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# Toward a National Disaster Response Protocol

*Randy Silverman*

Since the Florence flood of November 4, 1966, the concept of an organized disaster response for cultural property has been a focus for conservators. In 1976, a decade after the Arno River had retreated from Florence's museums, libraries, and historic churches, a Library of Congress planning conference convened to initiate a U.S. national preservation program. At that meeting Stephen Salmon noted a "glaring . . . lack of preparedness for disaster[s] by almost all American libraries."<sup>1</sup> Now, forty years since that calamitous flood, little has changed in terms of being able to initiate a nationally coordinated plan in the face of calamitous events that threaten cultural property in all collecting institutions. In fact, it is now clearly recognized that only one in five cultural institutions has created an emergency response plan that encompasses collections,<sup>2</sup> and it is likely that some or all of these plans will prove ineffectual in the case of a regional disaster. Furthermore, according to meteorologists at the National Oceanographic and Atmospheric Administration, we now face in the next twenty to thirty years the possibility of stronger, more damaging storms capable of threatening our cultural institutions.<sup>3</sup>

Ample evidence is at hand that a national disaster response protocol is urgently needed if we are to ensure that irreplaceable cultural collections are not needlessly lost. This protocol must be able to be activated quickly to deliver appropriate assistance to affected institutions and, accordingly, be unencumbered by day-to-day bureaucracies that historically have delayed response time and increased collection damage. This essay describes two recent large institutional catastrophes as well as the damage wrought by Hurricane Katrina, an unprecedented U.S. regional disaster, in an effort to underscore the importance of creating a nonprofit entity—the National Disaster Center for Cultural Property (NDC)—capable of implementing an effective response in situations where local resources and expertise are overwhelmed and cultural property is at risk.

## Two Institutional Disasters

On Friday, June 8, 2001, floodwaters from Tropical Storm Allison filled the lower level of the University of Houston's O'Quinn Law Library. The water rose to a height of eight feet, submerging the collection for about two days. Counted among the damage, according to Librarian Jon Schultz, were approximately 200,000 books, 1.2 million microfiche, "one of the finest Mexican law collections in the country," the "absolutely superb" John Brown Admiralty collection, paper copies of the Records and Briefs of the Texas Supreme Court, and the John R. Brown Archive (John R. Brown was the chief judge for the U.S. Fifth Circuit Court from 1967 until 1979, historically significant as the principal legal architect of desegregation throughout the South).<sup>4</sup> Damage to the O'Quinn Law Library's collection was estimated at \$28.5 million, independent of damage to the building itself.

From the outset Schultz considered most of the law library's collection unrecoverable. In a short video shot on-site two days following the flooding, Schultz documented floating books and furniture in the main stairwell leading to the library's ground floor collection storage area and sadly commented, "What can we get out? What can we save? Probably very little, if anything."<sup>5</sup> A consultant was retained to direct the law library's recovery effort.<sup>6</sup> The library's ground and first floors were separated using 6-milliliter black plastic sheeting (Visqween), and the environment in the upper part of the building was stabilized with two 60-ton portable air conditioners to reduce the risk of mold germinating in the dry part of the collection. Standing water was pumped out, and the library's unique archival material was salvaged and vacuum freeze-dried,<sup>7</sup> but the majority of the submerged collection—175,000 books and 1.2 million microfiche—was summarily discarded in the ten days following the flooding. Schultz's film captured "the Law Library [collection] leaving one bucket at a time," as front-end loaders, their steel buckets laden with drenched books, transferred the collection to industrial-sized garbage dumpsters that were unceremoniously transported to a Houston landfill.<sup>8</sup>

Two years after the tribulation caused by Tropical Storm Allison the Federal Emergency Management Agency (FEMA) paid the University of Houston \$21.4 million, three quarters of the collection's value, to compensate for the loss. The total loss was \$28 million, including the cost paid for the books, which averaged \$215 per volume.<sup>9</sup> The balance of the collection's monetary value was made up from private sources. But what of the loss of rare and historically valuable material? Schultz estimated that

fifty years of staff time would be required to reamass the law library's collection,<sup>10</sup> a task the library delegated to AMIGOS Library Services, a nonprofit resource-sharing network serving the southwestern United States. Local patrons faced up to a century of limitations on their research.

