Essential Records Manual

SECURITY BACKUP, DISASTER PREPAREDNESS RESPONSE AND RECOVERY

Office of the Secretary of State
Division of Archives and Records Management

STATE OF WASHINGTON

Essential Records Manual

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INTRODUCTION

1. PURPOSE

The purpose of this manual is to help local agencies protect their essential records information from damage, loss, or theft.

First, the manual helps you:

- Define your essential records and protect them.
- Conduct a risk analysis.
- Reduce the chances of a records damage, loss or theft.
- Produce a Records Disaster Recovery Plan.

Second, when a disaster does occur, the manual:

- Guides you through a disaster and provides recovery options.
- Serves as a technical and self-help guide.

2. HOW TO USE THE MANUAL

The manual provides detailed, step-by-step help and instructions for essential records protection, as well as procedures for prevention, preparedness, disaster response, and recovery. Parts I, II, and III of the manual are keyed to templates in the Appendices.

A template consists of blank forms and instructions. Each template comprises a part of the plan. Most organizations will not need to use every template. Organizations should choose those templates that apply to them, and add any new forms or written procedures that may not be covered. When an organization completes this process, it will have a records disaster plan. Of course, the plan will need to be tested and revised as necessary.

For immediate information on saving damaged records, see Appendix C.

Additional help in writing the plan may be obtained from the Archives Division, which periodically presents disaster preparedness workshops across the State. Additional information may be obtained at http://www.secstate.wa.gov/archives/

3. BASIC CONCEPTS

The following basic concepts are listed in summary form. They will be described in greater detail in Parts I, II, and III and in the appendixes.

A. Public Records: The term “Public Records” applies to any paper, correspondence, form, bound volume, film, magnetic record, drawing, or other document, regardless of media, that has been created or received by any state or local government agency during the course of public business (RCW 40.14.010).

B. Records management: Records are public property. Like any asset, they must be managed efficiently and prudently over their life cycle. Records management includes authorities, responsibilities and procedures for managing an agency’s records and information. Practicing good records management can dramatically reduce the impact of a disaster and the response and recovery efforts.

C. Essential Records: Essential records, sometimes called vital records, are the records necessary for the continuity of operations during and following a disaster. See Part I and Appendix B for detail. They are records an agency must have to maintain one or more of the following vital functions:

- Document the agency's legal authorities, rights and responsibilities (ordinances, resolutions, minutes, rules, and regulations etc.).
- Resume or maintain operations in a disaster or emergency situation.
- Document the rights of individuals (deeds, mortgages, court case files).

D. Risk Assessment: A disciplined approach to evaluating threats to records, potential impact of damage, and prioritization of protection, response and recovery efforts (covered in Part I).

E. Planning and Preparedness: The best way to avoid records disasters or to mitigate their effects is to plan in advance. An Essential Records and Records Disaster Plan, covered in Part II and Appendix B of this manual, will set out policy, authority, procedures, resources, and techniques for dealing with disasters to records.

F. Response and Recovery: These activities happen after a disaster or emergency occurs. Response is what is done during and immediately following a disaster to minimize damage and resume emergency operations. Recovery covers the process of salvaging records and information systems and putting them back into full and normal operations.

G. Stages of Essential Records Protection: Planning, protection and response activities logically occur in phases. The manual is organized according to these phases:

(1) Prevention: This phase is covered in Part I and Appendix B.
(2) Planning: How to develop a plan is covered in Part II and Appendix A.
(3) Response and Recovery: This phase is covered in Part III and Appendix C.

4. ROLE OF THE ARCHIVES DIVISION

Chapter 40.10 of the Revised Code of Washington was enacted to help agencies prepare for threats. It mandates that:

> "The State Archivist of Washington shall coordinate the essential records protection program and shall carry out the state emergency plan as they relate to the preservation of essential records."

The Archives Division of the Washington State Office of the Secretary of State (OSOS) has targeted specialized guidance and technical support services to assist in the protection of essential government records. One element is this Disaster Prevention, Preparedness and Recovery Manual. Another is the presentation of specialized workshops on essential records and disaster recovery to local agencies. Additional help and information is provided on compact disks (CDs) and on the OSOS web site. The division also provides on-site technical assistance to state and local government agencies undergoing disaster recovery efforts.

5. DISASTERS

Disasters of all kinds occur almost every day. They range from the extreme example of the New York World Trade Center tragedy in September 11, 2001, and the Puget Sound earthquake of 2001, to smaller local disasters such as a burst water pipe in a file room. They come in all forms including flood, fire, earthquake, wind, and man made events including sabotage and terrorism. One of the primary responsibilities of government is to prepare for disasters and lead the public response and relief effort.

A disaster is generally considered an event that is beyond the powers of the first responders to prevent or control the situation, resulting in loss of life and property. Records disasters are a sub-set of disasters in general. For the purpose of this manual, a records disaster is defined as:

> "The loss or unavailability of records or data that disrupts an organization's functions or results in loss or threat of loss to rights and assets of the organization or the public."

The definition is relative. It could refer to the destruction of 1,000 boxes or one box, or the loss or destruction of a computer hard drive that has not been backed-up. Note that the definition includes unavailability of records as well as loss or destruction because there are times when the loss of data for even a period of days is unacceptable.

6. TYPES OF DISASTERS

There are many causes of records disasters such as earthquakes, floods, storms, fires, broken water mains, sabotage, and terrorism. In Washington, these causes result in relatively few categories of damage to physical records:

- Water damage (may result in progressive further damage such as mold). Water damage is by far the most common type of damage.
- Fire damage (charred and burned, usually accompanied by water damage).
- Contamination (substances poured onto records such as gasoline, PCBs from transformers, sewage from broken pipes, etc. They are often accompanied by water damage).
- Unavailability (building may be unsafe, cannot get at the records right away).

The causes of damage to electronic records include the foregoing plus other causes such as:

- Power failure
- Equipment failure
- Software problems
- Human caused events such as virus infection
- Human error

7. IT CAN HAPPEN TO YOU!

In Washington State in recent years, there have many instances of records damage from a variety of causes including fire, flood, earthquake, contamination, computer viruses, and intentional sabotage. These range in scale from major disasters damaging thousands of boxes, to mid-size disasters affecting a few hundred boxes, to small but critical threats to a few boxes of important records. Examples include:

- Okanogan County Superior Court: An attempt was made in 2002 to fire bomb county court files. Fortunately an alert individual smelled the fumes before the bomb went off. However, the combustible fluids poured on the files contaminated them and they had to be recovered.

- Seattle Housing Authority: During the Christmas holiday a water pipe broke directly over a set of 12 boxes in the record center and soaked them. The boxes contained a special collection of original copies of deeds and other proof of ownership documents for hundreds of houses, buildings, and other real property. The records manager was called at home. There was no one available to advise her on what to do, but she had a disaster recovery chapter of her file manual. Following the recommended procedure, she immediately froze the records and restored them later by freeze-drying and thereby saved the records.

PART I -- PREVENTION

Part I of the manual covers steps that can be taken to reduce the scope of a disaster or prevent it from happening at all. It includes chapters on essential records, records management, electronic records, and risk analysis.

CHAPTER 1: ESSENTIAL RECORDS PROTECTION

ESSENTIAL RECORDS –DEFINED

Records necessary for the continuity of government operations during or following a disaster, and which support one or more of the following:

- Document the agency's legal authorities, rights, responsibilities, and financial status.
- Are necessary to resume and restore operations.
- Document the rights and obligations of its employees and the citizens it serves.

Essential Records can be on any media or format that contains information that must be protected against loss, including paper, photographic images, microfilm, electronic data systems, electronic images, maps and drawings, or any other media used for recording information of all types. Typically they are a small portion of an agency's records, but in some agencies most of the records may be essential, such as courts and county recorders.

Examples:

- Records of governance (council/commissioners' minutes, ordinances, and resolutions.)
- As-built facilities plans and drawings
- Property ownership records – deeds, leases and titles

WHY IS THE IDENTIFICATION AND PROTECTION OF ESSENTIAL RECORDS SO IMPORTANT?

Identification and protection allow you to:

- Respond to a disaster affecting records.
- Minimize disruption of operations after an emergency.
- Rapidly restore government services.
- Reduce the economic impact of a disaster.

It is simply good business practice. While there is an up-front cost and effort to protect essential records, it will usually be far less than recovering damaged records after a disaster.

LEGAL IMPLICATIONS

Identification and protection of essential records is also written into law and regulation.

- Chapter 38.52 RCW requires state and local agencies to have Emergency Management Plans.
- EMD (the Division of Emergency Management of the State Military Department) issues guidelines for local agencies to prepare those plans, including essential records protection.
- The Essential Records Act (RCW 40.10) directs state agencies to identify and protect their essential records, and sets forth specific actions for doing so. Local agencies are responsible for doing the same.

ESSENTIAL RECORDS PROTECTION
An Essential Records Protection Plan consists of **five basic elements**:

1. **Identify** which records are essential to your organization.

2. **Decide** which method you are going to use to protect each essential records series.

3. **Develop an Essential Records Schedule** that will list the records series deemed essential, indicate how they are protected, and identify who is responsible for protecting them.

4. **Implement** the protection measures selected for each record series.

5. **Test** periodically.

STEP 1 - IDENTIFYING ESSENTIAL RECORDS
There are several approaches to identifying essential records.

a. Identify the key functions of your agency.

b. Identify essential records series for each function using:
   - Agency functional and organizational charts.
   - Essential Records Schedule template in Appendix B-2.
   - The Washington State General Records Retention Schedule for Agencies of Local Government (See Appendix B-3 for a listing of these record series).
   - The General Records Retention Schedule approved specifically for your type of agency, such as County Auditor, County Clerk, County Treasurer, Health Department/District, Hospital District, Law Enforcement, and School District.

c. If you are still in doubt as to whether a record is essential the following questions may help:
   - What will be the consequences if these records are lost?
   - What will be the cost in terms of time, labor, and money if these records have to be reconstructed?
   - How rapidly will these records have to be reconstructed before serious damage is done to the operation, three months, a month, a week, day or hour?
   - Can these records be readily replaced from another source, agency, office, etc?
   - Are these records already duplicated or replicated in another form?
   - If in an electronic database, is the information sufficient to substitute for the original record?

STEP 2 - SELECTING METHODS OF PROTECTION
There are a several strategies and methods for protecting essential records from disaster. They range from simple steps, using existing file equipment and filing practices, to duplication and mirrored sites for electronic records. Each strategy or method represents a different level of protection and cost. The methods are not mutually exclusive.

Best Strategy: Experts agree the best strategy for protecting all types of essential records is duplication and off-site storage. However, there are low cost alternatives that can provide acceptable levels of protection for many records, depending on their value and level of risk. Part of the task of essential records planning is to assess the level of risk. See Part I, Chapter 4 Risk Analysis.

STRATEGY A: SIMPLE WAYS TO PROTECT ESSENTIAL RECORDS ON-SITE

1. **Transfer essential records to a non-current records storage center as soon as possible.** Reduce the time they are kept in office space to the minimum, consistent with retrieval needs.

2. **Locate essential records.** Mark their location on a floor plan. Put a copy of the floor plan in your records disaster plan. Give a copy to your agency's disaster recovery team members and the fire department.

3. **Keep essential records separate from other records**. They will be easier to find during an emergency.

4. **Keep essential records close together**. They will be easier to find and move.

5. **Locate essential records as close to the door as possible.** Easier to remove quickly.

6. **Keep essential records folders, documents and disks off desks**. As much as possible, put them away in file cabinets. Papers and files on desks or credenzas are extremely vulnerable to fire and water damage. These records are typically current and extremely valuable to operations.

7. **Keep essential records off the floor.**

8. **Keep essential records in metal drawer file cabinets**. File cabinets protect records better than open-shelf files since they can be closed. Shelf files that have doors that close are better than open shelf cabinets but not as safe as drawer type cabinets. Fire resistant cabinets offer even better protection but are expensive.

9. **Keep essential records out of bottom drawers.** Bottom drawers are more likely to be damaged in a flood. It is also better not to use top drawers, as they are apt to be wetter and hotter.

10. **Put special labels on essential records file cabinets.** The labels should be metal and readable even after a fire. Ideally they should be riveted onto the cabinets.

STRATEGY B: FACILITY PROTECTION AND SECURE ON-SITE STORAGE

On-site storage means storing essential records in proximity to the office.

Vaults, safes, and fire-resistant file cabinets offer protection against fire, theft, and vandalism. Vaults and safes and some file cabinetry are rated for fire resistance. A three-hour rating is often suggested, however hours of protection decrease as the temperature of the fire increases.

Such cabinets may not provide complete protection against a major conflagration or flood and are expensive.

Secure file rooms with smoke and intruder detection, sprinkler systems, compact or moveable shelving, and key control offer another on-site protection option.

The major drawback of all on-site storage is that it relies entirely on the ability to physically protect the original record. The best way to determine the viability of on-site storage is to make both a risk analysis and a physical threat assessment. See Chapter 4, Risk Analysis and Appendix B Risk Assessment and Prevention Plan Templates.

STRATEGY C: DUPLICATION AND OFF-SITE STORAGE

There are a number of methods for duplicating essential records. Each has advantages and disadvantages.

Essential records can be copied to paper, microfilm, electronic, or optical media. In some cases the informational content is essential rather than the document itself. The information may already be contained in an electronic system and thus "duplicated" in an electronic form.

> Do not store security duplicates at the same location as the original essential record. Duplicates should be stored off-site.

Paper Duplication

Advantages:

- Minimum chance of the primary and the security duplicate both being destroyed.
- Easy to do and can be done in the normal course of business.
- May be sent off-site using a commercial records storage service or an agency facility. The transfer process can be the same as the process for sending inactive records, provided the transmittal documents identify the box as containing "essential records."
- Does not require special equipment to read.
- May already exist as copies sent to another office or offices for informational purposes. One or more of these copies can be designated as security copy.

Disadvantages:

- More expensive to produce and ship than microfilm.
- Difficult and cumbersome to keep an active duplicate paper file up to date.
- Becomes voluminous and costly to store.
- Does not work well if the designated office is on the same floor or in the same building as the office that houses the original record.
- Duplicates are decreasing as a viable method of protection except for very small collections of essential records with short retentions.

Microfilm

Advantages:

- Microfilm is nearly 100 times more space efficient than paper.
- Microfilm is less costly to produce, ship, and store than paper.
- Microfilm is as durable as or more durable than paper.

Disadvantages:

- Cost efficiency is dependent on batching and filming many documents at once, making daily backup of small quantities of documents uneconomic.
- Specialized equipment is required to read it, which may not be immediately available after a disaster.
- Unit Record problem: An active file may end up on multiple reels.

Microfilming services, source documents filming, and output of electronic records to microfilm (COM), are available from the State Archives Imaging Services Program as well commercial providers. For further information on costs, contact your Regional Archivist.

The Washington State Archives provides security microfilm storage and inspection services at no cost to local agencies. For further information on costs, contact your Regional Archivist.

Electronic Imaging

This is an increasingly viable solution for protecting essential records. Imaged records are replacing both paper and microfilm as active records in offices.

Advantages:

- Imaged records can be inexpensively written to CDs, tapes or other electronic media.
- Electronic images can be "shipped" and stored at low cost.
- The original paper records can be sent to storage and serve as security for the imaged record.
- Electronic images of documents of reports can be output to microfilm as a fail-safe backup.
- No unit record problem.

Disadvantages:

- More expensive that microfilm.
- May require expensive indexing.
- Data on backup CDs or tapes must be redone each time software or platforms are upgraded or replaced. Electronic information in outdated formats cannot be read by current systems.
- Avoid proprietary systems, closed system architecture, non-standard file formats and compressions, which inhibit your ability to migrate essential records information to new systems.

Commercial imaging service providers are located in most major Washington State cities. Contact your Regional Archivist for further information on requirements for electronic imaging systems.

See the Chapter 3 and Appendix B-4 for protecting electronic records.

STEP 3 - DEVELOPING AN ESSENTIAL RECORDS SCHEDULE

Once the essential records are identified and methods of protection are decided they should be documented in an Essential Records Protection Schedule.

An Essential Records Schedule will identify:

- Records series that require protection.
- The office of record which has responsibility for it.
- The media on which it is captured.
- Instructions for protecting it, including the method of duplication, if appropriate, and the storage location.
- The frequency it is to be updated.
- Its total retention as a security copy.

Develop an Essential Records Protection Schedule by:

- Using "Essential Records Protection Schedule" (Form SAA-38) in Template A-2.
- Adding a "Protection Instruction" column to an existing agency or office retention schedule.
- Using a spreadsheet or table.

Figure 1: Example of an Essential Records Schedule

STEP 4 - IMPLEMENTING AN ESSENTIAL RECORDS PROTECTION PLAN

The Essential Records Protection Schedule and Plan should be implemented by each agency office in accord with the update cycle for each record series. This may mean weekly, monthly or perhaps only annual duplication or replication and off-site storage of some essential records. Obviously, the more frequent the implementation, the better the protection.

Protection of other essential records may require no action at all, because the method is simply their continued storage in secure on-site cabinets, vaults or record rooms or because they are automatically protected by natural dispersal.

AGENCY NAME: Central City					SCHEDULE DATE
No.	SERIES TITLE	OFFICE	MEDIA	UPDATE CYCLE OR TOTAL RETENTION	PROTECTION INSTRUCTIONS
1	Accounts Receivable	Finance	Paper	Daily	Scan. Back up images to DAT tape. Store tapes off-site
2	Accounts Payable	Finance	Paper	Daily	Scan. Back up images to DAT tape. Store tapes off-site
3	Payroll Reports	Finance	Electronic (Payroll System)	Monthly	Computer Output Microfilm (COM). Store security copy at State Regional Archives
4	Critical Materials List	Public Works	Paper	Monthly	Microfilm. Security copy at State Archives

Note: Development of an essential records protection plan should be done through a formal POLICY and PROCEDURE approved by agency management. A model policy and procedure is found in Appendix A-1.

STEP 5 - TESTING THE SYSTEM

Test the effectiveness of the Essential Records Protection system annually. This can be done by checking to see that:

- On-site facilities are secure.
- Essential records are stored properly.
- Security copies exist.
- Security copies stored off-site.
- Security copies are updated according to the schedule.
- Security copies held by other offices still exist.

CHAPTER 2: RECORDS MANAGEMENT

A. The purpose of records management program is to minimize the physical volume of an agency's records, streamline records retrieval, improve the integrity of files, reduce risk, and cut costs. It is much easier to protect essential records if a proper records management program is in place.

B. Good records management practices facilitate disaster prevention and disaster response for the following reasons:

- The organization will know what records it has, where they are located, and who is responsible for them.
- Records management information is necessary for prioritizing resources for essential records protection, as well as recovery and replacement of damaged records.
- Restoring records costs money. For example, some recovery methods can cost as much as $250 per box. Without a records management program it may not be possible to separate damaged records that your agency needs to restore or replace from those that it doesn't. This can result in restoring more records than necessary, a waste of time and money.

- If records retention schedules are properly followed, inactive and obsolete records are already removed from the office. They will not need to be dealt with during an on-site disaster or emergency. This saves time, money and reduces risk.
- During the recovery phase, records that have been salvaged must be returned to their rightful place. A records program provides the information necessary to determine where the right place is.

C. FOR FURTHER INFORMATION ON DEVELOPING AN EFFECTIVE RECORDS MANAGEMENT SYSTEM, CONTACT YOUR REGIONAL ARCHIVIST.

CHAPTER 3: ELECTRONIC RECORDS

A. Background: Electronic records are steadily supplementing or replacing conventional records in most organizations including local governments. Electronic records are often easier to protect than paper records because backup can be automated, backup storage is inexpensive, requires little physical space, and large amounts of data can be moved more easily in electronic format than hard copy.

Electronic records are legally no different than records stored on conventional media such as paper or microfilm. However, in practice, there can be large differences in the way electronic and conventional records are managed and protected. For example, electronic records must be protected at the beginning of the information life cycle by back up and duplication. Trying to rescue damaged tapes and disks is often impossible and should be considered a last resort.

A major difference between electronic and conventional records is the expected speed of recovery. Extensive damage to a paper-based system may require weeks or months for full recovery, yet be considered a successful recovery, whereas a one week recovery of an electronic system may be considered unacceptably slow.

Electronic systems are usually supported by technical infrastructures including mainframes or servers, local area networks, PCs, operating systems, database management systems, and the Web. An agency will usually have a relatively small number of large, centrally managed systems, with perhaps a larger number of smaller systems on workgroup level servers or individual PCs. The large systems are usually managed by an Information Technology (IT) organization, but management of small systems may be decentralized even to the individual worker.

B. Disaster Prevention for Electronic Systems: Prevention begins with system design. Fault Tolerance, also called redundancy, helps to provide protection not only against data loss but also against down time caused by system failures. Generally, the more that fault tolerance is built in, the more expensive the system (See Appendix B-4).

- An example of fault tolerance is the use of RAID (redundant array of inexpensive disks) for data storage. With RAID no single disk drive failure will result in data loss or down time.
- Another example is the use of UPS (uninterruptible power supply) to make sure systems shut down gracefully when there is a power outage.

C. Protection Methods: The basic method of protecting electronic records, like paper records, is duplication, with the duplicated data stored off-site. Five alternative methods of data backup and duplication are summarized below. The first is the cheapest and most basic. Succeeding methods are progressively more expensive, but faster and more comprehensive. (See Appendix B-4.)

Keeping backups beside the computer defeats the purpose.

1. **Backup and Restore:** Backup data from magnetic, optical or other storage media are routinely copied to disks or tapes and stored off-site. If working data is lost or damaged, the backup data can be retrieved and restored to the system. In addition to data, it may be necessary to reinstall the operating systems and application software, therefore system tapes and/or disks and written documentation must be stored off site but available to the disaster team. The backup and restore concept applies to systems of all sizes.

