

RECOVERY MEASURES FOR FLOODED ARCHIVAL MATERIALS INCLUDING PHOTOGRAPHS  
AT THE FREDERICK LAW OLMSTED NATIONAL HISTORIC SITE

by Elizabeth S. Banks

This paper is part one and describes the disaster itself. Part two, by Janet Stone follows this article and includes discussion of the vacuum freeze-drying treatment.

Ever since the Olmsted archives were acquired by the National Park Service in 1980 and 1981, the staff has been working to improve storage, documentation of, and access to this material. The archival collections are comprised of the landscape architectural business records and other material generated by Frederick Law Olmsted, Sr. and Jr., John Charles Olmsted, their partners and associates. As far as can be determined now, these include 115,000 landscape architectural drawings, 33,000 photographic negatives, 60,000 photographic prints, 70,000 sheets of planting lists, 12,000 lithographs, extensive financial records, job correspondence, records and reports, a library, and scale models relating to 5,000 individual jobs which date from the 1860's to 1980. There are also study collections on urban design, landscape architecture and the fine arts in general and a reference collection of maps and atlases. The archival collection represents a rare continuity of work by a single professional office, reflects the history of the development of landscape architecture and environmental design in the United States, and, moreover, remains in the setting in which it was created.

The Olmsted home and offices are situated in an area of Brookline, MA surrounded by hills. The 1810 house which Olmsted bought in 1883 sits partway up a hill, but the later office and vault additions (1889-1925) extend down toward a very low area. Evidence suggests that there had been earlier flood damage in the lower storage vault area during the Olmsted firm's time. Previous flood water marks existed in the lower vault and a list (generated by the Olmsted firm) of drawings that were destroyed in a major flood in 1955 was found among the Olmsted archival holdings.

In addition to the substantial building restoration that has been ongoing during the last six years, extra precautions against flooding were implemented for the vault and basement areas. Major building improvements including electrical rewiring, fire alarm and fire suppression systems, etc. were supplemented with relocation of drains, frequent cleaning of outside drains, improvements in gutters, and installation of a sump pump and water alarm in the lower vault.

Prior to a three year renovation project (1984-1987) to install climate control in the three-story brick storage vaults, the large collection of archival materials and historic furnishings and equipment were packed and removed from the vaults following a preliminary inventory. Some materials were placed in new fire-resistant file cabinets which had to be placed in the basement (on 4" pallets) because their weight was too great for other floors in the historic building. In view of limited safe storage space, the large collection of drawings was stored off-site in a secured facility.

August 1, 1985 was a dark and stormy night. Two inches of rain fell per hour for more than two hours and sent water from the surrounding hills to the Olmsted site. The storm drains backed up, leaving nowhere for the water draining from Olmsted to go. It stayed and gathered. Finally, over four feet of water broke open the basement door on the garden side of the building and sent a tidal wave of 26" through the newly renovated mechanical room (housing the HVAC\* equipment) and basement storage room. The lower vault was also filled with 26" of water.

The new sump pump was not yet connected, so it was not working. As a result, water probably came up through the drain in the vault floor from the storm drains outside. Water also probably entered the vault through the connecting duct work into the adjacent basement HVAC equipment room. Fortunately, because the vault renovation work was still under construction, the lower vault was empty. As we listened to the newscasters reporting that this was the worst storm in 30 years, we thought of the flood level of 24" in the lower vault in 1955.

When the water burst in, it quickly reached the fire alarm panel, setting off the fire alarm at 3:30 A.M. The Brookline Fire Department responded, and the Olmsted Site Manager arrived to find flood waters already receding to 18" deep by 4:00 A.M. Electrical circuits were pulled and staff from Olmsted and the Longfellow National Historic Sites arrived just before daylight, between 4:30 and 5:00 A.M. Some roads were flooded and some underpasses had 11 feet of water, making early morning travel difficult. By 4:45 A.M. the water in the basement had drained down to two inches, but it contained fine garden mud and small evergreen needles and cones.

Curatorial staff gathered flashlights, note pads and keys to unlock storage drawers and assess the damage. The contents of the lower drawers were soaked, and the water had drained out the bottom of the drawers. Papers had swollen and were still expanding. A layer of very fine dirt coated the outer pages. Middle drawers were only partly wet at the edges, damp in the middle and less dirt had been deposited. Since the cabinets were on the 4" pallets, much less water penetrated the middle drawers. In this type of cabinet the drawers close so tightly that only the finest silt had been able to enter. All of the records stored in the top drawers were completely unaffected.

