

**DISASTER PLANNING AND RECOVERY:  
POST-KATRINA LESSONS FOR MIXED MEDIA  
COLLECTIONS**

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# 1 INTRODUCTION

On November 4, 1966, the flood of Florence, Italy shook the world's museum, library, and archival communities. Destroying innumerable priceless artifacts, the flood shined public attention on the need for better disaster planning efforts for collections. Since that time, myriad disaster planning and recovery resources have been published, greatly improving the world's cultural heritage protection. Despite this progress, it seems the more disasters that occur, the more we realize how much more work there is to be done.

In less than a one-year period beginning in December 2004, the world saw three devastating disasters that caused the cultural community to again turn its attention to disaster preparedness. First, the December 26, 2004 tsunami in the Indian Ocean killed hundreds of thousands of people, destroyed countless homes, and demolished libraries, archives and museums in Indian, Indonesia and Sri Lanka. Then on August 29, 2005, Hurricane Katrina swept through the Gulf Coast of the United States, devastating nearly everything in its path. The resulting breach in levees separating Lake Pontchartrain from New Orleans flooded 80% of the city. Shortly after, the Kashmir earthquake demolished a large part of Himalayan Pakistan, and parts of India, an area that holds some of the last of the world's Tibetan Buddhist temples and artwork.<sup>1</sup>

These disasters alone bring to light the risk of the world's cultural heritage. As can be seen from the UNESCO report titled, *Lost Memory, Libraries and Archives Destroyed in the Twentieth Century*, natural and man-made catastrophes are perhaps the greatest threat to cultural collections. Yet many institutions neglect preparing for them. Disaster planning is often seen as too costly or too time consuming, and as a result, day to day activities often take priority over ensuring the collection and its staff are properly prepared for an emergency. Through a comprehensive survey conducted in 2004, Heritage Preservation and the Institute of Museum of Library Services found that, in the United States, "80% of collecting institutions do not have an emergency plan that includes collections, with staff trained to carry it out."<sup>2</sup>

## 1.1 STATEMENT OF PURPOSE

There are innumerable resources on disaster management in print and online. Even in the area of libraries, archives, and museums the information appears to be endless. Yet there are two areas that seem to be largely missing from the literature: extensive information for audiovisual collections, and mechanisms for preparing for and coping with large-scale disasters that may result in area-wide infrastructure disruptions. Furthermore, most of these resources treat disaster planning as the creation of a document, rather than as a series of preparedness actions and institutionalization of practices and resources that can be accessed in an emergency.

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<sup>1</sup> The Chinese occupation of Tibet, beginning in 1950 brought about the destruction of a large part of the Tibetan Buddhist heritage in the region. Parts of Tibet that were annexed by India under British rule contain almost all the world's remaining temples and art.

<sup>2</sup> *A Public Trust at Risk: The Heritage Health Index Report on the State of America's Collections – Summary Report*. (Washington, D.C.: Heritage Preservation, Inc., 2005): 6.

Most literature only gives preparedness and recovery for audiovisual materials a cursory glance, offering a minimal amount of information and then instructing the reader consult a conservator or specialist. However, these services can often be costly and beyond the resources of many institutions in the U.S. and especially in developing countries. As John A. Aarons, Government Archivist of Jamaica, writes of the recovery experience in Jamaica after Hurricane Gilbert in 1988: “Unlike in developed countries, there are no private conservators with specialized laboratories who could have been called in to assist. Therefore, the advice given in disaster preparedness manuals to ‘call in the conservators’ was not applicable.”<sup>3</sup>

A comprehensive guide is needed that addresses preparedness and recovery procedures for film, video, and audio materials that will be useful for all types of institutions worldwide as well as private collectors, musicians, and filmmakers. Although audiovisual media are recognized as some of the most vulnerable of all artifacts in a disaster, there is precious little published information on how to recover them. This report will contribute to such a guide that the Association of Moving Image Archivists and The Society of American Archivists hope to publish late in 2006 or early 2007.

The goal of this report is not to write another guide on developing a disaster plan. Instead, it will emphasize areas that are seen to be gaps in the existing literature. In terms of preparedness guidance, it will continually stress that disaster planning is not simply the creation of a document, but a way of thinking, communicating, and responding that must become integrated into an institution’s practice. The written disaster plan should be more of a reference when telephone numbers or recovery procedures are needed. It is not a step-by-step guide on how to cope with an emergency, as a written plan can never address the range of disasters one might encounter, or the scope of damage.

The experiences of institutions and individuals in New Orleans will be used to update the existing literature on disaster preparedness and recovery for mixed media collections, particularly in the face of area-wide disasters. Lessons learned from Hurricane Katrina were not media specific, and can benefit all types of institutions, regardless of collection format. This text will stress the planning suggestions made by those institutions, and incorporate many lessons they learned. Through case studies, it will stress the importance of creating a disaster plan that is applicable to an institution’s mission, geographic region, and climate. More information can be found on planning in references provided in the bibliography.

This report will also examine some of the issues surrounding disaster preparedness and recovery for audiovisual materials, with the constraints of underdeveloped communities in mind. For these, the recommended procedures will be accompanied by basic requirements that do not involve a lot of money or specialized resources.

This text attempts to address both short and long-term disasters by providing planning tips, guidelines, and case analysis that will:

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<sup>3</sup> John A. Aarons. “Hurricanes and Disaster Response: Lessons Learned in Jamaica from ‘Gilbert’.” *Preparing for the Worst, Planning for the Best: Protecting our Cultural Heritage from Disaster*. Johanna Wellheiser and Nancy E. Gwinn, editors. (München: K.G. Saur, 2005): 120.

- Eliminate or reduce damage to audiovisual and other materials due to long and short-term disasters.
- Prepare institutions and individuals for short-term disasters, keeping both isolated and area-wide disasters in mind. If the entire region is affected by a disaster, response and recovery will be much more difficult as staff, resources, and even access to the collection may be difficult. See case studies on the New Orleans, Louisiana area for more information.
- Provide practical salvage and recovery techniques for film, audio, and video materials.
- Use case studies to examine the variety of issues that can be encountered in a disaster. The impact of Hurricane Katrina on collecting institutions in New Orleans, Louisiana will be discussed in detail.

Special thanks must be given to the Center for Catastrophe Preparedness and Response at New York University for providing funding that enabled this research to be conducted in New Orleans.

## **1.2 FRAGILITY OF AUDIOVISUAL MEDIA**

Archivists and collectors with audiovisual artifacts in their care deal with some of the most fragile of all documentary, artistic, and communication media. Nearly all of these materials contain unstable polymers, which make them prone to relatively rapid deterioration, especially when compared to paper or wooden artifacts, for example. They are also dependent on external equipment, and in nearly all cases (with the exception of film) require an apparatus in order to be read. Even with adequate labeling, a magnetic tape alone cannot reveal its content: it needs the proper playback machine. As technology advances, new formats are created and the old ones are rendered obsolete. Equipment and technicians disappear. Thus these media face a very short lifespan, which necessitates highly specialized custodial care.

## **1.3 TYPES OF DISASTERS**

There are numerous different disasters that can occur and damage all types of collections. Some of these are the very obvious natural disasters such as earthquakes, or man-made disasters such as civil unrest. However, there are many other disasters that may at first appear small and unthreatening, but can be equally devastating. Audiovisual media are especially at risk for certain deterioration issues. All of these should be considered when making preventative measures and planning for disasters. The following are a few examples:

a) Short-term: Damage is immediate. May be isolated or widespread.

- Earthquake
- Flood
- Tsunami
- Severe storm (hurricane or typhoon)
- Civil unrest

- Fire
- Water leaks
- Theft

b) Long-term: Damage builds over time. May be a result of short-term disasters.

- Mold
- Pests
- Poor handling
- Improper storage resulting in mass deterioration
- Power failure or frequent power outages (especially in areas where temperature and humidity is high or fluctuating)

## 1.4 DISASTER PLANNING

Disaster planning is a matter of basic security for collecting institutions and their staff. Although natural and man-made disasters are not usually avoidable, thorough planning can mitigate their effects. When they do strike, the effects are often unpredictable, and chaos frequently ensues. Thorough staff knowledge of the procedures and resources to be accessed in an emergency can greatly improve stabilization time. A well-practiced plan will create a rational framework that can guide staff members through difficult and confusing situations, keeping in mind that the situation will vary with each incident. Disaster planning involves addressing four issues, which are typically defined in the literature as:

- Prevention: Measures that will prevent long and short-term disasters whenever possible, and will contain or minimize their effects if they do occur.
- Preparedness: Organizational activities that will prepare the institution for dealing with an emergency if and when one should strike.
- Response: The actions to be taken during and/or immediately after a disaster.
- Recovery: Procedures that will minimize damage and reduce further loss of collections

Though the planning process will take time, each phase is equally important and should be thoroughly addressed by a team of staff members. An individual should never create plans alone, as a disaster will affect everyone at the institution. The key to a successful plan is ensuring that all staff members know the appropriate procedures. There are many resources that will help with the planning process, a selection of which is available in Appendix A. The following four chapters will discuss their basic components.

Although disaster planning literature primarily addresses institutions, individuals should not neglect taking measures to protect their collections. Much of the information in the following sections will be useful for private collectors, artists, and others with valuable items. There are also resources available in print and online that the individual collector may find useful.<sup>4</sup>

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<sup>4</sup> See for example, Priscilla O'Reilly Lawrence. *Before Disaster Strikes*. (New Orleans: The Historic New Orleans Collection, 1992). Also, the National Archives and Records

## 2 PREVENTION

Prevention is the best defense against short and long-term disasters. Proper storage, staff training, and collection knowledge can eliminate a host of problems that audiovisual archives may face, especially things like custodial damage, vinegar syndrome, and cellulose nitrate decomposition. It can also help reduce damage caused by short-term disasters, such as floods.

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Administration website has useful information for personal collections. See "Saving Family Treasures Guidelines." *Preservation and Archives Professionals*. National Archives and Records Administration Website. Accessed 10 April 2006 at <<http://www.archives.gov/preservation/disaster-response/guidelines.html>>

Preventive planning to reduce the effect of short-term natural and man-made disasters involves surveying and identifying the hazards posed by the area and the building. The survey should take into consideration the external hazards posed by the topography, climate, and location and structure of the building. It should also look at the internal risks that could be created by hazardous materials, staff practices, administrative policy, and security issues. These risks should then be analyzed according to probability and scale of effect, so that actions can begin that will eliminate or at least reduce the determined threats. Checklists are available in many of the disaster planning guides that will assist with this process.<sup>5</sup>

Following the survey, the probability and effect of disasters will need to be analyzed. Depending on the location of the archive, these will vary. In tropical coastal areas, hurricanes, typhoons, and tsunamis may need to be given a high priority and high effect rating. In some areas, earthquakes will need to be placed high on the list, and in others, civil unrest, theft, or vandalism. With effective preventative planning, minor disasters such as collapse of shelves, leaking pipes, and pest infestation can be placed in the low probability, low effect category.<sup>6</sup>

## 2.1 BUILDING

Preventative measures should be taken to protect collections against long-term disasters, which could be caused by high humidity, insect and/or vermin infestation, and mold. These types of disasters are far more frequent in tropical areas, especially in developing countries. Because most of the literature on disasters addresses a relatively wealthy audience, it often seems that the only solutions to these problems are costly and unachievable. However, simple, practical measures can greatly reduce the likelihood of long-term disasters.

The building that houses a collection is the first, and at times the only, line of defense against long and short-term disasters. Ensuring that the storage structure is sound will help prevent long-term disasters. In an area that experiences frequent power outages, or in the event of extended lack of power (see case studies on New Orleans after Hurricane Katrina), a well-designed structure may be the only defense against rapid deterioration of audiovisual collections. For existing institutions, building repairs and renovations may need to take place so that the structure itself does not threaten to damage collections (leaking pipes, poor electrical wiring, etc), and to ensure that the building actually provides a line of defense in the event of an unavoidable emergency. This process may be time consuming and possibly costly, but it is absolutely the most important step that must be taken to protect collections.

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<sup>5</sup> See for example, Johanna Wellheiser and Jude Scott. *An Ounce of Prevention: Integrated Disaster Planning for Archives, Libraries, and Record Centers*. Second Edition. (Lanham, Maryland: Scarecrow Press, 2002): 35-37.

<sup>6</sup> For more information, see R. Robert Waller. "Seeking Balanced Risk Mitigation: Risk Assessment at the Canadian Museum of Nature." *Preparing for the Worst, Planning for the Best: Protecting our Cultural Heritage from Disaster*. Johanna Wellheiser and Nancy E. Gwinn, editors. (München: K.G. Saur, 2005): 129-136.

Most collection managers will not have the opportunity to be part of the building planning process. However, if those making the decisions are aware of some architectural possibilities that will improve the storage of collections, this may be a great benefit. Builders, designers, owners, and administrators frequently overlook climactic factors when planning a facility. This can result in unnecessary energy consumption.

One method of combating this is by passive climate control. The idea is that, “the repository is built and arranged in such a way that the thermal and hygroscopic properties of the building and its contents create a good stable indoor climate. It concentrates on building physics and ensures that the temperature and relative humidity stay within acceptable ranges.”<sup>7</sup> By providing adequate ventilation and air circulation, and reducing sunlight and solar gain, a controlled internal climate can be reached at relatively low cost. In many countries, traditional building structures have also been found to control climate and protect against disasters better than newer ones.<sup>8</sup> In tropical areas, and in the event of power outages, a well-designed building can protect against a host of climate-related disasters.

Storing collections underground is often the desired method of controlling climate. This poses a problem in areas with high flood risk, and even in dry areas should be considered with caution. Instead, the ideal situation might be to create a storage area using the idea of a building within a building, which has been successfully employed by many collecting institutions. The stacks are in the center of the building, which keeps the collections away from windows that might heat the area, or break in the event of a storm. Keeping the collection off the lowest and highest levels of the building will provide protection against roof leaks and floods. Hollow walls, or secondary roofs and facades will create sufficient airflow and guard against direct sunlight, and is a simple and inexpensive measure.<sup>9</sup>

## 2.2 SAFETY AND SECURITY

An early step in the preventative process is correcting and preventing fire, water, and safety hazards. Fire detection and suppression systems should be installed if they are not already. Many granting agencies require that institutions have these systems in place before they will fund preservation projects. There are a variety of systems to choose from, including fire extinguishers, wet and dry sprinklers, gas suppression systems, and smoke and heat detectors. Equipment should be frequently inspected and maintained. All staff members should know where detection and suppression systems are located in the building, and should be trained in their operation.

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<sup>7</sup> For more information on building for archives, see chapter four of: René Teygeler, Gerrit de Bruin, Bihanne Wassink, and Bert van Zanen. *Preservation of Archives in Tropical Climates: An Annotated Bibliography*. (Paris/The Hague/Jakarta: International Council on Archives/National Archives of the Netherlands/National Archives of the Republic of Indonesia, 2001): section 4.4, p.2. Accessed 13 February 2006 at <http://www.knaw.nl/ecpa/grip/tropical.html>.

<sup>8</sup> Teygeler, et al, 2001 and Deitrich Schuller, “Preservation of Audio and Video Materials in Tropical Countries.” *ISAS Journal*. No. 7, May 1996: 39.

<sup>9</sup> Schuller, 39.

If the collection is in an area prone to hurricanes, cyclones, typhoons, and other severe storms, you may want to invest in shutters for windows, or cut plywood boards to fit each. Taping windows does not offer much protection for glass, and is said to be a waste of effort.<sup>10</sup> Pre-installed shutters, such as automatic roll down, accordion, bahama, and awning shutters are available for moderate cost.<sup>11</sup> Plywood shutters, made in-house, are the most economical.<sup>12</sup> Plywood shutters should be attached to the outside of the window. Having them on the inside will do nothing to protect glass, and they can be loosened or blown off completely by strong wind gusts or debris.

If the collection includes any cellulose nitrate based motion picture or sheet film, it is crucial that the local fire department be made aware of this. They will need to know the location and amount of all nitrate film. These highly flammable materials will create their own oxygen once they ignite, and cannot be extinguished by any known fire suppression methods. The fire department will need to know if a fire in the building was caused by or might affect nitrate film, as they will have to follow special procedures when fighting the fire. For example, windows and doors should not be opened or broken during a nitrate fire, as this will give the blaze more oxygen and make it more powerful. Nitrate film should ideally be stored in climate-controlled vaults that can be isolated from other storage areas so that fires can be contained, and should be well labeled. Be sure floor plans indicate the location of all nitrate-based film materials.

### **2.3 STORAGE ENVIRONMENT AND ENCLOSURES**

The storage environment and enclosures that house audiovisual media will be the next line of defense in a disaster after the building itself. Many artifacts will be protected in a disaster if they are appropriately housed. These are also the most important factors in controlling mass deterioration of film and media. The right housing and climate will greatly prolong the life of these artifacts, and in the end, proper storage will be more cost effective than mass transfer of deteriorating media.

Controlling either the macroenvironment or the microenvironment can achieve the appropriate storage climate for all types of materials. Macroenvironment refers to the relative humidity (RH) and temperature of the storage room. The microenvironment is the climate inside the container or storage unit. Many institutions without the funds to maintain cold or frozen storage environments may find that microenvironment control to be more within their means.