By way of comparison, four years earlier Colorado State University's (CSU) Morgan Library in Fort Collins, Colorado, suffered a flood caused by days of rain that saturated the arid hills surrounding the city. On July 28, 1997, the ground floor of Morgan Library filled with nine feet of water, submerging for twenty-four hours a collection of approximately 425,000 twentieth-century science books and bound journals. As the University of Houston would do, CSU sought help from a consultant, who hired a commercial disaster recovery firm to coordinate the recovery.<sup>11</sup> After pumping the water from the ground floor the recovery crew removed the books from the library in cardboard boxes lined with black plastic garbage bags. The boxes were stacked onto wooden pallets and subsequently loaded into refrigerated semitruck trailers. The "packout" took nearly a hundred people fourteen days to accomplish. To reduce the rate of mold growth en route to a commercial freezer facility in Laramie, Wyoming, the packed truck trailers were blasted with liquid nitrogen on-site. The rapidly cooled books were frozen completely in Laramie and shipped frozen for treatment to Disaster Recovery Services (DRS, now Belfor USA) in Fort Worth, Texas. DRS washed each book individually to remove debris, squeezed it to remove excess water, and refroze each volume in preparation for vacuum freeze-drying in the company's commercial chambers. Mold, which began developing on the third day of the fourteen-day packout, was sterilized after drying using gamma radiation in a commercial sterilization facility in Fort Worth. Each book was then wiped down and shipped back to CSU in Fort Collins. The cost for this treatment regimen, including transportation, was approximately \$9.00 per volume, totaling approximately \$3.8 million.

Back at CSU, torn pages were mended, mold-damaged leaves were replaced with photocopies, and damaged bindings were library bound in Denver. The cost to the library to return the entire water-damaged collection to active service, including in-house processing, photocopying, mending, and commercial rebinding, came to approximately \$30 per book, totaling nearly \$12.8 million, with the entire process taking approximately two years to complete.<sup>12</sup>

From these figures we can see that the per-volume cost was approximately *seven times greater* to replace the books at the University of Houston O'Quinn Law Library than to recover the books at CSU (\$215 versus \$30), yet on

average, new law books cost only approximately \$17.50 more per volume than new science books, which made up the bulk of the affected CSU collection.<sup>13</sup> More important, however, is the concern that no amount of insurance can compensate for the loss of rare or unique holdings. These two response protocols demonstrate that current standards for this type of work are far from consistent and, in practice, will produce significantly different outcomes. Fiscal realities aside, the real question is, What will happen to the irreplaceable cultural property contained in even the smallest local archive, museum, or historical society when disaster strikes? The odds of serious damage or destruction rise dramatically when the recovery is not informed by disaster responders familiar with treating historical and artistic works or, as in the following example, when the local infrastructure is so overwhelmed that normal responses cannot occur.

### **Hurricane Katrina in Mississippi: A Regional Event**

Packing 140-mph winds, Hurricane Katrina made landfall in Plaquemines Parish in southern Louisiana at dawn on August 29, 2005, as a strong Category 4 hurricane. By midmorning, sustaining 125-mph winds, the hurricane was downgraded to a Category 3 storm as it touched land again near the Louisiana-Mississippi border. According to local reports, the storm surge that was forced ashore over Mississippi's shallow continental shelf may have exceeded 25 feet in places. The hurricane headed northeasterly through Mississippi, with wind speeds still at 100 mph by the time the eye reached the small town of Laurel, causing extensive damage approximately one hundred miles north of the Gulf of Mexico.

In preliminary reports the U.S. National Oceanographic and Atmospheric Administration (NOAA) labeled Katrina "the most costly natural disaster to strike the United States ever."<sup>14</sup> Despite the urgency of the situation, no U.S. infrastructure was in place in Katrina's aftermath to provide disaster assistance to cultural institutions in crisis. FEMA's immediate focus was to safeguard human life, with architectural and archaeological sites prioritized once life-safety issues were addressed. The agency did not address cultural heritage for months. In this dearth of activity state agencies such as the Mississippi Department of Archives and History took the initiative to begin assessing damage to collecting institutions within its regions. These efforts were limited by staff shortages and the need to focus on its own damaged facilities and collections. Independently, a team of two conservators (Ann Frelson from Emory University and Christine Wiseman from the Georgia State Archives) volunteered to begin assessing collection condition in Mississippi and Alabama two

weeks after the storm (September 14–16, 2005). Another independent assessment team comprised of Debbie Hess Norris (Heritage Preservation), Richard Pearce-Moses (Society of American Archivists), and David Carmichael (Council of State Archivists) arrived in Mississippi a few days later to focus on the region's most historically significant archival and museum holdings, including that of Beauvoir, Jefferson Davis's Home and Presidential Library.