   Imaging systems often back up optical disks by writing the data to two optical disks simultaneously. The back-up or mirrored disk is stored off site.

   Data may also be sent electronically to an off-site backup server, eliminating the need to create backup tapes or disks and physically move them back and forth.

2. **Cold Sites:** A cold site is a place that is ready for installation of servers and other hardware. In case a data processing site is destroyed or rendered temporarily unavailable, the computer hardware may have to be replaced before data backups can be restored. A cold site has raised floor, power supplies, communications, and air conditioning but does not have pre-installed computer hardware.

3. **Hot Sites:** A hot site, like a cold site, is a remote facility used to restore electronic operations when a disaster has rendered normal facilities and/or hardware inoperable. Computer hardware is already installed and is ready for uploading systems and data.

4. **Near Line:** A near-line facility is a version of a hot site in which periodic (usually nightly) backups of information are sent electronically. The near-line hardware is continually updated. In case of a disaster to the normal facility, the near-line facility can take over almost immediately and will be as current as the latest backup. This avoids the need to send system and data tapes to the site and eliminates the time required to bring up the system.

5. **On line Mirror Site:** Real time duplicates of essential files are maintained at the site. Fast communication links enable data to be written simultaneously to both the normal site and the on-line remote backup site. In case the normal site is disabled, the mirror site takes over immediately with virtually no down time. This alternative provides the fastest recovery but is usually the most expensive.

Backup Services:

Alternative 1, backup and restore, is usually carried out by the agency itself.

Alternatives 2 – 5 usually apply to larger systems. Because of expense, only larger organizations can afford to build such backup sites themselves. These services are often provided by commercial firms under contract. The sites may be long distances away.

An emerging option is to have a local government build these capabilities for itself but with extra capacity so as to be able provide these services to other governmental organizations.

For example, Yakima County has a backup facility able to provide all the above services (1-5) to other state and local governments under

inter-local agreements. This can provide excellent backup and duplication services even to small governments at a more reasonable cost than previously available.

D. Other Duplication Methods:

Computer Output Microfilm (COM): This is a form of duplication in which reports from computer systems including mainframes are automatically indexed and output directly to microfilm. It is also used for images or other electronic documents. COM is not intended for databases or multimedia. The microfilm can be stored off site and retrieved in case of disaster. The Washington State Archives provides a COM service for TIFF Images, MS Word, Excel, PDF, and other files to state and local agencies as well as storage services for the security microfilm.

Computer Output to Laser Disk (COLD): This is similar to COM except that reports are written to removable media such as CDs instead of microfilm. The removable media is stored off-site. The process is also known as Enterprise Reports Management (ERM). COLD CDs need to be rewritten as the software applications that are used to access records data are upgraded or changed.

Source Documents: Another form of duplication is to maintain the paper source documents and to re-key the data if the data is lost. This is time consuming and expensive.

Email: The IT department will usually back up email documents. Email messages that contain public record information should be moved into the agency's records keeping system as soon as possible and filed with the appropriate records series.

Key Essential Records Protection Issues:

1. Is there a centralized IT department? If not, the records officer may need to become actively involved in advocating the developing of a disaster plan for electronic records.

2. If there is a central IT department, does it have a Disaster Plan or at least backup procedures? If not, a regular backup process and Disaster Recovery Plan should be developed for the IT system as soon as possible.

3. If there is an IT disaster plan or backup procedure, does it cover essential electronic records? If not, the plan must be modified to include them.

4. Does the IT disaster plan or backup routine cover smaller group level servers and systems, PC based systems, laptops, and disks? If not, they should be.

E. Workgroup Level: Some smaller systems are not supported by centralized IT operations. Records may be stored on Local Area Network (LAN) servers, PC hard drives, removable magnetic disks or tapes, Compact Disks (CDs) or floppy disks. Disaster planning and recovery procedures should be written for small systems not supported by a centralized IT organization or by a LAN manager.

The most effective strategy for protecting data on small systems is to duplicate it and store the backup duplicate off-site. It is much more efficient to recover lost data from an off-site backup than to try to salvage magnetic tapes and disks after they are damaged. See Appendix C-9 for information on restoring magnetic or optical media.

- Backup PC and laptop data to the LAN, if the LAN itself is regularly backed up.
- If not backed up to the LAN, PCs and laptops should be backed up routinely, normally daily and weekly onto removable media for off-site storage.

- Written documentation and procedures for backup and recovery must also be stored at the off-site location. The PC user may not be around during or after a disaster, and someone else may have to restore the data.

A disaster could render the PCs or other hardware inoperable and the office space they occupy unavailable. Therefore the disaster plan should provide for alternate sites and equipment. The disaster team must be able to restore operating systems, application programs, and data on entirely new PCs or similar computers.

See Appendix B-4 for additional information on backing up PCs.

CHAPTER 4: RISK ANALYSIS

Generally, there is not enough money or time to protect all records against all eventualities. There may not even be enough to protect all essential records. Risks need to be analyzed and priorities set for protecting individual records series. The most common methods are Functional Analysis and Physical Threat Assessment

A. FUNCTIONAL ANALYSIS: This is a simple tool for assessing risks and setting priorities. The tool works for both conventional and electronic records. Each line represents a function. The function may generate one or more record series and/or information systems. Each department is asked to list its major functions. For each function, set a probability number between 0 and 5 (with 5 being the highest) representing the likelihood of a disaster or damage affecting these records.

For example, if the records are located in the basement in a flood plain area, the number might be set at five. If they are located in the Police Department in a secure, fire protected location, with a backed up data system, the number might be set at 1. The second number is the Consequences Number. Higher numbers indicate greater estimated adverse affects on continuity of operations. The product of these two numbers is the Risk Number, the higher the number, the greater the risk.

RISK ASSESSMENT				
NO.	NAME OF FUNCTION	PROBABILITY OF DISASTER 0 - 5	CONSEQUENCES OF DISASTER 0 - 5	RISK NUMBER 0 - 25
1	Accounts Payable	3	5	15
2	Payroll Records	4	5	20
3	Police Incident Reports	1	5	5
4	General Correspondence	4	2	8
5	Working Files	5	1	5

Figure 2: Risk Assessment Example.

Payroll and accounts payable records have the highest risk numbers and should receive protection priority. Police reports, while just as valuable, have a low risk number because of the low probability number.

This should be taken into account when developing an essential records program and when writing a Disaster Recovery Plan. For example, both payroll and police incident reports are normally considered essential records. But in this example, there may be only enough funds to duplicate one set. The risk number would indicate that that payroll records should be duplicated first.

All facilities are vulnerable to fire, routine water damage, and mold. In addition, are severe storms or earthquakes a danger in your area? Consider the location of your building(s) and nearby flood plains, rivers or creeks, railroad tracks, airport flight paths, or a nuclear power station. These will suggest the scope and type of disasters for which you should plan.

B. PHYSICAL THREAT ASSESSMENT: A key component of disaster prevention is awareness and correction of weaknesses in agency facilities and buildings that could cause a disaster, or exacerbate one resulting from another cause.

For example, un-braced shelving can topple over during an earthquake and spill boxes of records onto the floor (a mess but not a disaster). However, if the quake causes pipes to burst, the records thrown to the floor may be soaked, resulting in a disaster. If the shelving is braced, it probably will withstand the quake, and even if pipes burst, chances are only the bottom shelf of boxes will get wet.

The Physical Plant Threat Assessment can spot weaknesses within agency facilities that may result in a disaster that affect records or exacerbate damage from another cause.

Threat Assessment Inspection Checklists: Simple checklists can be used to identify, correct physical threats. Each checklist should identify a subject of inspection such as fire protection, files and records storage areas, plumbing and water, and specific points to be inspected. It should also identify results of the inspection and actions taken.

Inspections may be done by facilities maintenance, safety and fire prevention personnel. Such inspections should be done on a regular annual basis. Create a procedure for gathering information from annual inspections and confirming that remedial actions are completed.

Files and Record Storage Areas	**OK?**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Shelves well-braced	No	No existing bracing and shelving is not bolted to the floor.	Braced & bolted by Maintenance 2/11/03
Items shelved snugly			
Shelving 4-6" off floor			
No materials stored on floor			
No essential records or valuable materials in basement			
Exits unobstructed			
Important materials away from windows			

Figure 3: Checklist Example

The records disaster recovery team should inspect record-storage areas to identify conditions that could trigger or aggravate damage to record information. Some items will need attention only once (for example, correcting unsatisfactory shelf bracing). Other items require periodic inspections, such as furnaces and boilers. Some conditions will be found that require repair, replacement, or other maintenance activity. For example, if drains are not flowing freely, a simple cleaning could remedy that condition. If fire extinguishers are missing from a critical area, they should be purchased and installed. Other conditions may not be so easily remedied due to cost. For example, if there is no automatic fire suppression system, it may not be possible to immediately install such a system. However, the resultant vulnerability should be identified and funds requested in the agency budget.

Physical Threat Inspection Checklist Templates Appendix B - 7 contains a set of checklist templates covering other areas of specific concern to records disaster prevention. These templates are also on the accompanying CD and the Secretary of State's website. Their use can reduce records damage vulnerability.
The first section of the appendix, "Records Disaster Risk Assessment and Prevention Procedures," is a fill-in template that can be used to document responsibility, schedule inspections and indicate distribution. Forward copies of the completed inspection report to risk management.

SUMMARY: Once the risk analysis has been done, essential records identified and protected, physical threats documented, removed or reduced, the prevention phase will be complete. This will result in:

- Protecting the most important records.
- Lessening the damage that can be caused by a disaster.
- Identifying those records that merit recovery if they are damaged.

Prevention procedures should be reviewed and updated each year.

PART II: PREPAREDNESS

This part of the Records Disaster and Recovery Manual covers the Disaster Preparedness and Recovery Plan. Chapter 1 outlines the purpose and function of the plan. Chapter 2 shows how to write the plan. Chapter 3 covers testing the plan. There are several associated appendices that contain detailed procedures and fill-in templates for developing a records disaster plan.

CHAPTER 1: THE RECORDS DISASTER PREVENTION AND RECOVERY PLAN

A. DEFINITION AND PURPOSE

The Records Disaster Prevention and Recovery Plan (RDRP) is a customized plan, written by those responsible for an agency's records, approved and published by management, that contains actions that should be taken to reduce the risk of disaster, and to respond and recover from disasters that do occur.

A plan will not succeed without management support. Top management, by approving and endorsing the plan, will add force to the program.

B. BENEFITS

The benefits of prevention and preparation were covered in Part I. The benefits of a plan during and after a disaster are:

- Speed: Fast action is critical to responding to a records disaster. A plan already in place enables rapid response.
- Correct decisions: Actions taken must be the correct actions. A plan in place ensures that the people making the decisions are the people who know what to do.
- Coordinated action: A plan minimizes the tendency of various staff members and managers to make individual decisions about records. Individual decisions made during crisis situations may not be correct.
- Delegated authority: Policy, authority, and responsible delegations should be established before a disaster occurs. Sometimes people do not want to be responsible for dealing with damaged records. Sometimes too many people want to be responsible.
- Designated records team: The plan defines the roles of the team and team leader.
- Targeted resources: This includes funding authority, work areas, relocation sites, supplies, and contracts or relationships with outside vendors who may be needed.
- Established communications: Methods of communication are in place.

If a records disaster plan does not exist before a disaster occurs, it will have to be put together during the disaster. This is not easy to do in the dark, ankle deep in water, often on a weekend or holiday.

Ideally all the players who must take part in response and recovery from disasters will have participated in developing and approving the plan.

C. WHERE DOES THE RECORDS DISASTER PLAN FIT INTO THE FAMILY OF PLANS?
A records disaster plan does not exist in a vacuum. Other disaster plans may already exist. For example, local governments usually have general disaster plans that cover such things as evacuations, building security, fire prevention and bomb threats. Often these plans are based on Emergency Management Division (EMD) templates.

It is not necessary or desirable that the RDRP duplicate or conflict with provisions of the general disaster plan. But the RDRP probably will have features not found in the general plan. It is possible to embed the RDRP in the general plan, but it will probably be too large to be accepted. A good way to relate the two plans is to have the general plan refer to the RDRP by reference and policy. Records team members should be familiar with the basic features and procedures of the agency plan.

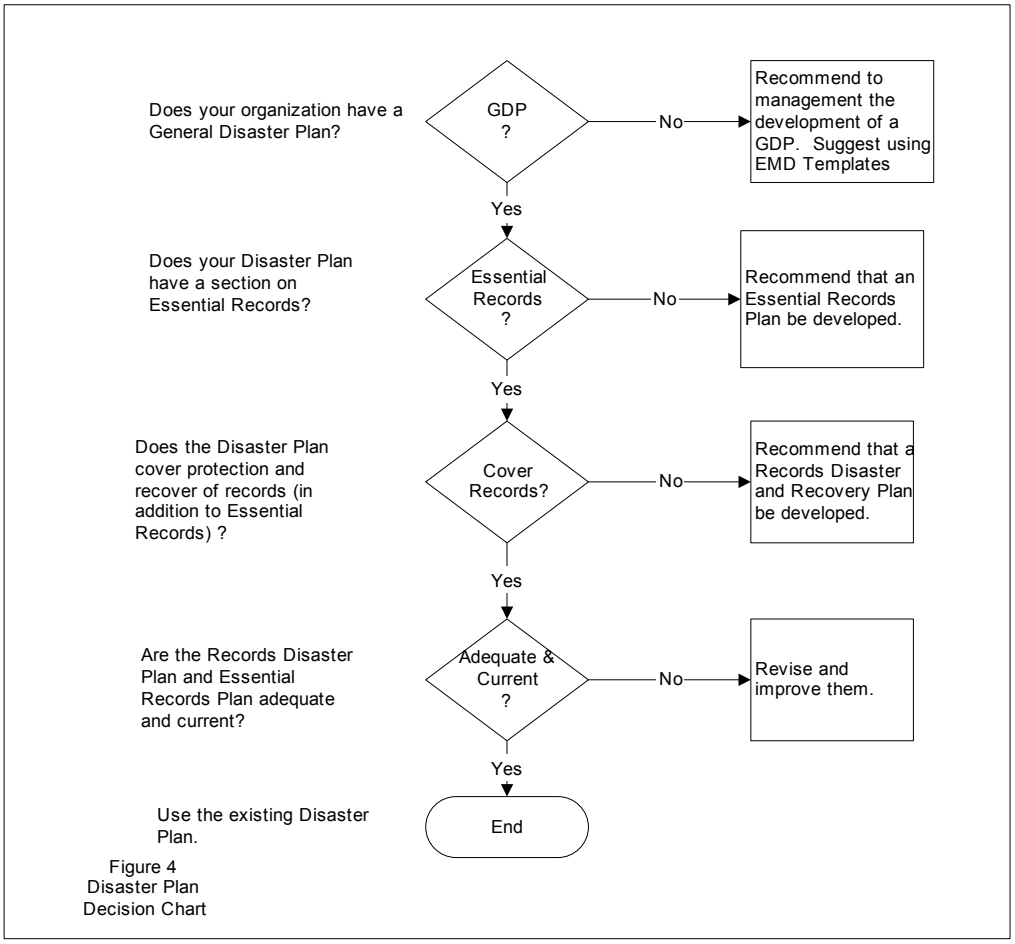

Figure 4: Disaster Plan Decision Chart

Similarly, if a local government has an Information Technology (IT) Department, that department may have a disaster plan or at least a back up and restoration procedure. If the plan or procedure is adequate, it should not be necessary to duplicate it. If not, the RDRP may have to address electronic records. (See Part I, Chapter 3, Electronic Records and Appendix B-4.)

CHAPTER 2: WRITING THE RECORDS DISASTER AND RECOVERY PLAN (RDRD)

The main components of most Records Disaster Plans are:

A. Management Approval and Support - Policy
B. Authority and Responsibility – Records Disaster Coordinator
C. Records Preparedness and Response Team
D. Training and Provisioning the Team
E. Support
F. Communications
G. Essential Records Protection Procedure Section
H. Preparedness and Prevention Procedure Section
I. Response and Recovery Procedure Section
J. Appendixes and Glossaries as needed

Use the attached templates in Appendix A, B, C and D to help write the plan. Begin with the Policy Statement in Appendix A-1, continue with the cover sheet (Distribution List), Appendix B-3, etc, using templates as noted.

See Part III for executing the plan and for making tactical decisions based on actual circumstances (after a disaster).

A. MANAGEMENT APPROVAL AND SUPPORT - POLICY
Approval and support are expressed initially by a policy statement signed by a senior management official or officials. This should be one of the first pages of the plan. The policy statement should include delegations of authority for decision making during and after a disaster. It is important that the lines of authority be determined in advance. Authority to commit funds and contract for services should be included. See Appendix B-1 for a policy statement template.

B. AUTHORITY AND RESPONSIBILITY - RECORDS DISASTER RECOVERY COORDINATOR: One person must be assigned the full authority and responsibility for response to and recovery of agency records after a disaster, large or small. This person would also direct the records disaster team. For purposes of this manual we are using the title Records Disaster Coordinator (RDC).

The RDC oversees the details of the recovery in consultation with the agency head, director, or other administrators. He or she reports directly to chief agency administrator, city manager, mayor, county, or district administrator and:

- Works within the agency's Emergency Management Plan and with members of the agency emergency management committee, agency risk management, purchasing, personnel, and maintenance offices;
- Develops an agency records disaster prevention, response and recovery plan in consultation with a records disaster recovery team and agency emergency management officer and/or committee;
- Develops and implements the agency essential records protection plan and schedule;
- Develops and implements a records disaster preparedness and prevention procedure;
- Directs all response and recovery operations involving records;
- Supervises the packing and transportation of records, drying and other recovery activities, storage arrangements, documentation of movement and treatment, and long-term restoration and rehabilitation of records;
- Assigns some functions to departmental records disaster coordinators, including supervision of work recovery crews.

These duty statements can be written into the plan.

C. BUILDING A RECORDS PREPAREDENESS AND RESPONSE TEAM
This section is intended to help build a successful team approach to help plan, prepare, and recover from a disaster that affects records in the agency or organization. See Appendix A-4 for an appropriate template.

The team should consist of departmental records disaster coordinators: These are designated individuals from each of the departments or subdivisions of the agency who are knowledgeable about their department's records. Department coordinators should be appointed by the department director and have that director's support. They should have authority and responsibility for protection, preparedness, response, and recovery actions under the overall supervision of the agency RDC. Often, if an agency has a records management program, departments will have records coordinators assigned to work with a records manager. These same people might best serve on the records disaster team.

The disaster preparedness and response team has four primary responsibilities:

1. Assist and advise the records disaster coordinator in developing and selling the Records Disaster Recovery Plan to management. A team approach to forwarding and gaining management support is usually superior than going it alone.

2. Assist in developing and implementing the essential records protection schedule and plan.

3. Engage in and support response to and recovery from a disaster. A records disaster of even small proportions stands a better chance of successful recovery through teamwork.

4. Supervise response and recovery at the departmental level; provide guidance on recovery priorities, disposition decisions, and replacement options for records.

These duties can be written into the plan.

D. TRAINING AND PROVISIONING THE TEAM
Emergency Response Information Packet: Each member should be supplied with an Emergency Response Information Packet, to be kept at home or in the car and brought to the disaster site in the event of an emergency. The packets should include the following materials. (Some or all of these items may be included within each team member's copy of the disaster response and recovery plan.)

- A list of the names and phone numbers of the DPT members
- A copy of the "Emergency Response and Salvage Wheel" by the National Task Force on Emergency Response
- A copy of the agency's records retention schedule and essential records retention schedule
- A diagram of each floor designating location of essential and other records
- A list of resource people (conservators, archivists, and other professional advisers) and their phone numbers
- A list of volunteers and their phone numbers
- A copy of the agreements with vendors relating to emergency response services such as cold storage
- A copy of the forms and instructions to be used during recovery procedures, such as initial damage appraisal, damage location inventory, and removal inventory
- Keys and combinations to records storage areas

Relevant templates are found in Appendices A-E.

Training: Members of the disaster team should be provided with training to enable them to carry out their responsibilities in a disaster response and recovery operation. This may range from annual, full-scale disaster simulation drills to periodic workshops. At a minimum, plans must be made for on-the-spot training in the event of a disaster. Training should be documented in the plan for budget purposes.

Personal Equipment: The agency should provide rubber pull-over boots, hard hats, disposable rubber gloves, and particulate filtering face masks for recovery team members and work crews. In addition, members of the disaster team should assemble and maintain their own personal kit containing clothing, and personal items such as medications, if any, that they will need during the first eighteen hours of a disaster recovery operation.

E. SUPPORT

The Essential Records Protection and Disaster Recovery Plan needs to adapt to and be supported by the agency emergency management plan. It may also need the support of other offices within the agency. The following functions are crucial to a successful disaster preparedness and recovery plan.

- Facilities management and maintenance: Responsible for facility maintenance, repair and inspection essential to records disaster preparedness. Manages clean-up and repair of physical plant after a disaster.

- Finance: Approves expenditures for emergency supplies, equipment, and services such as cold storage.

- Information systems: Manages mainframes, servers, Local Area Networks, and PCs. Manages operating systems, applications programs, email, and Web portals. Oversees system backups, provides for backup storage, and manages relocation of electronic information equipment and records to secure off-site facilities after a disaster. Manages or contracts for recovery of electronic information hardware, software and data.

- Purchasing: Acquires recovery supplies, locates emergency space and services for drying, storing, shipping, freezing, and freeze-drying damaged records.

- Risk management: Documents losses, notifies and negotiates with insurance companies and FEMA.