The Image Permanence Institute (IPI) has published a *Media Storage Quick Reference* guide that covers all types of audiovisual media. Consult either the online or print

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<sup>10</sup> "Hurricane Shutters FAQ." *Hurricane Shutters Homepage*. Atlantic Oceanographic and Meteorological Society Website. Version 1.0, July 10, 1998. Accessed 10 April 2006 at <<http://www.aoml.noaa.gov/hrd/shutters/index1.html>>

<sup>11</sup> "Hurricane Shutter Types." *Hurricane Shutters Homepage*. Atlantic Oceanographic and Meteorological Society Website. Accessed 10 April 2006 at <<http://www.aoml.noaa.gov/hrd/shutters/index3.html>>

<sup>12</sup> "Plywood Hurricane Shutter Instructions." *Hurricane Shutters Homepage*. Atlantic Oceanographic and Meteorological Society Website. Version 2.0, August 9, 2000. Accessed 10 April 2006 at <<http://www.aoml.noaa.gov/hrd/shutters/index2.html>>

version of this text for ideal storage environments.<sup>13</sup> The following table is a summary of the maximum recommended environments for a few types of media. Keep in mind that these recommendations can vary depending on the climate. With lower temperatures, a higher relative humidity will achieve the same effect, and vice versa. For all motion picture film, frozen temperatures are ideal, although magnetic media should not be stored lower than 52°F (11°C), as lubricant may separate from the binder layer and damage the recordings.

<b>Format (motion picture only)</b>	<b>Maximum Temperature and Relative Humidity</b>
Color acetate film	40°F (4°C)/40% RH
Black and white acetate film	40°F (4°C)/50% RH
Color polyester film	40°F (4°C)/ 50% RH
Black and white polyester film	70°F (21°C)/50% RH
Acetate and polyester magnetic tape	52°F (11°C)/50% RH
Nitrate film	36°F (2°C)/30% RH
CDs and DVDs	70°F (21°C)/50% RH

**Table I: Maximum recommended environments for specific media. Source: Image Permanence Institute *Media Storage Quick Reference*.**

Storage environment and enclosures play a crucial role in preventing or controlling vinegar syndrome for acetate film. In determining what type of enclosures to house audiovisual materials in, a three-year study by the IPI found that after a 10 month period, pre-degraded motion picture film (vinegar syndrome level of 0.5) stored at 40°F (4°C), 50% RH, fared better in “open,” or ventilated housings (cardboard boxes, drilled plastic boxes, metal cans without lids) than did those in sealed cans.<sup>14</sup> Even at freezing temperatures (21°F [-6°C], 50% RH), “the acidity of film rolls kept in sealed metal cans and sealed plastic boxes displayed significant increase over time compared to either open enclosures (cardboard boxes, drilled plastic cans) or sealed cans with absorbing materials (buffered cardboard disks).”<sup>15</sup> However, further studies led the IPI to conclude that cardboard discs can increase the acidic activity in a sealed can under warmer climates, and is not recommended practice. The researchers also concluded that, “at room conditions...the merit of open enclosures in lowering the acidity of pre-degraded [cellulose triacetate] film was not demonstrated.”<sup>16</sup> Thus, when the macroenvironment is controlled appropriately, ventilated containers are ideal for long-term storage of film.

<sup>13</sup> Peter Z. Adelstein. *IPI Media Storage Quick Reference*. (Rochester: Image Permanence Institute, 2004). Accessed 3 April 2006 at <<http://www.climatenotebook.org/MSQR/MSQR.pdf>>

<sup>14</sup> Jean-Louis Bigourdan and James M. Reilly. *Environment and Enclosures in Film Preservation: Final Report to the Office of Preservation, National Endowment for the Humanities*. (Rochester: Image Permanence Institute, 15 September 1997): 22.

<sup>15</sup> *Ibid.*, 23.

<sup>16</sup> *Ibid.*, 30.

Magnetic tape is a little more difficult to control, as it is very sensitive to fluctuating relative humidity. For storage of this media, macroenvironment control has thus far been the only method shown to prolong a tape's short life. It is important that fluctuations in RH do not exceed  $\pm 5\%$  within a 24-hour period. In tropical areas, where daily RH fluctuation can be up to 30%, managing video and audiotape collections can be rather tricky. Aside from increasing the likelihood of binder degradation, or "sticky shed syndrome," high RH environments support fungus growth, which can destroy magnetic tape.

If the archive cannot afford to maintain the recommended environment, the best method for climate control is thermal insulation of buildings (as discussed in Section 2.1 above). Collectors should always remember that humidity will ultimately be more important to control, especially at higher temperatures. Portable dehumidifiers are a possible alternative. These machines, which have been shown to successfully control RH in small areas, are available at relatively low cost

Another possible option is employing passive climate control on a smaller scale, using sealed cabinets or containers with dehumidifiers such as silica gel inside. Silica gel packets are commonly found packaged with newly manufactured goods such as handbags and sneakers. The same three-year study by IPI found that controlling the microenvironment with activated silica gel or molecular sieves at 95°F (35°C) in sealed cans effectively stabilized non-decomposing cellulose triacetate film by reducing moisture content. Although IPI found that such microenvironments do not quite compare to macroenvironment controls in terms of an artifact's lifespan, they provide much more stability than does leaving the material to the natural climate. IPI also observed that molecular sieves and silica gel had minimal impact on reducing the acid content of acetate film that had already degraded, contrary to what the molecular sieves are marketed for. In such cases, cold storage is the best way to prolong the artifact's life, until transfer or reformatting can take place.<sup>17</sup>

Vented, plastic cans, such as those produced by Stil Design, may be an ideal storage container for film. Not only will they allow air circulation, but also offer protection from air pollutants and damage during minor emergencies. Magnetic media and discs are said to do best when stored in inert plastic (polypropylene) containers. All tapes and discs should be stored upright (on spine). This will help distribute the tape pack evenly and will also allow water to drain off in the event of a disaster.

Complete reliance on active climate control systems (air conditioning) can be dangerous. This method places the collection in great danger during power outages, especially in areas that are very hot and humid (see Section 6 for examples). Unfortunately, it seems that only archives that cannot afford these systems put any effort into researching alternatives. Passive climate control for both macro and microenvironments is an area that needs much more work, not only to help stabilize cultural collections, but also to simply reduce energy consumption.

## **2.4 COLLECTION PROFILE AND SURVEY**

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<sup>17</sup> Ibid., 50.

Many preventative efforts are part of, or should be part of, day-to-day preservation management. As a start to not only disaster prevention planning, but preservation in general, a collection survey should be conducted to identify at risk materials, to enable prioritization, and to document artifact conditions that may be important to consider during disaster recovery. Surveying is a labor intensive and costly process, but the benefits can certainly outweigh the effort. Not only will it allow administration and staff to become more familiar with the state of the collection, it will facilitate fundraising, as well as duplication, restoration, and disaster recovery prioritization. Because most audiovisual archives have a variety of formats in their collection, the survey will help all staff to understand the vulnerabilities of different artifacts.

As part of the ongoing assessment process, detailed records of all the artifacts in the collection should be kept. As Mick Newnham of the National Film and Sound Archive of Australia notes, “Keeping good records of all aspects of the individual carrier can help pinpoint problem areas in the collection based on the collection profile and is a vital part of planning for disaster recovery.”<sup>18</sup> Staff should frequently conduct archive-wide analysis that documents ongoing storage environment conditions (relative humidity and temperature). Detailed records for individual items or works should be kept that document vital information such as format, uniqueness, generation (and by extension, best copy of the work), number of items per program, physical description, and physical condition (shrinkage, scratches, and other damage).

It is crucial that these vital records be considered in disaster management, as they will be indispensable during disaster recovery. Beyond cataloging records and descriptive information, vital records include legal documents and other fundamental paperwork. Copies should be kept on and off-site whenever possible, or at minimum in multiple locations within the building. If the records are electronic, paper copies should be created and/or duplicated electronic records should be stored off-site. Some institutions have their legal documents microfilmed for easy removal during evacuations.

Keeping records of the different formats in the collection, and the number of each is very important in prioritizing for projects or recovery. Prioritization is dependent on the information that is available, and will be a combination of the inventory, survey, and undocumented knowledge of staff members. If the archive does not have a clear picture of the collection, it will be very difficult to prioritize. As Rachel Lyons, Archivist at the New Orleans Jazz and Heritage Foundation Archive found, not knowing the content of recordings means speculating what items have more archival and historical value. Until the content of recordings is verified, it is impossible to prioritize based on content.

Section 3.3 discusses prioritization specifically for disaster recovery. However, the following issues should be the criteria during any prioritization project:

- Significance of content

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<sup>18</sup> Mick Newnham. “A Disaster Waiting to Happen.” Presented at the 9<sup>th</sup> South East Asia Pacific Audio Visual Archives Association (SEAPAVAA) Annual Conference and General Assembly, 2-7 May 2005.

- Access demands
- Institutional responsibilities
- Obsolescence
- Degradation
- Intellectual property restrictions

Chris Lacinak of Vidipax, Inc. stresses the importance of obsolescence and media specific considerations in evaluating collections of magnetic media for prioritization. An obsolescence evaluation should bear in mind the age of the tape as magnetic media have a limited life expectancy of only up to 30 years. Availability of equipment, parts, manuals, and qualified technicians and operators is also very important. In evaluating specific media, the robustness (substrate material, i.e. paper, acetate, or polyester base; thickness) will be important in determining lifespan. Storage history, format brand, model, or specific batch failure mechanisms will also be crucial considerations. Researchers are working to develop tools that will facilitate magnetic media evaluation, as it is currently a complex and unreliable process.

## **2.5 STAFF TRAINING**

In order to reduce damage to collections due to improper handling (one of the most likely of all disasters) staff should be properly trained in format identification and understanding (including issues of obsolescence and degradation), handling, storage, and condition reporting. Understanding how artifacts should be cared for will reduce neglect. Not only is this an issue in the daily operation of the archive, but if staff members do not know what particular format's vulnerabilities are they will not be particularly helpful during disasters recovery. Archive employees should also read the disaster preparedness plan for the institution and participate in all workshops on response and recovery, which will be discussed in Chapter 3 below.

### 3 PREPAREDNESS

This phase of the planning process brings together agreed upon resources and information onto paper so the institution is prepared when a disaster strikes. Here is where resources such as New York University Libraries' *Disaster Plan Workbook* may be helpful. This book provides blank pages that allow the institution to fill in their information. It also has response procedures for different materials, including audiovisual. Plans for other institutions may also be consulted, however, it is absolutely essential that the plan is not just directly copied from others, as each institution's priorities will be different. As one advisor notes, "A disaster plan is complex; it must apply to a building, the people and collection in that building, and the equipment."<sup>19</sup>

Contrary to the approach offered by most emergency preparedness resources, disaster plans should not be conceived of just as a document that outlines the steps to be taken in an emergency. Instead, planning should be thought of as a process of familiarizing staff with communication venues, external services and alliances, priority materials, and the use and location of supplies. Most planning advisors constantly warn that the key to planning is familiarity. This is absolutely true, however, it must be more than just familiarity with the location and contents of a written document. The document should only be necessary when telephone numbers or salvage procedures are needed. It should not be a document that staff will turn to for instructions on how to handle an emergency. This will be already familiar to them, through the training and planning process. The

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<sup>19</sup> Teygeler, et al, section 6.2.2

importance of this approach will be discussed in Chapter 6 on Hurricane Katrina case studies.

Disaster plans should be created by a group of people on staff. Even if a consultant is called in to help with the creation of the plan, more than one staff member should work with that person. Many planning resources advise that at least some of these individuals should comprise a group often referred to as the “disaster response team.” An early step will be to assemble the team and designate responsibilities in the event of a disaster. Leadership positions should be given to people that remain calm under stress and have the authority to make decisions about recovery procedures. Leadership positions do not necessarily have to be given to the head of the institution. Backup positions should also be assigned in case the first person on the list is unavailable. Team members should be aware of their own response and recovery responsibilities as well as those of others. In many small institutions, the team will be the entire staff.

The written plan must include approved salvage and recovery techniques for all types of materials in the collection. This will be especially important in countries and areas where trained conservators are not available. Training workshops will have to be conducted, and professionals should be consulted whenever possible to ensure procedures are dealt with properly and the chances of mishandling are reduced. Recovery for specific audiovisual media will be discussed in Chapter 5 of this text.

Planning is a good time to ensure that insurance policies are up to date, and cover the range of natural disasters that are common in your area. If the institution does not have a particular form of insurance, discuss the concerns of the collection with upper level administration.

As Dr. Jan Lyall of the National Library of Australia notes, “The main reason for failure is lack of awareness: plans do not work if they remain on a shelf. People make plans work, by being familiar with their contents.”<sup>20</sup> Keeping the plan short, simple, and clear will help facilitate awareness. Be aware that not all situations can be predicted. However, procedures for large and small-scale disasters must be included in plans. University of New Orleans Special Collections Librarian Florence Jumonville found that her institution’s plan works well for small things like leaking pipes, but failed to recognize Katrina-scale disasters, and in that case was completely inadequate. In a large-scale disaster, a long and in-depth disaster plan will not be very useful, highlighting the need for plans to be conceived of as more than just a document. The issues surrounding recovery will be different for each circumstance, but establishing communication networks, internal and external alliances, and priorities for salvage will help in any emergency.

### **3.1 COMMUNICATION**

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<sup>20</sup> Jan Lyall. “Disaster Planning for Libraries and Archives.” Written and presented for the *Pan-African Conference on the Preservation and Conservation of Library and Archival Materials*, 21-25 June 1993. (Nairobi, Kenya: International Federation of Library Associations). Accessed 8 March 2006 at <<http://www.nla.gov.au/nla/staffpaper/lyall1.html>>

Typical disaster planning advice is always to get the contact information for disaster response team members, archive staff, suppliers, labs and conservation facilities, and external individuals or institutions that can be contacted in the event of an emergency. However, traditional disaster planning guides and sample plans rarely take total communication breakdown into consideration. Area-wide disasters will sometimes bring down cell phone, telephone, and Internet service. Also, if your institution's server is knocked out, email communication will be difficult.

It is essential that as much contact information as possible is obtained during the preparedness phase, and that these lists are updated frequently. Make sure to get home telephone and cell phone numbers for all staff members, plus other emergency contact numbers (such as family members in other cities). All staff should be advised to obtain a web-based email address, such as a Hotmail, Gmail, or Yahoo! account that can be accessed in case of internal computer server problems. These email addresses should also be included in the disaster plan. Also, create a Yahoo! Group for the staff so that communication will not be just two-way. As many institutions learned in the wake of Hurricane Katrina, communication collapse can become exceedingly problematic, leaving one person in charge of making decisions for the entire repository.

Many individuals and institutions have found that during communications disruption, it is incredibly difficult to find out who is available to help, and whether people have come by the institution at different times. During Hurricane Katrina, many people were still in town immediately after the storm, but left a few days later when the flood began. At the Historic New Orleans Collection (HNOC), staff had come by the museum during those first few days, but could not find a way to contact other staff members. One person left a very small post-it note that said he had been there, but when other staff members came into the building, the note was impossible to see in the darkness. Having a designated area to leave messages, on chalk or dry erase boards, would have greatly facilitated communication in this case.

During the planning process, labs and other disaster response companies should be consulted to discuss their roles in a potential disaster. Labs should be chosen based on their location, facilities (for example, re-washing facilities for all film gauges in the collection), and experience with disaster recovery. A list of labs and services that can be consulted is provided in Appendix B.

### **3.2 BUILDING ALLIANCES**

It is important to consider the infrastructure of the institution when planning for a disaster. If the repository is part of a larger system, such as a university, the people in charge of the disaster plan should consult with university administrators. The university will have its own disaster plan that may or may not consider how to deal with damage to an archival collection. Talking with their planners about the repository's concerns and priorities will make them aware of the collection's special needs. If the repository is an archive within a large library or museum system, the planning process may be simplified as the institution may already have a disaster plan for the entire system. Still it is important for each division to have its own small plan that identifies priority materials, preparation, and response procedures.

Building alliances between organizations will also be a great help in the event of a disaster. As the HNOCC found, having strong relationships with sister institutions can provide a haven for priority collections that must be evacuated in an emergency; the Collection evacuated their priority materials to a museum in Virginia a few days after the hurricane. Reciprocal agreements should be made with an organization far enough away that a large short-term disaster will not affect both locations. For example, institutions in hurricane prone areas should look to make arrangements with a repository far inland, that wouldn't likely be hit by the same storm. The same goes for areas threatened by earthquakes. Institutional agreements should arrange for backup computer network support, space to house collections during the recovery phase, and personnel that can help with recovery. This information should become an important part of the plan. Talk to people at conferences, both national and international. Find out how your institution can help others, and how they might be able to work with yours in an emergency. If the staff of your institution are unavailable, or have lost their resolve, these partnerships will prove invaluable.

Professional associations can also be a venue for recovery assistance following a disaster. After Hurricane Katrina, the American Library Association (ALA) established an "Adopt a Library Program,"<sup>21</sup> which matches libraries in need with those that are available to help around the U.S. Having such programs set up as part of an association's mission or practice will facilitate expediting recovery assistance.

### **3.3 PRIORITIZATION**

During this phase, priorities may need to be established for recovery of collections. As discussed above, prioritization is complex and will depend on a thorough knowledge of the collection. Hopefully these issues have already been thought through before the recovery planning process. Disaster priorities may vary slightly due to the vulnerabilities of different media in distinctive types of disasters. This type of selection will require some difficult, often subjective decisions, but will be absolutely necessary as not everything can be saved in a large catastrophe. Damaged items that can be purchased commercially, for example, can be discarded. Collection records will be very important here. Fragility of format or individual carrier and location of items in the building may also be prioritization factors.