Due to communication outages and a total loss of infrastructure, these responders had little factual information to go on. As a first step toward broadly assessing the condition of all the affected institutions in the Louisiana and Mississippi Gulf Coast region, the American Association for State and Local History (AASLH) and the American Institute for Conservation (AIC) initiated a plan to mobilize two groups of conservators on the ground. This program was generously supported by the Watson-Brown Foundation of Thomson, Georgia, and the History Channel television network. Each team of volunteers was led by a museum professional and staffed by conservators selected by AIC. Four one-week rotations were planned in both Louisiana and Mississippi, with the project overseen by Steve Shulman, a project director hired by AASLH specifically to coordinate Hurricane Katrina recovery. AASLH dubbed the groups Heritage Emergency Assistance Recovery Teams—HEART.

I was a member of the first Mississippi HEART assessment team, which included Joy Barnett (administrative assistant, Texas Association of Museums), her son Ashley Barnett (Fire and Rescue, Burnet, Texas), and Gary Frost (library conservator, University of Iowa). Arriving in Jackson, Mississippi, on September 22, 2005, three and a half weeks after the storm, we ate and slept in a rented recreational vehicle and used a rental car to increase our mobility.

Passing through numerous National Guard checkpoints set up to prevent looting, the team visited twelve institutions and looked for but could not locate a thirteenth. Some institutions (notably, those located one hundred miles inland) experienced moderate water damage to their collections, while others, situated within the storm surge, experienced everything from severe flooding to the complete destruction of their buildings. In addition to noting the condition of each institution's collections and facility, the team's role became primarily advisory, helping staff determine the most effective means of drying collections in the hot and humid conditions (85 degrees Fahrenheit, 85 percent relative humidity) and with little or no electricity. Simply opening windows and doors to increase cross-ventilation and spreading out wet materials to dry by evaporation were complicated by the difficulty of removing temporary plywood

storm shutters screwed in place over windows. These shutters had been left in place in anticipation of subsequent storms or in fear of looting.<sup>15</sup>

Four of the institutions our team visited qualified for National Endowment for the Humanities (NEH) emergency assistance grants. We helped staff members draft and submit applications in support of their efforts to stabilize collections, and fortunately all four were successful; each eventually received \$30,000.<sup>16</sup>

### **The Need for a National Safety Net for Collections**

With the local population in crisis due to the loss of homes, belongings, employment, and, in some cases, the lives of friends or relatives, Katrina's aftermath underscored the need for a robust emergency response plan to help institutions safeguard their cultural property. Most tellingly, the first HEART team arrived on-site nearly four weeks after the storm, a delay that left mold growth unchecked. In contrast, following the Florence flood, hundreds of student volunteers (nicknamed "mud angels" or the Uffizi's "bathing attendants") arrived from around the world within two days of the event, with teams of the world's most experienced conservators arriving within two weeks from England, France, Germany, South Africa, and the United States (supported in part by the hastily organized Committee for the Rescue of Italian Art).<sup>17</sup> While the charitable acts of individuals and organizations coming forward in 2005 to initiate the Katrina recovery are to be applauded, this type of benevolence cannot be relied upon, as such aid is far less likely to occur following a smaller, more localized event. And while it is true that many collections pale in significance to Florence's Renaissance treasures, some artistic and historic materials damaged in any disaster remain unique, irreplaceable, and of cultural significance. It is irresponsible to allow the stabilization of these materials to hinge on a case-by-case emotional commitment, as it is impossible to know definitively the future historic or artistic value of any existing artifact.

One fact we know for certain is that cultural institutions are unprepared for disaster. In 2005 Heritage Preservation issued its Heritage Health Index, the first comprehensive national survey to assess the condition and preservation needs of a majority of U.S. collecting institutions. The survey indicated that more than 24,000 (80 percent) U.S. cultural institutions have no disaster plan in place for their collections. This figure suggests that "2.6 billion items of historic, cultural, and scientific significance are not protected by an emergency plan and are at risk should a disaster strike their institutions."<sup>18</sup> As of this writing, in March

2006, immediate outside assistance following a disaster can be mobilized only on an ad hoc basis, if at all, largely condemning these unprepared institutions to cope independently with disasters affecting their holdings. In the best of situations we lack the ability to standardize the quality of information or services that will be provided to a collecting institution in crisis as well as the means to ensure the timeliness of that response. This scenario ultimately condemns any number of irreplaceable cultural heritage objects to damage and loss by abdicating the responsibility for a response to local librarians, archivists, and museum curators who may or may not have any experience with appropriate disaster protocols.