- Safety and health: May authorize evacuation and re-entry into the disaster site.

- Security: Local police, sheriff, or agency security officer will secure the grounds and facilities and control access after a major disaster.

The records disaster coordinator should provide managers in each of these areas with copies of the Records Disaster Recovery and Essential Records Protection Plans and work with managers to insure the flow of materials, labor and services needed for response to and recovery of disaster damaged records.

- Fire Department: It is the fire department that decides when a fire-damaged structure can be re-entered. Since time is of the essence in records recovery, the fire department and the disaster recovery team need to develop a good working relationship. The urgency of early access to wet records and the need to avoid “collateral damage” to records during fire suppression should be emphasized. Teams should provide the fire department with floor plans designating the location of

essential records. If the fire department can enter and suppress the fire from within the building, and can locate the essential records, it can often limit water damage.

Coordination with providers of other related functions should also be written into the plan.

- Consultants: Consultants are sometimes needed to provide the agency with temporary specialized support. These might include: records management and information systems consultants, FEMA and EMD consultants, State Archives and other outside organizations that might provide support and resources.

- Conservators: If your agency has valuable records on specialized media, such as blueprints, sepias, coated papers, or photographs, you may want to consult a paper or photographic conservator during the planning and preparedness process, and have one on a "standby" agreement to assist in response and recovery.

- Recovery Specialists: Few commercial companies specialize in records recovery. Recovery specialists offer experience and expertise in recovering records from both large and smaller disasters. A short list of these companies is in Appendix C-5-4.

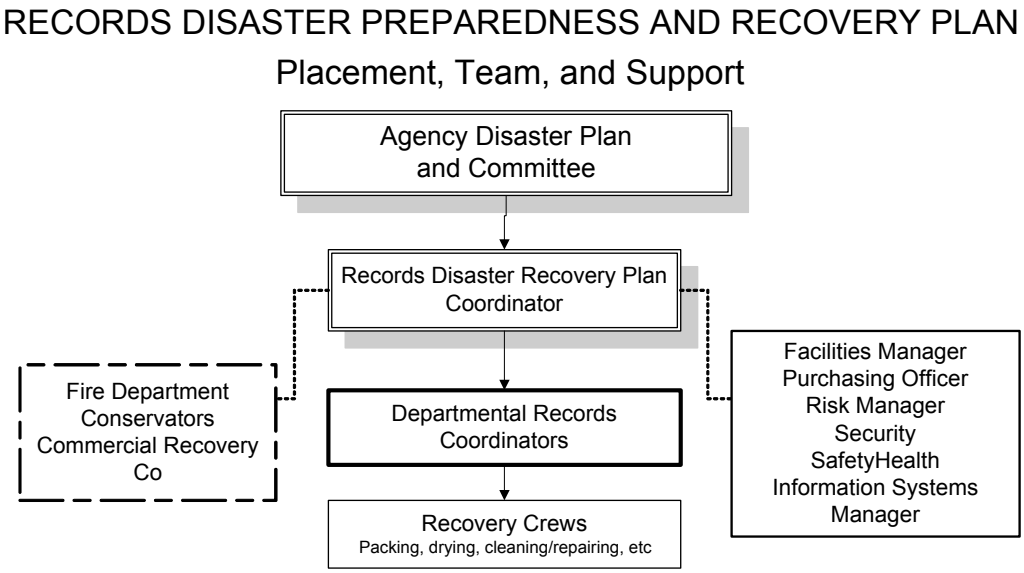

Figure 5 Organization Chart

F. SIZE, COMPOSITION AND STRUCTURE

The makeup of a records disaster response and recovery team will depend on the size of each organization and the scope of each disaster. A minor emergency can be handled by a small group working together on a fairly informal basis. Larger disasters require more people as well as more formal organization and reporting lines.

When minor emergencies occur, most of the recovery functions can be handled by the records disaster recovery team and other agency staff. A large scale disaster, such as a major fire in a building, may require contracted experts to handle the entire recovery, or, at a minimum, volunteers and day labor.

G. COMMUNICATIONS

Communications cover the normal chain of command from senior executives, communication between the Disaster Coordinator and Departmental Coordinators as well as communication between team members. It also covers communication with outside sources of help such as FEMA and the Emergency Management Division (EMD). See Appendix A4-1 and A-10 for template lists of emergency telephone numbers. Such a list should be part of the plan.

H. ESSENTIAL RECORDS

See Part I, Chapter 1, and use the Essential Records Schedule Template in Appendix B-2 as well as the listing of Essential Records in Appendix B-3. When the Essential Records Plan is completed it should become part of the Records Disaster Recovery Plan (there is a place for essential records in the EMD template for agency overall disaster plans that may also be used).

I. PREPAREDNESS AND PREVENTION SECTION

Risk assessment information (see Part I) may be placed in this part of the plan. Appendix B-6, 7 may be used to document physical threats and other aspects of prevention. Use of these tools should be part of the procedures identified in the plan.

J. THE RESPONSE AND RECOVERY SECTION

NOTE: The plan described in this section is a generalized or strategic plan with probable response and recovery procedures. Actual procedures used and choices of alternative courses of action (tactical decisions) will depend on circumstances. See Part III for choosing between alternative response and recovery procedures, and for appendix and template references.

Procedures for recovering records from a disaster should be part of the Records Disaster Plan, however separate hands-on information for recovery can supplement the plan along with response procedures. This will help ensure that all additions and updates to the section are properly distributed. Remember also to update the master and backup copies of the plan.

Your Records Disaster Plan should include procedures for the following basic response actions:

- Gaining access to the facility as quickly as possible.
- Making an initial assessment of damage to any records.
- Reporting findings to the agency disaster management officer or, if no agency-wide plan exists, to the chief administrator. (See Appendix C for Initial Records Damage Assessment Report template.)
- Assembling the record disaster response team using the emergency call list or telephone tree.
- Briefing the team on the nature and extent of the damage.
- Assigning team member tasks:
    - Stabilize the environment.
    - Locate and set up a response and recovery operations center.
    - Identify, locate and acquire needed supplies.
    - Prepare detailed damage assessments.
    - Perform triage – treatment decisions based on previously established recovery priorities and detailed damage assessments.
    - Remove and dispose of obsolete records and records that are damaged beyond recovery.
    - “Pack-out” records destined for temporary cold storage and/or freeze or vacuum drying.
    - Transfer records to an on-site or off-site location to be cleaned, air dried, interleaved and/or copied.

Track each action by box or record, indicate what it is, and where it is going i.e. disposal, salvage cold storage, freeze drying, etc., using either an automated or paper tracking system developed as part of the planning process.

The disaster response part of your plan should include procedures for implementing each of these actions. Appendix C includes procedural templates and instructions for response and recovery actions.

A general plan of operations must be established before any recovery activities are started. The volume of materials involved may be the determining factor in deciding which recovery procedure to implement.

The following recovery procedure questions should be addressed in the process of developing records recovery plans:

- How will the steps be carried out?
- Who will be responsible for each?
- Who will supervise?
- Where will the work be done?
- What kind of workflow makes sense?
- Who has authority to authorize disposal of items that are unrecoverable?
- What funds are available from the operating budget and/or from insurance coverage?
- What rehabilitation priorities must be set so that essential services are quickly restored?
- What activities may be done in house by the staff, and when should services be contracted?

CHAPTER 3: TESTING THE PLAN

No plan can be effective unless it is tested regularly. This is especially true of plans for electronic records but applies to all records. It is vitally important to test the communications areas of the plan including the ability to assemble a disaster team quickly.

Desktop test: A desktop test is a small scale test involving only the core team members including the records disaster coordinator, the disaster team, one or more departmental records coordinators, and key staff members such as facilities, IT director, etc.

- Write a scenario. (Water damage from burst pipe, etc.)
- Test communications. Call relevant team members and staff.
- Assemble the disaster team.
- Assess damage.
- Plan appropriate response.
- Evaluate results.

Larger scale test: This is a fully developed test involving more people and simulated records damage. An auditor might be invited to observe the test and help evaluate the results.

- Write scenario. Provide copy to Auditor in advance.
- Identify and flag "damaged" records in advance.
- Test communications. Call team members, operational staff, and fire department, etc.
- Assemble team(s).
- Test operations center.
- Detailed assessment of damage.
- Possibly test IT restore procedures.
- Plan appropriate response(s).
- Move records to simulated storage and repair area.
- Test documentation procedure.
- Test availability of supplies.
- Return and re-shelve "restored records."
- Evaluate results.

Testing of information systems supported by IT staff is a specialized process requiring a technical background. Testing backup and recovery of PCs and laptops requires less technical expertise. PC and laptop owners should be able to test backup and restore procedures.

PART III -- DISASTER RESPONSE AND RECOVERY

Disaster response is defined as assessing damage and taking actions that will minimize additional damage and permit the most effective recovery of records or information. Both strategic and tactical responses are needed when facing a records disaster.

CHAPTER 1: RESPONDING TO RECORDS DISASTERS

A. STRATEGIC RESPONSE:

The Records Disaster Plan described in Part II is a strategic plan designed to provide a basis for responding to any kind of disaster. (Specific responses to actual situations will vary and are covered under tactical response, below). Initial response for any disaster is likely to include the following basic steps:

- Gain access to the damage site. It is essential to gain access to the damage site as quickly as possible because some records will begin to deteriorate within 12 hours and mold will begin to grow within 48 to 72 hours. Access will be decided by the fire department, safety officer or another authority and can be delayed for days or weeks, pushing the envelope for recovery.

Six Keys to Successful Response and Recovery

1. A detailed Disaster Recovery Plan
2. Committed management
3. Educated and trained staff
4. Timely initial response
5. Effective communication
6. Quick, informed decisions

- Assemble the recovery team. Using pre-arranged communication links, bring in the recovery team as quickly as possible to help control the situation and carry out other response steps. (See Appendix A-4-1.)

- Establish controls. Set up a recovery command desk from which all actions regarding all records in the damage area must be cleared. Insist agency policy and procedure regarding the handling of all records be followed after a disaster. Experience shows that often agency staff will attempt to take matters into their own hands, resulting in further damage and loss of records and the intellectual control over them (what records existed, where, extent of damage and what happened to them, information essential for insurance and disclosure purposes). If necessary, assign recovery team members the task of enforcing agency disaster recovery policy and securing records from uncontrolled and untrained efforts to “clean house” or recover records. (See Appendix C-3-2.)

- Make an initial damage assessment. Using recovery team members, make a quick “walk through” of the damage site, noting the general volume of records damaged and undamaged, extent and type of damage, i.e., water, fire, contamination, or a combination such as edge damage, charred and wet, or mostly burnt and saturated. Photograph the damage with either a digital or Polaroid camera. This will provide information necessary for insurance or audit purposes. (See Appendix A-6.)

- Establish communications. Prepare initial report to management. Notify agency staff, outside support agencies and, if appropriate, give advance warning to conservators or commercial firms that may be needed in the recovery effort. Contact your Regional Archivist. (See Appendix A-8 and 9.)

B. TACTICAL RESPONSE:

Tactical responses are situation specific. They include actions that may be anticipated in the "Strategic Plan," but which can only be decided based on the nature and extent of the disaster.

- Decide on method of stabilizing the environment and records, based on damage assessment;
- Re-assign recovery priorities, if necessary, based on level of damage and "recoverability;"
- Decide on methods of drying and recovery;
- Assemble supplies, equipment, additional personnel or contracted services.

The initial reaction of people undergoing a disaster is often shock and disbelief. People are more concerned with where they will work tomorrow or how they will be paid than in dealing with damaged records. Records often have a low emotional priority, but they have a high real priority in terms of continuity of operations. It is the task of the records coordinator and the team to focus agency and staff attention on the records. This must be done immediately. The "need for speed" is paramount in responding to disasters.

Decide on the method of stabilizing the environment and records, based on damage assessment.

The disaster coordinator and team will need to make response decisions based on the nature and scope of the disaster and resources available. Much of this will be determined by circumstances. The following **must be known in order to make fast, accurate decisions:**

1. Is the damage to records large or small? If the amount of damaged records is small, agency staff should be able to handle it. If large, it may be necessary to call in outside resources such as document conservators, temporary help, and professional disaster recovery firms.
2. Is the damage to the facility minor or major? If minor, agency staff may be able to handle the problem. If major, the facilities or offices may need to be extensively repaired. If so, all records may have to be removed, damaged or not, before reconstruction can proceed.
3. Can the environment be stabilized? How long will it take?
4. What kind of damage? Most damage involves water. Other damage can involve fire, smoke, and contamination.
5. What kind of records? Do they include essential records or other important and non-duplicated records?
6. What kinds of media are involved?
7. What alternatives are available for drying and repair?
8. What funding is available?

(See Appendix A-6 for Detailed Damage Assessment Form.)

Stabilize the environment:

Structural stability: If the environment is rendered unsound by earthquake or other damage, can it be stabilized and returned to use rapidly? Work with facilities staff and appropriate government authorities to determine this.

Humidity: Continued high humidity will exacerbate existing damage to records, and facilitate mold growth on undamaged records. Reducing humidity will retard water damage and mold growth. Work with the facilities staff to see if HVAC systems can be restored. Humidity in small areas can be reduced by drawing in and circulating outside air. Humidity in large amounts may require the services of commercial de-humidifying firms. If humidity cannot be controlled rapidly, it may be necessary to remove all records. (See Appendix C-3-3, and 4.)

Re-assign recovery priorities, if necessary, based on level of damage and "recoverability."

The functional analysis described in Part 1 resulted in a priority listing for records protection, especially essential records. This prioritization may or may not be useful for records removal and recovery in connection with a specific disaster. Recovery decisions may have to be modified as a result of the nature and extent of the damage.

Disaster circumstances may force **a re-prioritization** of what records to salvage and in what order. Use the concept of "Triage" (a system of allocation of resources) to re-prioritize what records to salvage. Consider at least these three factors: (1) damage impact (2) value of the records and (3) extent of the damage.

(1) Damage impact:

The extent of damage to records may make some media or records unrecoverable. High priority records simply may not be salvageable. The length of exposure to water, heat, chemicals, hazardous materials, or other adverse conditions reduce the chances of successfully recovery. For example, materials on coated paper may not be recoverable unless the recovery begins within about 12 hours. They may have to be abandoned in order to save other materials. In case of fire, plastic-based media (photographic negatives, microfilm and motion picture film, audio and videotapes) are easily damaged beyond recovery.

(2) Value of the records. Consider such factors as:

- High priority: Essential records or other records, especially those needed immediately.
- Medium priority: Records that have value but are not immediately needed.
- Low priority: Records that are obsolete, duplicated elsewhere, or unnecessary.

(3) Extent of the damage. Suggested priorities:

- First: Medium damage. Needs earliest treatment.
- Second: Minor damage. These records can wait a bit longer.
- Third: Extensive damage. Chances of salvage are low and costly.

The results of the "walk through" damage assessment and re-prioritization triage are part of the information needed to proceed. Further factors discussed in the following paragraphs must also be evaluated before making final decisions. (See Appendix C-3-7.)

C: STABILIZE RECORDS:

The first decision is whether and how to stabilize the records and avert further damage.

Notes:

1. Do not move records without an inventory of what they are, to whom they belong, and where they are to be returned. (See Chapter II, Recovery - Information Management System.)

2. Avoid moving and storing valueless records as much as possible.

Options include:

- Freezing water-damaged records using cold storage facilities or lockers. Freezing will stabilize (stop) further water damage. Records can be kept in a frozen state for years. If the volume of damaged records is more than a few boxes or if the method of recovery requires

shipment to a distant location, freezing may be necessary. Freezer trucks may be needed to move them to the cold storage facility or a recovery facility.

- Moving undamaged records off-site. If temperature or humidity can't be controlled, undamaged records will absorb moisture and, if conditions are right, mold will begin to grow within 48-72 hours (see box on mold). Undamaged records can be moved to a location unaffected by high humidity. (See Appendix C-3-5.)

D: SELECT DRYING AND REPAIR OPTIONS:

The next decision is to select alternatives for drying and repair of records. The majority of damage is from water. Although there may be other damage such as smoke, soot, dirt and contamination, these will often be combined with water damage. Repair and cleaning of documents usually occurs after the drying process. In most cases the selection of the drying alternative is the primary decision.

Factors to consider in selecting a method of drying:

- Volume of media – Is the volume such that the records must be stabilized by freezing before being dried; must they be shipped via refrigerator carrier to a large drying facility out of state; or can desiccation humidification systems be used on site?
- Type of media – Are coated papers, photographs, and linen drawings and books damaged that are best dried by certain methods?
- State and degree of damage – Is there fire, mud or contamination damage that requires cleaning the records before they are dried? How wet are the records, completely saturated or just wet on one or more edges? Are records moldy?
- Sensitivity of the media – Does the media have coatings or emulsions that may be salvaged only through certain drying processes?
- Location of the drying facility – Can the drying be done on site or does the material have to be shipped out of state in order to use the selected method?
- Reference accessibility – Is access needed during the drying process?
- Funds available - Cost may dictate what is possible.

For further information:

- Media Types - See Appendix E-1.

- Drying alternatives including definitions, descriptions, advantages and disadvantages - See Appendix E-2 regarding:

    - Air Drying
    - Interleaf Drying
    - Desiccant Drying
    - Freeze Drying (cold storage)
    - Freeze Drying (freeze dry chamber)
    - Vacuum Thermal Drying
    - Vacuum Freeze Drying

- Smoke damage, fire damage, and contamination: (See Appendix C-6.)

Decision Logic Charts:

Figure 6-a and Figure 6-b, below are diagrams illustrating the decision process for responding to both small and large scale disasters, especially in dealing with water damage. They show graphically how to select among the various drying/recovery options based on factors such as

funds available, nature of the damage, recovery speed and the need for reference to the records during the drying process.

The diagrams are generalized. Decisions and actions may vary, depending on the specific nature of the disaster. The alternatives shown may be used in various combinations.

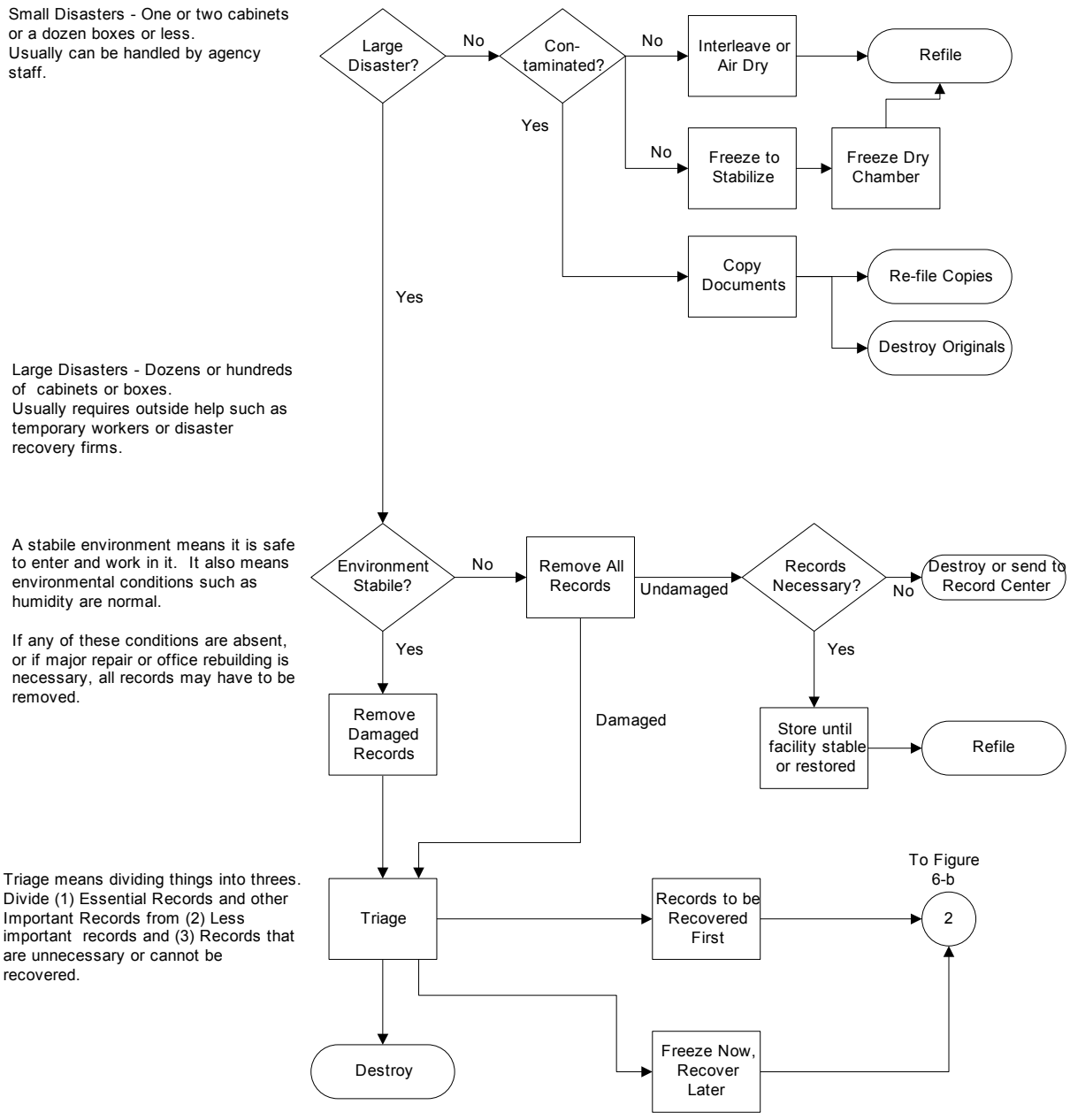

Figure 6a: Decision chart showing logic of selecting recovery/drying alternatives.