Long-term disasters are discussed in Section 2.2 on storage environment and enclosures. The following are some physical vulnerability issues that should be kept in mind during short-term disasters:

#### **a) Fire**

Nitrate film will naturally be at the top of this list. Objects such as wax cylinders also have priority in fire or heat related disasters as they can melt easily. Pre-1950 phonograph records are more sensitive to heat than those made later. Acrylic records in

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<sup>21</sup> "Libraries and Hurricane Katrina." *Chapter Relations*. American Library Association. Accessed 10 April 2006 at <<http://www.ala.org/ala/cro/katrina/katrina.htm>>

particular will melt at high temperatures. Magnetic tape is also very sensitive to extreme heat and can melt at only 125°F (whereas paper doesn't begin to melt until 350°F).<sup>22</sup>

#### b) Water

All film-based materials should be prioritized, as they are quite time sensitive. The emulsion may begin to separate from the base 72 hours after water damage, for example. Magnetic tapes can frequently be restored after water damage - large to medium sized tapes such as ½" reel-to-reel will fare better than thin, small tapes such as audiocassettes. Early sound recordings are also susceptible to water damage. Audiovisual archivists will almost certainly have other materials, such as paper-based collections, in their care that will also be sensitive to disasters. Clay-coated, or shiny paper, is a particular concern as it can dissolve in a short time.

### 3.4 ORGANIZATION AND STORAGE

After preparing for numerous hurricanes over the years, Alfred Lemmon, director of the Williams Research Center at the Historic New Orleans Collection (HNOC) has found that a few simple measures greatly reduce critical preparation and recovery time. Lemmon stresses that storing priority collections together is essential for emergency situations. These materials should be identified by a tag or label that glows in the dark. Because "disasters are always dark,"<sup>23</sup> HNOC staff says having these "glow tags" on their priority collections has been invaluable. In addition to saving staff the trouble of searching for the materials, this method also allows people unfamiliar with the collection to simply grab anything that is glowing. HNOC uses plastic material that can be purchased at hardware stores, and cut to the appropriate size.

Another quick and easy way to remove priority materials from a disaster area is to keep multiple items stored in one container. The HNOC plans on obtaining plastic storage bins that will become permanent storage units for some of its collection. Books will be placed in the bins that open to the user's side, but can be quickly shut and allow multiple artifacts to be removed quickly. From previous experience, HNOC has found that taking items out one by one takes far too much precious time in an emergency.

It is worth noting that during flooding, many people found that plastic bins could either be saviors or death traps. Often they would float, rather than fill up with water, and contents were untouched. However, when water did get inside, it did not drain and the contents inside were completely destroyed.

### 3.5 SUPPLIES

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<sup>22</sup> Kahn, Miriam B. *Disaster Response and Planning for Libraries*. Second Edition. (Chicago: American Library Association, 2003): 33, 77.

<sup>23</sup> Quoted from a conversation with HNOC's Director of Systems, Charles Patch.

If emergency supplies are not already stored in house, a basic stock should be purchased or acquired during the preparedness phase. Plastic bags and boxes, mops, respirators, first aid kit, flashlights, plenty of batteries, gloves, and sponges are some of the essential items. Disaster response kits are also available from many archival supply companies. See the Mid-Atlantic Resource Guide for Disaster Preparedness, compiled by the Conservation Center for Art and Historic Artifacts for suggested supplies and suppliers. Also see Appendix B for suppliers. The organization's disaster plan should list the number and location of all emergency supplies.

A fantastic suggestion for the storage of disaster supplies comes from Alfred Lemmon at the HNOC. The museum has kept a 55 gallon (208 Liter) wheeled garbage can near one entrance for many years, and since Katrina, plans on placing more around various entrances to the museum. Inside are all the disaster supplies, which can then be easily wheeled to the necessary location. Along with essential supplies such as plastic sheeting, tape, cloth, knives, and plastic buckets, HNOC keeps Cobra Coils in their disaster cart. The coil is a long, flexible absorbent material that is placed at the bottom edge of doors during water, or other liquid, emergencies. As water leaks into the room, the Cobra Coil absorbs up to 3.3 gallons of liquid, creating a pressure build up that prevents the water from overflowing into the room. Cobra Coils are available from Grainger Supply.<sup>24</sup>

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<sup>24</sup> More information on Cobra Coils can be found on Grainger Supply's website at <<http://www.grainger.com/Grainger/wwg/productIndex.shtml>>. Cobra Coils are composed of diatomaceous earth enclosed in dust-free casing. Institutions that can't afford the coils (\$49 each) might consider experimenting with creating their own absorbent supplies from this material.

## 4 RESPONSE

Planning for response should be discussed during the preparedness phase, and responsibilities designated to different disaster response team members. Procedures should be preplanned and practiced, so that time-consuming planning after the disaster does not put collections at more risk. It will be important to take quick, decisive action in order to reduce loss to collections. However, it is most important to ensure the safety of people first!

Response often begins before a disaster strikes, especially in the case of disasters with advance warning such as hurricanes, typhoons, tornadoes, blizzards, and at times civil disturbance, earthquake, and fire warnings. Institutions in areas that are prone to these types of disasters should have a set of procedures that are set in place during warnings. Individuals and institutions in hurricane prone areas are used to boarding windows, for example, during a hurricane warning. If your archive is in this type of area, be sure emergency supplies are on hand so that the building can be secured before evacuating. Also, collections should be moved off the floor and away from windows (although they should not be there in the first place). If the building has higher floors and these are fairly secure (roof damage unlikely), priority materials should be moved to the upper levels. In the event of a severe disaster forecast, priority materials may need to be moved off-site.<sup>25</sup>

Other emergencies will occur spontaneously. Buildings may need to be evacuated. Be sure your building is equipped with an appropriate fire alarm. Resources such as *An Ounce of Prevention: Integrated Disaster Planning for Archives, Libraries, and Record Centers* by Joanna Wellheiser and Jude Scott provide checklists for response planning for all types of emergencies.

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<sup>25</sup> This practice is only recommended when only the institution's staff, or small segment of the population must evacuate, not during a hurricane, when the entire population is leaving the area at once. Mass evacuations are trying on people, structures, and goods, and may place valuable objects in unnecessary jeopardy.

Many planning resources advise that institutions create a list of steps to be taken in an emergency. However, in most situations, the procedures for response will not be clear or simple. Instead of having an established list of response procedures, keep a few important general guidelines in mind and be sure staff members are familiar with them. It may be useful to keep a list of important response reminders specific to your institution laminated and in an easily accessible place. The following are a few general guidelines to remember:

- DO NOT ENTER the building until fire chiefs, building engineers, police, or others say it is safe. Do not endanger your life or the lives of others.
- Assess the situation before making any decisions or taking action. Use this time to get an overview of the situation, not of individual artifacts.
- Call and assemble the disaster team, volunteers, and other experts. Make contact with external recovery services when necessary.
- Document the damage. If someone had not been assigned this task in the planning phase, choose someone. Documentation will be very important for insurance claims. Also document recovery activities.
- Organize the recovery procedures outlined in the planning phase. Prepare for packing, drying, and/or shipping. Stabilize the area to prevent mold growth. Use the Heritage Emergency National Task Force *Emergency Response and Salvage Wheel* or your institution's established procedures for immediate material stabilization procedures.

In some large-scale and area-wide emergencies, many procedures will not be possible. In the case of Katrina, the turn around time for recovery was very slow. Communications failure prevented assembling teams in the first few days after the hurricane. After flooding began and evacuations became mandatory, it took a long time before most people could legally re-enter the city. Later, staff members would return to the city at different times, staggering the recovery process. These cases should be prepared for and practiced in advance. Utilize message boards and all backup communication methods to coordinate staff and keep everyone up to date. As a last resort, one person may have to make a decision for the entire institution, such as calling in a disaster recovery service. Have this planned and discussed with all staff members in advance.

## **5 RECOVERY**

This section will primarily discuss recovery from short-term disasters for motion picture film, magnetic media (audio and video), and a few other storage media for audiovisual materials. It will not provide information on hard drives, or computer discs. Optical media will be briefly discussed, as they are used to store moving image or sound content. The goal is to provide simple recovery techniques and recommended practices gathered from a variety of resources, including literature, interviews, and observation. However, as this subject is best left to the experts, it will not go into detail. Once it is published, the Association of Moving Image Archivists guidebook on disaster recovery for AV media should be consulted for further information. Approved recovery procedures should be integrated into the your written disaster plan.

The key to any successful recovery effort is getting to the affected materials as quickly as possible, stabilizing them, and recovering them. Of course, every situation is different, and it may not always be possible to treat damaged artifacts immediately. Recovery procedures in disaster plans should try to account for a variety of situations. For an example of do-it-yourself recovery after water damage, see section 6.4 on Helen Hill's films.

It is crucial to save all relevant identification and documentation. If an item must be re-housed, copy down the information on the old container. Save any retrievable paper records. If the items cannot be identified, recovery and rehabilitation will be exponentially more difficult. During the recovery process, document all activities and results.

If professional services are available in your area and are affordable, contact them immediately. A list of experienced professional services is available in Appendix B. However, this may not always be feasible or possible for some institutions and individuals, and recovery may have to be done in house. If this is the case, contact a lab or expert by email or phone to discuss the situation and obtain advice. Most labs will speak to you about this free of charge.

Finally, always make sure the area is safe before entering. Do not endanger yourself or others.

### **5.1 MOTION PICTURE FILM**

This section will cover basic salvage techniques for nitrate, acetate and polyester based motion picture film. Sheet film, slides, and paper prints will not be discussed in this text. Please see general disaster planning resources in Appendix A for discussion on these formats.

a) Water

Every water damage situation is different and may require a different approach than what is outlined here. In the section on dealing with water damaged films on their website, Kodak warns, “Since very few motion picture laboratories offer film cleaning services for water (and mud) damaged film, a salvage job is usually a do it yourself project as mentioned in the following steps and requires manual skill, patience, and a lot of improvising.”<sup>26</sup>

In any case, the first step is to stabilize the films so that there is no further damage. After 72 hours, the risk of emulsion damage is much greater. In most situations, water damage tends to affect the outer edges of the film first. Timely recovery may reduce damage to the emulsion. The following are the minimum steps required to stabilize film for a few different scenarios, summarized from information available on the Association of Moving Image Archivists website<sup>27</sup>:

- Dry films: Keep the films away from water. Put the film inside a plastic bag and then put it in a refrigerator. Send to a lab as quickly as possible, or proceed to in-house recovery.
- Wet films: Keep wet film wet. Place films in cool water (ideally distilled but any cool water will do) in a plastic container with a tight fitting lid, such as a Tupperware container or wastebasket, or plastic bag. If the container cannot be sealed, use a clean cloth to cover it. Copy down all identification information for the films. If they cannot be taken to a lab or attended to within a few days, remove them from their original storage enclosure and gently rinse off the outside of the film. Leave the film on its reel or core and wrap a rubber band around the circumference of the film. Do not unwind the films. Keep all storage containers for later identification. Keep the films as cool and clean as possible, changing the water when you can. Be sure they always stay submerged, as they may become stuck together if they dry. The cool water will help prevent swelling and softening of the emulsion. Send to a lab as soon as possible or proceed to in-house recovery.
- Films that were wet then dried out: Keep the films in a cool, clean place, but do not put them in water. Do not try to unwind the films. Take them to a lab as soon

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<sup>26</sup> “Water Damage” *Storage Room*. Kodak U.S. Website. Accessed 14 February 2006 at [http://www.kodak.com/US/en/motion/support/technical/storage\\_room.jhtml#tropic](http://www.kodak.com/US/en/motion/support/technical/storage_room.jhtml#tropic)

<sup>27</sup> Mick Newnham. “AMIA Hurricane Relief: What to Do About Your Home Movie Damage.” The Association of Moving Image Archivists Website. September 2005. Accessed 13 February 2006 at <[http://amia.typepad.com/home\\_movie\\_recovery/film\\_damage\\_recovery/index.html](http://amia.typepad.com/home_movie_recovery/film_damage_recovery/index.html)>

as possible, or proceed to in-house recovery. These films probably will have the lowest recovery rate of the three groups.

The following are basic procedures for in-house recovery of water-damaged films.<sup>28</sup>

1. With the films still submerged in water, gently rub off excess mud or debris from the outside of the film. Change the water frequently.
2. Slowly unwind the wet film. Gently pass it over running water, careful not to damage the weak emulsion. Wash the film in a laundry or dishwasher solution and water. Be sure to keep water temperature consistent between baths.

If the volume of film is too great to unwind and air dry (step 3), keep them wound on reels or cores and wash as thoroughly as possible.

3. Drape film on a wash line to dry, being careful to ensure that the emulsion does not come into contact with any surface. If the film is still wound, allow it to air dry completely.
4. Clean the film. You will need a set of hand rewinds, film cleaner such as FilmRenew, Ecco, or Renovex, 100% cotton wipes (old t-shirts will do), rubber gloves, and a well ventilated room. Place the film on the left rewind so it will wind through to a new core or reel on the right. Dampen cloth with film cleaner, and fold over the film, so that pressure is applied to both sides by thumb and fingers. When using fast drying cleaners such as Ecco, be sure the film is dry before taking it up on the new reel. For slow drying cleaners such as FilmRenew, wait a couple days for film to dry completely before putting it back in a can. Cleaning the film with one of these products will help lubricate it after the water damage.

If the films are covered in excessive amounts of mold or dirt, you may want to soak them in FilmRenew for an extended period. Other cleaners should not be used for soaking. FilmRenew will kill mold, making films safe to handle after cleaning. Soaking the films for a few days seems to remove nearly all visible mold and dirt, though more experimentation is needed to determine whether extended periods of soaking will have a detrimental effect on certain processes and stocks. See Section 6.4 for more information.

#### b) Fire

Fire is a very difficult disaster to recover from, and success will largely depend on how extensive the burns are. Heat can cause the emulsion to become sticky and adhere to adjoining surfaces. The emulsion and/or base may shrink, distort or crack. If the shrinkage is too great they will be unprojectable. If a specialized lab cannot run the films

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<sup>28</sup> This information was gathered from the “Water Damage” article on the Kodak U.S. website, from Larry Urbanski’s “Film Cleaning Tips and Techniques,” available from <http://members.tripod.com/~Moviecraft/filmclean.html>, and from observations during a home recovery experiment. See section 6.4 for case study information.

through their printers, they are probably beyond repair. Most labs that deal with recovery and restoration can handle a maximum 4% shrinkage.

If the fire was started by, or involves nitrate film, be 100% sure the fire is out before entering. This can be an extremely dangerous situation and should not be dealt with until the fire department approves entry into the area. Nitrate will continue to burn until it has used up all of its oxygen, that is, until the film is gone. There is no recovering a nitrate film once it has ignited. The most important thing to do is contain the fire as quickly as possible before it spreads to neighboring films. If the fire is in a closed off room, do not open doors or break windows, as this will just feed the fire even more. Do not attempt to extinguish the fire. In this case, loss will greatly depend on how many nitrate films are stored within close proximity to the fire. Safety film (acetate and polyester based) will not continue to burn once the fire is extinguished.

Carefully examine the film to determine the extent of damage. First gently vacuum away any loose debris. Melted plastics that are not fully adhered can often be peeled away.<sup>29</sup> When the damage is not severe, it may be possible to completely recover the film. Very carefully unwind to assess the extent of damage. The film may be damaged in some areas but not in others. If there are no duplicate holdings in the collection or in another archive, the charred areas of the film may have to be removed and the good areas spliced together. If the film needs to be cleaned, see film cleaning in the Water Recovery section above.

If the film has “blocked,” or adhered together, it may be possible to unwind the film by soaking it in an alkaline solution, using sodium polymetaphosphate of 15 g/liter.<sup>30</sup> As explained the National Film and Sound Archive of Australia’s *Film Preservation Handbook*, the process can be very slow and requires a lot of patience. It may take weeks before the film can be unwound without causing further damage. The film should be carefully monitored and the solution should be changed daily. When unwinding, place it on a set of rewinds while still wet, and slowly wind through. Rewash the film (as described above) afterwards.

#### c) Other

Most short-term disasters will involve water, fire, and/or debris. As mentioned above, dirt, soot, and other particulate matter can be vacuumed off the damaged materials. If the films are not affected by water, fire, mold, they will likely be in good shape. Basic film repairs, such as splicing and edge repair, may be necessary. If you are unfamiliar with these procedures, see a film handling guidebook such as the National Film Preservation Foundation’s *The Film Preservation Guide* (2004), which can be downloaded for free at <<http://www.filmpreservation.org/>>.

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<sup>29</sup> “Disaster Planning: Fire Damage Recovery.” *Film Preservation Handbook*. National Film and Sound Archive of Australia. Accessed 4 April 2006 at <<http://www.screen sound.gov.au/screen sound/screen so.nsf/HeadingPagesDisplay/PreservationFilm+Preservation+HandbookDisaster+Planning?OpenDocument#damage>>

<sup>30</sup> “Conservation Treatments: ‘Unblocking’ Film.” *Film Preservation Handbook*. National Film and Sound Archive of Australia. Accessed 4 April 2006 at <<http://www.screen sound.gov.au/screen sound/screen so.nsf/AllDocs/6EA8A225602EC517CA256B5E007D8537?OpenDocument>>

Long-term disaster recovery will not be covered in detail here. These disasters will hopefully be prevented by proper storage. Maintaining a clean facility will reduce pests such as insects and rodents. See Chapter 2 for more information on prevention.

## 5.2 MAGNETIC TAPE

This section addresses all tape-based video and audio formats, both cassette and open reel. Again, if possible, consult a professional recovery service or expert (see Appendix) before attempting any recovery yourself. If there is no one available, the following information may be helpful.

### a) Water

Water damage to magnetic tape is usually not as severe as it may at first appear. According to Peter Brothers, President of Specs Bros. and magnetic tape recovery expert, “Most tapes recovered from floods can be restored if treated properly... Water, alone, cannot damage the recording on ferric oxide tapes.”<sup>31</sup> Also, keep in mind that tape damage is more likely to be the result of mishandling rather than water, so handle materials very carefully.

