chamber of commerce. The before and after images are then used to raise funds for further works of art or animal conservation, or other programs, and the results are also used to market
the program or they can be used to spearhead more substantial fund drives like an endowment and a Capital Campaign.

However, while the committee structure often works in some museums, it can result in more time spent in meetings and less productive use of volunteer time. It is not my intention to change the culture of the CSH or SHM, especially as it appears to be working quite well. Committees are not necessary, but can in some situations be a constructive focus for organizing efforts. What is important is that they are focused to the needs of the institution and its mission. Attending meetings is often equated with participation, while meeting time is often found to be a poor investment of volunteer time. Meetings should function partly to instill a sense of community and esprit de corps by drawing from the personal knowledge and skills of staff. Funding is the essential factor. The Board must address the long-term and short-term costs of collections care. A good starting point would be to establish several funds:

- A building fund
- A collections care fund and
- A collections/exhibits endowment

Institutions like the California Academy of Sciences have been quite successful having local businesses endow certain exhibits and the Fine Arts Museums of San Francisco has been very successful in arranging for private funding for conservation.

SHORT-TERM RECOMMENDATIONS

1. Storage (CSH & McClellan)
Re-housing of a substantial segment of the collection is necessary. As mentioned above, this cannot be achieved without more space to reduce the density. Permanent storage needs a larger space and tables for examination and lights adequate for the examination of fragile, small and difficult to handle works, especially of glass and metal. In general,
however, while techniques for proper storage and preservation are being applied, the sheer numbers of objects and the density of storage work to undermine these efforts. Textile collections are a good example of this (Figure 26).

*Figure 26. CSH – Hanging Textile Collections*
2. Work areas
The CMPS plan for the work areas, including a conservation laboratory, are well designed and will provide a state of the art facility. Presently all work areas are clean and well ordered (Figure 27).

Figure 27. CSH Film Processing Laboratory

3. Cleaning
Cleaning of exhibits in the SHM complex appears to be well done, and in general, the Museum presents a very professional, clean and orderly condition. It is recognized practice that the first task is to provide an adequate display protection while allowing for the setting to be recognized by the public, and act as a learning device. The use of vitrines or plexi-glass covers, ropes, or other devices to keep the public from handling
objects also limit viewing. A balance must be reached, and since you are obviously involved in the use of such devices in some situations shows a professional concern. My discussions with staff demonstrate this indicates a sophisticated understanding of the complexities of the conservation problems. The recent redesign of galleries, especially the Native American exhibits, demonstrates this knowledge (Figure 28 as a “before” state and Figure 29 as an “after”).

Figure 28. Sacramento History Museum, Native American Gallery – BEFORE update
Figure 29. Sacramento History Museum, Native American Gallery – AFTER update

4. Cleaning and dust removal in general (this includes SHM) and dirt removal from floors and on other surfaces should be carried out with as little interaction with the objects as possible. Vacuuming can simply re-circulate particles depending on the equipment used and the filters employed. Pest strips are presently installed in dark areas of the exhibition and storage areas to attract any insects that are unnoticed in the day. Cleaning agents for floors and walls can produce chemical changes in artifacts and paint and paper art as well as be toxic to children and staff. Knowledge of the reagents used, can prevent problems in the future.

All cleaning should be done after a short workshop with a conservator. Here the presence of janitorial staff, or staff which supervises such staff, is important and preventative. Instruction should focus on cleaning and
moving of the objects, including selected volunteers. Handling should always be kept to a minimum. Cleaning by any contract workers should be monitored closely and cleaning equipment should be dedicated to the facility. This is very prudent and in line with “best practices” in museum management. When contractors or janitorial personnel use the same equipment to clean several facilities they can contaminate yours with the dirt collected from another, especially by the use of vacuum cleaners. Particulate from rugs is likely to be re-circulated by the HVAC system to all parts of the facility along with residual cleaning materials used in shampooing rugs and cleaning other surfaces. I was unable to examine the filter in the HVAC system.

5. Ethafoam and bubblewrap has been applied to objects in storage where space limitations have resulted in close conditions; this work should be expanded with the help of a dedicated line item in the budget for conservation storage (or rehousing) supplies. Again, it is obvious that density works against efforts to provide every object with proper and prudent space. Some storage furniture is ad hoc in design and construction and while it is functional, problems in access and use seem obvious. This is especially true of the architectural plan storage and it is hard to imagine any additions made to this cramped area.

6. A description of the condition of each object in the collection is a prudent tradition in some museums and has become best practices today and your records should include such notes. This is especially important in regards to objects like the contents of the permanent collection. Some objects need to be unframed to do this properly, and some should be unframed only by a conservator in their present condition. This is not a significant problem for your collection. I have included in the Appendix copies of directions for conditioning objects. Staff should also be able to record changes routinely. Often when damage occurs it is due to changes taking place over a long time with little immediate gross change. The main purpose is to have a base line on each object to be able to track changes over time. If it is reported in a condition report (on an artifact card, accession card, etc.) that an object had no cracks on such and such a date
and later it is found to be cracked, this damage can be determined to be associated with some event, for example, an exhibit or loan. The same can be said for damage resulting from failure of adhesives. As glues age they fail, and failure can be charted. Some glues are less susceptible to this situation, mainly these are emulsions of PVA sold as “white” glues under a variety of trade names. Look for “archival” in the sales literature.

7. **The heating and air conditioning unit needs to be monitored** more carefully (at all three buildings) and a decision made as to the needs of each building. Regular readings are usually made to determine the effectiveness of the system in maintaining temperature and humidity within acceptable levels to avoid damage to the collection. Collections isolation will limit problems. A copy of recent new findings by the Smithsonian Institution's studies of climate can be accessed from their website or from the National Park Service at Harper’s Ferry. These provide an explanation of levels of temperature and humidity allowable for museums. Finding out the best range of performance of the system and how it can maintain that performance is the best strategy, as a wider variation zone is preferable to periods of down-time. Data should be collected as in the chart below for collections areas and collections storage. This data was collected during my visit at another facility. I gathered some readings from the collections storage room and internal offices using my Arten reader (Reading Room 42% - rather low and 74 degrees F).

