After the Event: Response, Stabilization, and Salvage of Photographic Collections

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Responders: What they’re thinking

- Life/Safety
- Incident Stabilization
- Property protection

- Don’t get distracted by non-professionals
- Organize for efficient response
Incident Command System

How they organize

Incident Commander

- Information Officer
  - Safety Officer
    - Liaison Officer

Operations Section
Planning Section
Logistics Section
Finance/Admin Section
1. Human health and safety!
2. Assess the situation
3. Prevent further damage
4. Collection salvage
5. Return to normal
Personal Protective Equipment (PPE)

Are you equipped with the appropriate PPE?

apron, boots, gloves (nitrile), goggles, hard hat, respirator, or particulate mask (N95 or P100)
Remember - This is not about salvage and recovery.

The initial re-entry is to identify the location, type, and scope of the damage.
Be prepared to not have electricity.
Salvage in-house or call a vendor?

How many items are affected?

What types of items are affected?  
*Books with coated paper, objects, photographs, etc.*

How wet are they?

Has mold set in?

Do you have the time/money/space/staff to do it yourself?

What kind of facilities and equipment do you have available?  
*Freezers, vacuums, dehumidifiers, etc.*
What should a disaster recovery company do?
• Listen
• Assess damages
• Consult / advise
• Perform recovery and rebuild services

What should they **NOT** do?
• Take over
• Establish client priorities

Image courtesy of Belfor
Prevent Further Damage

This may include: draping shelves, removing items from a compromised structure, segregating moldy items, setting up dehumidifiers or air conditioners, etc.
Triage

The most vulnerable materials (parchment, photographs, etc.)

The collection(s) of greatest importance/value.

The size of the collection(s) involved.

Items which are *physically* the most readily accessible.
The problem(s) with water

Expansion/contraction
  ◦ Tears and detachment during event
  ◦ Warping after drying

Weakness and additional weight

Solubilization and Redepositing
  ◦ Media, adhesives, discoloration

Embedding
  ◦ Grime, soot, foreign particles

Corrosion: metal objects and components

Contamination: sewage, toxins

Mold
Water Damage

Air dry now.

Freeze now, air dry later.

Blast freeze now, vacuum freeze dry later.
To Freeze or Not to Freeze

Freeze

- books
- paper
- anything with coated paper (books or individual flat objects)
- vellum and parchment
- most photographs and negatives
- most textiles

Do Not Freeze

- cased photographs
- glass plate negatives
- magnetic and optical media
- anything with layers (varnished maps, paintings on canvas, thick paints on paper)
- organic objects (bone, shell, ivory, basketry, wood)
- inorganic objects (ceramics, metal, stone, glass, beadwork)
AFTER THE EVENT: Response, Stabilization, and Salvage of Photographic Collections

Barbara Lemmen • CCAHA
Vulnerabilities of photographs

- Laminate structure
- Mix of materials
- Hygroscopic components
- Food source for mold
- Housing and inscriptions

Courtesy of Graphics Atlas
The problems with water + photos

- Contamination
- Expansion/contraction
- Weakness and additional weight
- Solubilization and Redepositing
- Blocking
- Corrosion of metal and glass components
- Mold
Contamination

Hazardous, Chemically active, or Inert

Issues

Sources
• Water - chemical, biological, organic, inorganic, “black water”
• Fire decomposition products
• Debris
• Mold growth
• Enclosures/packaging/frames
Expansion/Contraction or Heat = distortion

Courtesy of a private client
Solubilization

- Gelatin emulsions or coatings
- If very vulnerable and/or wet too long
  - May stick to plastic enclosures
  - May not grow mold
Image Deterioration

- Fading
- Loss of density and detail
- Color change
Staining

- Transfer from mounts, housing, and inscriptions

Courtesy of private clients
Blocking to framing glass

Portrait of a man by Ellis, early 20th c., courtesy of Heather Brown and WUDPAC
Blocking to framing glass

Portrait of a man by Ellis, early 20th c., courtesy of Heather Brown and WUDPAC
Blocking of prints

Courtesy of private clients
Delamination or Flaking

• Differential expansion of layers
Changes in surface gloss

- Local wetting
- Drying in contact with enclosures

Courtesy of private clients
Mold

- Staining, weakness, loss of information
PLANNING
Plan

- Protect most vulnerable
- Label
- Stock supplies
- Know conservator’s role
Protect the “Do Not Get Wet List”

• Cased objects
• Wet plate collodion negatives
• Degraded cellulosic film
• Additive color plates
• Stabilized b/w prints
• Less common color processes
• Some digital prints
SALVAGE
Variables for stability + Salvage method