The following are basic procedures for in-house recovery of magnetic tapes.<sup>32</sup>

1. Damage may be more severe if tapes are in contact with dirty or salty water, due to corrosive agents. In these cases, rise tapes off with cold, distilled water as soon as possible. Wear gloves in case of sewage or biological contaminants.
2. Do not freeze dry magnetic tapes.
3. Separate wet and dry tapes. Do not attempt to play back wet tapes. Do not re-wet tapes that are already dry.
4. Empty water from cartridges and containers.
5. Be sure tapes are identifiable. Magnetic tapes must be played back to be read, so it is essential that they can be visually identified in case of damage. Copy down information from labels and inserts. Paper information that accompanies the

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<sup>31</sup> Peter Brothers. *Hurricane and Flood Recovery Advice*. Specs Bros. Website. Accessed 4 April 2006 at <[http://www.specsbros.com/h\\_flood.htm](http://www.specsbros.com/h_flood.htm)>

<sup>32</sup> Information provided in this and the following section on fire was gathered from multiple sources, including an online interview with Budhaditya Chattopadhyay, a post-graduate student in the Department of Sound Engineering at the Satyajit Ray Film and Television Institute in Kolkata, India, who recovered his personal audio collection after a flood submerged the recordings for two and a half days. Also consulted was the Specs Bros. website at <[http://www.specsbros.com/h\\_flood.htm](http://www.specsbros.com/h_flood.htm)> and Leon-Bavi Vilmont. “Audiovisual and Modern Information Media: Disaster Mitigation and Recovery.” *Preparing for the Worst, Planning for the Best: Protecting our Cultural Heritage from Disaster*. Johanna Wellheiser and Nancy E. Gwinn, editors. München: K.G. Saur, 2005. 177-185

recordings might be more susceptible to water damage than the tapes themselves. Remove all paper and cardboard to reduce fungal growth.

6. Allow tapes to air dry, without heating, in a well-ventilated area. Be sure there is circulation of cool, dry air. Position reels and cassettes on edge, rather than flat, when drying.
7. Once completely dry (keeping in mind that some moisture may not be visible), clean the tapes by running them through a cleaning machine (with burnishing blade removed). If you do not have access to one, rewind and fast-forward on a regular playback machine. Be prepared for the equipment to become dirty.
8. Copy the tapes simultaneously with the first playback. Verify content from the new tape.

#### b) Fire

Magnetic tape is extremely sensitive to heat. In the event of a fire, there may not be much chance of recovering tapes. Professional services may be able to restore damaged tapes if they can be reached quickly, however the recovery rate for fire-damaged tapes is very low. Fires will usually be accompanied by water, complicating the recovery. If magnetic tape is damaged in a fire:

1. Be sure duplicates are not available in the collection or elsewhere. Fire damage recovery is extremely expensive and it may be more feasible to replace damaged tapes than restore them.
2. Send irreplaceable tapes to a professional recovery lab whenever possible. Do not open cassettes or reels until a specialist can look at them.
3. If recovery must be attempted in-house, handle materials very carefully.
4. Gently vacuum dirt and debris off tapes. If available, use a cleaning machine (with burnishing blade removed) to clean remaining dirt off tapes.
5. For tapes with minimal damage, rewind then copy tapes simultaneous with first playback.

#### c) Other

Fungal growth is an enormous threat to magnetic media. Mold can grow and spread rapidly, eating away at the binder layer of the tape that holds content information. If mold is discovered, immediately clean the surface with a non-abrasive cloth or vacuum using a HEPA (high efficiency particulate air) filter.<sup>33</sup>

### 5.3 OTHER FORMATS

#### a) CDs and DVDs

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<sup>33</sup> Vilmont, 184.

Optical discs are fairly stable and can be cleaned with a damp or dry lint free cloth. Discs should be wiped from the center out in a straight line to the edge of the disc. This will prevent scratches and abrasions to the circular grooves.

b) Phonograph Records

LPs created since the 1970s are made on vinyl can be cleaned with a mixture of distilled water and mild soap, or an LP cleaning solution such as Discwasher. Wipe both sides of the disc with a lint-free cloth in a circular motion, with the grooves. The disc can then be wiped with clean water if necessary, or simply with a dry cloth. Let them air dry completely then replace in new sleeves.

Much of the information in this report came from my experiences working with libraries, museums, and archives in New Orleans, Louisiana, in February and March of 2006. Although it was six months after Hurricane Katrina swept through the area, the experience still felt very new to the people of New Orleans. During my 10 days in the city, I spoke with people who had only just returned after evacuating on August 28, 2005. The breaches in three levees that flooded 80% of the city have left many people without homes in the New Orleans area. As of March 15, 2006, it was estimated that 155,000 people were living in the city, down from 462,000 before the storm hit on August 29.<sup>34</sup>

Hurricane Katrina resulted in what has been called, “the largest civil engineering disaster in the history of the United States.”<sup>35</sup> Not one, but multiple disasters struck the city of New Orleans. The first was a hurricane, a very large storm that predictably and understandably caused heavy destruction to the area, and nearly obliterated many neighboring towns along the Gulf Coast. The second disaster, the breach in levees, although predictable, was preventable: it was the result of poor civil engineering. Finally, as if this wasn’t enough, more disasters were to follow: political, humanitarian, and administrative. Bearing all this in mind, I will refer to the overall situation as simply, “Katrina,” a word that reaches the lips of people in New Orleans by the hour, if not the minute.

The city of New Orleans is still in a state of total disrepair. Driving through the city, over half of which is deserted and uninhabitable, I was shocked by the severity of the situation, which the national media has done a poor job of communicating. It is difficult to process the vastness of the destruction, which trickles down to the smallest details of the society. Schools, businesses, and hospitals have closed. Because there is almost no low-income housing available, there are no workers to get the city up and running again. Everyone is hiring – one Wendy’s I passed by was offering \$125 bonuses each week – but no one is there to work. FEMA is moving evacuees out of hotels in New Orleans into cities and towns too far away for them to stay at their jobs. Mail delivery comes once or twice a week, and garbage pickup is sporadic.

This total infrastructure collapse is probably the worst disaster of all, as it makes rebuilding an incredibly slow and difficult process. Such disasters are not addressed by disaster planning literature for libraries, museums, and archives, and people dealing with recovery efforts under these circumstances found themselves without guidance. In this situation, where the staff is scattered and largely unavailable, administrators called in professional recovery services, which were often unfamiliar with the needs of collecting institutions. Although this was probably necessary in many situations, the results have varied. This highlights the need for large-scale disaster planning that includes establishing external alliances and services that can be called on.

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<sup>34</sup> Anne Rochell Konigsmark. “Study Evaluates future of New Orleans.” *USA Today*. 15 March 2006.

<sup>35</sup> Bob Marshall. “17<sup>th</sup> Street Canal Levee was Doomed.” *The Times-Picayune*. 30 November 2005. Accessed 4 April 2006 at <<http://www.nola.com/news/t-p/frontpage/index.ssf?/base/news-4/1133336859287360.xml>>

The following sections contain the stories of three institutions and one individual that have mixed media collections in their care, including audiovisual materials. The Louisiana State Museum, home to the perhaps the largest collection of local culture, had severe damage to one building that put thousands of priceless artifacts in jeopardy. Next, the Hogan Jazz Archive at Tulane University was fortunate to be on the third floor of a building that received approximately four feet of water in its basement level, destroying countless documents. WWOZ, New Orleans community radio station, suffered storm and flood damage, and had a tremendous scare when water reached within a foot of their original recordings collection. Finally, the story of Helen Hill, an experimental filmmaker and animator whose house and belongings were severely damaged by the flood is an example of do-it-yourself recovery that many individuals and under-funded institutions can benefit from.

All of these case studies have film, video, or audio materials in their collections, most of which had to be left in buildings without power for up to three months. Each institution and the individual filmmaker are very concerned about the effect that heat and humidity will have on the fragile materials. New Orleans experiences an annual average of 87% relative humidity, 89% in September.<sup>36</sup> The weeks following the storm were particularly warm, with an average temperature of 91.22°F from September 8 to October 7.<sup>37</sup> Some institutions are already seeing the effects of this climate. In the Special Collections Library at the University of New Orleans, films that already had vinegar syndrome quickly progressed to an advanced state of deterioration. One film that the librarian had looked at in April 2005 and not seen any visible problems with, by March 2006 had become deteriorated to the point beyond recovery. In this case, passive climate control would have made an enormous difference. Time will tell how the other collections have fared. With magnetic media it may not be until playback or reformatting that the health of artifacts can be determined.

## **6.1 LOUISIANA STATE MUSEUM**

### **PROPERTIES AND COLLECTION**

The Louisiana State (LSM) Museum has nine properties in the French Quarter of New Orleans, five of which are national historic landmarks. In addition, LSM operates facilities in Natchitoches, Thibodaux, and Patterson, Louisiana. A new branch of the museum opened February 2006 in Louisiana's capital, Baton Rouge.

The Louisiana State Museum has approximately 1 million objects in their collections, which are divided into Visual Arts, Jazz, Costumes and Textiles, Science and Technology, and the Historical Center. Within these collections, an enormous range of artifacts that relate to Louisiana's heritage can be found, from Civil War era submarines

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<sup>36</sup> "New Orleans Weather History." *CityRating.com Weather History*. Accessed 4 April 2006 at <<http://www.cityrating.com/cityweather.asp?city=New+Orleans>>

<sup>37</sup> Data obtained from average daily high temperatures during a 30-day sample period. As the Louis Armstrong New Orleans International Airport's Weather Station was not functioning after the hurricane until September 8, this was the first day used for the calculation of the average. See "Weather History for New Orleans Intl Arp, LA." *The Old Farmers Almanac*. Accessed 4 April 2006 at <<http://www.almanac.com/weatherhistory/index.php>>

and wooden looms, to manuscripts and sheet music. Audiovisual holdings can be found in the Visual Arts Collection, although the bulk of this material is in the Museum's renowned Jazz Collection.

The Old U.S. Mint building at 400 Esplanade Avenue has for many years been home to the Jazz Collection. Formerly the collection of the New Orleans Jazz Museum, this large and important collection of local jazz heritage includes instruments, paper artifacts, rare photographs, film, and audio recordings. The collection was donated to the Louisiana State Museum in 1977, when the Jazz Museum found it could no longer sustain itself financially. Moving image and sound holdings in the Jazz Collection include approximately 600 16mm film items, 1400 reel-to-reel audio tapes, 7800 phonographic discs (LPs and 78s), and a small number of wax cylinders. Approximately 300 New Orleans Jazz Radio broadcasts had been digitized before Hurricane Katrina, and many of these are available on the Museum's website.

### **HURRICANE PREPARATION**

The Louisiana State Museum had an extensive disaster plan on file. The document is a standard disaster plan, with a focus on hurricane threats. Preparation and recovery team members are listed, and all members were assembled to secure the buildings and collections for the approaching storm. As is fairly common in hurricane prone areas of the United States, wooden boards had been previously cut to fit each window of the buildings, making preparation simple and efficient. However, boards were attached to the inside of the windows, meaning the glass was vulnerable to wind pressure and debris. Building exteriors were secured according to standard hurricane preparation procedure for the Museum. All artifacts were moved to higher floors.

### **STORM DAMAGE**

Damage to the Museum's properties ranged from minimal to severe after Hurricane Katrina, the Old U.S. Mint building being the worst hit. The building lost approximately 60% of its copper roof during the storm, causing the top floor of the building to become inundated in many areas. The water-damaged areas were mainly visitor reception and office space; however, two collection storage areas were badly affected by water. Approximately 3% of the Museum's Jazz Collection was damaged when water entered one of the rooms through a broken window, where the plywood board loosened. Paper items left on the floor were soaked. The water also destroyed equipment, including a 16mm projector and audio speakers. Fortunately, the French Quarter did not flood after the levee breaches.

### **RESPONSE**

Staff members were able to return to the Museum two days after the hurricane to assess the damage and move artifacts from the Mint to buildings that had sustained less damage. Working in the Mint without electricity, the hurricane response team managed to secure the roof with tarps, and move the collections. The audio and film materials from the Jazz Collection were moved to the Museum's storage facility on Chartres Street. The paper items that had been damaged by water were sent to freeze drying facilities at nearby universities.

## **RECOVERY**

Most of the paper materials from the Jazz Collection were successfully recovered after being freeze-dried. A few items, mainly institutional scrapbooks, are still being conserved, however librarians at the universities report good progress, and a full recovery of all water-damaged collections is expected. The Old U.S. Mint is now undergoing an extensive two-year renovation.

Overall, the recovery process at the LSM has been difficult. As a result of the area-wide disaster, many staff members found themselves unable to return home, and were forced to leave their positions. As of February 2006, the Museum had lost roughly 30% of their staff, and more continue to resign almost weekly. Budget cuts have prevented the remaining staff from continuing projects that were started before the hurricane. The opening of the new facility in Baton Rouge (which took priority due to contractual obligations) has slowed the process of rehabilitation. Hundreds of thousands of artifacts have had to be moved to an offsite storage facility near Baton Rouge while buildings are being renovated and the staff prepares to become operational once again. As of March 2006, only one of the French Quarter properties was open to visitors.

As was the case with many of the artifacts, the film and audio materials were stored in an un-air conditioned facility for about one month while the area was without power. The Museum is aware of the potential long-term risks that these carriers have been exposed to, however it does not have the staff time or expertise to properly assess the collection. A proposal for assessment funding has recently been submitted to FEMA.

After a brief visual inspection of part of the film collection, I was unable to determine whether the storage environment and enclosures were beneficial or detrimental to the health of the films. Although no immediate smell was detected when I examined a few of the reels, the risk of vinegar syndrome in these conditions can be accelerated. It is possible that the refrigerators that house the film collection could have maintained a stable climate, but more research will need to be conducted on this issue. However, a large part of the collection is still on reels, and some of the metal is beginning to rust.

The high humidity and temperature during the power outage may have had the worst affects on the audio materials. Fluctuations in humidity, even just plus or minus 5% can be enough for mold, binder degradation (sticky shed syndrome) and other problems to develop. As the reels are still packed away in boxes, I was unable to do a visual inspection during this visit.

## **6.2 HOGAN JAZZ ARCHIVE, TULANE UNIVERSITY**

### **THE ARCHIVE**

The Hogan Jazz Archive is part of the Special Collections Division of Tulane University Libraries. Its renowned collection includes oral histories, recorded music, photographs, film, sheet music, objects, and orchestrations. The Archive also maintains manuscripts, clippings, scrapbooks, and a variety of jazz reference sources. Located on the third floor of Jones Hall on the Tulane campus, the Hogan Jazz Archive shares its building with some of the other Special Collections Departments, including the University Archives, the Southeastern Architectural Archive, and Tulane's Music Library.

The Archive's oral history collection is its strongest draw for scholars and students. With over 2,000 unique open reel tapes, and 400 cassettes, the collection is an incredibly valuable resource for historians of jazz. Many of the tapes are more than 40 years old, but are in very good condition. The Archive generally plays back master tapes for researchers. Other media collections in the Archive, including film and video materials, are in poorer condition than the audiotapes, although these are generally not unique programs.

### **DISASTER PLANNING AND HURRICANE PREPARATION**

When Hurricane Katrina struck New Orleans, Tulane's libraries were in the middle of updating their disaster plan. The old plan, approved in 2002, is a 32-page document that is used by the entire library system. It provides general guidelines for small and large-scale disasters, including contact information, location of supplies, and salvage procedures for different types of materials. The plan provides for some flexibility by allowing each department head to designate priorities for recovery. For the Hogan Jazz Archive, the top priority is its oral history collection.

Although it was not written into the plan, the University had been looking into disaster recovery services that they might call in the event of a large-scale emergency. The Library's experience with mold problems in the past due to inadequate climate control and some flooding in the Howard-Tilton Memorial Library after heavy rains, made the University aware of the risks it faced and what its options were in deciding on recovery procedures. After learning about the recovery experiences of universities in Colorado and Hawaii after flash floods, Tulane chose Belfor, an international disaster recovery service that had worked with the others. However, this decision was never integrated into the institution's plan, and many faculty and staff members were probably unaware of this.

Once the news of a hurricane warning reached the staff of the Archive, there was little time to prepare. Staff members came onto campus on Saturday afternoon, and quickly moved un-mounted objects away from the windows, and unplugged the computers. Although many 78rpm records in the archive are stored next to windows, there was no time to move these, and really nowhere to put them.

### **DAMAGE**

Jones Hall sustained relatively little damage from the hurricane itself. Unfortunately, floodwaters reached the building, and the basement received four feet of water. Directly across the street from Jones Hall, The Howard-Tilton Memorial Library, the main library on campus, had seven feet of water in its basement. The hardest-hit collections were government documents, musical scores in the Music Library, microfilm of newspapers and periodicals, and some nineteenth century African-American materials. The Hogan Jazz Archive was very fortunate that no windows were broken and no water came in. Their position on the third floor of the building kept them safe from the flood.

### **RESPONSE AND RECOVERY**

Immediately after the hurricane, communication had completely collapsed and the disaster plan could not be implemented. Tulane's President had to take quick action, and

decided to call Belfor to provide services to the entire campus, including the library. The company's recovery team was on the campus in a few days, and had restored temperature and humidity control to Jones Hall within a week. Large tubes pumped hot air in the buildings to dry it, and cool air to control the humidity. Hogan Jazz Archive Curator Bruce Boyd Raeburn noted that the building's climate was actually more stable with Belfor's emergency climate system than under normal conditions. This was the crucial factor that saved upper floors from any mold growth reaching their collections, to the relief of Hogan Jazz Archive staff. The upper floors of Jones Hall did not experience any after effects from the flood due to Belfor's rapid action. Belfor remained on campus for some time after the flood, repairing damage and stabilizing the facilities. The doors and windows of the building remained open so that the tubes could reach the stacks, while armed National Guards were stationed outside the buildings to protect the collections from possible looters.

