



# Waterfalls Are Not in the MeSH Vocabulary: one library's experience with unexpected flooding



UNIVERSITY OF MINNESOTA  
**LIBRARIES**  
Health Sciences Libraries

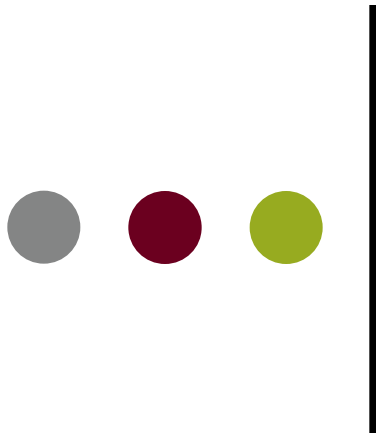
Katherine Chew  
Associate Director for Research, Collections and  
Access Services  
Health Sciences Libraries  
University of Minnesota



- Case History
- Lessons Learned & Best Practices
- Resources and References



# Disaster Timeline – April 17, 2009

- 
- Mid-morning – cooling hose bursts in 4<sup>th</sup> floor mechanical room
  - 10:25 am --
    - Burnt wire smell reported in 314
    - Dripping ceiling tiles noticed in 325
  - 10:30 am –
    - Waterfall effect in Institute of Health Informatics
    - Ceiling tiles begin falling in 314
    - Dripping noise heard in 2<sup>nd</sup> floor ceiling