The other plainly evident fact is that consistent and professional responses are needed. The short-term cooperative relationships that developed after Hurricane Katrina between relevant national organizations such as AASLH and AIC could provide a beginning point for standardizing training protocols and selection criteria for potential volunteers. The short-term positive energy contributed by numerous professional library, archives, and museum membership associations could be harnessed to produce and maintain up-to-date contact information for key personnel in cultural heritage institutions nationwide.<sup>19</sup> After a regional disaster, when street signs are gone and institutions are locked, recovery personnel need immediate access to home and cellular phone numbers for staff members to make contact and offer assistance, and this information is best collected and updated locally.

### **The National Disaster Center for Cultural Property**

A broader, more responsive national approach is needed so that the expertise of seasoned practitioners can be brought to bear consistently when local events become overwhelming. The basic objectives of this National Disaster Center for Cultural Property (NDC) could include

- providing emergency preparedness training for librarians, archivists, and museum professionals;
- providing disaster response training for conservators to help improve response time and to standardize technical protocols;
- providing rapid, on-the-ground responses to stabilize cultural property in times of emergency;
- coordinating links between existing national, regional, and state membership organizations to unify national training and recovery initiatives;
- improving salvage protocols for the wide range of media by

stimulating technical research;

- increasing national awareness about risks to cultural property from disasters; and
- developing funding to support ongoing training and disaster response activities.

### *Emergency Preparedness Training for Librarians, Archivists, and Museum Staff*

In an effort to keep costs low and to disseminate information broadly, emergency preparedness training to help minimize risks to collections could be provided at the national, regional, and state levels as pre- or postconference workshops for library, archives, and museum membership organizations. Trainers in this nationwide effort could be identified from among the existing core of experienced disaster responders and might include members of the International Federation of Library Associations, Preservation and Conservation Section, North American Network (IFLA PAC NAN), as well as the more than one hundred people previously trained through the AIC “Train the Trainers” program (2000–2001). The curriculum for these workshops would be based on the syllabus agreed upon by Heritage Preservation’s National Task Force and used in the “Train the Trainers” program.<sup>20</sup> This would include both emergency planning before the fact to try to prevent or minimize collection damage as well as postdisaster training to improve staff response time after the event.

With support from one or more national granting agencies (e.g., NEH Education and Training grants), this training could be provided free to participants in exchange for a commitment to complete an institutional disaster plan within six months of attending the workshop. A long-term benefit, this approach would not provide a quick fix. Were this program able to reach the staff of a thousand institutions annually, it would take a quarter century, or a whole generation, to develop disaster plans for every U.S. cultural institution holding historic or artistic works. Were the plans created electronically and stored centrally, pertinent contact information could be maintained and made available (with the institution’s permission) to responders to expedite the postdisaster assessment process.

### *Disaster Response Training for Responders*

Disaster responders for cultural property typically become involved in recoveries on an ad hoc basis without previously receiving formal

technical training. Conservators familiar with material-specific recovery protocols need to organize this knowledge into standardized training courses covering all types of heritage media to be shared broadly with their professional peers. This training could be offered regionally to help defray travel expenses. Trainers for these courses could be screened by AIC for previous disaster experience and training, and participation in the courses could be limited to people willing to become future responders. Prerequisites for trainees would include a good state of mental and physical health, current immunizations, and a willingness to participate in actual recoveries as necessary.<sup>21</sup> In the case of students currently enrolled in one of the four national conservation training programs, the benefits gained through a real-world disaster recovery internship would quickly become an invaluable component of their education.<sup>22</sup> A screening process could be set up within each program to determine each student's interest in and readiness for disaster response training in the field.

The curriculum for training responders should be based on the National Task Force's syllabus, with trainers (selected from a national pool as a result of their significant disaster recovery experience, specialized technical expertise, and pragmatic teaching skills) charged to develop and expand this basic curriculum over time. Participating in the training program would lead to responder certification.

Certified responders would be expected to maintain their own fully stocked emergency backpack (complete with personalized protective gear), to participate in one compulsory training program per year, and to produce written reports following each field operation. As documentation of useful recovery procedures and media-specific protocols accumulates, a manual of low-tech, low-cost stabilization and mass-conservation treatments for cultural property would emerge. This information could be published and updated on the NDC website to benefit responders internationally.