There will often be a need for improvisation. For example, in a recent disaster an organization was faced with the need to pay bills immediately. The normal procedure was to pay bills from original invoices but all the invoices were soaked. The solution was to copy the invoices while wet and pay from the copies. Clear plastic was placed over the copy machines to protect them

from water during the copying process. The original invoices were eventually recovered by freeze drying.

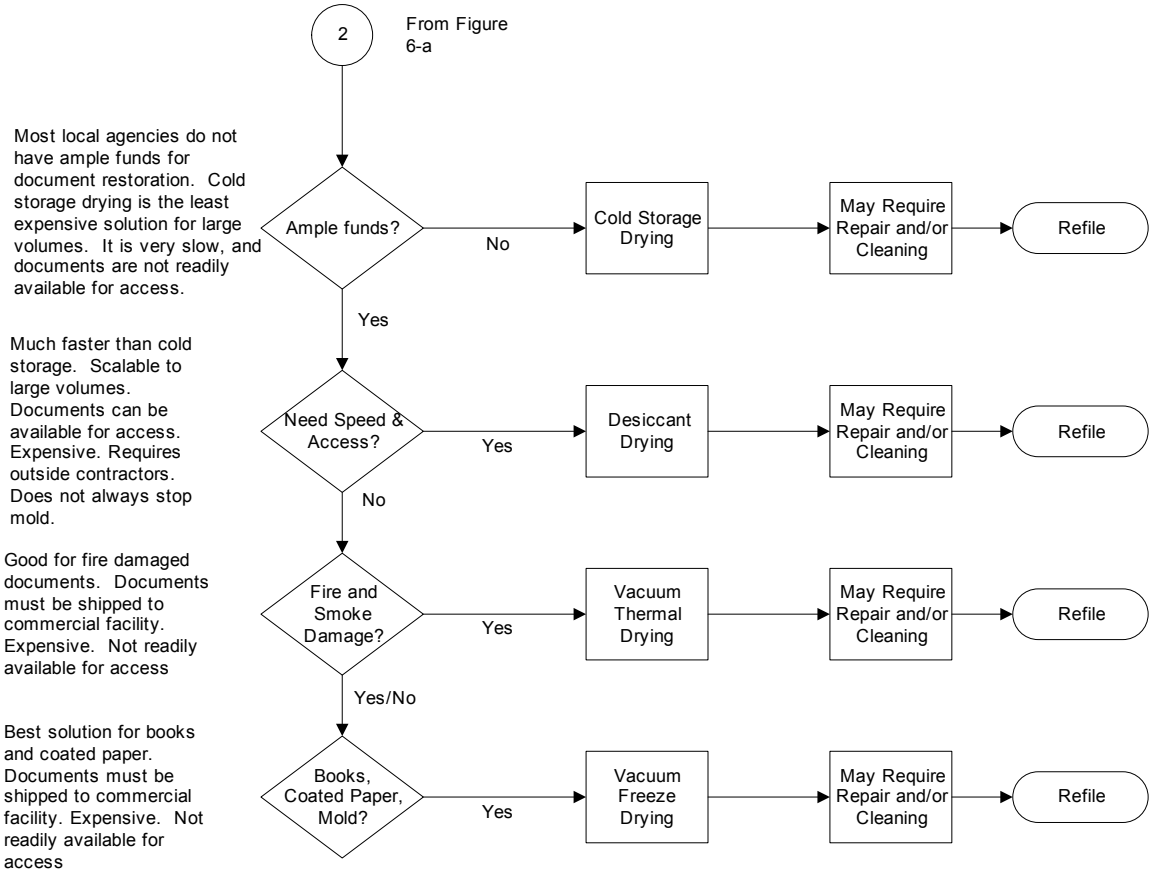

Figure 6-b: Selection of Drying Alternatives

E. ASSEMEMBLE RECOVERY RESOURCES:

Based on the information gathered during the "walk through" including the volume of records damaged and extent of damage, stabilization and recovery method decisions, decide on and assemble the supplies, additional personnel, and contractors needed for the task.

- Employ the lists of staff, volunteers, or temporary help assembled in the plan. (See Appendix B-4.)
- Use pre-arranged spending and hiring authorities or work appropriate agency staff to provide personnel and emergency funds.
- Move pre-packaged supplies to the damage site, or use lists assembled in the plan to locate and acquire supplies and equipment needed. (See Appendix D-2, 3.)
- Implement pre-arranged contracts made with commercial recovery firms or contact such firms from lists assembled in the plan. (See Appendix D-4.)

CHAPTER 2 RECOVERING FROM RECORDS DISASTERS

A. Recovery Defined
B. Recovery Rules of Engagement
C. Basic Recovery Procedures
D. Post Recovery Ups and Downs

A: RECOVERY DEFINED:

Recovery consists of actions and treatments that restore records and information to a useable state. Once recovery decisions have been made, recovery actions can begin. These activities may include, but are not limited to, one or more of the following:

- Implement a system for intellectual and physical control over damaged records.
- Pack out records.
- Stabilize by freezing for later recovery.
- Dry water damaged records.
- Clean documents soiled by dirt, mud, ash, soot, and mold growth.
- Store undamaged records.
- Repair documents charred by fire.
- Deodorize smoke-damaged records and fumigation for mold.
- Reprocess, clean microfilm and magnetic media.
- Duplicate contaminated or other badly damaged documents.
- Destroy unnecessary records or records too badly damaged to salvage.
- Repair and restore using conservation techniques for photography, microfilm, coated papers, maps, blueprints and drawings on sepia, linen or other textiles.
- Re-house returned records (re-foldering, filing, boxing, labeling, shelving, etc.).

Ancillary but related actions:

- Retrieve and install electronic record back-ups. (See Part I.)
- Use the Essential Records Schedule to determine if copies are available and where.
- Replace records with security copies.
- Use transmittal documents to determine exactly what is secured, where and who to contact for retrieval or copying.

B. RECOVERY RULES OF ENGAGEMENT:

1. DO NOT ENTER A DAMAGE SITE AND BEGIN REMOVING RECORDS WITHOUT A PLAN: Removing records without intellectual and physical control will result in chaos. No one will know who has what, where it has gone, and what has happened to it.

2. WORK SAFELY: Follow safety rules and instructions. There still may be remaining safety hazards such water soaked carpets, slippery floors, loose electrical wiring, and possible contaminants.

Wet records gain weight and expand in size, 200 percent of their original weight, and 30 percent in size. File drawers containing wet records may be difficult to open due to swelling. Forcing them open may cause additional damage. Lift smaller qualities of wet records than would normally be the case. Follow safe practices lifting boxes. Use a back brace.

3. BE AWARE OF CONTAMINATION: Contamination due to terrorism is a small, but increasing threat. Accidental contamination due to sewage pipe leaks, PCBs and mold are also dangers. If contaminates are suspected, see that the damage site is tested by appropriate state or local authorities such as the state Departments of Labor and Industries, Health, and Ecology. Follow

advice on handling specific kinds of contamination. Use rubber gloves and footwear, protective clothing and masks if necessary. See Part II, Ch. 2-D, and Appendix D for personal equipment and supplies.
Mold is the most common form of contamination and the most immediate danger to wet records. (See Appendix C–2, 2 for information about mold.)

4. KNOW WHAT YOU HAVE: Intellectual control over all records leaving the damage site is essential in order to know what records went where for stabilization, temporary storage, recovery or disposal, and to insure that recovered records are returned to their proper office, file system and owner.

A simple information system can be prepared as part of the detailed damage assessment or as records are boxed or crated for removal from the damage site. Tracking should be done at the box or crate level when removing records. If tracked at a higher level, pallet loads, for example, the boxes will be removed for whatever recovery action takes place, and not necessarily returned on the same pallet or even in the same load. Without a system, it will not be possible to identify the returned records and determine what additional cleaning or repair the records may require, or to where they are to be returned.

The system should identify 1) the office of record, record series, inclusive dates, 2) office location by file cabinet or shelf unit and drawer or box, 3) if the damage is due to water, fire or contaminant exposure. (See Appendix A-6, for inventory and tracking system form samples.) If the damage is limited to less that 10 or 12 file cabinets or 100 boxes, a manual system may be adequate. An automated system has great advantages for larger disasters. It can be a simple system based on a PC spreadsheet or database. An automated system will also be useful later for audit and insurance reports, destruction reports etc.

C. BASIC RECOVERY PROCEDURES

PACKING OUT: **"**Packing out" is the term used for boxing, crating, labeling, and moving records out of a damage site.

1. What to pack out: This depends on the conditions of the disaster and methods of recovery selected and the re-prioritization described in Chapter 1.

> As a general rule, pack out and recover essential and valuable records first. However, the disaster recovery team must also be concerned with all records in the damage site. Valueless records suddenly become important as a nuisance and cost factor if they must be moved out of the way for reconstruction or repair of the facility or for shredding, or must be removed because of mold growth.
>
> Undamaged records may be destined for storage, but if they have been in an environment conducive to mold growth, their presence at a records storage facility may be refused.

2. How to pack out: Different recovery methods may mean different packing out practices, containers and supplies. Commercial records recovery services will probably recommend and sell appropriate containers. Use information in Appendix C-4 if you are "on your own" or using a public or private service that does not have specific container requirements.

> See Appendix C for detailed specific instructions for packing out, rinsing, cleaning, inter-leaf, and air drying and repair of damaged documents and books.
>
> See Appendix C-6 for recovery from fire damage.

See Appendix E-2 for drying alternatives including definitions, advantages and disadvantages of each.

ADDITIONAL INFORMATION IN THE APPENDIXES: Specific procedures for the basic recovery of different media and formats of records are covered in Appendix C. The records disaster recovery team should be trained in their use and have them available when going into a disaster site. Appendix C contains a series of procedures and instructions that may involve commercial services but stress recovery employing the disaster recovery team and agency staff. These appendices and templates can be adopted as is, or may be tailored to the agency and cover the following:

- Recovery of paper records damaged by water, fire, mold, or a combination thereof: Appendix C-5 and C-6
- Recovery from Contamination: Appendix C-7
- Recovery of films and photograph materials damaged by water and fire: Appendix C-9
- Recovery of electronic records damaged by water, fire or contamination: Appendix C-10

Procedures for records recovery should be in the Team Members' Records Emergency Response Packets. Training should be offered to Team Members and other agency staff in these actions, techniques and treatments.

D. POST RECOVERY -- DISASTER FOLLOW-UPS & DOWNS

Records trauma: Disasters traumatize records. They will rarely be the same again. Water, and even over humidification, will cause paper to curl, wrinkle and swell, certain inks to run, and result in mold damage. Fire and contamination can have other effects. Don't expect records to be returned from recovery looking like they were before the disaster. Most of them will be stable and useful, but not "as good as new" (see repair and conservation).

Additional file cabinets will be needed for the same records.

Dried records will have a larger volume than before the damage. More file space will be needed than before. Drying causes paper to contract, but leaves air spaces between what were previously close spaced fibers.

1. Re-shelving recovered materials

- Records storage areas should be repaired using fire resistant materials.
- Cleaning personnel should sterilize the area to destroy any mold (in cases of water damage).
- Closely inspect the site to insure that there will be no residual moisture or signs of mold.
- A healthy environment for records includes a stable temperature (50˚to 60˚ F) and relative humidity (35 percent to 45 percent). Offices and file rooms are not normally kept at those levels. Higher temperatures and humidity will promote mold growth, particularly in previously damaged or moldy records.
- Regular inspections should be scheduled for at least one year following the return of damaged materials to the storage area. A random sampling technique may be used in inspecting the affected materials.

2. Recovery analysis and reporting

- Determine the cause of the disaster so that precautions can be implemented to prevent a recurrence.
- Hold a meeting of the records disaster recovery team members. Discuss all aspects of the experience.
- Report lessons learned. What went right and what went wrong?
- Evaluate existing preparedness, response and recovery plans. Identify what parts need updating or changing;
- Note which, if any, contractors, suppliers, or facilities proved inadequate;
- Determine what will be included in a report detailing the cause of the disaster and the response and recovery procedures used. (This report will serve as a reference and planning tool preparing for future records and information disasters.)
- Prepare a general summary of the response and recovery operations.
- Prepare a detailed report.

3. A letter of thanks should be sent to all individuals and agencies that participated in the response and recovery operations.

SUMMARY

- Prevention is more effective than recovery. Anyone who has experienced a records disaster understands recovery is messy, expensive, labor intensive, time consuming and sometimes an impossible task.

- The Essential Records Program is the heart of prevention and protection.

- Duplication (backup) is the best form of protection.

- Protection is especially important for electronic records. Recovery of damaged hardware, software and data is problematic. Backup is the first line of defense. It is increasingly practical for even small agencies to employ advanced backup techniques.

- When a disaster strikes, the response must be fast and sure. Speed is critical.

- In order to respond with speed, accuracy, and coordination, there must be a Records Disaster Plan in existence prior to the disaster. The plan should cover policy, authority, responsibility, communication and funding, as well as techniques.

- The plan can be part of the overall agency disaster plan, or it can stand alone. It should harmonize with, but not duplicate, agency disaster plans or electronic systems disaster plans.

- The response effort must be led by a person or a team who understands records.

- In order to set priorities and make response and recovery decisions correctly, the agency must know what records it has and understand the recovery alternatives and how to use them.

- The recovery plan of action used in a disaster, although based on the Records Disaster Plan, will be fine-tuned based on actual circumstances. There probably will be improvisations. Plan strategically, be flexible.

- Disaster response and recovery plans should be tested periodically.

APPENDIX A
PREPAREDNESS TEMPLATES

Appendix A provides a series of fill-in templates that, when completed, provide the authority, organizational structure and communications system for a records disaster response and recovery plan. It begins with a suggested agency records disaster policy statement to be signed by agency management. It stresses building a strong disaster recovery team, identifying supplemental assistance, communications, response and recovery forms, and mapping record locations by use of floor plans.

A-1 Records Disaster Policy Statement

Subject: Records Disaster Policy

Purpose: Establishes an agency-wide policy, plan and procedure for the protection of essential records from a disaster, and the recovery of _____ (insert name of agency) records damaged in a disaster.

Policy: The policy of _____ (agency name) is to insure that its essential records are identified and protected from natural and man-made disasters; and that procedures are in place, and tested, that will afford the most efficient and cost effective prevention of, response to, and recovery of all valuable agency public records damaged in a disaster.

Scope: This policy applies to all employees who create, receive and maintain _____ (agency name) records.

Responsibility: The _____ (insert name and title of agency head) has appointed _____ (employees name) as records disaster coordinator, with full authority to develop and implement plans for protecting agency essential records, and procedures for response to and recovery of records damaged in a disaster in conjunction with the agency Emergency Management Plan.

The coordinator will work with and through the records disaster recovery team composed of _____ (List members, as needed, based on the team organization in Part II, Chapter 2-E of the manual.) The team will assist in the development of all parts of the Records Disaster Plan and under the direction of the coordinator, will lead and participate in all response and recovery efforts.

All damaged records, regardless of office of origin, are to be recovered under the sole direction of the coordinator, or as the coordinator delegates to recovery team members.

Prepared by: *Insert name(s) of author(s)*

Approved and published: (*Insert name of governing body or authorizing official and date*.)

A-2 Introduction
Prepare a brief (three- to four-paragraphs) introduction to your plan, describing how the plan is organized (parts of the plan) and tips on its use.

A-3 Plan Distribution List

Name of Organization: _____

Date of Plan Completion: _____

Next Scheduled Update: _____

Set a date no more than 1 year in the future by which the plan should be updated

Distribution:

List all individuals or offices that receive copies of the plan (including those within your organization or agency as well as outside units, including but not limited to, fire and police departments, emergency service coordinators, and allied agencies) and locations of file copies. This will help ensure they receive copies of updates.

_____

_____

_____

_____

_____

A-4 Organizing for Response

A-4-1 List of records disaster response and recovery team members
This list provides a quick reference of names and phone numbers for each member of the disaster team.
Show the names, phone numbers (office, home, cell phone, and pager), of each team member, department and assigned response and recovery task, i.e.: photography, inventory team, data entry, boxing, etc. Also, state the names and phone numbers of agency support offices or staff, such as personnel, finance, etc who may be called upon to acquire supplies, additional personnel or contracted services. Use those that apply to your organization.

Function	Name	Work Phone	Home Phone	Cell/Pager
Recovery coordinator				
Records recovery coordinators				
(Specify department, office or recovery responsibility for each, i.e. photographer)				
Inventory/tracking data entry				
Photography				
Pack out – boxing				
Pack out – disposal				
Personnel manager				
Security head				
Data processing manager				
Financial manager				
Facilities manager				
Health and safety officer				

Add or delete as many as necessary to represent the departments and support functions of your agency

A-4-2 Team Member Responsibilities

Use this template for writing your own descriptions of disaster team members' jobs. Insert each position and its job description in this section. Refer to the list of suggested team members listed in Part II of the manual (sections B, C, and E) and the organization chart. Include the authority and responsibilities of the disaster recovery coordinator, each departmental coordinator and agency support staff. It is useful to have duties spelled out ahead of time so that members can be trained and prepared to immediately and effectively fulfill their respective roles.

A-4-3 Supplemental Personnel

If a disaster occurs that exceeds staff resources, supplemental personnel may be needed. This section lists possible sources of assistance.

The_____
[specify position(s) such as recovery coordinator, personnel manager, or other] will determine whether volunteers or temporary staff are needed, how many can be used, and qualifications or skills required for the tasks.

A-4-3-a Volunteers

1. The _____ *[specify responsible position]* will initiate contacts with civic groups, service organizations, etc.

2. The following have been identified as possible sources that might provide volunteers to assist with recovery operations: [In establishing contacts, consider organizations such as Boy/Girl Scouts, Elks, Kiwanis Club, Knights of Columbus, Rotary Club, VFW, and labor organizations]

   Organization: _____

   Contact Person: _____ Phone: _____

   Back-up Contact: _____ Phone: _____

   Notes: _____

   _____

3. If volunteers arrive on the scene without being solicited and the records recovery team is not prepared to use their services:
   Take their names and phone numbers.
   Decline their assistance, at least for now.
   Advise them that they will be contacted if and when assistance is needed.

4. If volunteers arrive on the scene following a solicitation, _____ *[specify responsible position such as volunteer coordinator]* will register them:

   Take the person's name and phone number.
   Interview them to determine their suitability for recovery tasks: experience and knowledge, physical abilities and limitations.
   Have each person complete a medical/emergency information form.
   Depending on the advice of your insurance carrier or legal adviser, you may also wish to have volunteers sign a waiver of liability.

5. _____ *[specify position such as personnel manager or volunteer coordinator]* will establish and maintain a system for keeping track of time worked by each volunteer.

6. _____ *[specify position such as personnel manager, volunteer coordinator, or training instructor]* will provide necessary training to volunteers before they begin work.

7. Supervision and work conditions. Volunteers should receive direct and continuous supervision.
   Volunteers will be assigned to a staff member, who will be responsible for his or her team of volunteers, oversee their work in the recovery operation, and insure their safety and welfare.
   No staff member should be assigned more than six volunteers.

Volunteers, like other workers, should be given regular breaks and rest periods (and meals, if appropriate).

A-4-3-b Temporary Help Services

1. The _____ *[name position such as the personnel manager]* will initiate contacts with temporary help agencies if auxiliary workers are needed.

2. The following sources may be contacted regarding temporary workers: (In establishing contacts, consider organizations like Kelly Professional Services, Manpower, etc. If your organization has existing agreements, list them here and (if applicable) indicate purchase order numbers or other authorizations in the "Notes" section of each entry. Some large organizations may also have employment pools that can provide assistance with manual or low-skilled work. Replicate this template for the organizations you identify.)

   Organization: _____

   Contact Person: _____ Phone: _____

   Back-up Contact: _____ Phone: _____

   Notes: _____

   _____

A-4-3-c List of Agency Staff

Insert here a list of agency staff by:

Name
Position
Work phone number
Home address
Home telephone, cell phone, beeper/pager (With these and all other phone listings, if numbers are unlisted or confidential, do not use or post without prior approval).
Email address

A-5 Floor Plans

Insert floor plans that may be useful in a disaster situation, including:

Building and floor layouts, with rooms (with their correct room numbers), aisles, exits and entrances, windows, and evacuation routes.

Identify:

Records storage locations. Indicate location of each file cabinet or shelf unit by number. Associate that number with a content list, records inventory or retention schedule.

Salvage priorities. Identify records, by cabinet or storage unit number, that are essential and have not been otherwise protected or duplicated. Refer to your Essential Records Schedule or recovery priority list (see Appendix B-8).

Fire safety: locations of extinguishers, fire alarms, sprinklers, detectors, enunciator panel(s), etc.

Engineering and mechanical controls such as shut-offs and master switches for gas, electricity, water, HVAC system, and elevators.

A-6 Forms

In this section place copies of forms you may need in a disaster, such as records recovery tracking system forms, damage assessment forms, recovery checklists, inventory forms, packing lists, requisitions, purchase orders, etc.

Initial Damage Assessment Report

The purpose of an initial damage assessment is to determine the type and extent of the disaster so that the proper level of response can be mobilized.

Damage Site Location	Date and Time of Occurrence	Total Volume of Records
City hall, 1st floor, room 105	April 27, 2003	3-4dr cabinets or 16 cu. ft.