Preshelving Area

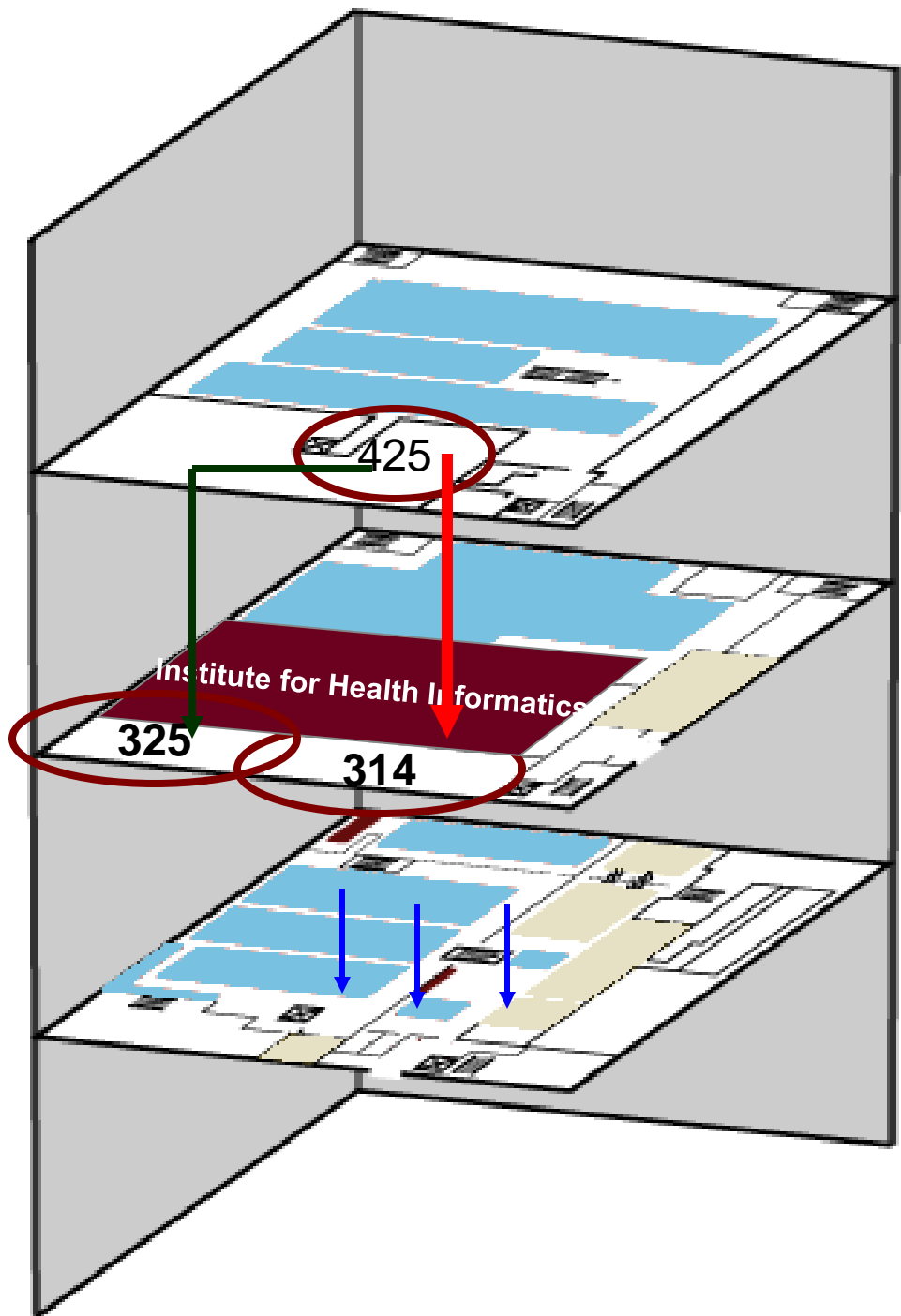


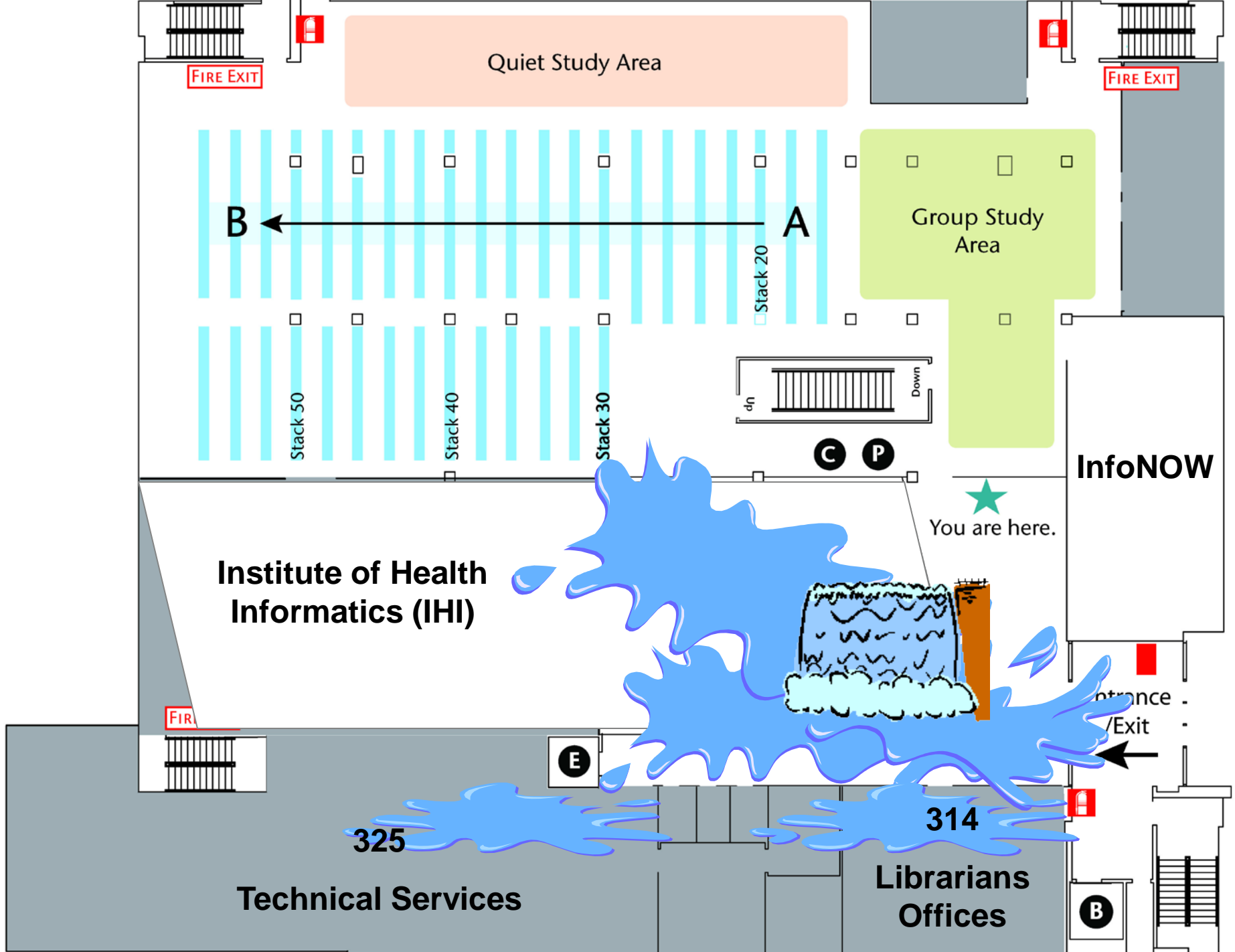


Fourth Level

Third Level

Second Level





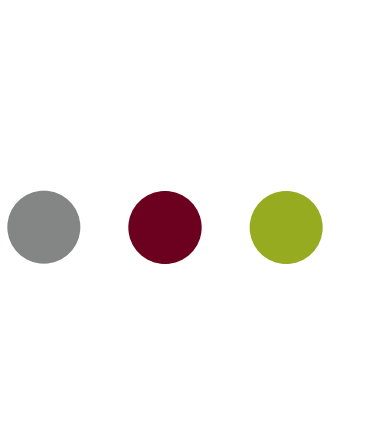






K-M N-O P-R S-T U-Z

# Recovery Timeline

- 
- 11:00 am – 2:30 p.m.
    - Diehl District facilities maintenance finds burst cooling hose and shuts off water
    - Water vacuuming starts on 3<sup>rd</sup> & 4<sup>th</sup> floors
    - Library IT removes computers from 314 and 325
    - University Libraries Facilities Maintenance colleagues arrive
    - Relocation of personnel and equipment starts
    - Environmental Health & Safety & other departments assess extent of damage
    - EHS strategy briefing

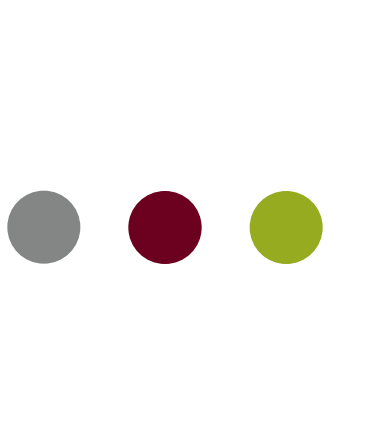


**Bio-Medical  
Library**

Services and  
Collections



# Recovery Timeline

- 
- 2:30 p.m. – Friday evening
    - Outside recovery contractors called in
    - Begin removal of wet/damp ceiling tiles, sheet-rock and insulation
    - Microbial spraying carpet for potential mold
  - Saturday - Sunday
    - Ducts finally stop dripping in 325
    - Air dryers & dehumidifiers run all weekend to dry carpets and office panels
  - Monday – Wednesday, May 13th
    - Gutting out and re-building 325





# Impacts

- 3604 square feet impacted
  - 314 – 783 sq ft
  - 316 – 142 sq ft
  - 325 – 1425 sq ft
  - 325A – 244 sq ft
  - 330 – 1000 sq ft
- 11 staff relocated
  - 4 librarians
  - 7 technical services staff & students
  - 1 associate director



# Key Departments

- Facilities Management/Health Sciences District Team
- Environmental Health & Safety
- Custodial Staff
- Capital Planning & Project Management/Academic Health Center Team
- Commercial Office furniture contractor
- University Libraries Facilities Maintenance Team

# **Water Event Task (WET) Force Identified Hazards and Recommendations**

## **Section 1 Facilities Management**

### **Facilities Management (FM) Description of Water Event Related Responsibilities:**

FM has the responsibility to prevent or mitigate losses from flooding in U of M buildings. Because losses are particularly likely when outside temperatures fall below freezing and after heavy rainfall FM should be particularly vigilant at those times. Losses have also occurred after a fire sprinkler system is activated. When one of these events occur FM staff should watch for water events and then promptly respond to a release of water. Prompt flood response allows the area affected to be rapidly characterized and cleaned. Prompt cleaning of water minimizes property loss and reduces the possibility of occupant health effects from mold growth on wet building material.