Belfor moved the damaged collections from other departments in the library to an offsite conservation facility, where they are still in the process of being recovered. Even though some materials, such as the microfilm, were not unique, it was more cost effective to recover them than to replace them.

While the Hogan Jazz Archive may have fared extremely well after the disaster, some private collectors that they know did not. The Archive has since been contacted by two individuals whose homes were flooded, and were looking to find a repository that could possibly recover the damaged materials, and keep the undamaged items from any future problems. The first collection to be donated to the Archive was the Danny Barker Collection. Barker was an extremely influential local musician who died a few years ago. His daughter had been negotiating with a few archives in the area before the storm hit, trying to find an institution to purchase the collection. Unfortunately, Barker's home was flooded and a large percentage of the collection was destroyed. What remained was donated to the Hogan Jazz Archive without charge, with the hope that it would be safe from mold growth. The Archive's Assistant Curator Lynn Abbott spent many hours cleaning active mold from the collection, which consists mainly of paper artifacts such as scrapbooks, and LPs. Badly damaged artifacts were sent to a conservation facility. The Archive is still in the process of assessing the damage to the collection and continuing to clean the artifacts.

Later, an individual who had been recording local musicians for many years brought his cassette collection to the attention of the Archive. His home had been flooded and although the 1,000 plus tapes themselves did not get wet, he was hoping the Archive would be able to transfer the recordings to a digital format (for Archive to keep in house), and stabilize the tapes. By the time Lynn Abbott went to the home to look at the collection, mold had begun to grow on the outside of the cassettes. Abbott noted that the mold did not appear to be growing on the tape itself, but that it was difficult to tell if this would be the case with all the cassettes. The Archive did a few sample transfers that seemed to go very well, but they are concerned about unforeseen problems they may encounter. They will be looking for mold, sticky shed, and other deterioration issues.

### **6.3 WWOZ 90.7 FM NEW ORLEANS JAZZ AND HERITAGE RADIO STATION**

## **STATION AND COLLECTION**

WWOZ is a listener supported, volunteer-operated, non-profit radio station. The station features blues, jazz, Cajun, Brazilian, Caribbean, and other types of music native to the city. WWOZ broadcasts live on FM radio, and online to listeners all over the world. An important part of their year is a live broadcast from the New Orleans Jazz and Heritage Festival.

WWOZ has been recording live local music for many years. Up to the early 1990s, these unique recordings were made on 1/4" open reel audiotape. When General Manager David Freedman began working at the station in 1992, he became concerned about the storage condition of the tapes. Situated in a small house in Louis Armstrong Park, the climate in the station was neither temperature nor humidity controlled. Freedman had the collection moved to the Jazz and Heritage Festival Foundation Archive.<sup>38</sup> New recordings after this point were made on DAT (and occasionally on cassette) and Hi8 video for many years; now they are on hard disc. Freedman found a high security, climate controlled storage facility, where recordings made after 1992 were to be housed. However, after experiencing a lot of difficulty with the security, WWOZ's audio engineer began putting tapes in a regular residential storage unit starting in 2000. Half of the collection was in each location prior to Katrina. Since 1992, WWOZ has recorded over 3,000 hours of live music. The station also has over 25,000 CDs and thousands of LPs that it keeps on-site for radio broadcast. Twenty recordings made by WWOZ were chosen to be part of the Save Our Sounds Project of the Smithsonian and Library of Congress.

## **HURRICANE PREPARATION**

Having been through a number of hurricane evacuations over the years, the staff at WWOZ had an established procedure for preparing the station. Computers were unplugged and removed from the floor. Pre-cut numbered plywood boards were attached to the outside of windows with screws and wing nuts. Freedman evacuated the city with the possibility of roof damage in mind, but not flooding.

## **DAMAGE**

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<sup>38</sup> The Jazz and Heritage Festival Foundation Archive has been recording interviews with musicians on the Music Heritage stage at Jazz Fest since 1968. The collection includes approximately 1,000 audio recordings, and 5,500 video recordings, along with ephemera and documents relating to Jazz Fest. WWOZ's recordings have been housed there since 1992. Fortunately, the Archive did not sustain damage during Hurricane Katrina, and the area did not flood. To prepare for the storm, Archivist Rachel Lyons moved the collections off lower shelves, spread them out on tables in the work area of the Archive, and covered these with plastic sheeting. Regrettably, the Foundation manager could not locate the keys to the archive after the storm, and was unable to get inside and turn on the power. The collection remained under plastic sheeting in very high heat and humidity for two months. Lyons is now very concerned about the recordings, and is seeking funding for transfer of some of the very valuable pieces. She is also writing a grant to the Grammy Foundation, proposing funding for compact shelving, which would have metal plates that ran over the cracks in the closed shelves, allowing water to run off the shelves and onto the floor (or receptacle), rather than into the collection. She also plans to have the shelves built higher than the current ones, so that collections might be stored on upper shelves, and empty containers and other materials housed on lower shelves.

Although Armstrong Park did receive a lot of floodwater, the small area on higher ground where the WWOZ station was located remained relatively dry. The building took in about 6 inches to a foot of water, meaning the floors were completely ruined. Luckily, the production and broadcast equipment was in good shape. Recordings stored in-house were also fine. A large part of the roof tiles were blown off by the storm, exposing the tarpaper underneath, and putting the equipment and recordings at risk. Because the area is still without power<sup>39</sup>, the building has become further damaged by mold growth, and will likely be uninhabitable.

Aside from physical damage, the disaster also took a toll on the station's financial situation. Unable to have the scheduled Fall Fund Raiser, WWOZ lost approximately \$500,000 in listener-donated support.

The off-site store that was home to the recordings since 2,000 was also in an area that flooded. One of the biggest scares for the station was water coming within one foot of these recordings. Freedman feels incredibly fortunate that they were not lost, but very concerned about the security of these materials in the future.

## **RESPONSE**

The best way to learn the story of the WWOZ's struggle to rescue their equipment, transmission tower, and priceless record collection is to read the blogs posted by David Freedman between September 5 and September 15, 2005.<sup>40</sup> Seeing the first days after the storm through his words is an incredible experience in itself. The four blogs offer an invaluable look into the life of one person, devoted to the culture of New Orleans, and his effort to come to terms with what had happened and what was in store for the future of the city. For the sake of this report, I will do my best to summarize the experience.

Freedman made his first trip back into New Orleans on September 6<sup>th</sup> with WWOZ Chief Engineer Damond Jacob and a couple of people from WWNO radio. They took a quick look at the tower facilities, which appeared at first glance to be completely destroyed. Upon reaching the station, the crew discovered the damage to the facilities. Freedman managed to arrange for a roofer to accompany him on his next trip and secure the roof before more permanent measures could be arranged. Obtaining a permit for himself and the roofer to enter the city, however, proved to be a daunting task.

After spending hours attempting to contact anyone that might be able to give the roofer a pass, Freedman thought he was at a loss. As luck would have it, he found out at the last minute that they would be able to sneak into town with the staff of WWL-TV. The head of Louisiana Public Broadcasting created a very official-looking letter saying that Freedman and the roofer had permission to enter the city and assess broadcast towers. She also gave him a WWL logo to put on his dashboard. Passing all of the city's checkpoints without hassle, they finally reached the station. The crew secured the roof with Visqueen plastic, and boarded up the doorways. Freedman gathered important memorabilia, CDs, records, documents, and computers, and took them along.

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<sup>39</sup> As of March 18, 2006, there was still no electricity in Armstrong Park.

<sup>40</sup> The blogs can be found on the station's website at <<http://www.woz.org/blog.php>>. They were originally posted on the website of the New Jersey-based independent radio station, WFMU, and can also be found at <[http://blog.wfmur.org/freeform/2005/09/woz\\_update\\_4\\_w.html](http://blog.wfmur.org/freeform/2005/09/woz_update_4_w.html)>.

## **RECOVERY**

The station has been moved a number of times since Katrina. After the first few days, they were able to broadcast online from Baton Rouge. Later, the station found facilities in the French Quarter, where they will be temporarily housed for one year, or until they can find a permanent home.

Since Katrina, WWOZ has lost approximately 30% of their staff, 40% of the on-air volunteers, and 90% of their off-air volunteers. Bringing the station back to life has been difficult, but the people of New Orleans cherish this cultural treasure: WWOZ has received hundreds of thousands of dollars from listeners all over the world, helping preserve the voice of the city's music heritage.

Shaken by the experiencing of coming within inches of losing half of their historic collection, WWOZ immediately sought funding to restore and safeguard the live recordings. Teaming with respected audio engineers and preservationists such as Tom Regal of BluWave Audio, and Grateful Dead AV archivist, David Lemieux, WWOZ has proposed a \$350,000 plan to preserve these recordings. The Grammy Foundation has offered the first contribution toward the estimated total. WWOZ is now one of the Foundation's three local preservation partners, along with The Louisiana State Museum and the Jules Kahn Collection of the Historic New Orleans Collection.

Following the experience of broadcasting solely on the Web, WWOZ is beginning to rethink its conception of radio. Realizing the move from traditional streaming radio, to on-demand access, the station is beginning to think of its on-air broadcasts as a means of pointing listeners to the website, where more information, programming, and music will be available. The station is proposing a massive project to rebuild the station in an entirely new way. Freedman's vision is to create a system where the music library is stored in a database accessible to the listeners and the programmers. Listeners can choose between different genres of music, or feel free to tune into live broadcasts. The server will be located in New Orleans, backed up in a far away location, and on external hard drives that can be removed in the event of a hurricane evacuation. All original programming will be archived in the system from its origination.

WWOZ has also shifted its focus from a music-only station, to include a component of local concerns called "Street Talk." Functioning like a news program, the concept is to address cultural issues that are being ignored by politicians, and get them circulating amongst residents. These will be from three to seven minutes in length, and will not be scheduled, but simply air once an hour and then point listeners to the website for more information. As the voice of the city's music culture, WWOZ can become a leader in the battle to keep that heritage alive. One of the biggest concerns that is feeding this effort is the potential loss of the city's musicians, many of who have begun relocating due to lack of housing in New Orleans.

## **6.4 HELEN HILL, EXPERIMENTAL FILMMAKER AND ANIMATOR**

### **BIOGRAPHY**

Helen Hill is a New Orleans-based experimental filmmaker and animator. Before Hurricane Katrina, she lived in the Mid-City area of New Orleans with her husband Paul, son Francis, their pig and two cats. After receiving an MFA from California Institute of the Arts in Experimental Animation, Helen and Paul spent time in Canada before moving to New Orleans. She is a founding member of the New Orleans Film Collective, and teaches workshops in handcrafted film and animation through the Collective. Her short films, including *Bohemian Town* (2004), *Madame Winger Makes a Film: A Survival Guide for the 21<sup>st</sup> Century* (2001), and *Mouseholes* (1999), have been screened at festivals all over the world. Her films feature puppets, hand drawn animation, found footage, and original hand-processed film. She is the author of a book called *Recipes for Disaster*, which is a compilation of filmmaker's techniques for hand processing film. Hill is currently working on *The Florestine Collection*, an animated short on handcrafting and race in New Orleans, through the tale of a woman who creates hand-sewn dresses.

Hill kept almost all of her films and film elements at home. Her short works are primarily on 16mm, although she also shoots home movies and short films on Super 8mm. The films are on a range of different stocks, color and black and white. Some have magnetic stripe sound tracks, some optical, and many are silent. Hill also kept her student's work and experiments in her collection at home. All in all, there are over 80 Super 8mm film reels, and approximately 50 16mm reels in the collection.

#### **DAMAGE**

When the warnings about the approaching hurricane became severe, Helen and Paul evacuated with their baby and pet pig. A few days after they arrived at Hill's parents' home in Columbia, SC, they learned that the area where they live was badly flooded. Two weeks after evacuating, Paul illegally returned to New Orleans to rescue the family's cats, and confirmed that their home was badly damaged. The four feet of water that came into the house destroyed almost everything inside, including many of Hill's films.

Helen and Paul were both able to go back to the city in October to try and salvage anything they could. With only a short time to go through their entire house, the two did their best they could to throw away everything that was beyond recovery, and save the rest. Hill's films had been stored either on a shelf that was above the water level, or in boxes on the floor. The films sustained various forms of damage, from being completely submerged, to getting wet then drying, to remaining dry but baking in the September heat and humidity. All these materials, including the few usable projectors, were hurriedly gathered and taken back to Columbia, getting mixed up in the process.

In addition to film damage, slides of Helen's artwork sustained varying degrees of decomposition. Both Hill's original artwork and friends' work that had been given to her were destroyed. To document the outcome, Hill made slides of the damaged work. Water and mold damaged videotapes that are commercially available were tossed. All of the family's paper files were beyond recovery, including documents relating to the films. Paul, a musician, also had a number of recordings that he had made over the years on audiocassette that were damaged. He took a large portion of these along, and is hoping to eventually find a method for recovering them.

## **RECOVERY**

Immediately after salvaging the remains of their home, Hill unwound and washed the filthiest film reels in a solution of dishwashing detergent and water, then let them dry loose. After a few months of struggling with their exile, Helen and Paul managed to find temporary comfort in Columbia. Hill eventually decided to send her films to a lab to have them cleaned. Being an experimental filmmaker who has worked extensively with manipulated and damaged film that she either found or distorted herself, Hill knew that even with damage to the images she would be able to find a use for them in future films. Unfortunately, Bono Film and Video Lab in Arlington, Virginia, rejected the films for cleaning, saying the excessive dirt and mold might damage the lab's equipment.

Determined not to completely lose her work, Hill decided to clean the films herself. She found information on film cleaning on the Urbanski Film website, and eventually called Larry Urbanski to find more information on cleaners and the cleaning process. Urbanski sent her FilmRenew, and helped her with tips on film cleaning. In the basement, Hill set up rewinds on a dining table that she bought at a garage sale and went to work. Her process has involved soaking the films in FilmRenew for different lengths of time, then wiping them with old cotton rags as they are run through the rewinds. Although slow-drying, FilmRenew does not need to be rinsed off after use, so they can simply be wound onto new plastic reels that Hill has purchased, then put away in cans after they have dried.

Due to the extensive damage, some of the films have suffered shrinkage. To combat this problem, Hill has sent films to a friend and optical printer in California. The Super 8mm home movies that were the hardest hit and thus the highest priority were cleaned first then sent to be blown up to 16mm on the optical printer. Hill will continue this process with other films she feels are priority materials. Because many items have lost their labels and/or leader annotations, Hill does not know what is on a reel until she takes it out and begins cleaning. During this process, she can judge how much she wants to work with a particular element. Urbanski had advised her that it really is best for her to do this work rather than a lab. Not only does she save money, but she can also decide how each film can be used and how extensive the cleaning should be.

The next step in the process will be locating elements of her films that are scattered around the U.S. and Canada. Prints or negatives for seven of her twelve finished shorts should be retrievable. Negatives will hopefully be at the labs where they were processed. However, Hill has used many different labs in the past, and without the paper documents for the films, it will take some time to track them all down. Fortunately, Hill and a friend made an agreement to save a copy of each other's films in case of a disaster, a great example of individual disaster planning through alliances. That person should have prints of three of Hill's shorts.

## **ISSUES AND OBSERVATIONS**

On March 19 and 20, 2006, I spent time at Helen and Paul's home in Columbia, and worked on cleaning a few films with Hill. We first looked at some of the films that she had previously cleaned and examined the results. The films had been soaked in FilmRenew between a few hours and a day. They still looked fairly dirty, and could probably use a second cleaning. We then ventured into the basement and worked with a

few reels that Hill had been soaking for ten days as an experiment. The excess dirt and mold came off completely; leaving only the few remnants of image that remained. The first reel was a Super 8mm home movie: a pretty straightforward cleaning job. The second reel, however, was not only an experiment in cleaning, but in cleaning experimental film: it was a compilation of films that her students had used to practice hand-drawn animation (in permanent marker and nail polish), manipulation, and tinting and toning. At times it was very difficult to determine what was intentional, and what was a result of flood damage.

There were a number of remarkable observations that are worth sharing:

- Most films that had been submerged revealed a deterioration pattern. Often the first third of the film would have no emulsion left, only patterns left by dirt and mold. Then, in the next third, small bits of image would appear mainly in the center of the frame, as the deterioration generally was worst along the edges. Finally, the last third would be more or less recognizable.
- Black and white film seemed to fare better than color. It appears that the organic dyes in color film would wash off in layers, which at times would leave only red or yellow images on the print. In some of the less damaged images, the deterioration of layers was often visible: the outer edges of the frame being more faded than the center. It is unclear whether the floodwater, or the FilmRenew caused this. When the reels were soaking in the cleaner, blue and green color would bleed into the liquid. Is it washing off the already fading cyan or is it taking that dye out of the films? Because the composition of black and white stock is not layered, the image would be very clear and dense where emulsion still remained.
- There were no visible edge codes on any of the films. This information was probably the first to go as the water and mold ate away at the edges of the film. As a result, there was no way to determine what the stock was. This is very unfortunate as it would have been very useful to compare how different film stocks reacted to the water and mold, and then to the cleaning.
- Some of the permanent marker would come off on the cloth, but not entirely. Tints, tones, and nail polish did not seem to be affected by the chemical. Images that were covered by splicing tape remained intact. More testing will have to be done to see what the long-term effects of the chemical are on these manipulations.

Clearly more research must be done on film cleaning and the effects of chemicals on various processes. However, the observations that were made in Hill's case will hopefully benefit others in similar situations. Keeping detailed notes on the recovery process would be very useful in future experiments.

