



Conserve 0 Gram

January 2002

Number 21/2

An Emergency Cart For Salvaging Water-Damaged Objects

When disaster strikes, there are three ingredients to orchestrating a successful recovery:

- an up-to-date emergency response plan
- trained staff
- sufficient recovery supplies that can be transported quickly to the disaster site

Note: *Information and references on disaster planning can be found in Museum Handbook, Part I, Chapter 10: Emergency Planning.*

Every museum should have a complete range of supplies on hand to clean up spills from broken pipes, roof leaks, or malfunctioning sprinkler heads, and to remove excess water from collection objects. There are a number of options for storing and transporting these supplies depending on the size and configuration of your collection areas. Rolling utility cabinets, and lidded, rigid polyethylene bins or trash bins with wheels (small enough so that you can reach the contents in the bottom) are possible containers.



Figure 1. Rigid polyethylene bin on wheels

Choose a container that is narrow enough to fit through doorways and is light enough to be

moved by one person. Backup supplies and oversized materials can be stored in a designated cabinet or closet.

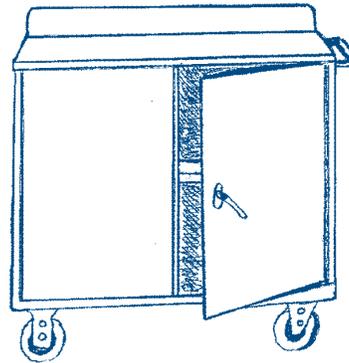


Figure 2. Metal supply cabinet on wheels

Salvage and Cleanup Supplies

To protect your collection from mold growth, it is important to remove the maximum amount of water as quickly as possible. Your emergency cart will contain the supplies necessary to deal with the recovery of collection objects. In addition to those supplies, make sure you have the following equipment available at your park to deal with water emergencies:

- fans
- wet/dry vacuum
- dehumidifiers
- carts for moving collection objects

If this equipment is *not* available on site, locate sources for refrigerated trucks and rental agencies able to supply the equipment. Keep those phone numbers with the other emergency numbers in your disaster operations plan and on the supply cart for quick retrieval.

Stock your emergency cart with the following supplies:

General Supplies

- Copy of the Emergency Response Plan
- List of response staff phone numbers
- List of general emergency phone numbers
- List of phone numbers for rental equipment and refrigerated trucks
- List of key locations for affected rooms and exhibit/storage cases
- Disposable cameras with built-in flash to document the emergency and objects *in situ* before recovery activities
- Clipboard with notepads
- Pencils, pens, and permanent ink markers
- Object record sheets (see back of “Salvage Cart Checklist”)
- *Emergency Salvage Wheel* and “Salvage at a Glance” *Conserve O Grams* (see references)
- Scissors (4-6 pairs)
- Object tags (several sizes)
- Door wedges (large size to hold open stairway and storeroom doors)

Safety Supplies

- **CAUTION** barrier tape and signs
- First Aid kit
- Boxes of pre-moistened, anti-bacterial towelettes
- Single-use respirators approved for protection against dusts and mists (respirators may be necessary if mold has already developed) according to the approved respirator plan in your park
- Disposable Tyvek® protective clothing (available in small, medium and large sizes) or aprons
- Stretchy, pull-on boots with non-skid bottoms
- Gloves (work gloves with leather palms, disposable latex gloves in several sizes, Nitrile gloves for dealing with objects that may have pesticide residues)
- Plastic safety goggles

Supplies for Removing Excess Water

- Large cellulose sponges
- Squeegee with a long handle (to move water toward drains)
- Sponge mops (cotton mops can be used but require a wringer bucket)
- Plastic buckets
- Broom
- Dust pan and brush
- Rags (boxes of cotton fiber painters rags or huck toweling to dry individual objects)
- Terrycloth toweling
- Paper towels
- Blotting paper (white, photographic type for interleaving paper objects)
- Disposable baby diapers (excellent for quickly absorbing large quantities of water from soaked textiles and other porous materials)

Lights and Power

- Flashlights and extra batteries
- Work lights (the type in plastic cages that can be hung) and extra bulbs
- Heavy-duty electrical cords with multiple heads
- Power strips
- String for tying electrical cords up out of the water

Tools

- Tool kit containing:
 - hammer
 - small and large flat-head screwdriver
 - small and large Phillips-head screwdriver
 - specialized tools for opening exhibit cases
 - pliers
 - crowbar
 - vice grips
 - utility knives with retractable blades (with extra blades)
 - nails
 - hatchet

Emergency Cart Checklist and Inventory

General Supplies

- Emergency Response Plan
- Emergency phone Lists
- Disposable cameras
- Clipboard and documentation forms
- Pencils, permanent ink marking pens
- Emergency Response Wheel* and reference documents
- Scissors (4 pairs)
- Door wedges
- Object tags

Safety Supplies

- Caution** tape and signs
- First Aid kit
- Anti-bacterial towelettes
- Respirators
- Protective clothing, boots
- Work gloves
- Latex and Nitrile gloves (sm., med.)
- Safety goggles

Supplies for Removing Water

- Cellulose sponges
- Squeegee with handle
- Sponge mops
- Bucket
- Broom
- Dust pan and brush
- Rags
- Terrycloth toweling
- Paper towels
- Disposable baby diapers
- White blotting paper