The inventories that we had completed for the Planting Lists and the study collection of European photographs (1860-1910's), two collections partially damaged by the flood, were compared with our visual survey. Curatorial staff began immediately to list the portions of each of the four collections affected. Janet Stone, the paper conservator for the North Atlantic Region of the National Park Service arrived. We are most fortunate that her lab is in the Olmsted House. We discussed salvage strategies and she moved photographs to her lab for treatment. We then began telephoning sources of help,

\*Heating, Ventilating and Air-Conditioning

services, and supplies. We based our approach on the disaster planning information from the excellent Library Science courses in Conservation of Library Materials given by the Northeast Document Conservation Center and the disaster plan for the Longfellow NHS. We called Mildred O'Connell, NEDCC Field Services Director, Gary Albright, NEDCC Photograph Conservator, various freezer facilities, Moisture Control, Inc., and the vacuum freeze-drying company. We were surprised to get the run-around from a recommended large dairy company, but we found a wonderful local ice cream company, Hendrie's Ice Cream, who provided freezer space to us free of charge.

Millie O'Connell arrived at the crack of dawn and we proceeded in earnest to work out a strategy to remove the swollen papers from the drawers. Restoration carpenters on the Olmsted staff had been working for over an hour to remove drawers from the cabinets so that we could send the whole drawer if that became necessary. Several other curatorial staff members made trips to the store for freezer wrap, wax paper, and plastic milk crates. There appeared to be no way to remove the papers from the drawers, without damaging the papers, except by breaking open the sides of the fire resistant drawers. The collections manager called the freeze-drying company again to explain the situation and to get their advice on sending the papers in the drawers. We were advised that wrapping them in smaller bundles was better, but sending them in the drawer was acceptable.

We proceeded first to demolish the sides of the two drawers containing the albumen prints. The contents of one were transferred upstairs to the conservator's lab for immediate rinsing, blotting, and flattening. Gary Albright provided advice on the damaging effects of freeze drying albumen prints and the procedures for treating them ourselves. As we worked to break open the sides of the drawers, we realized that it would take a great deal of time to do this to all of the drawers. In discussions with the conservator we became concerned about the extent of inks running before we could get the papers frozen. We therefore decided not to break open the drawers which did not contain albumen prints. Instead, we quickly listed the contents of the 15 remaining drawers and packed and inventoried an additional 6 milk crates of loose, miscellaneous water damaged material. Approximately 42 linear feet of materials were in need of freeze-drying.

In conference with the conservator, Millie O'Connell, and curatorial staff at 10:00 o'clock, we decided that one of the two drawers of albumen prints was all that our staff could manage that day. The second drawer of albumen prints was placed in Millie's car to go to Gary Albright at the NEDCC for treatment. A little after 11:00 A.M., a caravan of NPS and staff vehicles filled with the remaining majority of wet documents made its way to Hendrie's Ice Cream freezer plant in Milton, MA. We loaded the pallets with only one level of drawers to prevent damage from stacking. The milk crates were stacked and the pallets were placed in the minus 10 degrees F freezer. The staff at Hendrie's were most cooperative and careful in handling the materials. All containers were again checked against our inventory.

Upon returning to the site, the maintenance staff went back to assessing structural damage and the curatorial staff assisted the conservation staff in rinsing and flattening the albumen prints. A trip to a restaurant supply firm yielded plastic bread delivery trays. These were stacked and used to dry photographs. All flat table surfaces throughout the site were covered with blotters and drying photographs. The conservator also had stacks of prints interleaved and flattening. We enlisted the aid of two visiting Olmsted scholars and two staff rangers for part of the afternoon. A most fortunate event was the presence of our Cooperstown Paper Conservation Summer Intern, Jacki Elgar, who worked with us all day and into the evening, rinsing and separating albumen prints.

Staff projects for the following day included rental of the dehumidification equipment to dry out the structure, arrangements for the transport of the frozen materials by the freeze-dry firm, checking the progress of the drying photographs, and various other monitoring projects. The following Monday, at about 11:30, we were amazed to see a regular U-Haul truck pull up instead of the freezer truck the freeze-drying company had promised. The driver explained that no freezer trucks were available. He usually had dry ice blown into the truck. He followed us to the Hendrie's plant where the curatorial and maintenance staff loaded the truck. He promised that the dry ice supplier would be his next stop. The truck was already half full of boxes of frozen, water-damaged books that he had picked up from Boston area libraries at 9:00 and 10:00 A.M. that morning. However, there was as yet no dry ice in the truck. We repeatedly impressed on the driver the importance of getting the dry ice into the truck as soon as possible. We also improvised a few ways to keep the boxes, crates, and drawers from shifting during transit as the driver had nothing in the truck to secure or separate containers.