#### **FUTURE PLANNING**

After she tracks down prints and negatives of her films around North America, Hill plans on storing the remaining titles at a film collective in Canada. She feels that in addition to providing distribution services, the collective will be better equipped to protect the films

from disasters. Her hope is that the collective is better prepared to safeguard films that she is at home, and at least if the power fails in Canada, the heat and humidity are less likely to be a threat.

## **6.5 LESSONS LEARNED**

Uncountable lessons continue to be learned by a New Orleans that is still recovering from Katrina. Many of these have been incorporated into the first five sections of this report. However, certain themes were continuously brought up in discussions with staff at libraries, museums, and archives, and are worth repeating here. It should be kept in mind that this text incorporates the responses, suggestions, and frustrations of staff at other institutions than those described in detail above. Particularly helpful were Dr. Florence Jumonville at the University of New Orleans; Alfred Lemmon, Mark Cave, and Charles Patch at the Historic New Orleans Collection; and Rachel Lyons at the Jazz and Heritage Foundation Archives.

### **6.5.1 EFFECTIVENESS OF DISASTER PLANS**

When I began researching this project, I didn't realize the extent of the inadequacies of disaster preparedness plans. Aside from outlining the usual hurricane preparation procedures that people in the Gulf Coast are used to, the plans were basically useless. No one had prepared for a disaster of this scale. This was the lesson repeated by so many people: you can't prepare for everything.

Some institutions admitted that they had simply compiled their plan by copying bits from others, and found it completely useless in this situation. These institutions had been through a number of hurricane preparations before, and were used to the drill of boarding windows, unplugging electrical equipment, moving collections away from windows and off floors. However, most agreed that the plans simply did not address a disaster of this scale. Traditional disaster planning literature assumes that the event is localized, that is, confined to the building itself, not the entire area. When area-wide disasters are addressed, they still presume that staff will be able to re-enter the building within a reasonable amount of time. But how could there possibly be a written document that provides instructions on coping with the total infrastructure collapse of a city? Of course this would be impossible to conceive of in advance, and there is no plan that could offer procedures for such a large and difficult situation.

One word that was repeated everywhere I went was communication. While it is very difficult to cope with loss of power, cell phone towers, and landlines, many people feel that disaster plans could have incorporated better alternative communication venues. This is discussed at length in Section 3.1; however, it is worth repeating here to emphasize the magnitude of this issue. When planning for emergencies, don't neglect to establish every possible line of communication between staff members.

Indeed, you can't prepare for everything, nor should the planning process attempt to. When planning for disasters, the point is not to attempt to predict every possible situation.

Disaster preparedness guidebooks appear to presume this is achievable by outlining endless scenarios that one might encounter. Instead, the approach should be to equip the building, collections, and staff with the appropriate tools to deal with disasters. In fact, it seems that the approach to disaster planning needs to be shifted altogether. Rather than conceiving of a disaster plan as a document, that almost all people will ignore once it is created, it must be a way of thinking. Emergency response should not be numerical lists on paper. Rather, it should be, and will be most effective if it becomes an instinctual reaction, for this is how people will inevitably deal with an emergency. The planning process should involve increasing staff awareness of what external recovery services would be used in an emergency (for audiovisual media this could probably be a lab that the institution works with regularly), what collections have priority, where emergency supplies are kept, and where to find communications information in an instant. Thus, the only reason one would need to turn to the written document is to find telephone numbers and possibly salvage procedures for specific media. It should not be something that has to be read at the time of a disaster; this simply will not work.

### **6.5.2 EXTERNAL RECOVERY RESOURCES**

Building alliances with sister institutions was recognized by many people to have been a savior. Others found that professional recovery services could deal with the problem efficiently, such as the Hogan Jazz Archive. Yet a number of institutions are finding that the service contracted by high-level administration was inadequate for the collections needs. This issue goes hand in hand with the necessity of integrating the collection's disaster plan with the larger institution's plan.

The most effective way to ensure that these measures will be successful is to establish them in advance. Collection managers that had discussed external assistance before Katrina with upper administration found that they were happy with the results. Those who did not articulate the specialized needs of library and archival materials to the decision making bodies that were forced to make decisions for the entire organization (such as university or government institutions), were stuck with contractors that didn't take proper care to protect artifacts. Even though these services are meant to help, they can sometimes do more damage than good. A few institutions feel that the rebuilding efforts of some contractors will not be adequate to protect the collections in the future.

On the reverse side, there is also the issue of assisting other institutions. Louisiana State University and the Archives of the Diocese of Baton Rouge provided a lot of assistance to damaged institutions, and felt they could utilize their disaster plan to help others in this case.<sup>41</sup> The massive cleaning and drying effort that took place at these institutions were an incredible boon to the collecting institutions of the Gulf Coast. Fortunately, they were prepared to take on this endeavor. When negotiating reciprocal recovery assistance with other institutions, be sure that you have the training, staff, and space to take on large collection damage.

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<sup>41</sup> See "Disaster Recovery." *Department of Archives*. Diocese of Baton Rouge Website. Accessed 4 April 2006 at <[http://www.diobr.org/archives/disaster\\_recovery.htm](http://www.diobr.org/archives/disaster_recovery.htm)>

External services can adversely affect collections in unexpected ways. One university, located in a high and dry part of town, offered its campus as a base for rescue teams. Unfortunately, the administration decided that the library would be used as a dorm for firemen, who liberally took advantage of the building and wreaked quite a bit of havoc, which resulted in extensive damage to the building, equipment and collections. Perhaps there was no way of avoiding this set up, and in fact the firemen who came from other parts of the country probably did more good than harm. Nonetheless, it brings home the point that librarians, archivists, and preservationists must be advocates for their collections and make internal and external decision makers aware that these artifacts need special care.

### **6.5.3 UNFORTUNATE FATE OF PRIVATE COLLECTIONS**

Katrina caused undoubtedly catastrophic damage to New Orleans rich cultural heritage. Worst hit was not the collecting institutions; rather, it was private collectors, artists and musicians whose collections suffered the most. Helen Hill is an example of an individual artist who lost many of her personal creations, as did so many others. Well-known local musicians including Fats Domino and Danny Barker lost nearly all of their personal memorabilia. Legendary jazz photographer Herman Leonard, whose home and possessions were damaged in Katrina, has donated some of his most acclaimed pieces to the Smithsonian. The simple fact is that individuals were more vulnerable than institutions, whose mission is specifically to safeguard cultural materials, and whose staff are trained to handle damaged artifacts.

Bruce Boyd Raeburn at the Hogan Jazz Archive stated that before the hurricane, private collectors were very skeptical about donating their collections to institutions. Private individuals felt that the best place for their collection was in their homes, where they could access materials easily. Sadly, Hurricane Katrina wiped out some of the greatest private collections of New Orleans music and ephemera. Now it seems these individuals are looking at the local archives as safe havens for their beloved collections, as most Archives in New Orleans fared better than did residences. The Hogan Jazz Archive now has its hands full with the two collections that have come to them since the flood, and expect that there may be more to come. This disaster may well have been a turning point for establishing a good, trusting relationship between local private collectors and collecting institutions. Such a bond would be of assistance to the long-term preservation of local music history.

There have always been tensions between private collectors and collecting institutions. Creators often feel that their original works belong with them at home. Collectors don't want to put their amassed materials in a place where they will not be able to access items at will. However, following Katrina, many of these people are beginning to reconsider. Individuals whose homes and belongings were damaged immediately turned to archives with the hope that their staff might be able to save what remained. The Danny Barker collection could have found a home before Katrina, had the estate not prioritized financial compensation over preservation. What people seem to have realized since the disaster is that though it may appear that such collections should have high monetary value, they are worth nothing if they don't exist.

It would be a stretch to argue that all collections should be donated to an institution. Museums, libraries, and archives are often under-funded and under-staffed. Yet their entire responsibility is to ensure the preservation of cultural heritage, a task which most people do not have time to do all alone. Katrina has made a clear case for individuals to reconsider who may be the best caretaker of their collection. Even Helen Hill, a young filmmaker whose body of work is still growing, feels that donating prints to a collective will at least provide backup in case of another emergency.

#### **6.5.4 THE RISK OF CULTURAL COLLAPSE**

The loss of cultural collections brings to light an even greater potential loss that the city of New Orleans is facing: the loss of their unique culture. Residents are leaving the city and settling elsewhere for lack of housing. David Freedman, general manager of WWOZ put it very bluntly in our conversation on March 17: if people do not return, if the infrastructure of the city is not rebuilt soon enough to attract old residents, the cultural production of the city may be idle. Worse still, what is remaining could be destined to total commoditization. Freedman's fears of the French Quarter turned Disneyland may not be completely unfounded.

Freedman described to me an inimitable city, one where the local musicians had a unique way of working together and exchanging ideas. The local music scene had a very distinct flavor: Cajun and Creole rhythms blended with Jazz and Blues, the sounds of Rock-n-Roll mingled with Mardi Gras Indian chants, and Brazilian and Caribbean influences weaved into all styles. Freedman remarked that outside musicians who came to the city found they couldn't jam with the locals the way they could with one another. New Orleans music is one of a kind, and has always been one of the city's greatest sources of pride.

The rhythms and styles unique to New Orleans are not written in music textbooks. They cannot be learned from reading sheet music. Generation after generation, the city's musicians have learned their art through two venues: church gospel choirs and high school marching bands. Renowned nationwide, New Orleans high school marching bands are the highlight of all Mardi Gras parades. Through their music instructors, who learned from their band instructors, young musicians gain an irreplaceable set of knowledge. This they carry through their musical career, building and expanding it, then passing it along to the next generation.

With the flood and total infrastructure collapse of the city that followed, schools closed, churches were destroyed, and entire communities disappeared. As the beginning of the Spring 2006 semester, 20 public schools were open in Orleans Parish, 10 of which are operated by the Orleans Parish School Board. The rest are charter schools operated by the State of Louisiana's "Recovery School District" or the Board of Elementary and Secondary Education.<sup>42</sup> Combined, they are educating approximately 15,000 students,

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<sup>42</sup> "Public School Openings Scheduled for Spring 2006 in Orleans Parish." New Orleans Public Schools Website. Accessed 10 April 2006 at <<http://www.nops.k12.la.us/content/homepage/documents/School%20List.pdf>>

down from nearly 60,000.<sup>43</sup> Although the New Orleans public school system was one of the lowest performing in the country before Katrina, there was still strength in musical traditions. According to Freedman, who is on the local Music Education Commission, the city's schools are now under tremendous pressure to perform well academically. If a school does not receive a 50% passing grade, it will be shut down. Sadly, music and arts are not part of the evaluation, and have been cut from the curriculum so students can focus entirely on academics. Without the curriculum, the teachers, and the students, New Orleans music is at a total standstill. Freedman laments that the recordings of local performances in WWOZ's collection may now be representative of a culture that is dead.

The spirit of a city resides in the hearts of its people. Katrina so devastated New Orleans that it has less than half the population that it used to, and many current residents may be people that have come to help with the rebuilding effort. So many people that have stayed away are finding it difficult to return to a place that has been turned on its head. Amongst those that stayed, or at least came back when the city and their homes were inhabitable, there are whispers of leaving soon. Once it is rebuilt, there is a definite possibility that New Orleans will no longer be the city it once was. The rebuilding process is taking much longer than the city anticipated, leaving many with the feeling of an uncertain future. As of early April 2006, over seven months since the hurricane, only 2,000 of the city's former 22,000 businesses had reopened.<sup>44</sup> If the rate of recovery remains slow, and people begin leaving rather than returning, the collections that survived Katrina may soon become records of a community of the past.

Reductions in the overall population reflect the trend of smaller staff sizes at various cultural institutions in the city. The staff is doing their best to get the Louisiana State Museum back on its feet, for example. However, the reductions in staff size and funding for both recovery and day-to-day operations are possibly even larger a threat to the institution and its collections than the hurricane itself. All institutions and businesses that have re-opened are facing the danger of closure, and the LSM is no exception. The fact that it is a government institution complicates things even more, as the decision making process is often very political. Perhaps the worst disaster of all would be the closing of this and so many other important repositories of local heritage. If the artifacts housed at these institutions were to be separated and scattered, the city would lose even of its historical and cultural heritage, which is already in jeopardy.

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<sup>43</sup> The estimated number of students currently enrolled in Orleans Parish comes from "New Orleans, Louisiana – Schools." *Wikipedia*. Accessed 10 April 2006 at <[http://en.wikipedia.org/wiki/New\\_Orleans#Schools](http://en.wikipedia.org/wiki/New_Orleans#Schools)>. The estimated number of students before Katrina was obtained from a News Hour with Jim Lehrer Transcript, "New Orleans Schools Before and After Katrina." *Online Newshour*. 1 November 2005. Accessed 10 April 2006 at <[http://www.pbs.org/newshour/bb/education/july-dec05/neworleans\\_11-01.html](http://www.pbs.org/newshour/bb/education/july-dec05/neworleans_11-01.html)>

<sup>44</sup> Gary Rivlin. "Patchy Recovery in New Orleans." *New York Times*. 5 April 2006. Accessed 10 April 2006 at <<http://www.nytimes.com/2006/04/05/business/05recovery.html>>

## 7 CONCLUSION

This report is the culmination of research, interviews, tours, observation, and general discussion. During this process it became increasingly clear that the existing disaster planning literature, while invaluable in many cases, is inadequate in a number of ways. As mentioned in the introduction, very little information is available on audiovisual recovery and area-wide disasters are not addressed in detail. As this experience has shown, even the collecting institutions may not have the means to even contact experts in the aftermath of a catastrophe (when communications systems are down), much less to send damaged artifacts to conservation facilities. And in many countries, these services are not available. Having practical, relevant recovery information for audiovisual materials would allow institutions to write procedures they can use into their disaster plans, or at least keep this information on hand so it will be available in the event of an emergency.

Another glaring problem is that the available resources are primarily marketed to libraries, museums, and archives. Of course, such institutions are the recognized guardians of cultural heritage, and they should have as much access to preservation literature as possible. However, artists, musicians, private collectors, and average individuals also have priceless artifacts that are even more easily damaged in disasters such as Katrina. These people also need to know how to care for and recover their collections, and their options should be more than “call a conservator” or “send it to a lab.”

In the audiovisual world, very few individuals even know whom to contact in the event of an emergency, much less where to find information on do-it-yourself recovery. It has become clear after talking with many people that the AV archiving community needs to create more of a public face for itself. As is evident from Helen Hill’s experience, even Web-based resources are minimal, or at least hard to find. Although many of the specialists in this field are working to make a profit, it can’t hurt to share knowledge with those that can’t afford their services anyway. Expertise must be contributed to the larger public so that under-funded individuals and institutions can recover damaged media in the best manner possible, and not put materials at greater risk by mishandling.

There are efforts being made to improve this situation. Home Movie Day, for example, is a wonderful venue for educating the public on basic film preservation and introducing people to the community of professionals in their area. Publications marketed to the individual, such as Bill Brand and Toni Treadway’s “A Self Preservation Guide for

Film/Video-Makers,” which should soon be available on the Web, educates artists and gives them an idea of who to turn to when expert advice is need. It is my hope that a disaster planning and recovery guide by the Association of Moving Image Archivists (AMIA) would be made available to both individuals and institutions.

There is still much more work to be done, and it must be done pro-actively, not as a reaction to unsettling events. AMIA’s tips on home movie recovery were put on the Association’s website days after Hurricane Katrina struck the Gulf Coast, which may have been too late in this case. Fortunately, this information is now available in case of future disasters, and hopefully those in need of advice will find it through a Google search.<sup>45</sup> Still, this is only one step toward improving the literature available. More information, by experts that have experience dealing with these situations, is needed.

Preservation, archiving, and disaster planning are not attractive terms to the average artist, filmmaker, or musician. They will rarely seek out information on these subjects out of sheer interest. Yet if they do nothing to protect their own work, it may not be available in the future for others to enjoy or to learn from. Showing them the results of a disaster, such as Helen Hill’s damaged films, however, may spark a renewed desire in learning more about what they can do to protect their creations at home. The preservationists can facilitate this process by reaching out to the artistic community: conducting workshops at independent media centers, and film collectives, or publishing tips and guidelines online aimed at creators through venues familiar to them.

Similarly, disaster planning needs to be revamped so institutions will understand its importance. Right now, the body of literature available makes the process feel very sterile. By attempting to address all types of disasters in all regions, the planning guides spread themselves quite thin. By the same token, their broad and standardized approach may allow collecting institutions to feel that a disaster plan can be created in a systematic way. Clearly, plans that were created in this manner failed in a disaster the size of Katrina. This experience has highlighted the need for regional planning resources directed at collecting institutions, which speak to local geographic bodies, climates, and concerns. Such resources might make planning more attractive, since the institution won’t have to wade through the vast amount of information that doesn’t apply to them, and because they will address specific, familiar concerns. Katrina has also drawn attention to the fact that a disaster plan is not a written document as much as it is an awareness of how the institution will handle an emergency.

Sadly, there is nothing we can do to prevent catastrophes the size of Katrina, or the Indian Ocean Tsunami. These disasters will inevitably cause death and destruction beyond the control of human beings. When considering the lives lost or irreversibly altered by such tragedies, the loss of a few artifacts hardly seems significant. As custodians of cultural heritage, however, our charge is to ensure that these valuable items survive as long as possible. Even in the event that a community is ultimately destroyed, as may very well

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<sup>45</sup> This site may need to be edited for better search retrieval. When I conducted a Google search for “film recovery,” the AMIA page was not in the first few pages of results. Next I tried “water damaged film,” and the page was the fourth item on the results list (the first four were not very relevant to this topic). To optimize retrieval, the authors of this page may want to change the title or header information or metadata tags on the page.

be the case with New Orleans, those artifacts will provide a record of the unique group of people responsible for their creation. This is, and has always been, the role of historical collections, and the task of history.