Type and Extent of Damage		Volume of Records
Water damage minimum (one or more edges wet or damp)	x	3 drawers = 6 cu. ft. Cabinet 4
Water damage moderate (edges wet, water wicked into document text)	x	6 drawers = 12 cu. ft Cabinets 2,3
Water damage severe (papers soaked throughout, in standing water	x	3 drawers = 6 cu. ft. lower drs cabinets 2,3,4
Mold	x	3 lower drawers Cabinet 2,3,4,
Fire damage minimum (smoke, soot, lightly charred edges)	☐	
Fire damage moderate (edges heavily charred, paper discolored, brittle)	☐	
Fire damage severe (papers charred beyond edges, very sooty, extremely brittle)	☐	
Fire damage burnt Burned into center of papers)	☐	
Contamination	☐	

Declaration: No response required ☐ Emergency ☐ Disaster X

Field Notes:

DETAILED DISASTER RECOVERY WORKSHEET

RECORD SERIES TITLE VOLUME	**LOCATION OF DAMAGE SITE** **Cabinet, drawer or shelf & box numbers**	**TYPE OF RECORD** ☐ Loose Papers in Folders ☐ Photo prints ☐ Books or Binders ☐ Microfilm /Film ☐ Electronic	**PACK-OUT location:**
PREVIOUSLY SECURED AS AN ESSENTIAL RECORD? YES ☐ No ☐ (See Essential Records Schedule)		**RECOVERY PRIORITY** (Circle priority, with 5 being the highest) 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	

TYPE, EXTENT OF DAMAGE, AND RECOVERY TREATMENTS

Fire Damaged Paper Records

☐ **Minimum damage** (smoke, soot, lightly charred edges)

Recovery Treatments
- ☐ Clean gently with soft brush
- ☐ Humidify
- ☐ Re-file in clean folders
- ☐ Other

_____

☐ **Severe damage** (papers charred beyond edges, very sooty, extremely brittle)

Recovery Treatments
- ☐ Separate pages
- ☐ Remove surface soot and dirt
- ☐ Copy or microfilm
- ☐ Discard originals

☐ **Burnt**

Recovery Treatments
- ☐ Infrared photography
- ☐ Discard

Water Damage – Paper Records

Recovery Treatments
- ☐ Remove excess water
- ☐ Place records in containers

Small collection

☐ Recovery Treatments

Other

_____

Large collections pack-out to:

Recovery Treatments
- ☐ Freeze to stabilize or dry
- ☐ Freeze dry
- ☐ Desiccant de-humidification dry
- ☐ Thermo-vacuum dry

☐ FILMS: Place in containers of clean cool water, send to re-processor

☐ Electronic:

Some treatment actions may not be necessary or other actions may be necessary. See MANUAL PART III and APPENDIX C.

Notes:

Box No	Record Series Title/date	Original Location	Value	Type of Damage	Extent of Damage	Keep Discard	Freeze to Stabilize	Recovery Method	Fumigate	Repair Clean	Date Sent	Date Returned	Returned to Office	Date Destroyed
1 --4	Payrolls 1988-93	bldg 1	5	WF	3	K	N	FD	Y	Y	13-Apr-03	18-Apr-03	18-Apr-03	
5	Gen. Ledger 1990-98	bldg 1	5	W	2	K	N	IA	N	N	14-Apr-03	19-Apr-03	19-Apr-03	
6--8	vouchers over 6 yrs old	bldg 1	5	F	5	D	N	N/A	N	N	15-Apr-03	N/A		16-Apr-03
Legend														
	Essential Record Value	High=5	Low =1											
	Type of Damage	W=w ater	F-fire	M=mold	FW=fire &	w ater	C= conta	mination						
	Extent of Damage	High=5	Low =1											
	Keep or discard	K=keep	d=discard											
	Freeze to Stabilize	Y=yes	N=no											
	Recovery Method	A=Interleaf	/air	D=desiccant	FD= freeze dry	VF=vacuum freeze	TV=thermo vacuum							
	Fumigate	Y=yes	N=no											
	Repair	Y=yes	N=no											

.

A-7 Operation Center

Identify the spaces you could use for recovery operations. Include offices and operational spaces equipped with desks, phones, and other basic equipment, as well as spaces you could use for rinsing, air-drying, and other salvage activities. Pre-identify some areas within your building, but also identify some off-site spaces such as:

Public buildings: armories, schools, etc..
Private meeting facilities: Elks, Girl or Boy Scouts, or other service organizations.
Church buildings.
Commercial property that is for rent or lease.
Rented tents, trailer homes (such as used on construction sites), etc..

Outline the procedures you would use to transfer office equipment and supplies, as well as telephone, electricity, and other services in the spaces, if they do not have them already

A-8 Communications Plan

Outline your plans for communicating with staff members, particularly members of the records disaster recovery team. Outline a strategy for notifying them of routine emergencies, but also list the systems and alternatives that can be used when telephone service is disrupted due to earthquake, flood, or other disasters.

In most cases, telephone systems and other communication services will be operating routinely when recovery procedures are initiated. Once the _____ *[specify recovery coordinator or other staff authorized to initiate the Disaster Plan]* declares a disaster and initiates the plan, notification of team members will precede according to the following plan:

1. The _____ *[specify recovery coordinator or other staff member]* will notify the following:

   List the agency officers in the order you want them notified. It would be typical for first-phase notification to include the chief administrator, chief safety officer, records manager, data processing manager, and financial liaison.

Name/Title	Office phone	Home/cell phone

   Full contact information for each is available in the List of Agency Staff in **Appendix A-4-3-c**.
   List the disaster recovery team members that need to mobilize to respond to the records disaster.

Name	Office phone	Home/cell phone

_____

_____

(See Appendix A-9 for a list of other organizations that should be notified in case of a major disaster).

A-9 Emergency Contact Numbers

	Name	Phone: Workday	After-Hours
Ambulance			
Building Maintenance			
Agency Emergency Management Officer			
Doctor			
Emergency Management Division of the WA Military Department		(360) 438-8639	Toll Free: (800) 258-5990
FEMA			
Fire Department			
Hospital			
Insurance Agent			
Police/Sheriff			
Risk Manager			
Security Office			
Security System Co.			
State Patrol			
Telephone Co.			
Utilities: Electric			
Utilities: Gas			
Utilities: Water/Sewer			
Utilities: Other			
WA State Regional Archives:			
Other:			

APPENDIX B

RISK ASSESSMENT TEMPLATES

Appendix B provides procedures, forms and suggested lists of records for developing an essential records protection program. It recommends methods of backing-up and restoring electronic records when there is no established information technology department or existing electronic records protection plan. Prevention procedures and risk assessment checklists are also contained in this appendix.

Use this section to document your plans for protecting essential records, and the identification, reduction and mitigation of disaster hazards. Use the physical plant risk assessment inspection checklists to conduct an assessment to identify your vulnerabilities and needs before preparing these plans.

B-1 Essential records Protection Policy and Procedure Model

PURPOSE: Essential records protection is a major part of an overall preparedness and recovery program for disasters that affect Agency records.

The Essential Records Protection Plan is a procedure for protecting the _____ (insert agency's name) vital records from disaster. It consists of a schedule which identifies records essential to the operations of the agency during an emergency, and those records essential to the recovery of normal operations after a disaster. The schedule specifies how those records are to be protected, and establishes how often they are to be updated or cycled.

POLICY: It is the policy of the (insert agency name _____ to:

Insure the protection of records deemed essential to the functions of the agency during and emergency, and to restoration of normal operations afterward.

- Records needed to protect the rights and interests of the public served by the agency;
- Records needed to protect the rights and interests of the agency as a government entity;
- Records necessary to fulfill the department's obligations to employees;
- Records needed to protect the legal and financial integrity of the department's programs;
- Records required to maintain the technical ability and efficiency of the Department;
- Records, the loss of which would make resumption of operations prohibitively expensive or impossible.

SCOPE: This policy affects all employees who have records keeping responsibilities.

REPONSIBILITY:
The agency records disaster recovery coordinator will:

- Assist departments in the identification of their essential records;
- Assist departments in determining methods of replication and protection that are cost effective;
- See that the essential records schedule is updated annually;
- Maintain the official copy of the essential records plan;
- See that records are replicated appropriately, sent to storage on time, and cycled out of as scheduled;
- See that essential records being sent for security storage are properly documented, boxed and labeled.

PROCEDURE:

Updating the Essential Records Schedule

- Each year, the disaster recovery coordinator or records manager will send a memo to all program directors requesting that their program's essential records schedule is updated.

- Departmental recovery coordinator reviews the schedule with the department director.
  This review should consist of an administrative evaluation of whether each record series listed on the schedule continues to merit inclusion and the attendant costs of replication and storage, if any. This evaluation should consider the agency's policy stating what types of information requires protection.

  The review should include consideration of any new records series developed as part of new or added program functions; and should consider new and less costly methods of replication resulting from the application of technology.

- Changes, additions and deletions to the essential records schedule can be made by annotation directly onto the current program schedule form. If additional space is needed, use a new schedule form. Make sure the following information is correct for each record series:

- Record titles identify the records series by title and Disposition Authority Number from the Records Retention Schedule.

- Media indicate how the records series will be replicated for security storage, such as hardcopy, computer output microfilm, floppy disk, CD, microfilm, etc. Consult with the records manager for advice and assistance on replication. A series may already be replicated and secured electronically or may be easily be secured if the information is on an electronic system.

- There are several methods of providing security copies of essential records. Usually no one method will suffice for all records. Consider the following questions in making a decision. Each record series should be examined in terms of:
  - frequency of use
  - useful life of the media
  - availability of existing copies
  - volume of the records involved
  - and the cost of copying and storage

    Use of existing copies protected through natural dispersal. Some records exist in multiple copies. One of these copies can be designated as the essential record protection copy for such records.

    Paper Duplicates - Where copies do not already exist, the production of additional hardcopies of a record identified as essential may be merited. This is practical when the *volume is minimal* or the *update cycle is frequent*
    Microfilm or computer output microfiche - These methods are most commonly used for providing security copy of records which are voluminous, not superceded or updated frequently and have long term or permanent value.
    Electronic Media - This method is best used when the essential record is already in electronic form; volume makes paper copy impractical, and when the information is frequently updated or superceded.
    Update Cycle - Indicate the frequency that the record series is to be supplemented or superceded. It is important to establish an update cycle as frequently as practical in order to keep the

information or data current. Consult with the agency IT department or records manager regarding update cycles for electronic records.

Security Storage Site - Indicate the security storage sit to which each essential record series is to be sent. Use the following abbreviations:

- ER for electronic records sent through department to a designated security site.
- RC for paper and microfilm copies of essential records to be sent to the DCLU records center or through the records manager to the Washington State security microfilm storage site.
- ND for natural dispersal. Indicate the office which has the security duplicate.

Methods of Security Storage

- Natural dispersal
- Remote or off-site storage
- On-site storage

Sign-off - The updated schedule must be signed by the Program Manager.

Transferring essential records to security storage sites

Electronic Records

Essential records in electronic form on systems managed by the Department will be transferred to security storage by automatically according to the cycle established on the Essential Records Schedule.

Microforms

Essential records in microfilm or microfiche form are to be boxed in acid free microfilm containers (special order).

Label the containers as follows:

RECORD SERIES TITLE
Inclusive dates of records in the container
Department or office of record
Retention time in security storage

Send the boxed film and to the agency records disaster recovery coordinator.

Paper Records

Essential records to be secured in paper form are to be boxed and labeled using the agency or commercial records center storage boxes and labels per instructions for transferring records to off-site storage.

Except for essential records in electronic form, all records transferred for security storage must be accompanied by a completed Records Center Transmittal form. Annotate the form to identify the materials being sent as being for "Essential Records Security Storage."

Cycling essential records

Some essential records will continue in security storage with periodic accretions. Others will be cycled out and replaced with updated material per the Essential Records Schedule. Records scheduled for cycling out will be returned to the office of origin, or destroyed as indicated on the schedule when superceding records are received by the records center. Electronic records will be erased by agency when scheduled for replacement.

B-2 Records Retention Schedule

CITY OF WEST BALLARD

ESSENTIAL RECORDS SCHEDULE

1. ITEM NO.	2. RECORD SERIES TITLE	3. MEDIA	4. UPDATE CYCLE	5. RETENTION	6. PROTECTION INSTRUCTIONS
1	City Council Minutes	Microfilm	Annually	Permanent	Send security copy of microfilm to State
2	Ordinances and Resolutions	Microfilm	Annually	Permanent	Archives security storage in Olympia.
3	Annexation Files	Microfilm	Annually	Permanent	Send security copy of microfilm to State
4	Franchises	Microfilm	Annually		Archives security storage in Olympia
PROGRAM	**PROGRAM DIRECTOR APPROVAL**			**DATE**	**Disaster Recovery Coordinator or Records Manager.**

B-3 Essential records from the State General Schedule for Local Agency Records that your agency may hold.

FUNCTION and RECORD SERIES TITLE	METHOD of PRESERVATION
Accounting	
Time Accumulation Reports (Time Cards)	Microfilm
General Ledger	Backup tapes off-site storage
Individual Employee Pay History	Microfilm
Journal Vouchers & Indexes For Electric Utilities	Microfilm
Payroll Register	Microfilm
Administrative Records	

Official Agency Policy & Procedure Directives Rules & Reg.	Microfilm
Cemetery Records	
Index of Interments	Microfilm
Section Books	Microfilm
Section Maps (sold & available lots and occupied lots)	Microfilm
City & Town Clerks	
Adopted Agency Policy & Procedure Directives, Rules, Reg.	Microfilm
Agency Charters (rights, responsibilities & authority)	Microfilm
Annexation History Files	Microfilm
Encroachments	Microfilm
Franchises	Microfilm
Minutes Official City/Town Council, Board, Commission	Microfilm
Oaths of Office	Microfilm
Ordinances & Resolutions	Microfilm
Records of Public Hearings (transcripts, speaker, testimony)	Microfilm
Communications	
Computer Automated Dispatch Backup Tapes	Backup tapes off-site storage
Conservation Districts	
Agreements With Landowners--District is Signing Party	Paper copy off-site storage
Long Range Plans	Paper copy off site storage
County Coroner & Medical Examiner	
Card Index File	Microfilm
Coroner/Medical Examiner Ledger (chronological & alpha.)	Microfilm
Coroner/Medical Examiner Investigation Files	Microfilm
Inquests	Microfilm
Electric Utility Operations	
Maps & Area Plats	Microfilm
Pole List (pole type, location, ancillary equipment, etc.)	Microfilm
Staking Sheets (power line construction or extension)	Microfilm
Standards & Specifications Manual	Paper copy off-site storage
Transformer History Data	Microfilm
Underground Line Files	Microfilm
Water/River Flow Reports	Microfilm
Electronic Information - System Documentation	
Electronic Information System & Software Backup Data	Microfilm
Electronic Information System Design Documentation	Paper copy off-site storage
Electronic Info. System Programming & Implementation Data	Paper copy off site storage
Emergency Services	
Disaster Preparedness & Recovery Plans	Paper copy off-site storage
Facility & Property Management	
Encroachments	Microfilm
Engineering & Architectural Drawings & Specs.	Microfilm
Key/Card Key Inventory	Paper copy off-site storage
Land Information Files	Microfilm
Operating Manuals	Paper copy off-site storage
Fire & Emergency Medical Services	
Annual Report Adopted--Fire Fighter Board of Trustees	Microfilm
Minutes of Fire Fighter Board of Trustees Proceedings	Microfilm
Governing Councils, Commissions, and Boards	
Agency Charters	Microfilm
Franchises	Microfilm

Indexes to Minutes, Ordinances, & Resolutions	Microfilm
Minutes of Official Proceedings	Microfilm
Oaths of Office	Microfilm
Ordinances & Resolutions	Microfilm
Records of Public Hearings	Microfilm
Hazardous Materials Administration	
Generator Annual Dangerous Waste Report	Microfilm
Hazardous Materials Abatement Project File	Microfilm
Hazardous Material Accident/Incident Report	Microfilm
Hazardous Materials Certificate of Destruction	Microfilm
Hazardous Materials Disposal Records	Microfilm
Haz. Mat. Employee Right to Know Implementation Plan	Microfilm
Hazardous Materials Inspection & Test Reports	Microfilm
Hazardous Materials Inventory Sheet	Microfilm
Hazardous Materials Management Plan	Microfilm
Hazardous Materials Trained Personnel List	Microfilm
Materials Safety Data Sheet (MSDS)	Microfilm
Physical Exam Reports For Employees Exposed to Haz. Mat.	Microfilm
Housing Authorities	
Property History Files	Paper copy off-site storage
Insurance/Risk Management/Safety	
Certificates of Insurance	Microfilm
Disaster/Emergency Management Plan	Microfilm
Insurance Policies Purchased	Paper copy off-site storage
Irrigation Utilities	
Herbicide & Pesticide Spray Documentation	Microfilm
Land Use History Files	Paper copy off-site storage
Juvenile Services	
Daily Recordings of Juvenile Court Documents	Microfilm
Detention Log	Paper copy off-site storage
Detention Roster	Paper copy off-site storage
Dockets Court	Microfilm
Juvenile Court Case File Indexes	Microfilm
Juvenile Court Case Files	Microfilm
Medical History Files	
Social Files	Paper copy off-site storage
Land Use Planning Permits & Appeals	
Administrative Appeals Case Files	Microfilm
Annexation History Files	Microfilm
Approved (Binding) Site Plans	Microfilm
Building Construction & Modification Permit Files (Valid)	Microfilm
Building Construction & Modification Permit Indexes	Microfilm
Comprehensive Land Use Plan & Amendments	Microfilm
Conditional Use Permits	Microfilm
Critical Materials List	Microfilm
Maps, Drawings, Photographs (Official)	Microfilm
Maps, Drawings, Photographs (Reference)	
Open Space Classification Case Files	Microfilm
Plat Case Files	Microfilm
SEPA Determination of Significance or Nonsignificant	Microfilm
SEPA Environmental Checklist	Microfilm

Shoreline Management Permits	Microfilm
Zoning Exceptions/Waivers	Microfilm
Library	
Catalog	Paper copy off-site storage
Interlibrary Loan Documentation	Paper copy off -site storage
Shelf List /Inventory of Holdings	Paper copy off-site storage
Parks & Recreation	
Design Standards Reference File	Paper copy off-site storage
Park Maps	Microfilm
Project Plans & Drawings	Microfilm
Personnel	
Affirmative Action Plans	Paper copy off-site storage
Collective Bargaining Agreements	Paper copy off-site storage
Employee Benefit Contracts/Policies/Plans	Paper copy off-site storage
Emp Ben Participation/Enrollment Agreements &Withdrawals	Paper copy off-site storage
Employee History	Paper copy off-site storage
HBV & HIV Exposure Reports & Waivers	Paper copy off-site storage
Minutes of Civil Service Commission Proceedings, (A & S)	Microfilm
Volunteer Files	Paper copy off-site storage
Port Districts	
Airport Certification Files	Microfilm
Public Works - Engineering	
Aerial Survey Photograph Prints, Negatives & Flight Map	Paper copy off-site storage
As-Built Construction Project Plans	Microfilm
Bridge Inspection Files	Microfilm
Bridge Maintenance History Files	Microfilm
Franchise History Files	Microfilm
Franchise Working Files	Microfilm
Land Survey Field Books	Microfilm
Right -of -Way Case Files	Microfilm
Right - of -Way Vacation Files	Microfilm
Road Establishment Case Files	Paper copy off-site storage
Road Maintenance History Files	Paper copy off-site storage
Survey Maps Filed for Record	Microfilm
Records Management	
Public Records Destruction Log	Paper copy off-site storage
Records Center Transmittals, Inventories, & Indexes	Paper copy off-site storage
Sewer & Water System Documentation	
Grinder Pump Maintenance & Location Records	Microfilm
History Files - Sewage Treatment Plants	Microfilm
Hydrant Records	Paper copy off-site storage
Industrial Waste Permits	Paper copy off-site storage
Manhole Records	Paper copy off-site storage
Maps & Geographic Data	Microfilm
Meter Records	Paper copy off-site storage
Operations & Maintenance Manuals-Sewage Treatment Plants	Microfilm
Operations Log-Sewage Treatment Plants	Microfilm
Pipe Records	Paper copy off-site storage
Valve Records	Paper copy off-site storage
Social Services	
Client Case Files (Treatment Completed & Case Closed)	Paper copy off-site storage

` Client Screening & Referral Files (Completed & Closed)	Paper copy off-site storage
Facilities Inspections & Certifications	Paper copy off-site storage
Solid Waste Management	
Certificate of Disposal & Destruction of Hazardous Waste	Microfilm
Landfill/Transfer Station History Files	Microfilm
Landfill Site Closure & Custodial Files	Microfilm
Landfill/Transfer Station Site Testing & Monitoring Records	Paper copy off-site storage
Surface Water Drainage & Flood Control	
Flood Control Plan	Microfilm
Flood Damage Survey Reports	Paper copy off-site storage
Surface Water Management Project Plans & Specifications	Microfilm

B-4 Electronic Records Backup and Recovery

Put data processing plans here if your agency has an Information Technology Department, it probably has a disaster protection and recovery plan. If there is no IT department, or if there is no plan, you will need to develop one, even if it is for "stand alone" desk-top computers. In this section, list:

When and how routine backups are to be done, and where off-site copies are to be stored.

How to get access to off-site storage copies, including at night, on weekends, and during holidays.

Potential hot- and cold-sites you could use if data processing functions must be transferred off-site.

How equipment, software, and data files would be moved to those off-site locations.

Companies that can salvage your computer equipment, data files, etc. (see Appendix D)

The primary strategy for protecting data on small systems is similar to those developed for protecting large ones. The main defense is duplication. Data on servers and PCs should be backed up routinely, normally daily and weekly. The backup data should be stored in a safe place, off site. Programs, operating systems, and documentation should also be stored off site. Disaster team members must have access to everything.

BACKUP CONCEPTS FOR PCs AND LAPTOPS

Approach the problem of backing up computers with the assumption that important data is always at risk. It is not a question of 'if' the data will be compromised, but 'when'.