Level of preparation, training, staff available

Volume of material

Type of disaster

Conditions
• How wet?
• Exposure time
• Temperature
• Water quality
• Contaminants
Basic Salvage Steps

1. Evaluate Health and Safety aspect
2. Prepare work area and supplies
3. Maintain organization
4. Move unaffected PM away from high humidity
5. Dry or prepare to freeze wet materials

Courtesy of Debbie Norris
Maintain Order and Track Information

Often most time consuming part of a project

Options

- Maintain enclosures with objects to transcribe info
- Digital documentation of each page
- Polyester tags for washing
- Waterproof marking of objects
# Salvage Priorities

<table>
<thead>
<tr>
<th>PROCESS</th>
<th>SALVAGE PRIORITY</th>
<th>RINSE?</th>
<th>DRYING METHOD</th>
<th>*NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case photographs</td>
<td>X</td>
<td>NO</td>
<td>Air-dry</td>
<td>Do not disassemble prior to air drying</td>
</tr>
<tr>
<td>Collodion glass negatives</td>
<td>X</td>
<td>NO</td>
<td>Yes*</td>
<td></td>
</tr>
<tr>
<td>Additive color on glass, autochromes</td>
<td>X</td>
<td>NO</td>
<td>Freeze/Thaw/Air dry</td>
<td></td>
</tr>
<tr>
<td>Deteriorated cellulosec negatives</td>
<td>X</td>
<td>NO</td>
<td>Yes, Yes</td>
<td></td>
</tr>
<tr>
<td>Color – less common processes</td>
<td>X</td>
<td>Yes</td>
<td>NO, NO</td>
<td></td>
</tr>
<tr>
<td>Digital – dye inkjet, swellelable supports</td>
<td>X</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Digital – inkjet, EP, dye sub</td>
<td>X</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Color prints - ch</td>
<td>X</td>
<td>Yes</td>
<td>Yes, Yes*</td>
<td>Do not freeze dry prints on resin coated paper</td>
</tr>
<tr>
<td>Prints – 19th c. and 20th c. b/w</td>
<td>X</td>
<td>Yes</td>
<td>Yes, Yes*</td>
<td>Do not freeze dry prints on resin coated paper</td>
</tr>
<tr>
<td>Gelatin glass negatives</td>
<td>X</td>
<td>Yes</td>
<td>Yes, No*</td>
<td>Possible with special attention</td>
</tr>
<tr>
<td>Lantern slides</td>
<td>X</td>
<td>Yes*</td>
<td>Yes</td>
<td>Disassemble prior to air drying</td>
</tr>
<tr>
<td>Negatives and positives on film</td>
<td>X</td>
<td>Yes</td>
<td>Yes</td>
<td>Disassemble glass mounted slides prior to air drying</td>
</tr>
</tbody>
</table>

1st = Immediate Attention
- “Do Not Get Wet” List
- Anything blocking or sticking together

2nd and 3rd = Salvage or freeze in 48 hrs
- Everything else
- General rule – color before b/w and prints before film
- 72 hours until mold
Remove from housing

Caution! - hard to evaluate condition while in enclosures
- may be delaminating, mushy and stuck
- distortion may occur when removed
- consider duplicating in sleeve

Do not slide items out - cut away enclosures

If sticking, treat individually or consider freezing
Unframe

- If still wet, may come apart easily
- Disassemble face up

Once dry, treatment may be necessary - success depends upon stability of object

Courtesy of Debbie Norris
Rinse

If time allows

- To reduce debris and contaminants
- To keep wet and prevent from sticking when frozen
- Wetting agent with film reduces water spotting
Air Dry Prints

Courtesy of S. Watkins
Hang Film to Dry

- Create tag or keep identifying materials with item
- Keep slides in mounts
- Clip at margin

Courtesy of Debbie Norris
Air Dry Glass Plate Negatives

- Dry flat or in vertical racks, e.g. plastic or metal CD racks
Albums

Dry with non-woven interleaving between pages, preserving shape of binding as possible
or  Disbind; treat pages and cover separately
or  Remove photos; treat photos and bound album separately
Freeze

- For future thawing/air drying or vacuum freeze-drying
- Freezing is safe for most photographs
- Possible negatives effects of freeze-drying = gloss changes or surface deposits could affect printing
- Thawing and drying – consult a conservator
Exceptions for Freezing

• Wet collodion negatives
• Tintypes
• Ambrotypes
• Daguerreotypes
• Instant prints, e.g. Polaroids
• Additive color processes
• Some albums?
**Freeze**

1) Separate by process, then by size  
2) Rewet if materials starting to dry out  
3) Rinse and pour off excess water  
4) Wrap in or interleave with wax paper, if needed  
5) Seal shallow groups in polyethylene bags  
6) Pack in sturdy boxes
Vacuum Freeze-dry