## **APPENDIX A: SELECTED BIBLIOGRAPHY**

This annotated bibliography provides readers with further information about the references cited in the body of this report. It also describes additional disaster preparedness planning resources that may be useful to collecting institutions and individuals. It does not cover all aspects of emergency management, but refers readers to resources that can provide more information on a variety of related topics. The bibliography lists resources that offer planning and recovery guidance for mixed media collections, as well as those specifically for film and magnetic media. A list of Hurricane Katrina-specific references that were consulted for this report is also provided.

### **DISASTER PREPAREDNESS AND RECOVERY**

#### **GENERAL**

**Buchanan, Sally. *Disaster Planning, Preparedness, and Recovery for Libraries and Archives: A RAMP Study with Guidelines*. Paris: UNESCO, 1988.**

One of the most frequently cited disaster planning guidebooks, Buchanan's simple, yet thorough book addresses the concerns of all types of collections. Despite the age of this text, the issues have not really changed (with the exception of computer media concerns), and can still be used as a guideline. 187 pages.

**"Emergency Response." *Conservation*. Minnesota Historical Society Website. Accessed 14 February 2006 at <http://www.mnhs.org/preserve/conservation/emergency.html>**

The Minnesota Historical Society's "Emergency Response" page supplies PDF documents that cover emergency salvage procedures for wet items. Each document lists supplies necessary, drying and handling procedures, and additional steps. Procedures are available for magnetic media (reel-to-reel and computer disc), motion picture film, sound recordings, and a range of paper, organic, and inorganic material. The page also contains additional resources such as a re-entry checklist, disaster salvage tip sheet, and the Society's own disaster plan, all available in PDF format.

***Heritage Emergency National Task Force Website*. Accessed 22 February 2006 at <http://www.heritagepreservation.org/programs/TASKFER.HTM>**

Heritage Emergency National Task Force was created by Heritage Preservation and the Federal Emergency Management Agency (FEMA). The goal of this program is to help cultural and historical institutions protect their collections and buildings from natural and manmade disasters. They offer a range of resources and services, including the *Emergency Response and Salvage Wheel*, a simple, indispensable resource that provides

clear procedures and tips that can be easily consulted in the event of a disaster. One side of the Wheel outlines critical stages of disaster response, while the other offers practical tips for salvaging nine types of collections, including electronic media, and photographs. The new edition of the Wheel, released April 2006, features water-resistant coating, magnets on the handle for easy display, and a revised section on electronic media. Available in English and Spanish.

**Kahn, Miriam B. *Disaster Response and Planning for Libraries*. Second Edition. Chicago: American Library Association, 2003.**

A good general planning and recovery guide that addresses a variety of formats, including audiovisual materials. Arranged in five sections: Response, Prevention, Planning, and Response and Recovery Procedures, each with case studies. Appendices include useful checklists and forms, and a bibliography. Covers recovery procedures for post-1950s motion picture film, magnetic tape, CDs and DVDs, and phonograph records. 152 pages.

**Lawrence, Priscilla O'Reilly. *Before Disaster Strikes: Prevention, Planning and Recovery*. New Orleans: The Historic New Orleans Collection, 1992.**

One of the few resources aimed at personal collections, this small guidebook helps individuals prepare for and recover from disasters. Recovery techniques are discussed for paintings, paper and books, photographic materials, textiles, furniture and wooden objects, metal objects, and glass and ceramics. Since Hurricane Katrina, the Historic New Orleans Collection has decided to revise this publication, and it should soon be available online. 48 pages.

**Lyall, Jan. "Disaster Planning for Libraries and Archives." Written and presented for the *Pan-African Conference on the Preservation and Conservation of Library and Archival Materials*, 21-25 June 1993. Nairobi, Kenya: International Federation of Library Associations, 1993. Accessed 8 March 2006 at <http://www.nla.gov.au/nla/staffpaper/lyall1.html>**

Dr. Lyall's presentation provides useful basic information on disaster planning. It emphasizes the keys to successful disaster planning, and discusses why plans fail, and what the results of failure might be.

**National Park Service. "Salvage at a Glance, Part II: Non-Paper Based Archival Collections." *Conserve O Gram*. Number 21/5, January 2002. Accessed 6 February 2006 at [http://www.cr.nps.gov/museum/publications/conserveogram/cons\\_toc.html](http://www.cr.nps.gov/museum/publications/conserveogram/cons_toc.html)**

Salvage operations for a variety of audiovisual media are described in this four-page downloadable document. Information is presented in table form. Adapted from Betty Walsh's "Salvage at a Glance" and "Salvage Operations for Water Damaged Archival Collections." Not exhaustive in recovery procedures, but a good quick reference for media collections.

**Newnham, Mick. "A Disaster Waiting to Happen." Presented at the 9<sup>th</sup> South East Asia Pacific Audio Visual Archives Association (SEAPAVAA) Annual Conference and General Assembly, 2-7 May 2005. Accessed 21 April 2006 at [www.seapavaa.org/downloadables/2005SymposiumPapers/DisasterPreparedness.doc](http://www.seapavaa.org/downloadables/2005SymposiumPapers/DisasterPreparedness.doc)**

Mick Newnham's presentation provides a very good starting point for establishing disaster prevention priorities specific to audiovisual archives. The importance of having a collection profile and collection records are discussed, as well as staff training priorities.

***Preservation and Archives Professionals. The U.S. National Archives and Records Administration Website. Accessed 13 February 2006 at <http://www.archives.gov/preservation/index.html>***

NARA's website provides emergency management information for institutional and home collections. The "Disaster Response and Recovery" section of this site contains preparedness and recovery procedures, case studies, resources, and links to other many other related sites. It covers a range of materials, from books and paper, art works, objects, and audiovisual. The "Conservation" section has recovery information for film and magnetic media, as well as general information on dealing with flood and fire damage.

**Teygeler, René, Gerrit de Bruin, Bihanne Wassink, and Bert van Zanen. *Preservation of Archives in Tropical Climates: An Annotated Bibliography*. Paris/The Hague/Jakarta: International Council on Archives/National Archives of the Netherlands/National Archives of the Republic of Indonesia, 2001. Accessed 13 February 2006 at <http://www.knaw.nl/ecpa/grip/tropical.html>.**

This publication was issued on the occasion of the international conference *The Preservation of Archives in Tropical Climates*, which was held in Jakarta November 2001. It contains an extensive overview of currently available resources on issues in relation to preservation and conservation in tropical climates. Although it focuses on conservation issues for books and writing materials, the disaster preparedness chapter is a good, thorough resource for general disaster planning, keeping in mind the situation of archives in developing countries. This chapter does not favor any particular type of material, and often references issues for audiovisual materials. The "Storage" chapter is also incredibly useful for its discussion on alternate climate control methods. An indispensable resource for collecting institutions in tropical areas, as well as others interested in developing new methods for preserving collections.

**Walsh, Betty. "Salvage at a Glance." *Western Association for Art Conservation Newsletter*. Volume 19, Number 2, May 1997. Accessed 13 February 2006 at <http://palimpsest.stanford.edu/waac/wn/wn19/wn19-2/wn19-207.html>**

Salvage operations for a variety of materials are briefly covered in this table. Priority, handling precautions, packing methods and drying methods are covered for paper documents, books, art works, computer media, magnetic recordings, photographic materials, and microforms. Not comprehensive in recovery procedures but a good quick reference to include in a disaster plans for collections of mixed material. Author Betty Walsh has been working on disaster recovery and planning for the British Columbia Management Services since 1982.

**Walsh, Betty. "Salvage Operations for Water Damaged Archival Collections: A Second Glance." *Western Association for Art Conservation Newsletter*. Volume 19, Number 2, May 1997. Accessed 13 February 2006 at <http://palimpsest.stanford.edu/waac/wn/wn19/wn19-2/wn19-206.html>**

This document describes what steps should be taken by whom in minor and major disasters, discusses packing methods and recovery procedures for a range of specific materials (paper, audiovisual, art works, etc.), and briefly discusses post-disaster rehabilitation.

**Wellheiser, Johanna and Jude Scott. *An Ounce of Prevention: Integrated Disaster Planning for Archives, Libraries, and Record Centers*. Second Edition. Lanham, Maryland: Scarecrow Press, 2002.**

This general disaster planning guide was created by the Canadian Archives Foundation. It emphasizes planning and prevention, though includes chapters on recovery and rehabilitation. Covers recovery of specific materials including: still and moving photographic material, computer media, CDs, sound and video recordings, phonograph records. Appendices include a lengthy list of resources, references, and information on the Emergency Preparedness Canada (EPC). 283 pages.

### **MAGNETIC AND OPTICAL MEDIA**

***Specs Bros, LLC Website*. Accessed 13 February 2006 at <http://www.specsbros.com/>**

Specs Bros. President, Peter Brothers, is an internationally recognized expert who has had more than twenty years experience developing and applying disaster recovery procedures for magnetic tape. The company's website is a crucial resource for disaster planning and recovery information for magnetic tape. The site includes disaster planning and recovery sections, as well as hurricane and flood advice. Although Specs Bros. encourages those with damaged magnetic materials to seek the help of an expert, it also offers information on home recovery methods.

**Van Bogart, John W. C. "Recovery of Damaged Magnetic Tape and Optical Disk Media." National Media Lab. Presented at *Emergency Preparedness and Disaster Recovery of Audio, Film, and Video Materials*, a Library of Congress Symposium, 21 September 1995. Accessed 22 February 2006 at <http://www.uark.edu/staff/dr/rdpap002.htm>**

Van Bogart was working for the National Media Lab when he gave this presentation in 1995. Unfortunately, the Imation Government Services Program, which continued the work of the National Media Lab, has not archived this presentation on their website. The available version from the University of Arkansas is not complete, although it does provide a lot of useful information. The talk appears to have been presented with paper archivists in mind as its audience.

**Vilmont, Leon-Bavi. "Audiovisual and Modern Information Media: Disaster Mitigation and Recovery." *Preparing for the Worst, Planning for the Best: Protecting our Cultural Heritage from Disaster*. Johanna Wellheiser and Nancy E. Gwinn, editors. München: K.G. Saur, 2005. 177-185**

This article is found in a larger publication from the proceedings of a conference sponsored by the International Federation of Library Associations Preservation and Conservation Section, the IFLA Core Activity for Preservation and Conservation, and the Council on Library and Information Resources, Inc., with the Akademie der Wissenschaften and the Staatsbibliothek zu Berlin, Berlin, Germany, July 30 - August 1, 2003. The author is Research Engineer for Audiovisual Materials and New Media at the Centre de Recherches sur la Conservation des Documents Graphiques, Paris, France. Emphasizes recovery of magnetic media, optical disc, and early sound recordings.

## MOTION PICTURE FILM

***Film Preservation Handbook.* The National Film and Sound Archive of Australia. Accessed 4 April 2006 at <http://www.screensound.gov.au/Screensound/Screenso.nsf/HeadingPagesDisplay/PreservationFilm+Preservation+Handbook?OpenDocument>**

The Conservation Treatments section of the handbook describes the issues surrounding and procedures for cleaning, rewashing, and “unblocking” (unwinding film that has adhered together) film. The Disaster Planning section of the handbook deals with planning procedures, and includes a helpful list of questions that covers likely disaster scenarios. It also gives water and fire damage recovery information for film. Overall, this text is an important resource for all areas of film preservation. The handbook is also available for download in PDF format from the Southeast Asia-Pacific Audiovisual Archive Association website. Accessed 6 February 2006 at <http://www.seapavaa.org/homesite/publication.html>.

**Newnham, Mick. “AMIA Hurricane Relief: What to Do About Your Home Movie Damage.” The Association of Moving Image Archivists Website. September 2005. Accessed 13 February 2006 at [http://amia.typepad.com/home\\_movie\\_recovery/film\\_damage\\_recovery/index.html](http://amia.typepad.com/home_movie_recovery/film_damage_recovery/index.html)**

This online resource was made available by AMIA after Hurricane Katrina. It contains sections on disaster recovery for flood-damaged films, FAQ on film water damage, a list of labs with rewashing facilities, and information on getting damaged films to labs. There is also a link here to a section on video recovery by Peter Brothers, however this and more information on magnetic media damage is available from the Specs Bros. website.

**“Water Damage” *Storage Room.* Kodak U.S. Website. Accessed 14 February 2006 at [http://www.kodak.com/US/en/motion/support/technical/storage\\_room.jhtml#tropic](http://www.kodak.com/US/en/motion/support/technical/storage_room.jhtml#tropic)**

Kodak offers at-home procedures for restoring water-damaged films. This is a very simple explanation that could easily be attempted by a private collector, filmmaker, or institution with only a small amount of film. Large collections may need to find more detailed information.

**Urbanski, Larry. “Film Cleaning Techniques and Tips.” Urbanski Film Website. Accessed 26 March 2006 at <http://www.filmrenew.com/>**

Urbanski’s film cleaning page focuses on how to use FilmRenew to clean dirty films. It also addresses other types of film cleaners, and their differences. This is one of the only sources of do it yourself recovery for dirty, damaged films directed at individuals.

## **BIBLIOGRAPHIC RESOURCES**

***Disaster Preparedness and Recovery: Selected Bibliography.*** SOLINET. Accessed 22 February 2006 at [http://www.solinet.net/preservation/leaflets/leaflets\\_templ.cfm?doc\\_id=118](http://www.solinet.net/preservation/leaflets/leaflets_templ.cfm?doc_id=118)

SOLINET – the Southeastern Library Network, Inc. – is a non-profit library cooperative serving the Southeastern United States, though their services and information reach far beyond this geographic region. The organization provides an annotated bibliography that is very useful for libraries with mixed collections. They also offer disaster planning leaflets in Spanish and English, available at [http://www.solinet.net/preservation/preservation\\_templ.cfm?doc\\_id=71](http://www.solinet.net/preservation/preservation_templ.cfm?doc_id=71).

***Disaster Preparedness and Response. Conservation Online (CoOL).*** Accessed 6 February 2006 at <http://palimpsest.stanford.edu/bytopic/disasters/>

Conservation Online provides this thorough bibliography of a variety of online disaster planning and recovery resources. Includes case studies and sample disaster plans. Most resources are directed at a general library and archive audience.

***Mid-Atlantic Resource Guide for Disaster Preparedness.*** Conservation Center for Art and Historic Artifacts, Preservation Services Office, February 2006. Accessed 2 March 2006 at

<http://www.ccaha.org/pdf/Web%20version%20Resource%20Guide%20for%20Disaster%20Preparedness.pdf>

The Conservation Center for Art and Historic Artifacts (CCAHA), founded in 1977, is a non-profit conservation laboratory serving other non-profit cultural, educational, and research institutions, as well as private individuals and organizations throughout the United States. The purpose of this document is to assist institutions in their disaster planning procedures, by providing information on emergency services, supplies and equipment. These resources should be researched and then the appropriate vendors and service providers added to emergency telephone and service lists. Includes labs that provide film and magnetic media recovery services.

***Emergency Preparedness and Response: A Selected Bibliography.*** Amigos Library Services. Accessed 14 February 2006 at <http://www.amigos.org/preservation/bibdis.html>

Amigos Library Services is a non-profit library resource organization based in Dallas, Texas. This bibliography primarily consists of print resources for disaster management for libraries. Planning and preparedness, types of disasters, and recovery for specific media, including photographic and magnetic materials, are covered.

## **SAMPLE PLANS**

***“A Disaster Plan for Libraries and Archives.” Amigos Imaging and Preservation Resources.*** Amigos Library Services. Accessed 14 February 2006 at <http://www.amigos.org/preservation/leaflets.html>

Amigos Library Services’ plan is a simple document designed to assist libraries and archives in preparing for emergency situations. It provides a layout for institutions to fill in their own vital information. Recovery procedures are not included. Amigos specifies that it may be used as is, or in parts and combined with other documents. It may be reproduced without permission provided that Amigos Preservation Service is credited.

***Disaster Planning, Prevention and Recovery Manual for the Smithsonian Institution Archives.* Smithsonian Institution Archives. Accessed 6 February 2006 at <http://www.si.edu/archives/report/disaster/>**

The Smithsonian's lengthy manual covers general institutional procedures for all types of disasters, including fire, flood, tornado or severe storm, water from above, biopredation, and vandalism. Recovery and salvage operations for specific media are discussed, though not in detail. This manual is a good example of a plan for a very large institution with a variety of materials in their collection.

***Disaster Plan Workbook.* New York University Libraries. Accessed 6 February 2006 at <http://library.nyu.edu/preservation/disaster/toc.htm>**

This workbook prepared by New York University Libraries provides documents with blank areas for the institution to fill in specific information, such as phone numbers, names, directories and floor plans. It also gives general guidance in disaster response and recovery procedures. Chapter 4 contains basic recovery procedures for film, magnetic tape, phonograph records, and computer equipment. The appendices list the addresses and telephone numbers of several conservation services, with blank space for additional local services.

***Emergency Preparedness Plan for the Minnesota History Center.* Minnesota Historical Society. March 2005. Accessed 14 February 2006 at <http://www.mnhs.org/preserve/conservation/emergency.html>**

The Minnesota Historical Society provides an abridged version of its own disaster preparedness plan for other institutions to learn from. Although it was created for a large institution with many employees, the Society believes that its format and general content can be adapted for different facilities. The plan is comprehensive, covering procedures for disasters of all types and scale. It includes salvage procedures for various materials, which are also available from the Society's website as single PDF documents.