NOTE: It is far easier to back up and restore data than to attempt to salvage the media such as disks, tapes, or hard drives.

The most common scenario for data loss in personal computers is hard drive failure. Whether it is critical operating system files that become corrupt on a drive or a physical failure of a drive itself, data can often be recovered. But it will take time, effort, labor and money.

For laptop owners, a likely and threatening scenario is theft. In this situation, critical data is gone forever, with little hope of any recovery.

Other causes for data loss include:

- Failure due to environmental hazards like power surges, spikes, electrostatic shocks and heat
- Negligent or unauthorized users such as small children

- Malicious code, viruses, hacker intrusions

Backing up data is not a difficult task. For most people, identifying which data to back up can be the most challenging part. Figuring out where to place the backup data can also be challenging. However, once a process is identified, backing up data can be a simple routine that is easy to schedule or even automate.

Data

- Define the information to be backed up
    - Critical data that cannot be reproduced
    - Operating systems or applications can usually be reinstalled from separate source media. These are not good candidates to backup.
    - Applications, setup files and source code that only reside on the hard drive should be backed up.
    - Documents, database, web content, images and any other files that are considered important

- Consolidate/organize data in a way that is manageable
    - Data should be organized in a way that makes sense to the user
    - Consolidate backup data up under a source directory
        - 'My Documents' is an example for Windows users
        - Data can be consolidated under a user profile if multiple users access the system
        - If applicable, identify other ways that data can be organized within subfolders.
            - Dates – Useful for financial records
            - Type of content – Images
            - Subject – Documents, projects, etc…

The reason for organizing and consolidating data within a source directory is so that the user can quickly and easily identify a group or groups of data that should be backed up. Further organization helps the user to assign priorities, schedules and also creates logical associations for recovery purposes.

- Backup Media

If the PC or laptop is connected to a Local Area Network (LAN), the first choice of backup media is the LAN itself. This is assuming that the LAN is routinely backed up.

If not backed up to the LAN, the choice of backup media depends largely on the preference of the user. However, a few guidelines should be followed:

- Media should exist in different location than source
- Media should be easily portable.
- Media should be current with modern technology.

The user should decide what type of media he or she feels comfortable using. Power users may prefer tape drives with their large capacity, but they can be more difficult to use for an ordinary user. Zip drives and CD burners are the most prevalent forms of removable media on the market. Windows XP features drag and drop capabilities between the hard drive and CD burners, which make writing to CDs very easy. For non XP systems, the CD burning utilities are often quite easy to learn. Floppy disks should be the last choice.

The obvious limitations with such devices are size. CDs are available in 650 and 800 MB sizes. Zip drives start at 100, 250 and may now include even larger drives. If the data store is larger than the available media can hold, the user will need to further organize the data on the PC into smaller groups so that it can be copied in multiple backups.

Some people may wish to use a large capacity external hard drive, which would also work. Of course, the associated cost of these devices is somewhat higher than CDs, and they are not as interchangeable as a CD.

B-5 Risk Assessment and Prevention Procedure (Templates)

Awareness is important in disaster prevention efforts. Vigilance can often prevent a disaster or minimize the damage of a disaster. Employees can take the initiative to be troubleshooters and note problems that may be occurring in the building.

Problems such as leaky pipes, cracked windows, toilet problems, or unusual odors (particularly those that could indicate a fire) should be brought to the attention of the _____ *[specify maintenance supervisor, recovery coordinator, etc.].* Correcting a problem before it develops into a full-blown disaster can save great amounts of labor and thousands of dollars of records recovery and equipment salvage costs.

1. The _____ *[specify personnel officer or other]* will insure that each new staff member reads a copy of the records disaster response and recovery plan. Supervisors will also read the plan and become familiar with its layout and content.

2. The _____ *[specify recovery coordinator or other staff]* will inventory the disaster supply kit(s) _____ *[specify frequency; monthly, quarterly, annually]*, noting the supplies on hand, those needing to be refreshed, and those that would have to be purchased in case of emergency.

3. The list of vendors and consultants in *Appendix D -- Supplies and Services,* will be updated _____ *[specify annual or more frequent updates]* by_____ *[specify recovery coordinator or other staff]*.

4. The _____ *[specify recovery coordinator or other staff]* will review the full Disaster Response and Recovery Plan _____ *[specify annual or more frequent review]*, updating sections as necessary, and distribute copies of updates to the disaster recovery team members, and designated agency staff.

5. The _____ *[specify recovery coordinator or other staff]* will arrange for inspections using the Inspection Checklist and work with appropriate staff to ensure that problems are remedied.

B-6-1 Facility Risk Assessment Inspections

B-6-1-1 Maintenance

The _____ *[specify maintenance/facilities department or other appropriate unit]* will identify and inspect all areas and equipment that may cause or be subject to damage in a disaster. These will include areas noted in the Inspection Checklist that relate to:

HVAC system
Electrical appliances and wiring
Plumbing and drainage
Housekeeping

If possible, also state the frequency of these inspections and that copies of completed inspection reports will be submitted to the recovery coordinator.

B -6-1-2 Fire Safety

The _____ *[specify safety officer, or other appropriate unit]* will manage the fire safety program. This will include inspection and maintenance of fire protection systems and devices. Activities and inspections will include areas listed in the Inspection Checklist that relate to:

Fire extinguishers
Fire alarm system
Smoke and heat detectors
Fire suppression systems (sprinklers, halon, etc.)
Liaison with the Fire Department
Staff training

If possible, also state the frequency of these inspections and insure that copies of completed inspection reports will be submitted to the recovery coordinator.

B-6-1-3 Security

The _____ *[specify safety office or other appropriate unit]* will manage the security program, in conjunction with _____ *[specify records coordinator or records officer or other unit that supervises use of the records and record systems]* who oversees use of the records within the facility. This will include inspection and maintenance of security systems and devices such as sound alarms and silent alarm subscription alarm services. Activities and inspections will include areas listed within the Inspection Checklist that relate to:

Key control
Monitoring of security devices on doors, windows, inside and outside of the building

If possible, also state the frequency of these inspections and that copies of completed inspection reports will be submitted to the recovery coordinator.

B-6-1-4 Record Storage Areas

The _____ *[specify appropriate records coordinator or officer, manager, supervisor]* will ensure periodic inspection of records storage areas according to criteria listed in the Inspection Checklist. Inspections will give particular attention to:

Signs of leaks, water damage, etc.
Signs of mold, insect, or rodent infestation
[Add other reminders for particular threats to your records and facilities].

Inspections will include all additional on- and off-site areas used for records storage.

If possible, also state the frequency of these inspections. Daily inspection is recommended. Also note that copies of completed inspection reports will be submitted to the recovery coordinator, if that is a different person than the records coordinator/officer, who has responsibility for inspection of the records storage areas.

B-7 Records Risk Assessment Inspection Checklist Templates

The following checklist templates can be useful in carrying out risk assessment inspections. Their use can reduce vulnerability of records to a disaster. Some of the inspections outlined in those checklists may be the duty of personnel

responsible for facilities maintenance, safety and fire prevention and not the DRT. Work with those individuals to develop a reasonable schedule for the inspections and establish mechanisms to verify that inspections are done as scheduled. Create a procedure that ensures you will be informed of remedial actions needed and taken. Retain copies of completed inspection reports here or see that the risk management officer receives and retains them.

These are part of a larger number of disaster prevention checklists designed for a comprehensive agency disaster preparedness program. The entire set is contained in the web version of this manual. You may want to review those checklists and recommend them to your agency Emergency Management office or Disaster Preparedness Committee.

Records Risk Assessment Inspection Checklist Templates

1. General Preparedness	**OK?**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Records Disaster Plan written and updated			
Emergency Instructions posted at all staff phones			
Disaster supply kit(s) created and inventoried on schedule			
All shut-off valves, breaker switches, etc. properly labeled			

2. Plumbing	**OK?**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Pipes and plumbing well-supported			
Pipes and plumbing free of leaks			
Staff know location of water main and have appropriate tools (if needed) for shut-off			

3. Fire Safety	**OK?**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Appliance cords in good condition			
Appliances turned off and unplugged nightly			
Schedule visits with the Fire Marshal to follow-up on observed code violations			
Floor plans identifying location of essential records given to Fire Department			
Detection systems:			
appropriate type(s) present			
wired to 24-hour monitoring station			
tested regularly			
Fire extinguishers present, inspected regularly and re-charged if necessary			
Automatic suppression system (e.g., sprinklers, halon) present and operating Fire drill conducted twice per year			
Staff trained in:			
sounding alarms			
interpreting enunciator panels (if present)			
notifying Fire Department and others as called for			
using extinguishers			
turning off power, HVAC, sprinklers, gas main			
closing fire doors			

4. Housekeeping	**OK?**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Cleaning supplies and other flammables stored safely			
Trash removed nightly			

5. Files and Records Storage Areas	**OK?**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Shelves well-braced			
Items shelved snugly			
Shelving 4-6" off floor			
No materials stored on floor			
No essential records or valuable materials in basement			
Exits unobstructed			
Important materials away from windows			
Flashlights kept in windowless and dark areas, and batteries checked			

6. Protection from Water Damage	**OK?**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
No water sources located above records			
Water detectors present			
Storage areas checked daily for leaks, seepage, etc. Sump pumps and backups present where needed			
Dehumidifiers available			
No leakage/seepage through walls			
Valuable materials stored above ground level			
Valuable and fragile media stored in protective enclosures			
Staff have keys to mechanical rooms and janitorial closets			

B-8 Records Recovery Priorities

In the event of a disaster, unprotected essential records should be transferred to a safe location, or salvaged in the priority order assigned below. Also see Appendix A-5 -- Floor Plans for locations of these materials and for area-specific disasters.

	Priority Materials [specify record series, file number range, item, etc.]	Location (Specify Bldg, floor, room, cabinet)	Departmental Coordinator
1)			
2)			
3)			
4)			
5)			

APPENDIX C
RECORDS DISASTER -RESPONSE and RECOVERY PROCEDURES and TREATMENTS

Appendix C contains procedural templates for responding to minor emergencies and major disasters that affect records. It also provides detailed instructions for recovering paper and other media damaged by water fire and contamination.

C-1 Disaster response and recovery procedures are the steps taken from the time a disaster situation is detected to the time when records are packed out, dried or otherwise salvaged and then restored to use. This section provides fill-in templates and specific procedural instructions that comprise a plan for response and recovery of damaged records. The extent and order of the steps may alter depending on the nature of the emergency, extent and type of damage, and available resources.

The primary natural disaster occurrences in Washington State are earthquakes and flooding. Earthquakes can cause water and sewage pipes to break which can result in records damage. Earthquakes can also knock over wall shelves, storage units, and book shelves which will exacerbate the problem. Flooding occurs almost yearly in river basin and bottom land areas.

Regardless of the damage source, the records disaster coordinator should be among the first of agency staff notified of a disaster affecting agency facilities. Notification is a critical step to the successful recovery of damaged records.

C-1--1 Notify Records Disaster Coordinator

During working hours, contact the recovery coordinator,

_____

(Insert name, title, and office phone number of the person who will determine damage by phone or through an inspection of the site.)

After-hours, notify: _____ (It may be appropriate to list (a) the maintenance/facilities staff, (b) the recovery coordinator, and (c) the security office.)

Name/Title	Office Phone	Home Phone/Pager

C-1-2 Assemble the records disaster recovery team

The recovery coordinator mobilizes the records disaster recovery team using the telephone list in A-4-1.

C-1-3 Gain access to the damage site

After a fire or other major disaster, the records disaster coordinator must gain access to the damage site quickly. The Fire Marshal agency security or safety officer or other public officials will be in charge of the building and will declare when it is safe for re-entry. The coordinator will have to work within their decisions, which can jeopardize

successful recovery. It is best to have reached an understanding about the value of the records and the need for quick access with the responsible authority ahead of time.

C-1-4 Initial damage assessment

The disaster coordinator and/or team should determine what level of response is warranted and whether or not to declare a records disaster.

(1) The situation will be deemed an emergency if the nature and extent of damage is of limited severity and can be dealt with by available personnel. See Appendix C-2-1 Minor Water Damage and C-2-2 Mold Outbreak.

(2) A records disaster will be declared if the nature and extent of damage warrants resources beyond those available at the time.
See Appendix A-6 Forms for an example of an Initial Damage Report Form

.

C-2 Minor records emergency response

C-2-1 Minor water damage

The following procedures are for minor water damage from roof leaks, plumbing system malfunctions, plugged drains and similar emergencies. The disaster coordinator or team should determine what level of response is warranted.

1. If easily done, attempt to determine the cause or source of the water.

2. Call, in the following order:
   It may be appropriate to list a plumber or the head of building maintenance. Some organizations may also want the security office notified.

Name/Title	Office Phone	Home Phone/Pager

3. If records and/or record systems are threatened by water, immediately notify the recovery coordinator.
   Insert name, office phone, and home phone or his or her designated back-up
   _____
   _____

4. Insert name, office phone, and home phone. If neither is available, call in the following order:

Name/Title	Office Phone	Home Phone/Pager

54. Attempt to cut off water if feasible. See building and floor plans for the location of water shut-off valves.

6~~5~~. **Turn off all electrical circuits** in the affected area. No one should walk through water until the appropriate safety officer has declared the area safe.

7~~6~~. Pull the in-house disaster supply kit, located _____ (specify its location).

8.~~7.~~ Protect the records while awaiting assistance (Choose a. or b.):

a. If water is coming from above, get plastic sheeting located in _____ (specify location) and use it to cover affected areas, cabinets, shelves, etc.

b. If water is coming in on the floor, get hand trucks, carts, or dollies located in _____ (specify location) and remove materials from affected area beginning with those in lower drawers and shelves, and move them to a safe location.

9~~8~~. Remove any standing water with a wet-vac, located _____ (specify its location).

10~~9~~. Take steps to **reduce the temperature and humidity and to increase air circulation**:

a. Measure the temperature and relative humidity using monitoring devices in the supply kit.

b. Turn on air-conditioning or lower the temperature setting.

c. Increase air circulation in the affected area by running fans continuously.

11.~~10.~~ Initiate response procedures and instructions detailed in the Appendix C-3 scaled to the need. If the quantity of damaged materials is less than 50 volumes or three file drawers, they can be recovered in-house using air-drying techniques. (If the quantity of damaged materials exceeds that amount, you must decide between (a) freezing them and then air-drying in small batches or (b) calling in a company that provides drying services. Indicate that decision here.)

C-2-2 Minor Emergency Response: Mold and Mildew

Spores of fungi (mold and mildew) are found almost everywhere. They only require the proper conditions of moisture, temperature, nutrients, and sometimes light to proliferate. Media such as paper, cloth, leather, and adhesives may be consumed or stained by many types of mold. The combination of temperature and humidity remains the most critical factor influencing their growth. General cleanliness and the removal of dust and dirt reduce the risk of infestation.

When the temperature reaches 70 degrees Fahrenheit and relative humidity is near 70 percent, conditions are ideal for growth and reproduction of most types of mold. Any rise in these levels creates an environment conducive to increased mold and mildew growth. They will generally grow within 48 to 72 hours after the onset of these environmental conditions. It is important to note that the absence of visible growth at low temperatures does not indicate the death of spores.

What is mold?

- Mold is one of a family of environmental microbes that includes yeasts, mildew and mushrooms. Mold is the most prevalent form of contamination.

Requirements for growth:

- Spores - are everywhere
- Moisture - +70 percent relative humidity
- Temperature - if it's comfortable for humans, it's great for mold
- Food source - eats anything organic (paper is a delicacy)
- Time – growth can begin in 48 hours if conditions are right

How to recognize mold:

- Musty smell resulting from digestive process
- Colored spots on paper (early stage)
- Holes eaten in paper (advanced stage)
- White, beige powder forms (usually a sign of dead mold, but does not mean material is free of live mold or dormant mold spores)

How to destroy mold:

- Dehumidification
- Fumigation
- Freeze drying
- Vacuum fumigation or vacuum drying

The onset of mold is of major concern in recovery. It consumes and destroys paper and book bindings.
Some people will have an allergic reaction. Some molds can be toxic.
Workers should wear masks or respirators and disposable gloves when working with records containing mold.

A mold outbreak can occur if temperature and humidity controls are not adequate, but also may be the result of a flood or other water damage. In the event of an infestation, take the following actions:

1. If mold is on a few isolated items:

   a. Place items in freezer bag located in _____ *[give location]*.
   Call the Recovery Coordinator, _____
   (Insert name, office phone, and home phone). If he or she is not in the office, leave a message.

2. If mold is discovered in whole drawers, stack ranges, or storage areas, call: *list here:* (a) a representative of the maintenance/facilities department who can adjust the temperature and humidity, (b) the recovery coordinator, and (c) the records coordinator or records officer.

Name/Title	Office Phone	Home Phone/Pager

a. Transfer all infected materials to an isolation room (insure that other areas will not be affected as the materials are being transferred). Seal materials in multiple garbage bags.

b. Immediately and thoroughly clean and sterilize the affected storage area(s) (see item six below), including the climate control system if possible.

3. Determine whether the affected records must be retained. Consult the records coordinator/officer to verify retention requirements. Consider reformatting (photocopying, microfilming, etc.) badly damaged/affected items.

4. If the records must be salvaged, consult a conservator or preservation specialist (see Appendix D -5 Supplies and Services) when dealing with severely affected materials. Small scale mold attacks can be destroyed by applying Lysol as safe fungicide. Sunlight or ultraviolet light also kills mold. Expose individual documents directly for 10 to 20 minutes. Thymal or alcohol may be used also, preferably under a paper conservator's direction. See Lois Price's *Mold: Managing a Mold Invasion* for detailed instructions at www.ccaha.org/mold

5. Dead mold residue can be removed from documents using a vacuum with a soft brush attachment. The vacuum should be fitted with a HEPA filter to stop the spread of mold spores. An alternative is to use a wet-dry vacuum with several gallons of water mixed with a fungicide like Lysol in the tank. Always work from the center of the document to the edges.

6. Large scale mold invasions can be destroyed using desiccant air drying, vacuum drying, and freeze drying; however freeze drying will not kill mold spores.

7. Check treated materials periodically (at least monthly) for evidence of new or recurrent mold or mildew growth.

C-3 Major record disaster response procedures

C-3-1 Establish Security Measures

a. The _____ (Indicate facilities manager or other personnel) will secure the site as far as possible by replacing doors and windows or by other means.

b. Only authorized persons will be allowed to enter the site. They will be designated by the use of _____. (Possibilities are: identification badges, phosphorescent vests, specially marked caps or hard hats. If these are specified, the organization must have an ample supply purchased and pre-printed and maintain them in the in-house disaster supply stockpile so they will be available immediately.) The personnel officer will be responsible for distributing these and will maintain a sign-in and sign-out register.

c. Special security personnel may be required if the security system has been damaged, if doors or windows are damaged, or if the facility is not substantially intact. In such cases, the recovery coordinator will work with the security officer to arrange for adequate security.

d. Unauthorized persons in the disaster area should be reported immediately to the team captain, immediate supervisor, or security officer.

_____ (disaster recovery coordinator or agency head, etc.)

C-3-2 Establish an operations center See Appendix A-7

In a routine emergency where the building is intact, operations will be controlled and coordinated through the recovery coordinator's office, located at (Indicate address, room number and phone number).

_____

If off-site space is required for operations control or for recovery activities (sorting, packing, drying, etc.), consult the Supply and Service Providers List in Appendix D-4.

C-3-3 Stabilize the damage site

The _____ (name a position) will supervise the stabilization of the building. First priority will be given to actions that ensure the safety of people. Second priority will be for the restoration of power. Other actions will receive attention as soon as possible. Actions that may be needed include the following:

Work through proper authorities such as the Department of Ecology and local health departments and HASMAT units on cleanup of sewage, biological agents, chemicals, and other contaminants.

Shut off and repair/restore utilities (gas, electricity, etc.).

Stabilize leaning or collapsed shelving.

Remove mud, water, ceiling tile debris, broken glass, etc.

C-3-4 Stabilize the environment

The _____ (name a position) will supervise the restoration of environmental controls with the goal of providing a cool, dry climate in the affected area.

a. If the heating/air-conditioning system is operable, settings will be adjusted to provide maximum cooling and dehumidification, with the goal of maintaining the temperature below 70 degrees and the relative humidity below 50 percent, and the system will run 24 hours per day.

b. If the heating/air-conditioning system is not working due to damage or power outage, use oscillating fans to circulate air. Stagnate humid air will exacerbate mold growth.

c. The _____ (name a position) will ensure that staff monitors the temperature and humidity at least every four hours to measure progress. The following monitoring devices _____

(specify which ones you have available) are located in _____ (specify location)

C-3-5 Stabilize the records

If site stabilization is not possible, most records will have to be moved off site. Undamaged records should be moved to a warehouse, agency or commercial records center or rented space that has a suitable environment.
Records damaged by water can be stabilized by freezing.
The disaster recovery coordinator _____ (or name a position) activates agreements for the use of cold storage and warehouse space made as part of the Disaster Recovery Plan or requests the agency purchasing officer to secure space for both damaged and undamaged records. (See C-5-2 Freezing.)

C-3-6 Make a detailed damage assessment

The recovery coordinator, photographer and other team members as assigned, will make a detailed assessment of damage. The photographer will use the camera and film stored in the disaster stockpile in _____ (give room number or other location) or use available equipment.

The assessment can be made using a report form such as the example Appendix A-6. It should be far more detailed than the “Initial Damage Report,” but should not be made at the drawer or box level. Doing so would simply cost too much time. At a minimum it should be made at a room or area level, and at a maximum at the cabinet level.

Based on the requirements of your insurance carrier, risk manager, or state/federal emergency management agencies, you may wish to add additional details about the types, form, and level of documentation that is required.