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<td>71</td>
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<td>70F</td>
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<td>42%</td>
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</tbody>
</table>

These results will indicate when the greatest amount of humidity change takes place in what area of the facilities, and usually less so in the storage areas. International exhibits agreements establish 50 to 55% Rh as the basis levels. What is important is that you be able to maintain a stable range without dramatic swings. Certainly in your area humidity will be a seasonal problem, but some objects, like wood and paintings on canvas, could experience severe damage even at low Rh (below 40%). You will experience extreme swings of temperature over the seasons as described from local data in the CMPS Report. Isolated galleries with humidification can solve the problem, or cases designed to hold specific Rh. Usually a temperature range of 68 to 78 or 64 to 74 is considered optimal. The most important point is to avoid swings in either temperature or Rh, say 10% Rh or 15 degrees in temperature. Reference to Garry Thomson’s, *The Museum Environment* is useful for examples and details. Many newer articles on this issue are available from the Society for the Preservation of Natural History Collections or by searching Conservation Online.

In general, one wants to limit variation in the environment of the buildings and compress any swings in temperature and humidity to narrow ranges. Stability is what is most important, less so than absolute numbers. While most museum scientists argue that 70 degrees Fahrenheit and 55% Rh are best, recent work has shown that keeping conditions within acceptable limits, but avoiding wide swings on a daily, weekly, monthly or seasonal basis is a more realistic goal to achieve. Data from the temperature and humidity readings will provide direction for assessing the HVAC system and determining the safety of objects in various areas of the facilities and related buildings that might harbor microenvironments. Monitoring
should continue on a periodic basis (once a week or twice monthly as mentioned) for a year, allowing for an understanding of how the HVAC system reacts to seasonal change.

8. **You should arrange for additional interns from both museum studies programs and conservation training programs.** The staff has had a number of successful experiences with interns from programs and proven to possess the ability to supervise them and place them on projects, which they can adequately fulfill, which is a necessary requirement for placement. Many university programs will not place students into organizations without the presence of trained and experienced staff. These students can also be very effective in assisting the implementation of re-housing and cleaning projects, condition reporting and collections management tasks as well as exhibition planning, organization and installation. It must be kept in mind that interns do require supervision and that this demands allocation of staff time. A staff that is at 150% capacity cannot seriously fulfill this role. At 100% time allocation a staff can profitably use interns to create efficiencies.

9. **The AAM Standard Facilities Report** undertaken in 2000 indicates the current state of fire preparedness. Fire security and response is the responsibility of the Fire Department, but it is prudent to align your emergency preparedness plan specific to the capacity of the Fire Dept. and to review these on a yearly basis as fire departments and local emergency budgets are undergoing substantial changes. You should also execute a few fire and disaster drills. Releasing fire extinguishers is always an educational experience for staff. The fire alarm seems to be smoke and heat activated and the suppression system is water based and stored, the best types of these are a sectional dump or delayed use. Some modifications could be made to avoid a disaster as in the case of an accidental "dump.” This should be discussed with the Fire Chief. Chemical fire extinguishers are not recommended but are effective for some small fires. CO2 extinguishers are seldom used today but are effective and do not damage art.
A detailed workshop on disaster procedures would also be of help, especially focusing on how to minimize damage to the collections in various scenarios. Readings on disaster planning and disaster equipment vendors are available from Heritage Preservation.

10. **External light is a problem for fading of some pigments and embrittlement of some organics at SHM and at McClellan.** This is only a problem if you plan to use extensively your collection materials with organic materials or pigments that fade and are light sensitive art. You could install UV blocking coatings or other methods. Testing for performance of the coating is important. This can be done by renting a UV monitor and taking readings during the day. The nature of UV blocking or absorbing coatings or films is that they are not 100% effective and they tend to age and lose effectiveness. It is obvious that staff is aware of this problem and will take steps in the future to retard its effects, if the exhibit situation changes. This can result in a visual problem if it is not expertly done or if a poor product is used. In general, an analysis of lighting is in order. A light meter can be rented and used to determine the kinds of radiation given off by your lighting, especially the gallery lights. A plan can be developed for the replacement over time of all light emitting UV by FADEX or other similar bulbs. The installation of gallery lighting seemed adequate, and light levels were kept low at SHM in most galleries as mentioned above.

11. **A water sensor can be wired to the security system to alarm** for either flooding or water leaking from the roof, sprinklers, or plumbing

**LONG-TERM RECOMMENDATIONS**

1. **The development of a long-term plan for upgrading operations, collections care, acquisitions, staff education, outreach and facilities is a major undertaking.** A long-term goal would be to integrate the several buildings as proposed in the CMPS Report.
2. The development of a long-term funding drive for collections, which should enhance an endowment and include other areas should be undertaken. Perhaps an equipment fund, and a collections care fund, would be best in the near future. You are revitalizing your non-profit foundation and that is an effective strategy.

3. A public relations plan to engage the public in the achievement of these goals is worth investigating.

4. Along with the long-term fund drive, a series of grants should be developed to provide funds for:
   - Grant # 1: collection re-housing
   - Grant # 2: a conservation survey of all objects in the collection
   - Grant #3: treatment of those objects in greatest need of stabilization

The most important at present is a grant for a full time registrar. Then this person can undertake a comprehensive project of re-housing and inventory (Grant #1). This will be expensive given the objects involved. I would advise the preparation of a grant to the Institute for Museum and Library Services. This grant should include funds for acid-free materials, Mylar and acid-free folders for photographic materials and documents. Each day that the collection remains in its present housing (especially acidic materials and boxes are one large category), and conservation problems go unaddressed, the future costs will be greater. You can build on your excellent past history and current practice.

A second grant for a conservation survey of the collection should be developed and sent to the Getty Center and the National Endowment for the Humanities (Grant # 2). This survey would result in an assessment of every object in the collection, producing a prioritized list with the collection broken into type of material (e.g., wood, metal, glass, etc.) and by need for treatment. This list can then be referred to when objects are requested for loans (indicating whether it is safe for them to travel) and for developing grant applications to other agencies for conservation.
treatments such as grants funded by the National Endowment for the Arts (Grant #3).

GENERAL INFORMATION

The above Executive Summary and Recommendations contains the main recommendations resulting from this assessment. The body of the report, however, contains substantial information that should be read by staff members and civil authorities, and any board members, for a full understanding of the basis for long-term conservation planning and the impact of such planning and changes on current practice. I do present some further recommendations, which should be acted on at some time in the planning process.