### *Providing Immediate, On-the-Ground Responses*

As a prerequisite to providing on-the-ground responses, the NDC would need to develop strong logistical capabilities to

- remain abreast of ongoing weather and geological events threatening North American cultural property;
- identify quickly the cultural institutions requiring assistance within an affected area and ascertain the postdisaster condition of their cultural holdings;

- determine what is known of the significance of the collections affected, the severity of the risk to their survival, and the ability of the institutions holding them to respond appropriately to the crisis; and
- determine the availability of first responders for the purpose of rapidly mobilizing teams.

At this writing, an immediate proposed NDC-type response could be possible only as a result of the selfless contributions of concerned, highly skilled conservators and other emergency responders. Because mitigating threats to cultural heritage collections under these circumstances is part-time work requiring extensive specialized expertise, responders must be willing to donate their time, knowledge, and skills for little or no compensation and with very little warning. Those selected to participate as NDC responders would need to successfully complete a responders' training program to ensure that standardized protocols were applied generically by all responders. Some thirty people could be trained in the first year, with an additional ten added the second year to produce a total of forty on-call responders nationally, supplemented by a number of students from the conservation training courses.<sup>23</sup>

With the onset of an emergency affecting cultural property, a single first responder would immediately be deployed to the affected area to assess the precise need for aid and to make initial contacts with the involved parties. As a result of this first assessment, a team of responders would be mobilized to a project work site, where they would work out of a mobile job-site trailer. Custom designed for field operations, this inexpensive (\$6,000) nonmotorized vehicle could be towed to the disaster site to provide work stations from which responders could help stabilize private and institutional collections.

### *Linking Efforts with National, Regional, and State Membership Organizations*

An ongoing role of the NDC would be to coordinate disaster training and recovery initiatives with existing national, regional, and state professional membership organizations. This type of coordination takes advantage of the general goodwill and support expressed for disaster victims in times of crisis and could encourage participation in emergency preparedness training programs. NDC could also help define and coordinate disaster response roles for these organizations,

keeping their contributions useful by preventing overlap. An important early work would be the creation of a database containing both business and personal contact numbers for directors plus several levels of backup for each cultural institution nationally. This contact information needs to include those institutions not currently affiliated with any professional membership organization and is likely best stored centrally but gathered and updated through the local branches of regional or national professional membership organizations.

### *Advancing Salvage Protocols through Technical Research*

To advance the technical options available to responders, NDC must stimulate research related to the salvage of cultural property. A preliminary step in this effort would be to survey the areas of greatest perceived need (e.g., protocols for drying vellum manuscript books). Once the areas were identified and ranked, NDC then could help coordinate the submission of grant proposals to initiate this research. A clear need exists to create national vulnerability maps to identify high-risk institutions because of their location in floodplains, earthquake zones, hurricane zones, tornado zones, and so on. This information would help identify at least some of the institutions currently at risk from natural threats and prioritize them to receive training. This information might prove useful also to insurance companies and provide an incentive for the insurance industry to support efforts to mitigate institutions' risks through disaster planning. A secondary component of this mapping could be the development of national resource maps that include primary and secondary evacuation routes for collection transport, location of secure storage facilities outside the immediate vicinity of the institution, location of freezer plants, proximity to conservation expertise, and similar relevant data.

### *Increasing National Awareness*

Raising awareness about the risks to cultural property from disasters is a key to improving responsible collection management. Attention could be focused on the field by initiating the Peter Waters Prize, a medal awarded annually to an honoree selected for significant contributions to the preservation of cultural property through disaster preparedness and recovery, and by posting relevant information on the NDC website for access by responders internationally.<sup>24</sup>

### ***Funding***

Funding to support NDC's infrastructure and ongoing training and disaster response activities could be sought through public (e.g., NEH education and training grants) and private (e.g., the Watson-Brown Foundation, the History Channel) sources. Standing agreements specializing in covering heritage collections also could be forged with insurance companies, which have a vested interest in mitigating damage to reduce their risk.