**“Procedures for Recovering Audio and Sound Recording Materials.” *Syracuse University Library Disaster Manual.* Syracuse University Libraries. August 1995. Accessed 22 February 2006 at <http://libwww.syr.edu/information/preservation/audio.htm>**

Although a bit out of date, Syracuse University Library's simple disaster plan, with procedures for the recovery of audio materials, is worth taking a look at.

## **DISASTER PREPAREDNESS AND RECOVERY CASE STUDIES**

**Aarons, John A. “Hurricanes and Disaster Response: Lessons Learned in Jamaica from ‘Gilbert’.” *Preparing for the Worst, Planning for the Best: Protecting our Cultural Heritage from Disaster.* Johanna Wellheiser and Nancy E. Gwinn, editors. München: K.G. Saur, 2005: 117-125.**

This report does not address audiovisual recovery, but it does offer an insight into the dilemmas faced by collecting institutions in developing countries when recovering from a disaster.

**Van Bogart, John W.C., and John Merz.** *St. Thomas Electronic Records Disaster Recovery.* National Media Laboratory. November 1995. Accessed 22 February 2006 at [http://www.imation.com/government/nml/pdfs/AP\\_NMLdoc\\_StThomasElectronic.pdf](http://www.imation.com/government/nml/pdfs/AP_NMLdoc_StThomasElectronic.pdf)

This case study is helpful in understanding the efforts involved in restoring optical and magnetic media after a hurricane. The authors were sent to St. Thomas, U.S. Virgin Islands, to assist in the recovery of government data that was stored on optical, hard, and floppy disc. Detailed description of the procedures and images are included.

**Waller, R. Robert.** "Seeking Balanced Risk Mitigation: Risk Assessment at the Canadian Museum of Nature." *Preparing for the Worst, Planning for the Best: Protecting our Cultural Heritage from Disaster.* Johanna Wellheiser and Nancy E. Gwinn, editors. (München: K.G. Saur, 2005): 129-136.

A summary of the Canadian Museum of Nature's (CMN) comprehensive collection risk assessments of 1993 and 1998. The paper outlines the method and presents the results with particular emphasis on how this data was used in disaster preparedness.

## **STORAGE**

**Adelstein, Peter Z.** *IPI Media Storage Quick Reference.* Rochester: Image Permanence Institute, 2004. Accessed 3 April 2006 at <http://www.climatenotebook.org/MSQR/MSQR.pdf>

This guide provides preservation storage guidelines for still and motion picture film, glass plate negatives, magnetic tape, photographic paper prints, inkjet prints, CDs, and DVDs. When ordered from IPI (\$25), it comes with a two-sided wheel. Side one offers guidance on storage environments for specific media, and side two outlines the dates of use for different plastic supports for film and magnetic media. An indispensable resource for institutions and individuals with audiovisual collections.

**Bigourdan, Jean-Louis and James M. Reilly.** *Environment and Enclosures in Film Preservation: Final Report to the Office of Preservation, National Endowment for the Humanities.* Rochester: Image Permanence Institute, 15 September 1997

Another useful publication from the IPI, this report details the effects of different storage environments on triacetate base motion picture film. It describes climatic effects of various enclosures at different temperatures, as well as the usefulness of molecular sieves and silica gel on controlling the environment inside sealed containers.

**McCormick-Goodhardt, Mark and Henry Wilhelm.** "The Design and Operation of Passive Humidity-Controlled Cold Storage Vault Using Conventional Freezer Technology and Moisture-Sealed Cabinets." Presented at the IS&T 2004 Archiving Conference, April 2004. Accessed 25 April 2006 at <http://www.wilhelm-research.com/>

Wilhelm Imaging Research conducts research on the stability and preservation of traditional and digital color photographs, as well as motion picture film. This article is just one of many available on their website that cover storage of still and motion picture film. Of particular interest here is the investigation into passive climate control systems that are ultimately cheaper than ongoing active temperature and humidity control.

**Schuller, Dietrich. "Preservation of Audio and Video Materials in Tropical Countries." *ISAS Journal*. No. 7, May 1996: 35-45.**

In this article, the author discusses some of the storage issues that audiovisual archives face in tropical countries. The ideal recommended practices are offered, with compromises for tropical areas, especially in developing countries. Everyone, regardless of economic status, should consider the practical building solutions provided in this article.

***Storage and Handling of Processed Nitrate Film.* Kodak U.S. Website. Accessed 4 April 2006 at [http://www.kodak.com/US/en/motion/support/technical/storage\\_nitrate.jhtml](http://www.kodak.com/US/en/motion/support/technical/storage_nitrate.jhtml)**

Kodak's website has a lot of good information on the care of nitrate-based film. Any collection that includes this material must be carefully managed. This article is a good place to begin for those unfamiliar with the storage and handling of nitrate.

## **OTHER**

***A Public Trust at Risk: The Heritage Health Index Report on the State of America's Collections.* Washington, D.C.: Heritage Preservation, Inc., 2005. Accessed 21 April 2005 at <http://www.heritagepreservation.org/HHI/index.html>**

The Heritage Health Index is the first comprehensive survey ever to assess the condition and preservation needs of U.S. library, museum, and archival collections. The findings reveal that immediate action is needed to prevent the loss of millions of irreplaceable artifacts.

***Hurricane Shutters Homepage.* Atlantic Oceanographic and Meteorological Society Website. Accessed 21 April 2006 at [http://www.aoml.noaa.gov/hrd/weather\\_sub/shutters.html](http://www.aoml.noaa.gov/hrd/weather_sub/shutters.html)**

Includes hurricane shutters FAQ, types of shutters, and information on how to build your own plywood shutters. This page also links to the Hurricane Research at the Atlantic Oceanographic and Meteorological Society, where one can find more hurricane information.

***The Film Preservation Guide: The Basics for Archives, Libraries, and Museums.* San Francisco: The National Film Preservation Foundation, 2004. Accessed 25 April 2006 at <http://www.filmpreservation.org>**

This resource describes practical film collection management methods for nonprofit and public organizations with limited resources. Topics including handling, duplicating, storing, making available, and storing film are covered. It traces the path of film through the preservation process and includes case studies, illustrations, charts, glossary, bibliography, vendor lists, and index. Recipient of the Society of American Archivists 2005 Preservation Publication Award.

**van der Hoeven, Hans and Joan van Albada. *Lost Memory: Libraries and Archives Destroyed in the Twentieth Century.* Paris: UNESCO, 1996. Accessed 6 February 2006 at <http://www.unesco.org/webworld/mdm/administ/rtf/LOSTMEMO.rtf>**

This document was prepared under the framework of UNESCO's Memory of the World Program on behalf of the International Federation of Library Associations. By

highlighting all the cultural institutions (including audiovisual collections) that were destroyed in the last century, the report intends to alert the public and professional community of the incredible loss of heritage through man-made and natural disasters. It drives home the importance disaster planning and pursuing a world without war.

## KATRINA-SPECIFIC REFERENCES

A summary of references cited or consulted for the main body of this report that relate to Hurricane Katrina and the resulting problems in New Orleans, Louisiana.

“Disaster Recovery.” *Department of Archives. Diocese of Baton Rouge Website*. Accessed 4 April 2006 at [http://www.diobr.org/archives/disaster\\_recovery.htm](http://www.diobr.org/archives/disaster_recovery.htm)

“Effect of Hurricane Katrina on New Orleans.” *Wikipedia*. Accessed 21 April 2006 at [http://en.wikipedia.org/wiki/Effect\\_of\\_Hurricane\\_Katrina\\_on\\_New\\_Orleans](http://en.wikipedia.org/wiki/Effect_of_Hurricane_Katrina_on_New_Orleans)

“Hurricane Katrina.” *Wikipedia*. Accessed 21 April 2006 at [http://en.wikipedia.org/wiki/Hurricane\\_Katrina](http://en.wikipedia.org/wiki/Hurricane_Katrina)

Konigsmark, Anne Rochell. “Study Evaluates future of New Orleans.” *USA Today*. 15 March 2006.

“Libraries and Hurricane Katrina.” *Chapter Relations. American Library Association Website*. Accessed 10 April 2006 at <http://www.ala.org/ala/cro/katrina/katrina.htm>

Marshall, Bob. “17<sup>th</sup> Street Canal Levee was Doomed.” *The Times-Picayune*. 30 November 2005. Accessed 4 April 2006 at <http://www.nola.com/news/tp/frontpage/index.ssf?/base/news-4/1133336859287360.xml>

News Hour with Jim Lehrer Transcript. “New Orleans Schools Before and After Katrina.” *Online Newshour*. 1 November 2005. Accessed 10 April 2006 at [http://www.pbs.org/newshour/bb/education/july-dec05/neworleans\\_11-01.html](http://www.pbs.org/newshour/bb/education/july-dec05/neworleans_11-01.html)

“New Orleans, Louisiana – Schools.” *Wikipedia*. Accessed 10 April 2006 at [http://en.wikipedia.org/wiki/New\\_Orleans#Schools](http://en.wikipedia.org/wiki/New_Orleans#Schools)

“New Orleans Weather History.” *CityRating.com Weather History*. Accessed 4 April 2006 at <http://www.cityrating.com/cityweather.asp?city=New+Orleans>

“Public School Openings Scheduled for Spring 2006 in Orleans Parish.” *New Orleans Public Schools Website*. Accessed 10 April 2006 at <http://www.nops.k12.la.us/content/homepage/documents/School%20List.pdf>

Rivlin, Gary. “Patchy Recovery in New Orleans.” *New York Times*. 5 April 2006. Accessed 10 April 2006 at <http://www.nytimes.com/2006/04/05/business/05recovery.html>

## **APPENDIX B: SERVICES AND SUPPLIES**

All services listed will have some experience dealing with disaster recovery. Always call before sending any material.

### **MAGNETIC TAPE RECOVERY**

#### **Imation Government Services**

Attn: Government Team

1 Imation Place

Oakdale, MN 55128

(800) 730-6637

[www.imation.com](http://www.imation.com)

[government@imation.com](mailto:government@imation.com)

Services: Data recovery from magnetic or optical storage media, assessment of recovery projects

**Specs Bros.**

P.O. Box 195  
Lodi, NJ 07644

(800) 852-7732

(973) 777-5055

Fax: (973) 777-5065

[www.specsbros.com](http://www.specsbros.com)

[admin@specsbros.com](mailto:admin@specsbros.com)

Services: Chemical decontamination, fire restoration, flood reclamation, disaster planning consulting, on-site evaluations, recovery cost estimates.

**Vidipax**

30-00 47<sup>th</sup> Ave

6<sup>th</sup> Floor

Long Island City, NY 11101

(800) 653-8434

(718) 482-7111

Fax: (718) 482-1370

[www.vidipax.com](http://www.vidipax.com)

[info@vidipax.com](mailto:info@vidipax.com)

Services: Tape recovery, on-site evaluation

**FILM RECOVERY**

Note that there are many other labs and services with rewashing facilities for film than those listed here. This list has been selected for the lab's proven ability to handle various types of damage encountered in disasters. Before sending material to any other lab, contact these facilities for advice and more information.

**BB Optics**

108 Franklin Street

New York, NY 10013

(212) 966-6253

[www.bboptics.com/bboptics.html](http://www.bboptics.com/bboptics.html)

[bill@bboptics.com](mailto:bill@bboptics.com)

Services: No rewashing machines, but owner Bill Brand has extensive experience supervising preservation projects for both independent artists and institutions. The lab provides assessments for recovery projects, and can perform hand cleaning for small collections of film. BB Optics specializes in optical printing from 8mm, Super 8mm, 9.5mm, and 16mm black and white and color film, which is sometimes a necessary next step after damaged film has been cleaned.

**Colorlab**

5708 Arundel Ave

Rockville, MD 20852

(301) 770-2128

Fax: (301) 816-0798

[www.colorlab.com](http://www.colorlab.com)

[info@colorlab.com](mailto:info@colorlab.com)

Services: Rewashing facilities for 8mm Super 8mm, 16mm, and 35mm. Extensive experience in film restoration and disaster recovery.

**Eastman Kodak Company**

Disaster Recovery Lab, water damage

B65, Door G, Room 3340

1700 Dewey Avenue

Rochester, NY 14650-1819

24hr Hotline: (800) 352-8378

Services: Provides publications and information on care and recovery of film-based materials.

Contact for information about reprocessing of Kodak film.

For motion picture labs worldwide (that may or may not have rewashing facilities and/or experience in disaster recovery) see "Worldwide Motion Picture Labs." *Kodak U.S. Website*.

Accessed 4 April 2006 at

[http://www.kodak.com/US/en/motion/industry/dyn\\_labs.shtml?id=0.1.4.11&lc=en](http://www.kodak.com/US/en/motion/industry/dyn_labs.shtml?id=0.1.4.11&lc=en)

## ARCHIVAL AND DISASTER RECOVERY SUPPLIES

**Gaylord Bros.**

P.O. Box 4901

Syracuse, NY 13221-4901

(800) 448-6160

Fax: (800) 272-3412

[www.gaylord.com](http://www.gaylord.com)

[customerservice@gaylord.com](mailto:customerservice@gaylord.com)

Gaylord Bros. offers archival enclosures for a variety of materials held by collecting institutions and individuals, as well as disaster recovery supplies.

**Protext**

PO Box 30423

Bethesda, Maryland 20824

(301) 320-7231

Fax: (301) 320-7232

[www.protext.net](http://www.protext.net)

[protext@protext.net](mailto:protext@protext.net)

ProText offers disaster recovery supplies for libraries, museums, archives and collectors.

ReactPak (disaster preparedness kits), manuals, de-humidifiers, emergency water diverter, and other products are available.

**Metal Edge, Inc.**

6340 Bandini Avenue

Commerce, CA 90040

(800) 862-2228

Fax: (888) 822-6937

[www.metaledgeinc.com](http://www.metaledgeinc.com)

[info@metaledgeinc.com](mailto:info@metaledgeinc.com)

Metal Edge supplies archival enclosures for all types of materials, with comparatively large selection of audiovisual containers and storage units. Disaster recovery supplies are also available.

**Stil Design**

3 Rue Vallière Bureau 103

Québec, Québec

Canada

G1K 6S9

Toll Free: (888) 414-0449 ext 10 (U.S. and Canada)

(418) 694-0449 ext 10

[www.stildesign.com](http://www.stildesign.com)

[info@stildesign.com](mailto:info@stildesign.com)

Stil Design produces and distributes archival quality vented motion picture film cans, as well as archival containers for CD/DVDs.

**University Products, Inc.**

517 Main Street

P.O. Box 101

Holyoke, MA 01041-0101

(800) 336-4847

(800) 628-1912

Fax: (800) 532-9281

[www.universityproducts.com](http://www.universityproducts.com)

[custserv@universityproducts.com](mailto:custserv@universityproducts.com)

University Products sells a variety of archival enclosures and disaster recovery supplies for libraries, museums, and archives.

For more services and suppliers see the *Mid-Atlantic Resource Guide for Disaster Preparedness*, compiled by the Conservation Center for Art and Historic Artifacts, Preservation Services Office. February 2006. Accessed 2 March 2006 at

<http://www.ccaha.org/pdf/Web%20version%20Resource%20Guide%20for%20Disaster%20Preparedness.pdf>

## **APPENDIX C: SOURCES FOR RECOVERY FUNDING**

This list is intended to be a starting point for institutions to locate disaster recovery funding. Note that there may be many other funding sources available, especially in the event of a major catastrophe. Regional, national, and international professional organizations for collecting institutions may also offer special disaster recovery grants, and often will provide assistance in the form of volunteers or resources.

**Cultural Emergency Response – Prince Claus Fund**

Hoge Nieuwstraat 30

2514 EL The Hague

31 (0) 70 427430-3

Fax: 31 (0) 70 4274277

[m.willemsen@princeclausfund.nl](mailto:m.willemsen@princeclausfund.nl)

[www.princeclausfund.nl](http://www.princeclausfund.nl)

Cultural Emergency Response provides limited emergency assistance in the event of damage to, or destruction of cultural property arising from man-made or natural disasters. Funds will only be provided within six months after a disaster has occurred. Priority is given to countries or communities that are politically or economically unstable. Maximum donation is 25,000 euros.

**Federal Emergency Management Agency (FEMA)**

Federal Center Plaza

500 C Street, SW

Washington, DC 20472

Disaster Assistance: (800) 621-FEMA (800-621-3362)

(202) 566-1600  
Fax: (202) 646-4086

[www.fema.gov](http://www.fema.gov)

[FEMA-Correspondence-Unit@dhs.gov](mailto:FEMA-Correspondence-Unit@dhs.gov)

FEMA provides news releases fact sheets, advisories, and financial assistance information. The agency deals with all aspects of emergency management, but has information and funds specifically for cultural institutions in the U.S. affected by disasters.

**Institute of Museum and Library Services (IMLS)**

1800 M Street NW, 9<sup>th</sup> Floor  
Washington, DC 20036-5802

(202) 653-IMLS

Fax: (202) 653-4600

[www.ims.gov](http://www.ims.gov)

[imlsinfo@imls.gov](mailto:imlsinfo@imls.gov)

IMLS is a grant providing organization for libraries and museums in the United States. Although none are specifically for disaster recovery, the Institute has helped many institutions deal with rehabilitation after disasters. A special grant category was made to assist institutions affected by the 2005 hurricane season.

**National Endowment for the Humanities (NEH)**

Division of Preservation and Access  
1100 Pennsylvania Avenue, NW.

Washington, DC 20506

(800) NEH-1121 (800-634-1121)

(202) 606-8570

[preservation@neh.gov](mailto:preservation@neh.gov)

[www.neh.fed.us](http://www.neh.fed.us)

Although NEH does not have a special grant category for disaster recovery and response, the agency can provide some assistance to U.S. institutions to salvage or protect collections that have been damaged by a disaster.