The CSH & SHM's role as a focus to gather together and to inspire the preservation and celebration of the city’s ecology, industry, and history should be pursued. However, the city needs to reassess their role in this effort. While it is well known that museums can play an important part in tourism, they also can function effectively as a means of communication and revitalization within communities. The city management staff might benefit in this regard from a workshop organized toward identifying such potential outcomes of the facility. One of the great examples of this kind of outcome was the Bilbao Guggenheim Museum. Ideas for a new building and expansion of the services appear to be going on but should be evaluated in terms of the success the organization is having now as it is.

Legal Issues
A serious concern, which needs immediate attention, is the problem the documentation of the ownership of collections. This is a topic which could be addressed by applying for a MAP I, given you did have a MAP II grant in 1993. This would allow you to hire a professional who has dealt with this issue to work with city lawyers and apply current methods to resolve. It is difficult to conduct collections care projects on objects, which you do not own. Moreover, it will be very difficult to acquire grant funding for conservation for objects that are privately owned. It would be
prudent to consult with a lawyer and have letters drawn up and sent to donors who still retain ownership stating clearly that the CSH is not responsible for loss or damage due to fire, earthquake, flood, or theft. You should consult also with your insurance carrier to determine if the city has any liability in this situation. I understand you completed the NAGPRA process on the collections.

**Collections Management Goals/Role and Use of Collections**

The present staff should be encouraged to attend meetings of the AAM and other museum meeting opportunities and take part in workshops and career development opportunities to enhance your organizational strengths. A collections policy puts forth procedures for the acquisition, care, exhibition, storage and deaccessioning of objects. The deaccessions process, however, is a considerable problem for any museum as was the topic of a conference at the Getty Museum in 1998. The proceedings of this conference are available in book form and contain summaries of discussions at other international conferences on the same subject. The book is edited by Miguel Angel Corzo and titled, *Mortality Immortality? The Legacy of 20th Century Art*, and is available from the Getty Museum. Other similar documents are available from the AAM (http://www.aam-us.org/).

**Staffing**

The present paid staff consists of the six at the CSH (four full-time, two part-time), and three full-time at the SHM, with Ms. Eymann as Executive Director and Manager; collections and exhibits staff includes (at CSH) Ms. Prince, Curator; Ms. Johnson, Archivist; Ms. Ryan, Associate Curator; Mr. McDonald, Archivist and Ms. Crowther, Photo Archivist.

At SHM, Ms. Swanson, Deputy Director; Ms. West, Public Programs, and Mr. Sickels, Facilities. It is clear that the CSH staff act now as the support staff for the SHM and that most individuals are working beyond the usual scope for their titles. These staff positions are obviously well executed as the institution displays the appearance of the kinds of organization one
expects. Each individual presented a most professional case for their aspect of your operations.

Staff training for volunteers should be on-going with workshops provided by local registrars and conservators in a variety of skills, including: object handling, working with integrated pest control methods, cleaning and monitoring of a variety of objects, and storing objects. You can contact the American Institute for Conservation & the Conservation Online website for up-coming training opportunities. Some of these are one-day events; others take place over a weekend or during a conference. They can be expensive, but should be considered for the long-term benefit they can bring.

Figure 30. CSH Archivist Patricia Johnson
Planning and Collections Care Needs

As I noted in the recommendations, the need for storage is a very important issue. It is tied, however, with the need for long-range planning and fundraising. If a new Center for Sacramento History facility is built, it should have at least 40,000 sq feet for new collections as the CMPS Report argues. Some important goals of such a plan should include:

1. **The cataloging of the collections** is a continuous process but records should be transferred to electronic form, which is in process (Figure 30). One set should be stored off-site in case of a disaster. This should take place along with a project to photograph the collection. From discussions with Ms Johnson, it is obvious that improvement of the condition of the records is a central need, both in terms of the preservation of the documents themselves as well as the housing (cards, binders, folders, etc.). An electronic system can function as an opportunity to integrate CSH records and storage locations on one database. Using a digital camera with such a program is wise, as each item can then be associated with a number, an image and a location. This can enhance security and condition efforts, make inventory less time consuming and all this would work to reduce insurance costs.

2. **Achieving a professional appraisal of the collections tied with a review of the insurance coverage and policy** is a good idea. Such an appraisal can reduce insurance costs and facilitate deaccessioning. This should be done in coordination with the development of a new policy toward ownership of the collections and resolution of long-term loans. At the present time it must be recognized that liability for the collections due to fire, theft, or natural disaster could rest on the city’s elected officials. The American Association of Museums has handbooks and workshops, which deal with these issues of liability.

3. **Current light levels in the redesigned parts of the SHM are professional and at acceptable levels. The main focus should be to determine UV light levels and light levels in general.** Light levels in museums are a constant source of problems, both in terms of people
comfort and art preservation. Low light levels may be good for art (generally at 300 to 50 lux or below), but the public tends to complain at such low illumination. Much has changed since low light levels became the standard (see Canadian Conservation Institute, Technical Bulletin, 5, April, 1981, and Gary Thomson's *Museum Environment*, 1986, 2nd ed.). Some museums are increasing light levels, especially to take advantage of natural light. For example, the National Gallery in London (Saunders, 1993) has allowed levels as high as 650 lux while providing UV blocking glazing or other filtering methods to protect sensitive materials in exhibit areas or cases. Saunders describes how low voltage tungsten-halogen lamps can be fitted with lenses coated with metal oxides, which reduce ultraviolet to acceptable levels, and yet provides significant illumination to produce a comfortable feel for gallery visitors. He also describes the use of fiber optic bundles to focus low light to especially sensitive materials. In many of the dioramas and small cases, fiber optic or "light piping" is recommended. This method has the advantage that the lighting system can be located outside the case, reducing heat buildup and eliminating the need to disturb objects in the installation to change bulbs. Sease (1993) describes several scenarios for their use. For workrooms and collections storage areas Verilux lamps that filter UV are preferred, they have long lives, are glare free, and shatterproof. Recent discussions on this topic are interesting and can be accessed at http://cool.conservation-us.org/byform/mailing-lists/cdl/2001/1497.html.