Affiliation with a relevant federal institution would provide maximum long-term stability and credibility for a newly created NDC, but a certain amount of autonomy is also desirable to maintain maximum flexibility for initiating rapid emergency responses. A federal/state partnership within the right university infrastructure might provide an ideal mix, with the university providing access to a strong existing infrastructure (accounting, computer assistance, web management, legal counsel, etc.) to stabilize ongoing operations. A further, considerable benefit of connection with a nonprofit state institution would be the positioning of NDC both to apply for large federal grants to support education and training and to be able to seek private donations.

Finally, to gain visibility, NDC would benefit from the involvement of a celebrity spokesperson to help influence public opinion and increase awareness about the risks to cultural property. The NDC should design, produce, and distribute promotional materials (posters, bookmarks, publications, etc.) to keep the public informed about the issues related to loss and recovery of cultural materials.

### **Conclusion**

A National Disaster Center for Cultural Property capable of providing immediate emergency assistance to collections in crisis is needed to ensure the preservation of U.S. cultural property. Once operational, this program could focus on strategies for preventing damage to heritage collections as well as for responding with timely aid when damage occurs. A sweeping education and training program could dramatically increase the number of U.S. collecting institutions with disaster plans in place and consequently help these institutions identify steps to reduce or prevent certain types of collection damage. With 80 percent of U.S. cultural institutions currently lacking this essential collection management tool and no response mechanism such as NDC available, the ongoing cycle of random damage and loss to irreplaceable heritage collections will inevitably be perpetuated.

Most pointedly, continuing to drift without a National Disaster Center cannot help but result in the loss of historical perspective occasioned by the destruction of the bedrock of historical writing—the source collections in cultural heritage institutions. These sources are fundamental to telling the story of civilization as well as the stories of the institutions themselves—the libraries, archives, and museums—that society has entrusted with the essential duty of managing the cultural record on which historical understanding is grounded. Further sacrificed in the loss of books, papers, and objects in our heritage institutions will be the record of the men and women who created, maintained, and protected these collections against assaults of nature and humanity alike.

They and we deserve better. Consequently, no group should be more dedicated to supporting the creation of a National Disaster Center than the historians who, more than any other group, are served by the work it is designed to do.

## Notes

1. Stephen R. Salmon was then executive director for Systemwide Library Planning at the University of California, Berkeley. His comments were the result of personal experiences with Hurricane Celia, which hit Corpus Christi, Texas, in 1970 while he worked in the area. See *Proceedings of the Planning Conference for a National Preservation Program Held at the Library Of Congress in Washington, D.C. on December 16 & 17, 1976* (Washington, D.C.: Office of the Assistant Director for Preservation, Administrative Department, Library of Congress, 1977), 85.

2. Heritage Preservation and the Institute of Museum and Library Services, *A Public Trust at Risk: The Heritage Health Index Report on the State of America's Collections* (Washington, D.C.: Heritage Preservation, 2005), 6–7.

3. National Oceanographic and Atmospheric Administration, “NOAA Raises the 2005 Atlantic Hurricane Season Outlook: Bulk of This Season’s Storms Still to Come,” <http://www.noaanews.noaa.gov/stories2005/s2484.htm>, accessed November 7, 2005.

4. Jon S. Schultz, *The Albertus Project: Surviving Allison*, video recording, 17:21 min. (University of Houston, © 2002).

5. *Ibid.*, Sunday, June 10, 2001.

6. Don Hartsell, principal, Solex Environmental Systems, Houston, Texas.

7. John H. Lienhard, “Engines of Our Ingenuity, No. 1655: Après le déluge,” <http://www.uh.edu/engines/epi1655.htm>, accessed January 28, 2006.

8. Schultz, *The Albertus Project*, Tuesday, June 26, 2001.

9. This breaks down as \$100 each for half of the volumes (87,500) and \$150 each for the other half, plus \$90 per volume for processing and for obtaining offsite housing. Replacement cost for microfiche was \$0.60 each (\$2 million total). These figures were kindly provided by Jon S. Schultz, librarian, University of Houston, O’Quinn Law Library, email correspondence, July 19, 2004.

10. Jon S. Schultz, "Planning and Recovery Process: Easing the Pain," in *Maximize Today and Envision Tomorrow*, educational program handout materials, July 13–14, American Association of Law Libraries 96th Annual Meeting and Conference, July 12–16, 2003, Seattle, Washington (Chicago: American Association of Law Libraries, 2003), 112.

11. Bill Boss directed CSU's campuswide recovery; I was hired as a consultant to Boss to define recovery protocols for the library's water-damaged books.