### ***Facility Maintenance and Operations Physical Hazards and Loss Prevention Measures***

**A. Increase vigilance during freezing temperatures.**







Task Force Home

Sign Up For Our Mailing List

Information on Major Disasters

Disaster Planning and Response Resources

Task Force Initiatives ▶

About the Task Force ▶

## Coping with Water Damage

This 10-minute video provides step-by-step guidance on dealing with water damage at museums, libraries, and archives. Practical tips on safety, simple equipment, and salvage priorities also make the video a useful guide for home owners who want to rescue treasured family heirlooms.



The award-winning [Field Guide to Emergency Response](#) helps museums, libraries, and archives cope when disaster strikes. The easy-to-follow handbook and companion DVD were produced by Heritage Preservation in 2006, with support from the [National Endowment for the Humanities](#)



Preparedness Month! Take some time to make sure your cultural

- [Protect Family Treasures](#)

[Home](#)[Library Management](#)[Courses](#)[Search >](#)

## Master of Disaster: Developing a Disaster Plan (LibraryU)

Course ID: LU\_ADM003

Price: \$40.00

[Please Sign In](#)

## Disaster Prevention and Response Track

The disaster prevention and response track is a series of classes designed to provide a comprehensive overview of the core concepts, issues and infrastructure needed for cultural institutions to prevent, prepare for, and respond to natural and human-created disasters that threaten collections. Topics covered in the core classes include disaster preparedness for library and archival materials, developing a disaster plan, fire safety, and risk management. Elective classes cover mold, salvage, disaster decision-making for managers, environmental monitoring, establishing local emergency response networks, hurricane preparedness, and security issues. This track includes face-to-face, self-paced, and online classes.

Below is a list of events included in this training track:

[Demystifying Mold](#)

[Demystifying Mold \(Live Online\)](#)

[Developing a Disaster Plan \(Live Online\)](#)

[Disaster Preparedness](#)

[Disaster Recovery](#)

[Disaster Recovery for Museum Collections](#)

[Emergency 911: Decision Making for Managers \(Live Online\)](#)

[Establishing Emergency Response Networks for Cultural Collections \(Live Online\)](#)

[Fire Safety for Cultural Institutions On Demand](#)

[Hurricane Preparedness \(Live Online\)](#)

[Preservation and Salvage of Audiovisual Materials \(Live Online\)](#)

[Risk Management: Knowing Your Responsibilities On Demand](#)

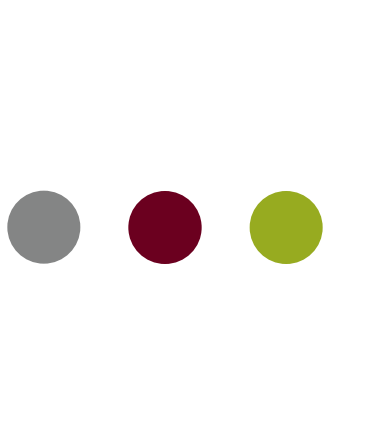
[Security: How to Protect Rare Books and Manuscript Collections \(Live Online\)](#)