4. Membership goals affect collections care in both the availability of volunteers and docents and in direct funding for operations and specific project funding. Often museums find that surveying their membership and the public at large about the museum and its role and functions can act as a means of increasing membership and improving the image of the museum volunteers and docents in the eyes of the community. Since both the CSH & the SHM have memberships (CSH is in the process of developing this) there is a considerable opportunity between these groups. Bigley, Lane, Fesen, Maier and Stewart describe how such a survey resulted in increased membership at the Witte Museum in San Antonio (1991).
5. You have a useful curatorial/conservation staff library but need to expand and update it, which is essential for a functioning preservation center. A number of subscriptions to professional journals is in order.

Exhibits (Both at the SHM & the Reading Room of the CSH)
The exhibits vary in concept and type considerably. These exhibits appear well planned and installed. Some are old and have need of redesign and have objects in them that are over exposed, but most display a new approach and have been installed recently which is astounding given the lack of resources and staff. I noted only a few problems with any of the exhibits and installation materials. Light is, again, an important consideration. Color fades, skin becomes dry and is attacked by light, paper can become brittle and browned. Good practice requires one to cycle objects in and out of exhibitions by using similar appearing objects to renew cases without the expense of recreating a new exhibit entirely. I saw no specific case of case lighting problems or diorama lighting structures, but it should also be kept in mind that such lighting produces heat that can damage skills, fade colors and harm animals. The use of cases with low light to create environments is well done (Figure 31).
There are some areas that are too object rich, but in general the exhibits of historic objects work well in the spaces provided by the museum layout (Figures 32 & 33). Looking over the schedule of events you have produced over the past year I was impressed by the number of offerings and their diversity. You seem to be using the facility effectively. The exhibits in the SHM building are well organized and planned and from my observations, are well appreciated by the public. Interviews I undertook with the public demonstrated a sincere attachment to the mission of the Museum from local visitors. When I visited the CSH there was an exhibit of photographs from the collection in the Reading and Research Room. It was well designed and mounted.
Figure 32. Sacramento History Museum

Figure 33. Sacramento History Museum
Specific Collections
A conservation program should be developed for the collections.

- This begins with a survey of the collections dividing the materials into parts: photographs, documents, textiles, etc. Your catalog database project could be the framework for such a listing.
- Then, each section should be given the total number of objects in each group.
- Then, each group should be assessed as to what the loan and research demand is on the objects, that is, how many requests per year for objects from group A, B, etc.?
- Finally, with the help of a conservator the collections are assessed for present conservation needs, how many re-housings are needed, how many specific items require treatment to stabilize them. This will provide you with several types of information:
  
  - groups of items in the collection
  - number of items in each group
  - a quantification of what the use of the collection is, which translates to how much handling is concentrated in which groups.
  - the specific condition of the groups

Then, with the help of an appraiser you would assign values to the objects in these groups indicating which are of most monetary and historic value to the Museum and of exhibition interest. You then have all the information you need for a conservation plan. You can use this information to prioritize the objects and groups of the collection for yearly treatment and preservation activities. One would focus, for example, on the most used objects or most fragile like the paper art, and allocate a certain amount of money per year to re-house them in Mylar enclosures and acid-free files. You have begun to use these materials now. Money to
support such surveys is available from the Getty Grant Program and the NEA and IMLS. All of this could be done as part of a re-housing project to save time and money. An inventory should be done on a routine basis to give confidence to the records. Tests of the card catalogue conducted with Ms. Johnson, and other records of items demonstrated that most objects were in their proper locations. However, this should be done in a systematic manner to guarantee that all objects are on site and in expected locations.

A general book that has had considerable use in the past and seems more accessible than any more recent book as a source of information on the condition of objects in collections, and general museum procedures, is Frieda Kay Fall’s, *Art Objects: Their Care and Preservation, a Handbook for Museums and Collections*, published by Laurence McGilvery, La Jolla, California, 1973. This book is now out of print, but can be obtained by rare book sites online.

**Origins and Documents**

A search through all your files should be made to separate historic documents that relate to the origins of the CSH & SHM. Xerox copies of originals should be made to retain completeness of the files and the originals set in document storage boxes, perhaps in the locked cases in temporary storage. Examination of the entire collection should be undertaken for condition.

Newspaper clippings make up a large segment of many museum files, especially where they document museum shows and other activities. Various donor files have a variety of paper materials. These are a source of acidic migration and should be stored in Hollinger boxes from Conservation Resources. Their degradation can result in acid migration to the rest of the collection in fact, through the air conditioning system. They should not be stored with other documents or art. Information on this is summarized in my article in Archives et Bibliothèques de Belgique (1993, republished in the International Journal of Museum Management and
Curatorship, 1994). I have provided a copy of this article for the staff in this report.

Storage of materials on top of each other should be avoided. A good general work for caring for paper art is Ann Clapp’s, *Curatorial Care of Works of Art on Paper*, 1987. It is a concise work of basic methods.

![Figure 34. CSH Textiles Storage](image)

**Textiles**

You have a wonderful collection of textile objects, mainly historic. Textiles require special storage and handling. Your textile collection has received some professional care. The boxing may need some reduction of density, but in general the collection looks to be in excellent condition of storage. The rolls of textile materials are well done (Figure 34). Some types of textiles have been found to be preserved best if they are stored in certain ways, especially clothing, fabrics such as coverlets and rugs, hang
others on padded hangers and place others in acid-free boxes. Most of yours are in flat boxes or in cabinets hanging. Hangers can be a problem but so can folds that are pressed over time.

Textiles that appear in good condition and lack of insect attack may indicate the presence of insecticides. I understand you had some tested but in addition to the typical ones, DDT and Methyl Bromide, most I have seen in this good condition have arsenic or mercury. A number of special pamphlets on textile collections are available from the American Association for State and Local History (see their website). They also publish a very good handbook for collections care by Per E. Guldbeck, revised by Bruce MasLeish, *The Care of Antiques and Historical Collections*, 1985 ed. An excellent reference for textile care is a manual by Sheila Landi, *The Textile Conservator’s Manual*, 1998 revised ed.