12. Randy Silverman, "The Day the University Changed," *Idaho Librarian* 55, no. 3 (February 2004), <http://www.idaholibraries.org/newidaholibrarian/200402/index.htm>, accessed May 26, 2006.

13. For 2005, book supplier Blackwell North America calculated the average cost of science books they supplied at \$95.49 (<http://www.blackwell.com/pdf/CC0405.pdf>, accessed February 10, 2006), while, according to Lee Warthen, assistant director, University of Utah, Quinney Law Library, the average cost of law books for 2004–5 was \$112.99, a difference of \$17.50 per volume.

14. Axel Graumann et al., "Hurricane Katrina, a Climatological Perspective: Preliminary Report," National Oceanographic and Atmospheric Administration National Climatic Data Center, Technical Report 2005-01, October 2005, <http://lwf.ncdc.noaa.gov/oa/reports/tech-report-200501z.pdf>, accessed November 7, 2005.

15. In fact, a second devastating storm, Hurricane Rita, made landfall near Sabine Pass, Texas, two days after the Mississippi HEART Team #1 arrived in Jackson, Mississippi.

16. Gary Frost and Randy Silverman, "Disaster Recovery in the Artifact Fields—Mississippi after Hurricane Katrina," *International Preservation News* 37 (December 2005): 35–47.

17. See, for example, Giorgio Batini, *4 November 1966: The River Arno in the Museums of Florence* (Florence: Bonechi, 1967); Peter Waters, "Book Restoration after the Florence Flood," *Penrose Annual* 62 (1969): 83–93; Carolyn Horton, "Saving the Libraries of Florence," *Wilson Library Bulletin* (June 1967): 1035–43; Howard W. Tribolet, "Restoration in Florence" and "Florence Revisited," in *Florence Rises from the Flood* (Chicago: R. R. Donnelley and Sons, 1967).

18. Heritage Preservation, *A Public Trust at Risk*, 6–7. The breakdown by type for U.S. cultural institutions having no emergency plan is archives, 70 percent; libraries, 78 percent; historical societies, 92 percent; museums, 78 percent; scientific collections, 86 percent.

19. In the United States these groups include the American Library Association, Society of American Archivists, Council of State Archivists, American Associations of Museums, and their state and regional affiliates.

20. The National Task Force on Emergency Response curriculum includes the following headings: (1) "Introduction"; (2) "Background"; (3) "Terminology"; (4) "Team Building and Group Dynamics"; (5) "Risk Assessment and Planning"; (6) "Health and Safety"; (7) "Supplies, Equipment, and Resources"; (8) "Immediate Response"; (9) "Salvage—General Methods and Guidelines"; (10) "Salvage—Collection Specific Techniques"; (11) "Scenario—Damage Assessment"; (12) "Debriefing"; (13) "Evaluation"; (14) "Bibliographies"; (15) "Addenda."

21. Immunizations would include inoculations against tetanus, diphtheria, hepatitis A and B, and influenza.

22. The four U.S. conservation training programs are Art Conservation Department at Buffalo State College; Conservation Center of the Institute of Fine Arts at New York University; Kilgarlin Center for Preservation of the Cultural Record at the University of Texas at Austin; and Winterthur/University of Delaware Program in Art Conservation.

23. Responders should be compensated at a fixed daily rate so as to encourage participation by conservators in private practice and should have all work-related expenses (e.g., travel, lodging, food, equipment, and supplies) covered by NDC. Responders need to have medical coverage provided by either Worker's Compensation Insurance or the insurance policy of their home institution and should operate as consultants, agreeing to indemnify and hold harmless NDC in the case of injuries, damages, or acts of omission. Once trained, responders will maintain the currency of their own immunizations, fit testing for respirators, and passport (for operating outside U.S. borders) and agree to remain on call during specified periods of time. This body of trained responders would be able to provide backup for each team member, as some inevitably would find themselves unable to participate on short notice at any given time.

24. The contribution of Peter Waters (1930–2003) to disaster preparedness and recovery is hardly estimable. Following the devastating Florence flood of 1966, he served as the first technical director to Italy's Biblioteca Nazionale for its restoration work. A decade later he published *Procedures for Salvage of Water-Damaged Materials* (1975), the first manual on and still a primary source for the conduct of this challenging work. In the broader arena, for a generation (1971–95) he headed the Library of Congress's conservation lab, where he disseminated the use of heat-set tissue as a repair material, the replacement of lamination with polyester film encapsulation, and the principle of "phased preservation."