Page

in

of

# References

- 
- Beales, D. L. (2003). Before Disaster Strikes. *Journal of Hospital Librarianship*, 3(4), 11-24.
- Blue, A. R. (2009). Expect the Unexpected: Be Prepared When Disaster Strikes. *BCLA Browser: Linking the Library Landscape*, 1(3)
- Emergency and Disaster: Preparedness and Response.(2008). *OLA Quarterly*, 14(4), 09/30/09. Retrieved from [http://data.memberclicks.com/site/ola/olaq\\_14no4.pdf](http://data.memberclicks.com/site/ola/olaq_14no4.pdf)
- Eng, S. (2002). How technology and planning saved my library at ground zero. *Computers in Libraries*, 22(4), 28-35.
- Healthcare, I. (2009). Providing Access to Electronic Journals in the Face of a Natural Disaster: The Experience of Two Libraries. *Journal of Electronic Resources in Medical Libraries*, 6(1), 49-54.
- Hochstein, C., Arnesen, S., Goshorn, J., & Szczur, M. (2008). Selected Resources for Emergency and Disaster Preparedness and Response from the United States National Library of Medicine. *Medical Reference Services Quarterly*, 27(1), 1-20.
- Hoping for the best while preparing for the worst: disasters, emergencies and the community college.*(2007). In Villadsen A. W., de los Santos, Gerardo E. (Eds.), . Phoenix, AZ: League for Innovation in the Community College.
- Kahn, M. (2003). *Disaster response and planning for libraries* (2nd ed.). Chicago: American Library Association.
- Matthews, G., Smith, Y., & Knowles, G. (2009). *Disaster management in archives, libraries and museums*. Farnham, England ; Burlington, VT: Ashgate.
- McKnight, M. (2006). Health Sciences Librarians' Reference Services During a Disaster. *Medical Reference Services Quarterly*, 25(3), 1-12.
- Miller, W., & Pellen, R. M. (2006). *Dealing with natural disasters in libraries*. Binghamton, NY: Haworth Information Press.
- Muir, A., & Shenton, S. (2002). If the worst happens: the use and effectiveness of disaster plans in libraries and archives. *Library Management*, 23(3), 115-123.
- Norton, M. J., Wilson, D. T., & Yowell, S. S. (2009). Partnering to promote service continuity in the event of an emergency: a successful collaboration between two interlibrary loan departments. *Journal of the Medical Library Association: JMLA*, 97(2), 131.
- Robertson, G. (2008). Disaster? No Plan? What a library director should do. *Felicitier*, (4), 175-177.
- Silverman, R. (2004). A litany of 'Terrible, No Good, Very Bad' Things that Can Happen After the Disaster. *International Preservation News*, 33(September), 8-15.
- Stremple, R., & Martone, M. F. i. (2000). Disasters come in all sizes. *InfoPro*, 2(11), 29-35.
- Todaro, J. B. (2009). *Emergency preparedness for libraries*. Lanham, Md: Government Institutes.
- Wilson, D. T., & Yowell, S. S. (2008). Resourceful Blogging: Using a Blog for Information Sharing. *Medical Reference Services Quarterly*, 27(2), 83-210.
- Wilson, D. T., Yowell, S. S., & Holst, R. (2009). Take Ten: A Ten-Step Approach to Emergency Preparedness and Service Continuity. *Journal of Hospital Librarianship*, 9(2), 139-146.
- Wong, Y. L., & Green, R. (2008). Disaster Planning in Libraries. *Journal of Access Services*, 4(3), 71-82.



Questions?

Katherine Chew

[chewx002@umn.edu](mailto:chewx002@umn.edu)

612-626-3017

Speech:

## **[Slide 1] / INTRODUCTION**

Hello, my name is Katherine Chew and I am the Associate Director for Research, Collections and Access Services for the Health Sciences Libraries at the University of Minnesota.

My presentation today is entitled, *Waterfalls are not in the MeSH vocabulary: one library's experience with unexpected flooding ...*. A situation I am sure everyone here has either experienced at least once or hopes to never have it happen to them – but you do not have to be alone, there is a world of support out there, you just need to be aware of it.

## **[Slide 2]**

I will be presenting the [click]

- A short case history, a highlights reel rather than the full length feature film, of the disaster [click]
- Lessons learned & best practices for any type of disaster, big and small as well as [click]
- A selected, and by no means comprehensive list of resources & references [click]

### **[Slide 3]**

A bit of building history. Construction on Diehl Hall, where the Bio-Medical Library is located, began in June 1958 and consisted of two floors above ground and two floors below ground [click – Diehl picture 2 stories]. The sub-basement houses medical research facilities. The Bio-Medical collection moved into the building during the Christmas holidays in 1960. Two additional floors were added in 1964 courtesy of fund-raising efforts of Dr. Owen Wangensteen, the namesake of the 5<sup>th</sup> floor rare book collection. The sixth floor contains additional research labs. [click -- Diehl picture – today]. This two-phase construction, as well as research labs on the top floor has contributed to our occasional and up to this point, relatively minor, water problems. Now on to our story ... [click]

## [Slide 4]

Disaster Timeline -- April 17, 2009

This past April, the University buildings were in the process of switching over from winter heating to summer cooling systems, which meant that the building chiller systems were being serviced. In Diehl Hall, a facility maintenance worker inadvertently or improperly neglected to ensure that the cooling hoses were completely shut off. Subsequently, water pressure built up in a hose located in a mechanical room on the 4<sup>th</sup> floor and it burst at some point on the morning of Friday, the 17<sup>th</sup> of April.