*Figure 35. CSH Metals storage*
Metals
Metal objects are stored on the shelves and in some other locations (Figure 35). These objects need to be wrapped in ethafoam and separated as they are now touching one another. Some of the less important objects could be placed in acid-free boxes and stored on the overhead shelves or stored in cut out areas in ethafoam blocks, which could be set into the cabinets in temporary storage which would create more vertical storage space without resulting in stacking objects on each other or in contact. The collection shows that you have had someone apply these techniques for some time and proper care has been instituted. You need to continue this investment in this resource. Metals require frequent monitoring to detect changes in corrosion. Some objects are entered in the inventory with poor descriptions and little in identification of materials. Guns, for example, are usually composite objects of metal and wood and often different kinds of alloys. These should be examined and the media identified. Deterioration can originate in the proximity of different kinds of objects, electrolytic cells can be produced by some metals touching, etc. The Guldbeck book mentioned above has general advice for collections with metals and a publication by the Smithsonian, *Conservation Concerns: A Guide for Collectors and Curators*, 1992 is very useful as a general resource. Many metal objects are composite with wood and include shell and inlay including carved handles. This is especially true of the toy collection where there exists a variety of such materials in one object.
Glass and Ceramic
The above comments about metals apply to glass and ceramics. They need re-housing and should be separated with ethafoam sleeves, the ends of which can be closed by sewing with linen thread. Such storage prevents vibrational damage from street traffic and limits damage from earthquake. Some are still packed in boxes and unsorted (Figure 36). Many items of metal, glass and ceramic are stored as part of the permanent collection, again often as composites but there are a number of very nice ceramic pieces of supposed Native American origin. There are some composite glass or ceramic and metal objects in the collection. Many are parts of objects of historical interest and are incorporated into their components (Figure 37). While not everything can be on display, the
collections could be online to let the world know of the really amazing collection you do have.

Figure 37. CSH Storage
**Basketry**  
Many of the items are documented and almost all are in very fine condition. They are properly stored in general, but suffer crowding. Basketry like textiles and feathers are often incorporated into composite objects like hats, or toys, glass eyes or talking components, woven bodies or bases (Figure 38). The amount of space should be doubled. In general, no object should be stored inside another. Crushing can take place easily.

![Figure 38. CSH Hat Storage](image)

**Wood**  
Wood objects in the collection, may appear as composite parts, as in the ethnographic and historic collection. Wooden objects should be examined periodically for wood pests and cracking from environmental conditions. There are likely to be microenvironments in the museum that might cycle...
enough to cause dimensional changes in wooden and other sensitive organic objects. Wood is most sensitive to moisture loss and in your area cracking and stress on other composite objects might result over time. Monitoring is necessary. It is, nevertheless, important to have wood periodically inspected for changes and infestation. Again, wood is found in composite items and is often overlooked.

**Leather and bone, Skin, Horn, and Other Organic**

Your collection has a considerable amount of skin in the form of treated kinds of leather as in the saddles (Figure 39). Saddles also have supports of wood at times or horn and silver, inlays of shell or other materials. Traditional treatments with oils and soaps make them a problem to store as they can give off gases and attract insects.

*Figure 39. CSH Storage*
Photographs
You have a fantastic collection of photographs and images from different reproductive processes. Some of these are linked to the McClatchy newspapers, but many others are related to local photographers who worked for the papers or were artists. Some are from collections either of families or of collectors as in the Ambrotypes, but the silver gelatin collection is certainly of historic value. You have put considerable effort into the proper preservation of this collection and you can be proud of this work. Still many objects could use the attention of a photographic conservator while many still could use rehousing (Figures 40, 41, & 42).

Figure 40. CSH dagguerotype
Figure 41. CSH
Works on Paper
You have a wonderfully diverse collection of watercolors, cartoons from the newspapers in original, books (some non-western), maps (some from the 16th century, and some valuable first editions of books printed on all subjects. You have done a great job of protecting and preserving this collection. You have properly housed much of it, but the numbers of objects is tremendous (Figure 43). Some require special care (Figure 44).
**Paintings and Framed Works in General**

You have a number of paintings on canvas as well as other drawings and images of a variety of manufacture that are framed. Some of these are in drawers where they take up space, but given their size they are probably safer there though they should not be mixed with unframed work as a general rule. Most framed paintings are in shelving, some wrapped in plastic others in bubblewrap (Figure 45). You should dedicate an area for framed work with vertical storage on racks or with spacers of foamcore.
Figure 44. CSH storage

Figure 45. CSH storage
Plastics and Others
A variety of other work, including toys are made of plastic materials, some of cellulose others of petroleum products. These should be monitored as they can age terribly and are often stuffed with organic materials that can give off gas or be food for insects (Figure 46). Shelving can have silver dots placed in them to monitor for sulfur and other pollutants given off by plastics.

Figure 46. CSH storage

Staff Training
Staff members should be encouraged to benefit from professional training. This is be essential in the development of “best practices” procedures according to AAM guidelines and other professional organizations for museum professionals. I understand that you conduct training for the volunteers on a variety of tasks at present. This should be expanded to include workshops by conservators in art and artifact handling, care of
photographic materials and documents, and re-housing and cleaning of objects as well as basic exhibit cleaning. If time is a factor, training videos on conservation and collections care are available from the Smithsonian Institution and the Canadian Conservation Institution. Some local museums have these tapes in their libraries and may loan them out for short periods of time. Others are available from Mr. Jack Thompson at 1-503-725-3942.
Bibliography


Suppliers

Gaylord Co., 800-634-6307.

Ethafoam from Preservation Products, Gladon Company, Inc. 178 West Boden St. , Milwaukee, Wisconsin, 53207, 800-448-6070.

Light Impressions 1-800-828-6216

Verilux, UV filtered fluorescent lamps. 1-800-786-6850.

The Packaging Store
1-415-558-8100

Grants

The Getty Center, grants for non-profits with ongoing exhibition programs for surveys and treatment of the collections. Getty Grant Program 310-440-7320.

National Historic Publications and Records Commission provides grants for State Historical Records preservation and access. 202-501-5610


Institute of Museum and Library Services. 202-606-8536

Appendix of Articles


Niccolo Caldararo, "Conservation Assessment Program", n.d. Included in report and sent prior to visit.
Disaster planning information can be found online at the Stanford University Conservation Online website:
http://palimpsest.stanford.edu/bytopic/disasters/

And also at this site: http://cpc.stanford.edu/ which is the California Preservation Clearinghouse.

❖ Museum Studies Departments

Museum Studies Department, San Francisco State University, Burke Hall, c/o Dr. Linda Ellis, 1600 Holloway Ave., S.F., Ca. 94132.