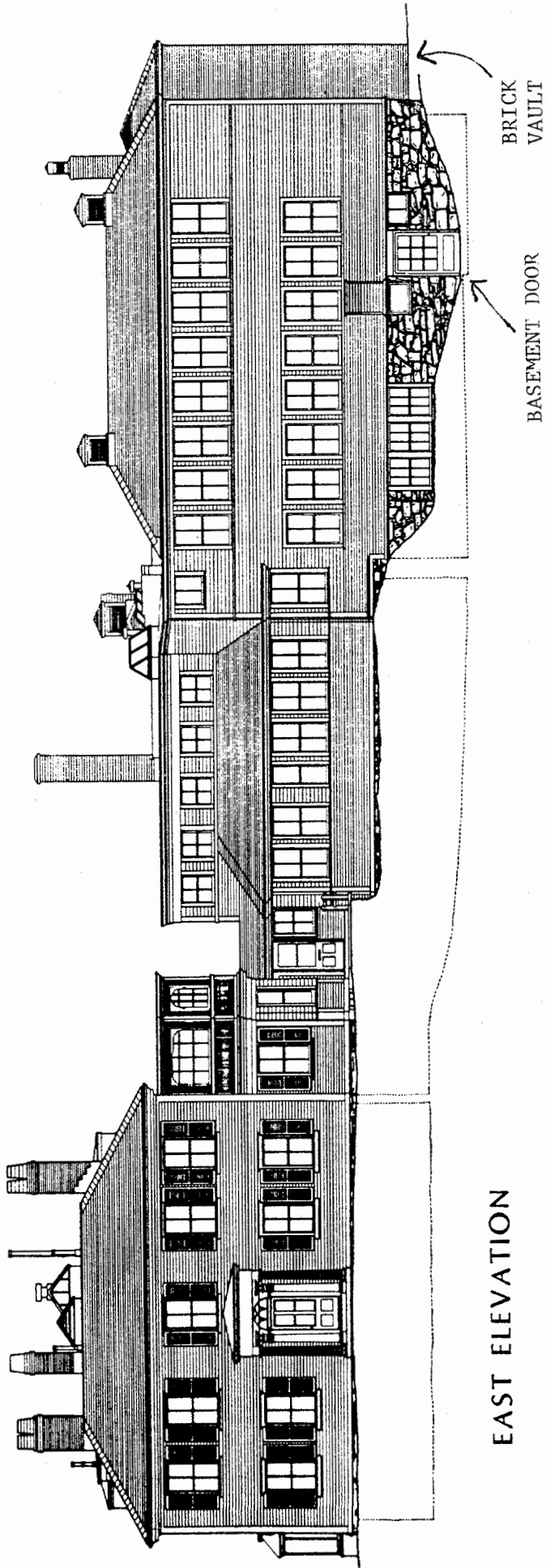
As soon as we returned to the Olmsted site the collections manager telephoned the freeze-drying company to convey our profound concern. She also called the institution whose books were in the front of the truck to ask if this was the usual procedure and was told that it was. Next, she called Millie O'Connell at the Northeast Document Conservation Center to ask if others were aware of this procedure and to voice our concern.

As a result of this experience we have concluded that quality control for services provided by disaster recovery and freeze-drying companies can be a very gray area. Companies offering their services to museums, archives, and libraries need to be aware that more knowledge, skill, and care is required than the recovery of contemporary business records may entail. The needs of institutions responsible for historic records should be clearly stated so that further damage such as thawing and refreezing or damage in shipment can be prevented. Institutions need to share their experiences and develop and convey standards to disaster recovery firms.