The Bio-Medical Library's facilities manager, who also happens to be our Public Services Manager, had a report at around 10:25 a.m. of a burnt wire smell in Room 314, the main librarian office suite. Roughly at about the same time, the staff in the technical services office noticed that a section of the ceiling close to the interior elevator, had begun to drip water. The library facilities manager meantime, had just started to do a walk-about of the building to try to trace down the burnt smell, when, whoosh!, at approximately 10:30 a cascade of water burst through the ceiling in the Institute of Health Informatics (the afore-mentioned waterfalls of this talk's title), ceiling tiles began falling in Room 314 across the hall and a dripping noise was heard on the ceiling one floor down.

A top-down check of the other library floors, rapidly revealed the culprit and epicenter of the torrent. [click]



## **[Slide 5]**

[Pictures of the fourth floor mechanical room].  
Behind the walls and books shelves pictured is the mechanical room located on the fourth floor. [click]

## **[Slide 6]**

Here is a multi-level floor plan of the library to give you an idea of the water flow.

[click] Room 425 is the mechanical room on the 4<sup>th</sup> floor

[click] the Institute of Health Informatics had recently moved into some shared space in the library on the 3<sup>rd</sup> floor

[click] the librarians office suite room 314

[click] technical services in room 325

[click] direction of the main water flow ( red arrow )

[click] this green arrow shows the secondary water flow that was not discovered until it was realized that after the water was shut off in the mechanical room, water continued to flow and drip into technical services. Apparently the water followed a conduit and had built-up a pool of water and what started as a very minor dripping problem became a significant water flow that could not be stopped and had to drain itself out

[click] a subsequent dripping down to the second floor

## **[Slide 7]**

To get a slightly different perspective [click]  
Third floor layout, with areas affected marked. Technical services, librarian suite, IHI waterfall and the general spread of the water

## **[Slide 8]**

I know you all dying to see pictures, especially the “waterfall” of the title ...

[click] This is IHI’s collaboratory space. Impressive amount of water fall, isn’t it?

[click] Here is another view. If you look hard you can see the “raining” from the ceiling (Picture of water dripping from ceiling)

## **[Slide 9]**

[click] Outside of the IHI collaboratory space

[click] The entryway to the library

[click] Hallway to the elevator

[click] Looking the other way

[click] Falling ceiling tiles in librarians office suite

[click] Inside IHI – the collaboratory space where the waterfall occurred – over to the right is their conference room

[click] Inside IHI – water spread to the main section of the Institute and actually continued over to the wall separating them from the rest of the library

[click] Water saturated ceiling tile about to burst in TS

[click] before the ceiling tiles came down in TS

[click] devastation after as the water continued to come down [click]

## **[Slide 10]**

### Recovery

A notification tree was initiated as soon as the first dripping ceiling tiles were noticed, with updates as the situation escalated, resulting in an incredible amount of collaborative departments and services coming together to deal with the immediate situation and start recovery activities.

The first on the scene at around 11 a.m. was a facilities custodial staff member with a small water vacuum. The University Libraries own facilities maintenance team also arrived, to provide expertise and advise on how to deal with the immediate water situation, such as optimal placement of plastic sheeting or as simple as poking holes in wet ceiling tiles to reduce the likelihood of the entire tile collapsing. The Diehl Hall district facilities manager and staff dealt with stopping the water. As the extent of the disaster was determined, other complementary departments were called in. Environmental Health & Safety was concerned with the growth of mold, Capital Planning & Projects in case extensive renovation would be required, which brought in as well the University office furniture contractor to assess the damage and re-usability of wet or damp office furniture. In the meantime, library staff worked to remove valuable computer equipment, identifying and setting up temporary staff office space and technical services, and roping off hazardous areas in terms of wet/dampness.

A mid-afternoon briefing was held that updated all those concerned with the findings and where we would go to from there.