Sir Sandford Fleming College, Collections Conservation and Management Program, Sutherland Campus, Brealey Drive, Peterborough, Ontario, K9J 7B1 Canada.

❖ Conservation Schools

Conservation and Preservation Studies
Graduate School of Library & Information Science
SZB564/D7000 University of Texas at Austin 89
89Austin, TX 78712-1276 512-471-8290

Queen's University
Art Conservation Program
Art Centre Extension
Kingston Ontario K7l 3N6
Canada

Conservation Center of the Institute of Fine Arts
New York University
14 East 78th St.
New York, N.Y., 10021
Map 1 – Sacramento History Museum (SHM), 1st floor, before 2009 Reinstallation
Map 2 – Sacramento History Museum (SHM), Mezzanine or 2nd floor
Map 3 – Sacramento History Museum (SHM), 3rd floor
Map 4 – Center for Sacramento History (CSH)
Map 5 – McClellan Off-Site Facility
Describing the Condition of Art Objects

Richard D. Buck

Editor's Note: This article by one of the profession's most distinguished conservators will appear in the forthcoming third edition of Museum Registration Methods, by Dorothy H. Dudley and Irma Bezdil Wilkinson. At the time of his death in May 1977, Richard Buck was director of the Balboa Art Conservation Center in California. He was the first director of the Intermuseum Conservation Association at Oberlin College, and was for many years chief conservator at the Fogg Art Museum. Buck wrote a number of articles for MUSEUM NEWS and other technical publications.

George L. Stott compiled the revision of Buck's article for Museum Registration Methods, and offered these comments:

"At the present date, a glossary in this field, although necessary, cannot be final. For even a grudging acceptance it has to retain vague and habitual terms that run alongside a few that are precise. Twenty-five years or more might bring adoption of terms that are clear and definite. Then a glossary, a much longer one, will have become standard. Conservation in the arts will have acquired a professional language.

"Richard Buck's comments... are extremely valuable—the product of a lifetime of distinguished experience. It is hoped that the printed version of this brief treatise will be made more readily available to curators and to registrars."

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condition refers to the state of preservation of an object. That state is determined by three basic considerations: insecurity, damage and disfigurement. An object may be insecure because of weakness of material or construction brought about by deterioration or mechanical stresses. It may be damaged because deterioration has become so advanced that there are actual losses or ruptures, or it may be damaged by mechanical or physical violence or chemical change. Finally an object may be disfigured by dirt, stains, discolored coatings, poor restorations or by damage. A comprehensive description of condition includes these three aspects.

The registrar should be familiar with condition examination and records because the registration department is a checkpoint in the traffic of museum objects, a place where all aspects of condition should be observed and understood, even if they are not all recorded. The full record of condition belongs in the custodian's dossier and in the records of periodic inspections carried out by the conservator. These more detailed records should, however, be available to registrars, as the need for information on condition arises whenever objects are to be handled or arrangements made for their exhibition, storage or shipment. For this reason insecurity is an aspect of condition that is of primary concern to a registrar. The registrar should also be able to recognize and describe recent or un repaired damage. Old damage, hidden under restorations, and disfigurement are generally of less
immediate importance to the registrar and are more properly the concern of the curatorial or conservation departments.

**Insecurity**

Insecurity is often the most difficult aspect of condition to detect and describe. It is indicated by a wide range of symptoms, in the past largely ignored, that may be taken as omens of damage.

Insecurity may be the result of a natural weakening of the materials of which the object is made. Fabrics, paper, bone, leather, varnishes and almost all organic materials tend to become weaker and more brittle in time, and tiny splits and breaks are signs of the beginnings of larger ruptures. Insecurity may also result from a weakness in construction. Joins and repairs should always be examined; repaired breaks are particularly vulnerable.

Mechanical stress, too, causes insecurity. Both wood and fabric expand and contract in response to seasonal changes. It is safer to permit some movement than to thwart it by nailing paintings into their frames or by using other rigid fastenings. Room for expansion is particularly important for panel paintings. The free members of a cradle might be tested to see that they are not locked; the looser they are, the better for the panel. Metal clips or board backing should be props, not levers exerting great pressures against the painting. On the other hand, mountings should never be so loose that they are inadequate. The fit of the painting into the rabbet of the frame should be checked to see that there is no danger of the painting falling through the frame and that the thin step of the rabbet is not cracked or broken, threatening to give way.

Insecurity may be simply the result of an object’s material or design. Objects made of glass, for example, are inevitably insecure; so, too, are ceramic pieces and objects with free-standing elements. Stone objects are often surprisingly insecure. Stone is usually heavier than commonly thought; a cubic foot of marble weighs about 175 pounds. A statue of several cubic feet in volume may seem easy to handle, particularly if there is an arm, head or other projection to grasp, but these are almost always too weak to stand the stress of lifting.

It is therefore suggested that the weight of stone sculpture be recorded if possible. Points of possible weakness in stone objects should be checked; the presence of real weakness is revealed by identifying hairline cracks.

Insecurity is normally described in detail by the curator and conservator. But because of the registration department’s service as a checkpoint in the traffic of museum objects, it is an aspect of condition with which the registrar should be thoroughly familiar.

**Inspecting for Condition**

To some extent the limits of the registrar’s concern with condition are defined by the equipment available for inspections. A registrar should have a large table over which are fitted at least two strong, cool beam lights. To reveal the necessary evidence of condition, the lights should be adjustable so that they are capable of both general illumination and cross lighting. The table should be well padded, not only to protect frames, but also to protect paintings and drawings. Turned face down for a scrutiny of their backs and solid objects and ceramics up-ended for study. With this equipment and a hand lens it is possible to observe even small, inconspicuous defects, such as cleavage in paintings, checks or splits in the backs of wood panels (where they usually appear first, before breaking through to the front), scratches or dents in metals, stone and ceramics, foxing on paper and so forth, all of which may be signs of insecurity or new damage.