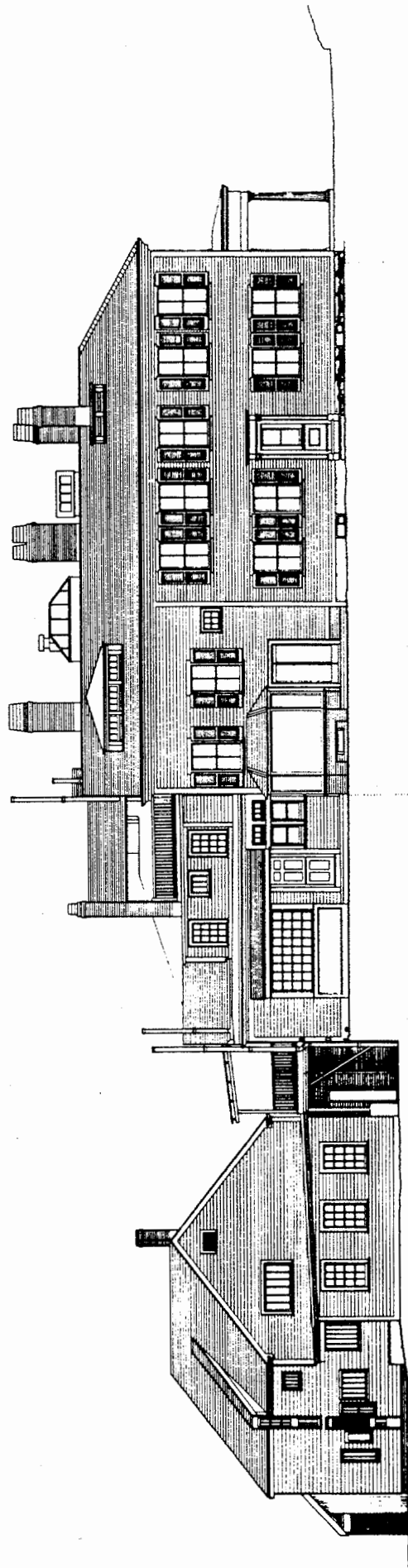
The Northeast Document Conservation Center staff provided invaluable help to the conservation and curatorial staff, making our disaster recovery work progress as well as it possibly could.

The continuation of this disaster recovery and further developments are described in Janet Stone's article "Evaluation of Post-Flood Handling and Vacuum Freeze-Drying treatment of Archival Material: Frederick Law Olmsted National Historic Site."

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EAST ELEVATION



SOUTH ELEVATION

FREDERICK LAW OLMSTED NATIONAL HISTORIC SITE  
 HISTORIC AMERICAN BUILDINGS SURVEY 1982 Survey No. MA 1168  
 drawn by Rebecca Trumball  
**ELEVATIONS**



Recovery Measures for Flooded Archival Materials including  
Photographs at the Frederick Law Olmsted National Historic Site.

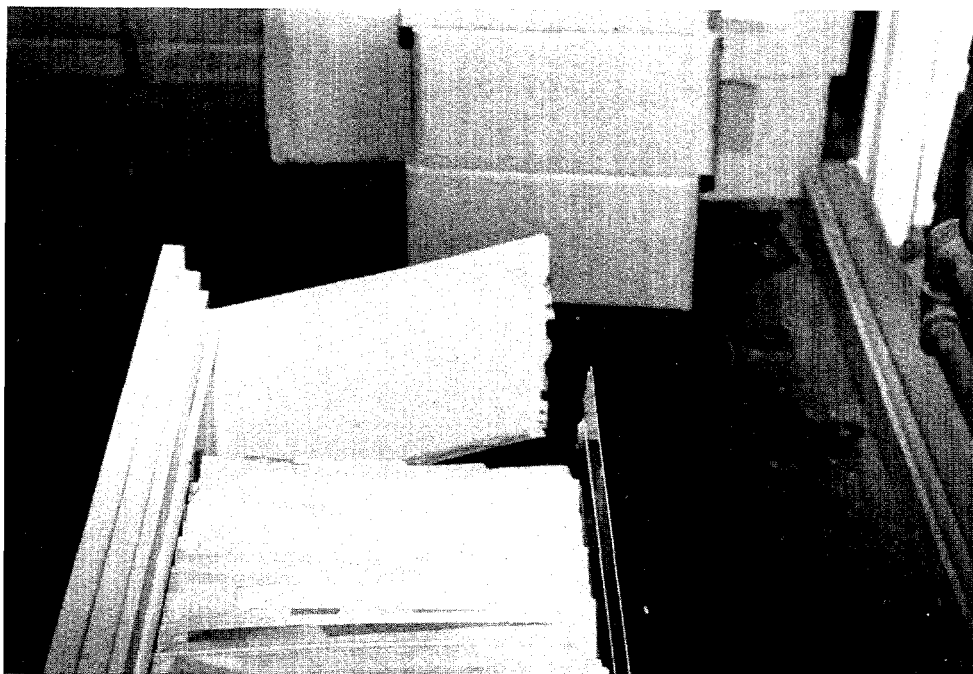


Basement door opening onto the garden.



Basement door interior. View inside the mechanical room housing  
the heating, ventilating, and air-conditioning equipment, showing  
the flood level in the room which is adjacent to the lower vault  
and the basement storage room.

Recovery Measures for Flooded Archival Materials including  
Photographs at the Frederick Law Olmsted National Historic Site



File drawer from one of the fire-resistant file cabinets showing the side broken open to allow removal of the wet, swollen albumen prints.



Albumen prints in final stages of air drying in bakery racks.