## **[Slide 11]**

[click] Custodial staff trying to deal with a large amount of water

[click] Wet sheet rock removed up to 24 inches along the elevator corridor and shared wall with IHI Conference room. More sheet rock was removed from various areas within the IHI as well

[click] microbial carpet spraying to prevent mold growth

[click] ensuring the safety of our patrons [click]

## **[Slide 12]**

Outside contractors were called in with industrial strength carpet extractors, dryers, and dehumidifiers. Dryers, fans and dehumidifiers were left on all night and throughout the weekend. Since the technical services area continued to drip well into the weekend, it was determined that it would need to be completely gutted out and re-done due to the danger of significant mold growth.

## **[Slide 13]**

[click] The recovery contractors

[click] fans, dryers and dehumidifiers in room 314

[click] technical services gutted out. The good news for technical services was, though they would have to put up with a rather cramped temporary space for awhile, they were allowed to re-design their work space, get fresh paint, new carpeting, upgraded network connections and better lighting – for free! Since it was a facilities maintenance error, covered by insurance, their department paid for everything.

[click]

## [Slide 14]

Over 3600 square feet were impacted with 11 staff members temporarily relocated. However, there was minimal impact to patrons or library services and no collections were endangered – those materials that were in technical services were able to be moved in time.

IHI was able to hold their Open House 12 days later, the librarians moved back into their office 2 weeks later and TS moved into their renovated space within one month [click]

- 3604 square feet impacted
  - 314 – 783 sq ft
  - 316 – 142 sq ft
  - 325 – 1425 sq ft
  - 325A – 244 sq ft
  - 330 – 1000 sq ft
- 11 staff relocated
  - 4 librarians
  - 7 technical services staff & students
  - 1 associate director

## [Slide 15]

Key departments involved:

- Facilities Management/Health Sciences District Team
- Environmental Health & Safety
- Custodial Services
- Capital Planning & Project Management/Academic Health Center Team
- Commercial Office furniture contractor
- University Libraries Facilities Maintenance Team
- And a host of other ancillary departments such as NTS (Networking and Telecommunications Services) [click]

## [Slide 16]

Here are some lessons learned & best practices, not necessarily in order of importance, except, perhaps, for the first one ....

- Have an up to date emergency plan in place [click]
  - Because we had an emergency plan in place, staff knew who to call and what initial procedures needed be done before the bigger guns arrived
  - Also, remember to put personal safety first, never endanger yourself or others [click]
- Get to know the auxiliary services such as Environmental Health & Safety and contact them as soon as possible [click]
  - This increases the possibility of salvaging carpets, fabric furniture, and the growth of mold, as they may have water event responsibilities, recommendations and procedures in place [click]
- Inventory swing spaces ahead of time [click]
  - Do you have conference rooms or classrooms that can be quickly converted to staff office space or if collections were damaged, a large, open space that could be used to contain drying collections for any length of time. Can the conference rooms or classrooms handle the technical requirements? We had a small conference room that had originally been a suite of offices, so it easily became a slightly cramped, but effective temporary technical services office. We also had, due to recent staff changes, several vacant scattered staff workstations that could quickly be re-activated [click]
- Set up a workable command center
  - Think about this ahead of time. Initially our command center was the library administration

office on the fourth floor, where admin staff fielded phone calls. However, the epicenter of the emergency was on 3<sup>rd</sup> floor and it was there that staff from various departments and contractors converged. Walkie-talkies in the hands of key personnel would have reduced some of the confusion of locating people with needed knowledge and improved coordination of effort. Moving the command center to a spot out of the immediate emergency area, but handy to, or adjacent to would have also improved communication. Fairly quickly, a large white-board [click] was brought into the area, and that served as a communication center, with notes, observations and a place to conduct briefings was accomplished [click]

- Have emergency response kits handy [click]
  - This includes plastic sheeting available on all floors – and remember to replace sheeting after use to reduce mold growth
  - Create quick response kits. There are commercial ones available, [click / click] or you can create your own with easily obtainable supplies. These come in handy for blocking off areas to public use, taping or clipping plastic sheeting around drip holes to funnel water into containers, paper and pens for making notes and sharpies to mark damaged tiles or sheetrock. The kit pictured here is one of several created for use by the University Libraries Facilities Maintenance team after the Bio-Medical Library experience [click]

## [Slide 17]

Lessons learned & Best practices (cont.)