Pros
- Save time/money
- Save original housing

Cons
- Distortion may be created – pack carefully
- Contaminants will be locked in
- Gloss and density changes likely

Exceptions
- Stacks of RC prints
- Deteriorated film
- Lantern slides
- Glass plate negatives*

*Belfor Property Restoration, Exton, PA
VFD takes 4 weeks at -45F and 40 torr
**Treatment after drying**

**Goals**
- Improve chemical stability
- Reduce surface soil and mold
- Even out surface gloss
- Separate blocked items
- Reduce distortion

**Possible Techniques**
- Surface cleaning
- Washing
- Mold reduction
- Stain reduction
- Mending and flattening

*Before*  
*After*  

Courtesy of Debbie Norris
Mold reduction

Courtesy of Olivia Primanis
Rehouse

• Labeling and organization need to be tailored to the client’s needs

• Recreating original formats: slide mounts, albums, frames

• May also function for odor reduction

• Time consuming
Reduce Odor

• Smoke Smell vs. Volatile Organic Compounds (VOC’s)

• Ozone use unsafe for photographic materials

• Address odors with treatment and/or housing

• Zeolite containing paper and paperboards work very well
A Consumer Guide for the Recovery of Water-Damaged Traditional and Digital Prints

Disasters caused by fire and water threaten the preservation of photographic prints. Fire often results in the complete destruction of photographs, with no chance of recovery. The only practical way to reduce the chances of fire loss is to equip the storage area with adequate fire protection, such as sprinklers, or to store records in fire-resistant safes. Water damage is another story and is the focus of this publication.

Problems caused by water are fairly common. They may result from relatively minor disasters like spills, leaks, floods, burst water pipes, plumbing leaks, and sewer backups. They also may result from major disasters, such as extinguishing a fire, a broken water main, earthquake, and flood.

When a home is flooded, many problems must be addressed, such as the removal of possible health hazards, home cleanup, utilities restoration, and the like. These are discussed in some detail in an American Red Cross publication, *Repairing Your Flooded Home.* Recovery of water-damaged papers, books, and photographs is another important concern. These materials can sometimes be saved by taking prompt and appropriate action.

**PREVENTING WATER DAMAGE**

Because water damage to photo albums is likely to be catastrophic, the best defense is prevention. Strategies include the use of appropriate printing technologies, journaling supplies, and album materials; the creation of film backups or digital prints; and the selection of proper storage locations within the home.

The Right Storage Materials

Store photographs in enclosures made from materials that conform to ISO Standard 18041. Meeting this standard doesn’t mean that the materials themselves are flood-resistant. Rather, they mean that they will not be chemically reactive with enclosed photos, even when wet. Use journaling pens and colored inks that are made with pigment colorants and that are waterproof, so their colors will not bleed onto prints.

Duplicates

Keep backup images in a separate location. Having backups in the form of original negatives or on electronic storage media such as CDs is important.

Storage Location

Determine a storage location for your albums as simple, in general, if an area in your home feels comfortable year round, then it will be comfortable for your albums. Don’t store albums and photographs under water pipes or directly on the floor. Closed cabinets may offer more protection than open shelving. Never store your photos in the basement. Even if your basement feels dry, water will collect there first in a major water emergency. If you live in a flood-risk area, have a generator and make sure it includes your photos and albums. This may simply mean keeping your photos and albums in an upstairs area or on higher shelves or on the second floor of your home. During a flood watch, move valuables to higher areas of the house.

**GENERAL RECOMMENDATIONS**

While there has been considerable experience with the salvage of photographic prints and papers, little has been reported regarding the salvage of digital prints. Some water-damaged digital prints from home computer printers or commercial photographers behave very differently from traditional photographic prints. Recent laboratory investigations at the Image Permanence Institute have shed some light on the relative susceptibility to water damage of inkjet, dye diffusion, and traditional photographic prints and on their recovery. What was learned from these investigations can provide general guidance for the home consumer but should not be taken as definitive for all products and circumstances. Regardless of the nature of the print, the following basic rules apply.

**Start Treatment as Soon as Possible**

This is the most important action you can take. The longer prints remain wet, the more susceptible they will be to permanent damage. Delay may result in loss or blurring of the image as well as disintegration of the paper support. Mold is a major concern of prints remain wet for more than a few days. Mold eventually will destroy all pictorial information. If mold is already present, dry the material before further treatment.

This document can be found in PDF format at http://www.imagepermanenceinstitute.org/consumerguide_watere DAMAGE.pdf

https://www.imagepermanenceinstitute.org/webfm_send/314
Thank you for your attention

Questions?

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