Lights and Power

- Flashlight and spare batteries
- Work lights, stands, extra bulbs
- Electrical cords, power strips
- String

Tools

- Tool box
 - ___ hammer
 - ___ slot screwdrivers
 - ___ phillips screwdrivers
 - ___ pliers
 - ___ crow bar
 - ___ vice grips
 - ___ utility knives with extra blades

Containers, Supports, Wrapping Materials

- Roll of 4-mil clear polyethylene
- 2 rolls duct tape with dispensers
- Corrugated polypropylene boxes
- Clear polyethylene bags
- Heavy-duty garbage bags
- Nylon cable ties
- 20 12-inch wood blocks

Containers, Supports, Wrapping Materials

- Polyethylene sheeting (large roll of 4-mil for tenting areas if leaks are still a problem, cut sheets—about 4' x 8' for wrapping objects and covering smaller surfaces)
- Duct tape (several rolls to seal bags or splice together sheets of polyethylene)
- Corrugated high-density polypropylene boxes (for transporting wet objects). Cut several holes in the bottom for drainage.
- Plastic bags (clear food-grade, both light weight and heavy duty, in a variety of sizes for objects; heavy duty garbage bags for disposal of soiled recovery supplies and trash)
- Nylon cable ties for closing bags
- Wood blocks (2-3 dozen 12" blocks cut from 2' x 4' lumber to raise objects off the floors)

Supplies should not be removed from your emergency cart to be used for other purposes. It is still a good idea, however, to inventory your supplies yearly and replace anything that is missing.

Copy the front of the insert sheet of this Conserve O Gram to use as a check off inventory list. Make copies of the back of the insert sheet to use as Object Record Sheets during salvage.

Suppliers:

Many of the supplies necessary to stock an emergency cart can be found at hardware and home center stores. More specialized items, such as protective clothing, Nitrile gloves, and cabinets or bins are available from:

Lab Safety Supply
401 S. Wright Road
Janesville, WI 53546
(800) 356-0783
<<http://labsafety.com>>.

New Pig
One Pork Avenue
Tipton, PA 16684-0304
(800) 643-6465

ULINE
2200 S. Lakeside Dr.
Waukegan, IL 60085
(800) 295-5510
<<http://www.uline.com>>.

Corrugated polypropylene salvage boxes and small, ready-made disaster recovery kits available from:

University Products, Inc.
517 Main Street, PO Box 101
Holyoke, MA 01041-0101
(800) 628-1912
<<http://www.universityproducts.com>>.

The *Emergency Salvage Wheel* is available from:
Heritage Preservation
1730 K Street, NW, Suite 566
Washington, DC 20006-3836
(202) 634-1422
<<http://www.heritagepreservation.org>>

References:

Harris, Michael R. "Emergency Cart for Protecting Collections from Water Damage" In *Storage of Natural History Collections: Ideas and Practical Solutions*, edited by Carolyn L. Rose and Amparo R. de Torres. Pittsburgh: Society for the Preservation of Natural History Collections, 1992.

Heritage Collections Council. *Be Prepared: Guidelines for Small Museums for Writing a Disaster Preparedness Plan*. Canberra, Australia: Heritage Collections Council, 2000.

“Salvage of Water-Damaged Collections, Part I: Salvage at a Glance—Paper-Based Archival Collections” *Conserve O Gram 21/3*. Washington D.C.: National Park Service, 2002.

“Salvage of Water-Damaged Collections, Part II: Salvage at a Glance—Non-Paper-Based Archival Collections” *Conserve O Gram 21/3*. Washington D.C.: National Park Service, 2002.

Museum Handbook Part I, Chapter 10, “Emergency Planning”. Washington, DC: National Park Service, 2000.

World Wide Web Resources:

American Institute for Conservation of Historic and Artistic Works
<<http://aic.stanford.edu/disaster>>.

Conservation OnLine
<<http://palimpsest.stanford.edu/bytopic/disasters/>>.

Federal Emergency Management Agency (useful general information with links to other related sites)
<<http://www.fema.gov>>.

SOLINET
<<http://www.solinet.net>>

Steps to Preparing for Disaster Recovery

To Do:	Completed (date)	Still needed (date)
Assess all risks and threats		
Reduce or remove risks		
Identify high priority collection objects		
Establish collection disaster response team		
Establish support networks		
Prepare the Disaster Response Plan		
Prepare the Disaster Recovery Plan		
Assemble recovery cart(s)		
Train all staff		
Review the plan		
Update plans/provide refresher training/train new staff (annually)		
Inventory recovery supplies (annually)		

The *Conserve O Gram* series is published as a reference on collections management and curatorial issues. Mention of a product, a manufacturer, or a supplier by name in this publication does not constitute an endorsement of that product or supplier by the National Park Service. Sources named are not all inclusive. It is suggested that readers also seek alternative product and vendor information in order to assess the full range of available supplies and equipment.

The series is distributed to all NPS units and is available to non-NPS institutions and interested individuals on line at <http://www.cr.nps.gov/museum/publications/conserveogram/cons_toc.html>. For further information and guidance concerning any of the topics or procedures addressed in the series, contact NPS Museum Management Program, 1849 C Street NW (NC 230), Washington, DC 20240; (202) 343-8142.