C-3-7 Develop a detailed plan of action

The _____ (specify key personnel who will be involved, generally including the recovery coordinator, and facilities manager) will meet to review the extent of damage, status of building systems, and available personnel. They will develop a plan of action that addresses major issues in the records recovery plan.

If damage is extensive, the plan may require decisions on what records to salvage based on value, extent of damage, and whether or not they are duplicated elsewhere.

Utilize the functional risk probability analysis, the records recovery priority list, and the essential records schedule (see Part 1, Chapters 1 and 4) to aid in decision making. Document each decision for insurance and public disclosure purposes.

Determine the kind and degree of damage that records in each location have sustained. These will be "gross" designations, not on an item-by-item nor perhaps even a box-by-box or drawer by drawer basis, but (depending on the extent of the disaster) on a range-by-range, cabinet-by-cabinet, or room-by-room basis. Use a scale for rating degree of damage, i.e., Level 1 to 5, with Level 1 indicating minor or no damage and Level 5 indicating extreme damage.

In the event of a large-scale disaster, a key decision will be which recovery operations to handle with existing staff and which to contract to disaster recovery companies. This decision will influence all facets of the recovery plan.

1. Which materials will be salvaged and which discarded?
2. Will the disaster recovery team or staff handle the salvage operation, or will some or all of it be contracted to disaster recovery specialists?
3. How will the materials be salvaged? Recovery operations for records to be air-dried locally differ from those that are appropriate for records to be sent to a drying facility.

Appendix E contains information about various drying methods, their advantages and disadvantages.

Text in this section provides basic information and general guidelines, but may require significant revision based on local situations and decisions.

Before salvage begins, the _____ (disaster recovery coordinator) will:

Determine the salvage priorities for various agency records, based upon those given in the "Recovery Priorities" list in the Plan but modified based on the type and extent of damage and the services and funds available.

Decide what drying and other recovery methods to employ, and what resources must be mobilized.

The disaster team and other staff will be briefed on the plan of action and their responsibilities in it. If appropriate, training in specific techniques such as packing, cleaning, or air-drying will be offered by _____ (specify a position).

C-3-8 Procure and assemble the necessary supplies and services

The agency procurement officer will consult with the recovery coordinator and personnel manager to determine what supplies and services are required for the recovery operations.

The in-house supply and equipment stockpile inventory is in Appendix D-3.

External suppliers and service providers already identified are listed in Appendix D-4.

C-3-9 Determine and assemble additional personnel needed

The following also may be called to help:

- Supplementary agency personnel as needed.
- Volunteers
- Temporary Help
- Others as determined by the recovery coordinator.

Agency personnel shall be informed exactly when and where to report. Additional details are provided in
Appendix A- 4-3- c andA-8 - Communications Plan.

C-4 Pack out
This section assumes that all the items covered in the "Response Procedures" have been addressed including triage decisions about which records to salvage and in what order, and by what method.

If on-site training is required, it will be provided by _____ (specify the Recovery Coordinator or other position). If more extensive training is needed — for example, for volunteers or temporary workers — it will be organized by _____ (specify the personnel manager or other) and led primarily by _____ [specify the Training Instructor or other position].

C-4 Pack-Out
Records usually have to be removed from affected areas for immediate drying in a stable location within the organization, to a cleaning or recovery area within the organization, or transported to a freezer facility or a commercial drying facility.

Execute the pack-out operation in the order determined by the recovery coordinator, based on the "Recovery Priorities" list and the degree of damage. If a full range of recovery services is available, it is generally appropriate to begin with the wettest materials and move to those that are merely damp. However, if the organization is limited to air-drying using staff resources, it may be better to begin with those that are least damaged and therefore most quickly recovered.

C-4-1 Organizing Pack-out
Depending on the nature and extent of damage, available help and possible logistical constraints, work crews in the pack-out operation will consist of people assigned to the following tasks:

> **Pack-out leader**: ensures smooth workflow, alleviates bottlenecks, and troubleshoots
> **Box assembly**: sets up boxes, etc.
> **Retrieval**: removes materials from shelves, cabinets, floor, etc., attempting to pull materials of similar size for each container
> **Wrapping**: cuts freezer/waxed paper (necessary for bound materials only).
> **Packing**: takes items from retriever and wrapper, and boxes items
> **Sealing**: seals and (working in concert with recorder) labels containers
> **Record keeping**: keeps a written packing list
> **Transporting**(s): moves containers from packing area to pallet, elevator, stairs, etc.

C-4-2 .Packing for pack out: Pack-out procedures for wet records depend on whether materials are being transported to a nearby area for immediate drying or to an off-site cold storage or freeze-drying facility. The latter requires more careful packing and more thorough documentation. Different recovery methods may mean different packing out practices and supplies. Commercial records recovery services will probably recommend and sell appropriate containers. Use the following if you are "on your own" or using a public or private service that does not have specific container requirements:

> Freezing: If the goal for some or all records is stabilization and/or recovery by freezing, it is preferable to pack records in plastic crates (milk crates) that have ample holes for air circulation which hastens freezing and drying. Cardboard boxes are satisfactory for minor water (edge) damage.

Cleaning mud and debris: Plastic crates always.

Storage: Undamaged records destined for temporary storage should be boxed in standard 1 cubic foot records storage boxes. Avoid use of odd size boxes not designed for record shelving or not stackable on moving pallets.

Thermo-vacuum deodorizing and fumigation: Either plastic crates or boxes will do.

In-house air or interleaf drying: The container depends on the degree of water saturation. Cardboard boxes are satisfactory for minor water damage. Plastic crates are preferable for saturated records, as seepage from the files to cardboard container may create sufficient weakness to cause the bottom of the container to collapse.

Microfilm and other photographic negatives should be put into five-gallon barrels filled with clean cold water and transported that way to a re-processing facility. Once wet, film should never be allowed to dry out. If it does, emulsions separate and adhere to an adjacent film base.

Note: As a rule of thumb, unless otherwise stated, cardboard boxes are preferable from a packing, labeling, cost, and storage viewpoint.

To move materials within the building during pack-out, use hand trucks, utility carts, or dollies located _____ (give locations). Metal hand trucks and utility carts are preferable. If only wooden ones are available, they should be well covered with heavy plastic sheeting to prevent damage to their finish.

If possible, loosely sort materials according to the degree of wetness (soaked, damp, or dry). Pack like materials together — e.g., damp records or volumes in one box, soaked ones in another, and so on.

Files: Place folders in boxes located _____ (give locations). Place the folders vertically in boxes (standing as they would in a file drawer). Do not fill boxes completely in order to allow for swelling. However, don't allow the folders to slump or slide down within the box.

Bound volumes: Load into boxes for transport. Place normal-size volumes in a "spine-down" position. Pack large volumes flat in the boxes. If time allows, loosely place sheets of freezer paper or waxed paper around every volume (or every other volume). Enough space should remain in the packed boxes to allow for swelling. Don't permit volumes to become bent or distorted in packing or transport.

Microforms: Place in cool, clean water until ready to transport for reprocessing. See further details in the "Recovery Priorities" section that follows.

Photographic materials: Most can be left in cool, clean water for a few hours until ready to dry or send for reprocessing. See further details in the "Recovery Priorities" section.

If using cardboard boxes, do not stack more than four boxes high. The boxes can be stacked on pallets and the pallets can be shrink-wrapped to prevent slippage during transportation. Pallet jacks or a fork lift can then be used to move the pallets onto trucks or to the drying area.

C-4-3 Labeling:
Each box or crate should be labeled. Labeling may be comprehensive and include all of the inventory information such as records series title, dates, office location, etc. It can also be a simple control number assigned to the box in a database or box listing sheet. Use water proof markers to label boxes and plastic tags for plastic crates which have limited space for writing. (See Appendix C for additional instructions for "Packing Out.")

C-4-4 Know what you have - Recovery Tracking System
For inventory control as well as insurance purposes, it is necessary to know the condition and disposition of records, especially if they are being transferred to a contracted restoration service provider.

- What records were destroyed in the disaster?
- Which records need to be removed or replaced?
- Which records were unharmed or sustained only minor damage?
- Which records were damaged but are salvageable?

As materials are removed, one team member will label each container with a brief notation of its contents and original location (by shelf or file name/number range; by cabinet/drawer; by record series; etc.). Indicate the damage (e.g., "wet," "dry," "smoke," "mud," etc.), salvage priority, and, if time allows, the volume (number of volumes or archives boxes) inside. If materials are going to different areas (e.g., some to the rinsing stations, others to an air-drying area, and some to a freezer), also note the destination of each container.

If there is a large number of boxes, give each a brief unique designator code (e.g., floor/section designation and box number), then provide the detailed information regarding contents, damage, and priority on an inventory/packing list and or in a tracking system spreadsheet.

Throughout the salvage operation, it is useful to also document various decisions made (particularly the decision to discard) and who made/authorized them. This may be the responsibility of the _____ (name an individual/position).

The photographer should take photographs or videotape the salvage operations to document the recovery effort.

C-4-5 Removal
If elevators are working and conditions permit their safe use, they will be used. If not, the following strategies may be used: use of "human chain," laying plywood on stairs to create ramps for sliding boxes down, sliding boxes out windows onto ramps, and removing boxes out windows into dumpsters suspended by cranes.

C-5 Records Recovery Treatment Procedures

C-5-1 Rinsing and cleaning:

Some records may need cleaning after a disaster.

Materials may be rinsed before drying or freezing if they have been subjected to mud, sand, or other dirty deposits, and if adequate personnel and time are available for the rinsing work. The objective of the cleaning is not to make the materials pristine, but to remove gross deposits.

Select an appropriate area for the rinsing operations. It may be a loading dock, parking lot, or outdoor area. Key requirements are that it have access to running water, and have good drainage or be sloped so that water does not stand in the area. Specify here the areas that seem most likely to be suitable:

_____

_____

_____

Personnel working in the rinsing area should be provided with rubber boots and gloves and waterproof clothing. If the water has been contaminated by sewage, workers will have additional protective gear as recommended by the safety officer.

The rinsing stations may be set up in either of the following ways, depending on the type of rinsing that is needed:

Wet records covered with mud or debris can be washed before being sent for drying. If there is edge mud or debris they can be lightly sprayed while in plastic crates. The spray will remove most of the debris which will drain out of the crate. If entire documents are covered they can be bathed in a shallow pan and literally hung out to dry. (See Appendix C-3-4.)

If mud deposits are so light that a single brief rinsing will remove them, each station may consist of one garden hose with a spray nozzle.

Rinse individual folders or volumes one at a time, holding the folder/volume tightly closed to avoid transferring dirt between the pages.

If mud deposits are heavy:

- Set up a series of 3-8 large plastic garbage cans.
- Have a garden hose running into each can, with the nozzle resting at the bottom, and turn water on to provide a slow but continuous flow into each one.
- Workers will take each item to the first can, hold it firmly closed and immerse it, move to the second can and immerse the item, and so on through the line.
- Keep a supply of sponges at the last can, so that mud can be lightly dabbed off there.

- The last station will have a hose with spray nozzle so the workers may rinse materials under a fine spray.

- Gently squeeze excess water from volumes or folders

Do not attempt to remove mud or stubborn stains during the rinsing process. This would significantly slow down the operation.

The same procedure may be used for photographic materials, except that shallow dishpans or photo processing trays may be placed on tables and used instead of garbage cans.

Never use these rinsing techniques on records with soluble inks (watercolors and many manuscripts), animal skins (leather, vellum, or parchment), or works of art on paper. Always "test" the ink first by wetting one character or word to see if it "feathers."

Once materials have been rinsed, they may be transferred to the air-drying area or packed for transport to a freezer or drying facility as outlined in the packing instructions above.

C-5-2 Freezing

Freezing may be used as a stabilization technique for wet records. It should be used whenever records cannot be dried within 48-72 hours, because records left wet and at normal temperature beyond that time are at great risk for developing mold. In addition, bound volumes do not continue to swell and inks do not continue to "feather" or diffuse once frozen.

In a medium- to large-scale disaster, freezing buys time for the organization. Once the materials are stabilized by freezing, funds can be obtained, drying options and vendors can be evaluated, and the staff can take a break after the difficult work of response and pack-out. There is no limit on the amount of time that materials may be left frozen. In fact, paper will dry over time in a freezer.

Bound volumes and paper records are suitable for freezing. In a large-scale disaster, microfilm and most other photographic materials can be frozen also, though that is not ideal. Historic photographs (such as daguerreotypes, tintypes, and ambrotypes) should never be frozen.

Cold storage companies are located in most cities and public port facilities often have cold storage facilities. If your organization has a cafeteria or restaurant, it may have a walk-in freezer you could use for small to medium quantities. As you contact services, be aware that state and other health regulations may restrict the storage of records and books with certain foodstuffs. In a pinch, you can use a home freezer; those that are self-defrosting work best.

In an area-wide disaster such as floods or severe weather, you may not be able to find a local freezer facility. In that case, you may use a refrigerated truck for transporting materials to a remote facility or for temporary cool storage on-site; while it will not freeze the materials, it may keep them cool enough to slow mold growth.

Your plan should describe:

- What freezer facilities you have identified, with the name of a contact there and phone number for after-hours emergencies
- Arrangements for transporting materials to the freezer facility, whether using your own vehicles or a trucking service

C-5-3 Drying
Most damage to records is due to water. There are six or more common methods of drying water soaked records ranging from interleaf drying to vacuum freeze and desiccant air drying See Appendix E for descriptions of each and their advantages and disadvantages Detailed procedures for two methods, Interleaf and air drying, are detailed here because they are the two that require hands on action by the Disaster Recovery team and other agency staff, and thus require the greatest knowledge and training. The other methods are most often done by contracted services, with less participation by the team or agency staff.

C-5-3- I Paper: Water Damage
The greatest damage to paper from water is done during the first 8 hours after a disaster. It is essential to begin restoration immediately after assessing the damage and stabilizing the area. Only small collections that can be dried within 72 hours should be restored without prior freezing. Collections larger than three file drawers or 30 to 50 books should be frozen as there will likely be neither staff nor space to process them.

C-5-3-1-a Interleaf Drying is ideally suited to emergencies involving small number of records in an environment where the temperature and relative humidity are low, so as not to create an environment which can harm the records.

Make sure the area for drying is large and clean, with adequate security, and that it has proper temperature and humidity controls.

Method:

- In a safe recovery station, set up tables and cover them with clean unused newsprint or other blotting materials (i.e., blotter paper, paper towels, cotton rags, florists –non-colored waxed paper).

- Remove the records from the damaged area using milk crates.

- Remove the folders from the milk crates. Remove the records the folders, and discard fasteners and file folders. Folders do not dry well or will warp. It is best to create new folders. Be sure to write down information from the folder tab prior to discarding it. Keep the records in the order found in the folder.

- Place the individual records on the table. Use some sort of identifying mark in between file folder so that the records will be returned to the correct folder after being dried.

- Change the blotter paper regularly.

- Remove the records when they are totally dry, usually 30-48 hours. Return all the records to their proper files ensuring that reused file folders are not damaged.

TIP: If the wet sheets are difficult to separate, use a sheet of polyester (Mylar). Mylar is considered a polyester sheeting since it will create an electrostatic charge. An example of Mylar found in everyday use is overhead projector sheets. Mylar sheets can be purchased at any office supply store.

- Place a sheet of Mylar on the top of a stack of wet paper and gently lift.
- Place the document on the table, and when it has partially dried, remove the Mylar.
  You will need several sheets of Mylar. Remove the Mylar as soon as possible to allow air to circulate over the paper to dry it more quickly.

C-5-3-1-b Air Drying

There are several methods of air drying.

- Use large flat surfaces such as folding lunch tables.
- Spread blotter paper on the tables and place wet documents on top.
  This method is faster than interleaf paper but requires huge amounts of space.
- Loosely place documents in metal file sorters
  This method takes less space than using tables but is slower.
- Clothesline or fishing line may be used to dry papers. Hang the line between two objects and clip the documents to it. Use plastic clothespins to hang records - wooden clothespins will retain water
  This is a good way to dry brochures and pamphlets.
  Only use this method on paper if a small section of the paper is damp.
  Do not hang extremely wet records as they are fragile and may pull apart.
- Shallow baking trays or screens may also be used for drying. Cover the bottom of the tray/screen with blotter paper so the records will not stick to, nor take the shape of, the pan. Pans can be stacked to allow larger numbers of records to dry at the same time.

Wear disposable rubber gloves to prevent dirt and oil from skin from getting on the records.

Some items, such as blueprints, maps, etc., will need professional work due to the fragility of the paper used to print them and due to their size.

C-5-3-2 Books: Water Damage

Books can be treated the same way as loose paper, except for positioning.

- Set up tables in recovery area. Cover them with absorbent material.
- Remove books from damaged areas using milk crates or heavy cardboard boxes.
- Lay books flat on table and interleaf using newsprint, paper towels or other available absorbent material. Replace absorbent material frequently until book is dry. or,
- Stand books upright on absorbent material, open each book with boards at a 90 degree angle and “fan” pages, separating as many as possible. Repeat fanning process every half hour to hour until dry.
- After a few books are dry stack them and apply light pressure. This may help reduce wrinkled pages and warped covers.

C-5-3-3 Coated Stock: Water Damage
Coated stock, books and magazines, photography of value should be frozen right away. Do not try to air dry. Employ a professional conservator to treat these materials.

C-6 Recovery From Fire Damage
(Materials involved in a fire are likely also to suffer water damage.)

- Treatments for fire damage apply to both records and books.
- Records and books which have both fire and water damage should be dried first and then treated for fire damage.
- Records and books that are not wet and only charred around the edges or damaged by soot will not need immediate attention.

C-6-1 Treating Charred Records and Books

- Charred, sooty or mold covered wet records should not be cleaned until returned from drying. Attempts to do so will result in smearing, making the matter worse.
- Dry or dried, charred, sooty, dusty documents or documents covered with dead mold residue after drying can be cleaned. Use a "Hake brush, very soft dry cloth towels (like diaper cloth) and clean outwards from the center of the document. A low negative pressure vacuum cleaner with soft brush head or, for charred records,~~)~~ a brush head with a loosely woven cloth cover can also be used with caution.
    - Set up clean work tables and cover with disposable material such as news print.
    - Remove records very gently from damaged area using milk crates cardboard boxes.
    - Remove documents from file folders. Copy all information from folder tabs. Keep documents in the order that they were in the folder. Do not mix items from different folders.
    - Handle carefully as burnt or charred paper will be brittle and is easily torn or may crumble.
    - Gently clean records with a Hake brush or soft chamois cloth. Move the brush or cloth from the center of the page to the edges will help avoid tears and will allow dust and charring to fall away from the document.
    - If the records are badly damaged, copy using a flat bed copier or microfilm machine.
    - If records are only coated with soot, and not actually charred, they can be cleaned with a low suction vacuum cleaner.
    - Return records to new folders after treatment.

C-6-2 Burnt Material

Damage caused by extremely high temperatures is irreversible; however, the information from severely burnt records can often be read by photography using an ultraviolet light. This procedure is expensive and should be reserved for only the most valuable information. These methods usually are carried out only in forensic science laboratories and are available only in exceptional circumstances. In the absence of professional help, no attempt should be made to open charred bundles, for such handling will result in further damage.

Even if materials are not charred beyond recognition, exposure to high temperatures will cause the paper to become extremely brittle. Such records should be evaluated. Some

may be discarded, and others may be microfilmed or photocopied to preserve the remaining information.

If edges of bound volumes are charred or badly smoke-damaged, they can be sent to a library binder, who will remove the binding, trim the edges of the paper, and rebind the volumes. A list of certified library binders is available from the Library Binding Institute (see Appendix D -- Supplies and Services). Others may be found in the Yellow Pages.

C-6-3 Smoke and Soot Deposits

If smoke and soot is deposited on the edges of materials, they can be treated in the following ways:

Treat the materials in-house, using “chemical sponges” (pure latex rubber sponges) to remove the soot particles from the edges of volumes and documents. Use gentle sweeping motions, moving from the center out to the edges of the document.

A professional document conservator should evaluate archival, fragile, or specialized records before employing any general-purpose soot and particulate removal techniques.

C-6-4 Smoke Odor Removal

Professional companies can deodorize fire-damaged paper records. There are two major options. Some companies essentially "perfume" damaged materials to mask the odor. Many such companies can be found in the Yellow Pages under "Smoke Odor Counteracting Services."

Materials may be treated in a thermo-vacuum or an ozone chamber. Ozone more effectively neutralizes the odor. However, ozone is a powerful oxidizing agent that irreversibly accelerates the aging of paper, so it generally should not be used on archival or intrinsically valuable records. Thermo-vacuum systems will also eliminate smoke odor. Companies listed in Appendix D -- Supplies and Services, provide this service.

When dealing with fire damage to special materials (art works, photographs, magnetic media, etc.), it is best to consult one of the conservators or other specialists listed in *Appendix D -- Supplies and Services*.

C-7 Recovery from Contamination

- Do not attempt recovery of any contaminated records until it is positively identified.
- Contact the local health department, State EMD (see Emergency Contact Numbers, Appendix B-10) EMD will contact the appropriate state departments such as Health, Ecology or Labor and Industries.
- Contaminated records can be recovered without outside intervention provided it is deemed non-injurious. Recovery crews should wear disposable rubber gloves. Face masks are necessary if fumes are present.
- Recovery of contaminated records most often means electrostatic copying or microfilming as contaminates are difficult to entirely remove, leave stains and residues which will accelerate disintegration of papers and films, and may transfer to adjacent documents when refilled.
- If contaminates leave residues, follow the procedures for cleaning and rinsing.
- If the contaminate is deemed injurious, a decision must be made to either destroy the records or call in a professional recovery company experienced contamination problems.