It is the function of the registrar to inspect an object upon its arrival at the museum. This first inspection is important in view of possible insurance claims. Another inspection is advisable at the time an object leaves a museum. An object should have been carefully ex-
Examined before its shipment is authorized, but the registrar makes the final check to see that an object is fit to travel, to be handled by another staff, to endure another climate and to make a safe return. Drawings should be inspected to see that frames are sound; that the backings are stiff enough to take a moderate accidental blow without bursting the glass; that the back is sealed to exclude dust. Paintings should be checked to see that they are secure in their frames but not bound; that the stretcher keys are all present and firm and none has fallen down behind the lower stretcher stick; and that, for larger paintings, a small wad of cotton is lightly taped between the canvas and the center of the middle stretcher cross-member to prevent vibration of the canvas during shipment. Occasionally a registrar may discover some evidence of insecurity not previously noticed. If so, special precautions must be taken in the handling of the object, or it may even be withheld from shipment.

Failure to perform the final check can have serious consequences, not only for the safety of the object in travel but also for the museum shipping the object. Should damage occur. It is an insurance that gives protection not offered by any underwriter. After the final check, objects should be kept in a safe storage area until they are ready to be put into their packing cases, thus keeping them out of the shipping room traffic as long as possible.

Recording Condition

The method of recording condition varies from museum to museum, but some general instructions are applicable to the content of the notes. There is a need for brevity and accuracy. Every attempt should be made to describe three attributes of any defect: its nature, its location and its extent. As the nature of a defect is often most difficult to describe, it will be considered last.

Location may be described in a number of ways. A defect, like grime, may be generally distributed, in which case the word "general" will suffice. Occasionally stains or scars may be described as being "scattered generally." A defect appearing in a specific area only may be located in terms of the design—in the background, for example, or in or near a figure or other design feature. It may also be located in reference to the eye, arm or leg of a figure. In locating a defect in terms of the design, the point of view must be clear. It is useful to adopt the heraldic terms "dexter" and "sinister" to designate the subject's right or left, respectively, as distinguished from the viewer's right or left.

For locating defects on paintings, an approximate or an exact method can be used. In the approximate method the surface is divided into nine zones like those of a tic-tac-toe figure. The three horizontal positions are designated left, center and right; the three vertical positions top, center and bottom. Thus any zone can be designated by capital letters such as TL, C or BR. In the exact method the coordinates of the defect are measured in height (vertical distance above the bottom left corner) and width (horizontal distance from the same point), just as one would plot a point on a graph. The point of reference is always the bottom left corner of the stretcher or panel, unless otherwise specified.

The extent of a defect must be recorded according to its nature. A split, a tear, a hole or a stain can be measured in length or area. But abrasion, grime, cleavage, weakness, brittleness, dullness and so forth are not easily measured, and adjectives must be used. The following sequence of five adjectives that represent arbitrary degrees has been used with success: "negligible," "slight," "moderate," "marked," "extreme." Thus "slight," for example, has a fairly specific meaning because it refers to a defect more serious than "negligible," and less serious than "moderate."

The use of any routine terminology saves time in writing records and automatically increases
accuracy. Such entries as “slight general dullness,” “flaked loss of paint, size of a dime, H. 6 1/2 in., W. 8 1/4 in.,” or “disjoin at dexter elbow” all have reasonably clear meanings. The nature of a defect should be described in a word or two with specific meanings. Much of the misunderstanding about condition is traceable to a casual use of terms for describing defects. The need for more accurate communication in art technology has brought about a gradual refinement of terminology over the past 50 years. The glossary of terms used to describe condition (below) represents a step toward some standardization. The glossary published in the first edition of Museum Registration Methods was revised for the second edition in light of suggestions offered by the Committee on Terminology, International Institute for Conservation—American Group. This third edition of the glossary includes some new terms and revisions of earlier definitions. It has been prepared with the assistance of George L. Stout, who, as editor of Technical Studies in the Field of the Fine Arts, introduced many terms now in common use. I acknowledge with many thanks his extremely helpful suggestions. I assume responsibility for the selection of these terms from many others that might have been included and realize that there are gaps that may need to be filled.

**Glossary**

**Abrasion** One type of erosion; a surface loss assumed to be caused by friction on the varnish, paint or ground in a painting, on the design material or the support of a drawing or print, on the finish of furniture, sculpture or other objects. Also called scrape, wear, rub.

**Accretion** An accumulation of extraneous material on the surface of an object that alters the original design. Also called encrustation.

**Auxiliary attachments** Materials or constructions fastened to an artifact with the evident aim of contributing strength and stability, e.g., cradles on panels to restrain warp; linings on fabrics; dowels and splines in three-dimensional objects of wood or stone.

**Blanching** Irregular, obtrusive, pale or milky areas in paint or varnish; not a superficial defect like bloom, but a scattering of light from microporosities or granulation in aged films.

**Bleeding** The diffusion of a color into adjacent materials, often caused by water or other solvents.

**Bloom** Superficial surface cloudiness, white or blue white, caused by moisture penetrating a surface coating of varnish.

**Check** A rupture in wood along the grain and less than the length of the piece, usually caused by the accelerated drying of wood at the exposed end grain (cf. split). In plywood and in wood that has been too rapidly dried, checks may appear anywhere along the grain as a result of surface shrinkage.

**Chip** See dent.

**Cleavage** A parallel disruption occurring as separation between or in any of the laminae of a stratified construction, so called because it runs parallel to the surface. When marked, it is visible as an elevation of contour and audible as having a sonancy (the faint sound emitted upon contact) different from that of coherent structures in the same artifact.

**Blister** One type of laminal disruption. It is rare but may be found in paintings, veneer and engaged leather coverings, where it appears as an inflated, semiglobular bulge (i.e., convex in section) and is usually caused by excessive heat. In film it appears as an inflated pocket and is produced when the film is made plastic by the action of solvents, heat or both.

**Buckled cleavage or buckling** One type of laminal disruption in which loosened layers take a conformant of gablelike ridges (also called tending). These ridges may combine parallel and perpendicular disruption and may be caused by compressive forces underneath the laminae. They are recognized by contour and by sonancy.

**Cupped cleavage or cupping** A type of laminal disruption in which flakes of paint are created with paint surfaces bent concavely into the shape of cups.

**Obscure, blind, or flat cleavage** A cleavage not evident to the eye in surface examination, but sometimes revealed by sonancy.

**Coaptation** A repair that involves fitting to each other parts that belonged together, such as broken pieces of sculpture and pottery, also recovery of altered shape. Evidence of such treatment may be clear. Also called rejoicing, attachment, setting down.