- Conduct emergency drills or exercises. A colleague of mine did a mini water drill in her library, where a scenario was set, with paper signs indicating dripping water and so forth. The facility manager was in on the drill and acted accordingly. After the drill the staff reviewed what they did right and where they went wrong.[click] The California Preservation Program website has an example of a disaster exercise [click]
- Take lots of photographs! [click] They document the disaster, are useful for insurance purposes and [click] help tell the story when memory starts to fade. If possible, also try to video as a way of documenting decisions and damage.

## [Slide 18]

Here are just a few of the many available comprehensive emergency/disaster websites. Many of the major resources listed are found on all of the websites [click]

- CoOL: Conservation OnLine (<http://cool.conservation-us.org/bytopic/disasters> )

CoOL, Conservation online, is a project of the Preservation Department of Stanford University Libraries and Academic Information Resources, and is now “housed” on the AIC (American Institute for Conservation of Historic and Artistic Works) website. [click] It is a full text library of conservation information, covering a wide spectrum of topics and resources. [click]



- National Network of Libraries of Medicine Emergency Preparedness and Response Toolkit <http://nnlm.gov/ep> [click]
  - Provides templates, tutorials, promotional materials, reporting forms, service continuity and links to other resources
- NEDCC: Northwest Document Conservation Center <http://nedcc.org/home.php> [click]
  - Is the creator of the dPlan, a freely available online program for creating comprehensive disaster plans. They also have a wealth of downloadable leaflets on a wide variety of preservation/salvage topics [click]
- CoSA: Council of State Archivists Emergency Preparedness Initiative <http://www.statearchivists.org/prepare/index.htm> [click]
  - They are the creators of the Pocket Response Plan, a concise document for recording essential information needed by staff in case of a disaster. It is intended to be customized for each institution and individual staff member. It is printed on both sides of a legal-size sheet of paper, then trimmed and folded to credit card size and stored in a water-proof envelope that fits easily into a wallet. [click]
- Heritage Emergency Task Force [click]
  - The Heritage Emergency National Task Force is the developer of the Emergency Prep Wheel and the Field Guide to Emergency Response.
    - Emergency Prep Wheel
      - **Side One: Action Steps** outlines critical stages of disaster response, such as stabilizing the environment and assessing damage.
      - **Side Two: Salvage Steps** provides practical

tips for nine types of collections: books and documents, photographs, electronic records, paintings, and more. [click]

- Field Guide to emergency response: comes with an instructional dvd which illustrates critical techniques outlined in the guide. What is nice is that the Heritage Foundation has made the checklists from the guide freely downloadable as well as short clips from the DVD and other streaming videos on salvage techniques [click]

## **[Slide 19]**

### Resources -- Workshops

I highly recommend attending a disaster or emergency planning workshop. I attended one in 2005 that was developed by the Minnesota Historical Society's Conservation Outreach Program and lead by Bob Herskovitz, our regional expert on disasters in libraries. The workshops are helpful in that they walk you through the creation of an emergency preparedness plan, provide templates, examples, and lists of resources.

- Disaster! Preparing a Library Response Plan
  - Minnesota Historical Society [click]
- Emergency Preparedness: Ten Steps for Service Continuity.
  - Our GMR has three classes available
    - 10 Step Approach to Service Continuity Planning
    - Disaster Planning in the Library and Beyond
    - Emergency Preparedness for Libraries (a combination of the first two classes). All are approved fore MLA CE credit. [click]
- Master of Disaster: Developing a Disaster Plan

- WebJunction provides self-paced online learning community services to a wide variety of library organizations. [click] If your library consortium is a member, the classes are free. In Minnesota, Webjunction classes are sponsored by the State Library, Metronet and Minitex. Indiana, Iowa, Ohio, Illinois also listed as sponsors.
- Disaster Preparedness [click]
  - Lyaris is the library network that was created from the merger of PALINET and SOLINET. They provide a Disaster Preparedness and Response track [click] that has a variety of classes, some of them web-based. Classes are also open to non-members.

## **[Slide 20]**

### References

Here is a short list of books and articles on emergency/disaster planning. I will gladly email the list to anyone who is interested.

## **[Slide 21]**

Questions?