**Cockling** A broad wrinkle or system of wrinkles without creasing, usually referring to the conformation of paper or parchment.

**Corrosion** The chemical alteration of the surfaces of metals caused by agents in the environment or by reagents applied purposely. The color and texture of a metal surface may be changed without alteration of the form if there is no increase in the volume of the corrosion products, as in the gray green corrosion of Chinese bronzes. If the volume of corrosion products is increased, hard nodules or crusts are formed on metal surfaces. Also called patina, eruptive patina, noble patina. Cf. flourescence.

**Crack** A fracture or fissure in any surface, especially a paint film. No loss is implied.

**Crackle** A perpendicular disruption of laminae. Crackle is common in old paintings and may also occur in lacquer, inlays, ceramic glazes and other laminae. Two main types are recognized: the crevice, which usually has a narrow aperture and often penetrates more than one lamina; and the rift, which usually has a relatively wide aperture and penetrates only a single lamina. Description of crackle patterns requires a complex vocabulary.

**Traction crackle** An "alligator" pattern of crackle produced by shrinkage forces in a rapidly drying upper layer, lying over a slow drying plastic layer. The pattern of traction crackle is a characteristic
complex branching, and the apertures are frequently wide and disfiguring.

**Dent, dig, gouge, chip** A defect in the surface, caused by a blow. A dent is a simple concavity; a dig implies that some material has been displaced; a gouge that material has been scooped out; a chip that material has been broken away.

**Dig** See *dent*.

**Discoloration** Changes of hue, value or chroma, often having uneven distribution and plainly detrimental to the prevailing tone relations.

**Dishing** A defect in the stretcher caused by the torque of a drawn fabric. The stretcher members are twisted out of a common plane, a shallow dihedral angle is formed at the corners. Dishing is a common cause of corner wrinkles in stretched canvases (cf. *draw*).

**Disjoin** A partial or complete separation of a join between two members of an object, as distinguished from a crack, tear, check or split.

**Draw** A wrinkle or system of wrinkles in stretched fabric, radiating from corners or edges, usually caused by uneven tension. Corner draws may also be caused by various stretcher defects, especially *dishing* (*q.v.*).

**Efflorescence** Although efflorescence has a specific chemical meaning referring to the change from a crystalline salt to a powdery mass with loss of water, in condition recording the term is used more broadly to describe powdery or crystalline crusts resulting from other interactions on the surface of stone, plaster, ceramics or metal. Efflorescence has been used to refer to crystalline accumulations on the surface of paint, a relatively rare phenomenon not yet fully investigated, which seems to involve certain ingredients in the paint interacting with each other or with agents in the environment. The bright green spots of powder sometimes found on bronzes and called "bronze disease" are an efflorescence caused by the transformation of cuprous chloride corrosion into basic chloride. This reaction requires moisture and can be controlled by maintaining a dry environment, i.e., below 60 percent relative humidity (cf. corrosion).

**Embrittlement** A perceptible decline of firm, plant and supple organic material toward an amorphous or even pulverized state; easily observed in fabrics, paper and leather.

**Erosion** A degradation of the integrity of an artifact with loss of outer portions in consequence of decay, embrittlement, abrasion or agitation of a weak bond.

**Fading** A discoloration with loss of chroma and usually with change to a higher value; a change of hue may also occur. It is evident particularly in textiles where parts, such as seams, have been protected from light.

**Flake** A portion of a lamina isolated and bound by fissures. Flakes may have profiles (sections) that are flat, rimmed, convex or concave. Also called *island*.

**Flaking, flaked loss** Lacunae left by sloughing of laminar flakes through a combination of *cleftage* and *cracking*.

**Foxing** Yellow or brown spots on paper, or occasionally pale spots on toned paper, which follow the degradation of cellulose by mold. Similar brown spots are sometimes caused by the rusting of iron particles in the paper.

**Gouge** See *dent*.

**Insect invasion** Signs of the working of insects, such as tunnels or "honeycombs" in wood or open gaps and holes in fabrics or paper. These are often clear upon careful inspection.

**Lucuna** A void in the integument of an artifact where design material has been lost.

**Lining** A repair that involves an auxiliary attachment applied to a planar artifact, such as textiles, paintings and leatherwork. Linings can usually be noticed readily (cf. *mount*).

**Mold, mildew** A large group of small fungi, the vegetative structures of which invade many organic substances. Provided sufficient moisture is present, these structures or hyphae produce enzymes that dissolve or degrade the host material. This chemical action may leave wastes that stain the host, as, for example, *foxing* marks on paper. On maturity, reproductive structures will appear on the surface of the host as visible and often colored, furry or weblike excre-}

...cences. Until mature, mold or mildew may not be detectable except by the characteristic musty odor. Because mold requires moisture for growth, mold activity may usually be arrested by maintaining a dry environment, i.e., below 65 percent relative humidity.

**Mount** A repair that involves an auxiliary attachment to weakened artifacts such as paper and textile fragments. With paper, attachment may have been by adhesion throughout. Textiles are usually sewn to their mounts. (Bases, pedestals and removable frames are not considered to be mounts or parts of an artifact.)

**Penitimento** Literally, repentance or a change of mind; in a painting, a visible evidence of an early design below a revised design. If the upper paint has become slightly translucent, either through an increase in the refractive index of an oil medium or other causes, a ghost of the earlier design may be seen. Evidence of the earlier design may also consist of brushing in the surface conformation unrelated to the visible design.

**Soil** A general term denoting any material that dirties, dulls or smirches an object.

**Dust** Loose soil generally distributed on surfaces.

**Grime** Soil tenaciously held on surfaces.

**Smear, fingerprint** Types of local grime. Fingerprint may refer to local *bloom* on varnish, or occasionally to an interruption in general varnish *bloom*.

**Spatter, run, stream** Dried droplets or splashes of foreign material.

**Stain** A discoloration that usually darkens the substance of an artifact in streaks or spots. Its appearance depends on the contacting material.

**Split** A rupture running along the grain of a piece of wood from end to end, usually caused by exterior mechanical stress.

**Stretcher crease** A crease or line of cracks in the ground and paint layers of a painting on fabric, following the inside edges of stretcher members or the edges of cross members. It is caused by the flexing of the fabric against the edges of these members.

**Tear** A break in fabric, paper or other sheet material as a result of tension or torsion.