C-8- -Recovery Procedure for Microfilm, Photographic Film
~~C-8- -Recovery procedure for microfilm, photographic film~~

C-8-1 Microforms Recovery

Microforms subject to water damage should be professionally cleaned and dried within 48-60 hours. Generally this involves the use of a service bureau that will rewash, process, and dry the film. In most cases, the film should not be used again, but a duplicate copy should be made and the damaged one discarded. Coordinate microfilm salvage with service bureaus and processing laboratories

C-8-1-a Microforms Recovery Priority

1. Color microfilm is most vulnerable. If the film is important, it should receive high-priority attention.
2. Silver-gelatin and other emulsion film, while relatively stable, should generally be salvaged next.
3. Diazo and vesicular films duplicates and should be replaceable, moreover they are most stable and should generally be salvaged last, if at all.

C-8-1-b Microforms Recovery Procedures

- Fasten a rubber band around the box so the box, label, and roll will remain together.
- If the film is dirty or muddy, put in a 5-gallon bucket filled with clean, cold water, and agitate lightly to remove major dirt deposits.
- Drain off water. Replace with fresh water that is clean (preferably distilled) and cool until ready for packing.
- Observe the film brand identification on top of each film carton. Kodak film can be packed for delivery to Eastman Kodak Company, and Fuji Film can be packed for delivery to Fuji Film Company, since both provide no-cost salvage of their film, Appendix D -- Supplies and Services. The State Archives Imaging Services Section will also clean and dry film. Commercial microfilm labs will clean and dry film for a fee.
- Pack wet or damp reels of film in boxes lined with three layers of heavy duty plastic garbage bags (10-gallon size). Fasten each plastic bag separately and seal all boxes, marking them WET FILM FOR REWASHING & DRYING. Each box may contain 40-50 reels of 35 mm film (about 80-100 reels of 16 mm film) with a maximum weight of 35 pounds.
- Prepare and enclose a packing list in the container, and retain a copy of it.
- Arrange for shipping via UPS, Federal Express, or other carrier, and be sure the service bureaus know to expect receipt.

C-8-2 Microfiche

If the fiche is a duplicate and replacements are readily available, do not attempt salvage. If salvage is required, follow these steps:

- Keep the fiche in clean, cool water until ready to salvage.
- Set up small buckets, shallow dish pans, or photo trays with clean, cool water.
- Dip the fiche in the series of water baths to rinse off dirt, mud, or other debris.
- Hang individual microfiche sheets on clothesline to dry. Be sure clothespin is attached to edge of sheet and does not contact the image area.

Freezing

If film cannot be salvaged within about 60 hours, it can be frozen.

C-9 Computer Media

Special procedures for protecting computer media are outlined in Appendix B-4 – Backing up PC's.

The best procedure for recovering information recorded on computer media is to use your backups to recreate whatever data and files were on the affected media. If you attempt recovery techniques described here, never put the affected or damaged media in one of your newer or better machines, as the equipment could be damaged. If in doubt, always consult a data recovery specialist. *Appendix D -- Supplies and Services*, lists some of those companies.

C-9-1 CD-ROM and optical disk

- Rinse in cool, clean water.
- Dry with a very soft, non-abrasive sponge. To accelerate drying, use a blow dryer turned to the "cool" setting.

C-9-2 Hard drives ad magnetic tapes

To the extent possible, use backups stored off-site. If salvage is required, contact specialized companies listed in *Appendix D-- Supplies and Services.*

C-9-3 Diskettes

The objective in salvaging diskettes is not to save the diskettes themselves, but to allow you to copy data from a wet disk to a new one.

- Remove the disk from its plastic casing.
    - ·3½" diskette: Gently pry up the metal "door" and remove the diskette inside. A spring will be visible, and it needs to be removed (it comes out easily as it is held in place by the metal "door"). The plastic disk will now be visible. Using a micro-spatula or thin screwdriver, slide the end in slightly so as not to touch the magnetic medium, and pry open each end to break the plastic seal that holds the two sides together.
    - ·5¼" diskette: Use scissors to cut off the very edge of the diskette housing so that you create an opening on the edge of the diskette that faces outward when it is in the disk drive.
- Reach in (using clean hands or lint-free gloves) and gently remove the magnetic medium.
- Gently rinse the magnetic medium in clean, cool water. Several rinses may be required, if the disk was in dirty water.) Wipe with a lint-free cloth.
- Open a new diskette, using the procedures outlined in step 1. Remove the magnetic disk from within the casing. Place it into the new case. When recovering 3½" diskettes, you do not need to reattach the metal "door" or spring, but be sure the plastic fits snugly together so it does not get jammed in your disk drive.
- Insert the disk into the floppy drive of a PC. It is a good idea to use an older PC, in case the disk still has some dust or other defects that could damage the disk drive.
- Copy the damaged disk onto a new diskette.
- Remove the recovered magnetic medium and discard it. You can then continue using the diskette housing for recovering information from additional damaged diskettes.

C-10 Post-disaster restoration

After records have been recovered, some further restoration work may be required before they can be re-filed, re-shelved or returned to other storage locations.

C-10 1 Repair
Some records may need and deserve repair. Papers can be torn or have jagged edges resulting from charring. The first rule of repair is: Do not use adhesive tape to repair valuable records. Many tapes contain chemicals harmful paper. They are also difficult and expensive to remove. All repairs of permanent, historical and intrinsically valuable records should be repaired using only reversible and non-damaging treatments archival treatments. Professional paper conservators should be employed for this purpose, or at least consulted, unless a member of the staff or volunteer is technically trained for this work.

C-10-2 Storage:
Records that have been water-damaged or mold-infested should be kept apart from other records for at least six months in a well-ventilated area having good climate control (65 degrees Fahrenheit and 35-45 percent relative humidity). The following locations may be used for this purpose:

_____

_____

_____

C-10-3 Assessment: _____ (specify the responsible position/person) will evaluate the records and decide on the next steps:

Outline procedures for each below.
Note: These are primarily records management decisions and actions and therefore not delineated in this manual.

- **Disposal:** (Specify who has legal authority to order the destruction of records, what record-keeping must be done, and where or how records will be discarded. Agency records coordinators should be contacted. The Archives and Records Management Division may also be contacted for guidance. Remember that there are Washington state statutes and codes that establish requirements for retention, maintenance, and security of government records.)
- **Reprocessing and Duplication:** (Specify procedures and responsible staff.)
- **Replacement:** ([Specify procedures and responsible staff.)
- **Repair:** (Specify procedures and responsible staff.
- **Re-housing:** ([Specify procedures and responsible staff.)
- **Re-labeling and Shelf Preparation:** (Specify procedures and responsible staff.)
- **Re-filing and/or Re-shelving:** (Specify procedures and responsible staff.)

C-11 Post Disaster Briefing and Evaluation
After the records recovery operations are complete, evaluate the operation of the Records Disaster Plan. Talk with those involved.

- Were they sufficiently prepared?

- Did the Plan work?
- How could it be strengthened?

Revise the plan accordingly.

Remember to thank those within and outside the organization who assisted in the recovery operation.

APPENDIX D

RECOVERY SUPPLIES and SERVICES TEMPLATES and INFORMATION

Appendix D discusses the value of stockpiling response and recovery supplies, and provides procedural templates for maintaining a stockpile and contacts with service providers and suppliers.
It offers a checklist of the most commonly used supplies in response and recovery, and contains a name and address directory of national and regional service providers and suppliers.

D-1 Disaster Supply Stockpile -- Concept

Limited disasters (emergencies) plague organizations on a regular basis. The roof leaks. An air-conditioning system component malfunctions, sending water onto materials below. Pipes leak and drains back up. Most limited emergencies are water-related, but mold outbreaks also are a constant threat.

Quick response can make the difference between a minor annoyance and a costly event. The faster records are stabilized, the less damaged there will be. Having a disaster supply stockpile on hand allows staff members to begin responding immediately.

The following "Disaster Supply Stockpile" template is a checklist of materials needed for a limited water and fire disaster involving 12 to 16 cubic feet of records. Most of the items are readily available from local hardware, grocery, and drug stores. A few more specialized items may be purchased from archival, conservation and recovery suppliers generally located out of state. See the list in “Suppliers and Service Providers in Appendix D-3.

Agencies prone to major area-wide disasters (such as earthquakes and floods) should plan for a greater level of self-sufficiency and should stockpile additional specialized supplies that cannot be easily obtained locally.

Decide where and how to store the supplies. Avoid the areas that are most susceptible to leaks or flooding; this generally argues against storage in the basement. Interior closets are often good candidates. Some organizations divide the stockpile, storing two or more identical kits in different areas of the building as a hedge against disaster.

Store the supplies in sealed, waterproof containers so that even if there is some water in the area, the kit will be intact. Some recommend storing supplies in a 20- to 30-gallon heavy duty plastic garbage can (those with wheels are helpful), which can be transported easily to the site, and may have additional uses for debris removal. Some institutions put the supplies in milk crates, each shrink-wrapped in plastic and secured onto a dolly or hand truck.

Keep a copy of the stockpile checklist in each DPT member packet, showing the location of supplies and equipment kept elsewhere (e.g., mops, fans, dehumidifiers) and providing instructions on how to get access to storage locations. All members of the team should know the location of the stockpile.

It may be impractical to include some bulky or expensive items in the stockpile. Equipment such as de-humidifiers, fans and small tools may have to be borrowed from the agency maintenance department or other source. Arrangements for their use should be made ahead of time.

Creation of a large stockpile to handle major disasters may require storage of some of the more cumbersome equipment (generators, dehumidifiers, and so on) outside the building. Some public agencies can use a city or county warehouse for this purpose. Be sure you know how to get access to these areas, and be sure to inventory off-site supplies and equipment regularly.

D-2 Disaster supply stockpile policy & procedure

To ensure fast and effective response to emergencies, the agency maintains a stockpile of disaster recovery supplies. This section lists those supplies and their storage locations.

Include the following paragraph to designate where supplies are kept outside the building — for example, in a central warehouse or supply depot:

The location designation _____ (insert abbreviation or code you plan to use) refers to the facility located at _____ (insert exact street address, floor, etc.). To get access to this facility, contact _____ (name individual(s) who authorize and provide keys or access to the location, including office and after-hours phone numbers.) If this person is unavailable, contact in the following order:

Name/Title	Office Phone	Home Phone/Pager

You may also note here the frequency of inventories and who is responsible for conducting them.

D-3 Records Disaster Recovery Supply Stockpile List. The following list of supplies provide for a relatively small emergency that includes bound materials, paper documents, and photographs (including microfilm).

The "Quantity Needed" column represents the minimum for recovering materials in a small water emergency (e.g., with about three - six file drawers or 12 cubic feet of damaged materials) when utilities are not disrupted.

The WEB version of this template contains expanded lists of supplies for medium and large disaster. As part of your planning, determine the scale and types of disasters for which you need to prepare, and increase the quantities accordingly. Depending on the type of situations you anticipate, some of these supplies may not be needed.

SECTION 1. SUPPLIES FOR PEOPLE				
ITEM	**LOCATION**	**QUANTITY NEEDED**	**QUANTITY PRESENT**	**DATE CHECKED**
Boots, rubber		1/person		
First aid kits		1		
Gloves, latex or rubber		3/person		
Dust/Particle Masks		2/person		
Protective clothing (e.g., rubber aprons, Tyvek coveralls)		1/person		

SECTION 2. RESPONSE SUPPLIES				
ITEM	**LOCATION**	**QUANTITY NEEDED**	**QUANTITY PRESENT**	**DATE CHECKED**
Hand trucks and utility carts or dollies		1		
Camera(digital, Polaroid)		100 exposures		
Clipboard		1		
DUCT TAPE		2 rolls		
Extension cords, 50-foot, grounded		2		
Flashlights, batteries, replacement bulbs		1 per dept.		
GARBAGE BAGS		1 box		
Labels, adhesive		Box of 20		
Lights, shop, & bulbs		1		
MARKERS, WATERPROOF		4		
NOTE PADS		1		
Paper towels or Hand wipes		1 carton		
PENS & PENCILS		4		
PLASTIC SHEEETING		6 rolls		
Scissors		1		
TAPE, FILAMENT, DISPENSER		4 rolls		
Utility knives, extra blades		1		

SECTION 3. RECOVERY SUPPLIES				
ITEM	**LOCATION**	**QUANTITY NEEDED**	**QUANTITY PRESENT**	**DATE CHECKED**
Alcohol				
Blotter paper		50 sheets		
Book press		1		
Boxes, cardboard record/file storage*		10		
Boxes, polyethylene*		10		
Bread trays, plastic				
Buckets (for rinsing)		3		
Clothesline (nylon or 30-lb. monofilament)		100 feet		
Clothespins, plastic		100		
Dehumidifiers		1		
Fans		1		
Freezer bags, 1-gallon		50		
Freezer/waxed paper				
Garbage cans, plastic, 20- to 30-gallon				
Garden hoses & nozzles		1		
Interleaving paper (un-inked newsprint, or paper towels)		400 sheets		
Milk crates*		10		
Mylar sheets, 3-mil, 12" ´ 15"		25		
Photo trays or shallow dish pans (for rinsing)		3		
Tables, 6-ft., folding		2		
Temperature/humidity monitors and batteries[1]		1		

*Interchangeable with polyethylene boxes, plastic milk crates or cardboard boxes.

[1] Describe products/services available, payment terms, and any special arrangements, unique features, limitations, or other conditions.

D-4. Supply and Service Providers

Identify emergency service providers, suppliers and other resources needed in a disaster situation. Make these contacts before you confront a disaster, when you can calmly evaluate the suitability of a particular service or product and establish an understanding with the provider.

As each firm is contacted, address the following points:

Availability: Explain what resources you might need and find out what services, equipment, and/or supplies are available and at what price. Will it be possible for you to contact the provider and acquire the resource outside normal business hours? What is the expected delivery time of materials or services?

Payment Terms: Will the provider accept a standing purchase order, extend credit, or make some other arrangement so that after hour access to the resources is available?

Contacts: Ask the provider to supply the names and phone numbers of after hour contacts. Let the supplier know which agency staff are authorized to call for help.

Geographic proximity may be irrelevant when identifying qualified recovery and restoration services, particularly for the more technical services such as vacuum freeze-drying, on-site dehumidification, or video restoration. A few national companies have developed an understanding of the needs of government records and archival materials and have developed sophisticated services to address those needs. Many have mobile equipment and teams that can be on-site within a matter of a few hours. Others have developed ways to facilitate shipment of damaged materials.

Providers should understand and support your needs. Renew contacts annually. This facilitates learning of new resources that may have become available, and to update the contact information for your institution and the supplier

This section lists the sources of supplies and services that might be needed in a disaster.

Part A describes the uses and sources of supplies.

Part B describes specialized services such as drying, extermination and fumigation, fire damage restoration, freezing, and sources of information and referrals.

The institutional checklist should be organized to reflect for each type of supply or service the following basic information:

Company: _____

Phone: _____ Fax: _____

Address: _____

Notes:[2] _____

Date of Last Contact: _____

After-Hours Contacts	Home Phone	Cell Phone/Pager
Primary:		
Back-up:		

Include multiple providers of the supplies and services based locally, regionally, and nationally, especially if your organization is vulnerable to area-wide natural disasters. Also, if some of these supplies are kept in the in-house stockpile, note those locations.

D-5 Supplies and services

D-5-1 General sources for supplies

Appliance stores: Source for fans, dehumidifiers, etc.
Archival and conservation supply stores, art supply stores: for blotter paper, Remy and other specialized paper and fabric and book conservation and recovery supplies and equipment.
Department stores: Source for general purpose equipment such as folding chairs, tables, etc.
Drug stores: Source for several general-purpose supplies, alcohol, first aid materials, safety supplies, etc.
Grocery stores: Source for general purpose supplies such as cleaning products and supplies, clothesline and clothespins, freezer paper and waxed paper, garbage bags and cans, garden hoses, paper towels, rubber gloves.
Hardware & home center stores: Source for building materials, generators, tools, garden hoses, etc.
Janitorial service and supply stores: Source for cleaning and disinfecting supplies.
Office supply stores: Various materials (clipboards, note pads, markers, labels, scissors, utility knives, etc.) that may be needed for recovery operations.
Safety supply stores: Source of personal safety supplies such as protective clothing, first aid kits, hard hats, etc. Local ones may be identified in the telephone book Yellow Pages under headings like "Laboratory Equipment & Supplies" and "Safety Equipment & Clothing."

D-5-2 Supplies and uses

[2] Describe products/services available, payment terms, and any special arrangements, unique features, limitations, or other conditions.

The "Suppliers and Service Providers: Readiness Review Sheet" in this section explains how these supplies are used and provides some recommendations such as appropriate composition, types, and sizes.

Alcohol: Used to remove mold.
Blotter Board: To dry drawings and other oversized material.
Book Press: Used for pressing dry or nearly-dry bound volumes to reduce cockling and distortion of pages.
Boots, Rubber: Worn by workers in wet areas.
Bread Trays: Used for stacking maps and oversized documents for transport and air-drying. Trays can sometimes be borrowed from bakeries.
Buckets, Large: To keep microfilm and other photographic materials wet until reprocessed
Camera: To document disaster conditions.
Chairs, Folding: Used for work stations.
Chemical Sponges: To remove soot from edges of bound records
Clothesline and Clothespins: Used for air-drying pamphlets, photographs, other materials.
Clothing, Protective: see "Safety supplies" and "Hardware." Provide clothing to insure worker safety during salvage operations. This may include dust/particle masks, work gloves, rubber/latex gloves, hard hats, rubber aprons, rubber boots, and “Tyvek" coveralls.
Containers, Cardboard Record Storage: Used for packing and removing undamaged records from disaster site to temporary storage. Cardboard boxes should be 200-lb. test and stocked in two sizes: 1 cubic foot (12" x 15" x 10") and 1.5 cubic foot (12" x 18" x 12").
Containers, Milk Crates: Used for packing damaged records destined for cold storage and freeze drying.
Dehumidifiers (portable and industrial): Used for reducing humidity in rooms and buildings, particularly when normal air-conditioning is unavailable.
Dry Ice: May be used to keep materials cool during transport or while awaiting transport.
Fans, Industrial: Used to increase air circulation, particularly in spaces where records are being dried, as air movement increases evaporation and reduces the risk of mold.
Freezer Bags: To separate wet bound materials going to cold storage
Fungicide: Used to treat mold-infested materials and spaces.
Garbage Cans, Plastic: Used for cleaning or rinsing dirty materials and for storing and transporting materials and supplies.
Gloves, Rubber or Latex: To protect response and recovery workers from dirt and contaminates
Hand Trucks, Carts, and Dollies: Used for transporting materials within the site and to transport.
Hoses, Garden, and Nozzles: Used for cleaning dirt/mud from material,
Humidity and Temperature Monitors (e.g., hygrometer, hydro-thermometer, hydro-thermograph): Monitors temperature and humidity levels in rooms and facilities to ensure that they are sufficiently low for the return of record material.
Labels, Adhesive: Used for labeling boxes and other general purposes.
Masks, Dust or Particle: Protection of workers against mold and particulates.
Milk Crates: Used for packing wet/damaged records materials for transport. May sometimes be borrowed from dairy providers or grocery stores. Note that the ribs of these crates will cause wrinkling/distortion of wet paper files/documents, if used to hold, transport, or freeze them-correctly packed cardboard boxes are best for this.
Mylar: Individual sheets may be used to separate wet paper documents. Available from conservation suppliers and sometimes from art supply stores.
Newsprint, Un-inked: Used for interleaving wet materials to increase evaporation. May be available from local newspapers.

Paper, Blotter: see "Art supplies." Used in drying loose paper materials.
Paper, Freezer or Waxed: see "Grocery, Hardware, & Home Center Stores." Used to separate individual volumes prior to freezing.
Paper Towels: Used for general cleaning and other purposes (HandiWipes also work). May also be used to interleave bound volumes during air-drying.
Photo Processing Trays: Used for rinsing photographic materials, diskettes, and other small items; shallow dish pans serve the same purpose.
Photographic Supplies and Processing: Source of film and processing services that may be needed to document damage and recovery activities.
Plastic (Polyethylene) Sheeting: Used for a variety of purposes: to protect shelves, cabinets, furniture, equipment from continuing threat of water; as temporary window covering; etc. 6-mil polyethylene is stronger, but 4-mil (the minimum acceptable weight) is less expensive. Should generally be purchased in 100-foot rolls.
Polyester, Spun (e.g., Pellon and Reemay): Used for interleaving materials printed on coated paper (e.g., yearbooks, many art books) to prevent pages from sticking together.
Respirators: Used when mold or other biological contaminants are present. In case of dust, dust/particle masks are adequate.
Tables, Folding: May be needed for temporary work space or for air-drying operations. Size of 6' x 30" is recommended. May sometimes be borrowed from churches, civic organizations, etc.
Tape: May need duct tape (particularly if surfaces are wet), filament tape, tape dispensers, etc. for sealing boxes, affixing plastic sheeting over cabinets, shelves, etc.
Wet-Dry Vacuum: Used for removal of standing water.

D-5-3 Services

Cold Storage: Cold storage facilities can be used for temporary freezing and storage of collections while awaiting further decisions and action. Freezing will ward off the risk of mold and prevents further swelling and distortion of paper-based materials.
Conservator: Provides advice on stabilization and salvage; performs conservation treatments on affected items. Conservators typically provide advice and treatment on only a specific format of materials. You will need a paper and book conservator for records recovery, not a metal or textile conservator.
Data Processing Specialist: Provides consultation on data processing functions, including restoration of equipment, recovery of software and data files.
Data Recovery Service: Performs restoration of data on magnetic or optical media.
Dehumidification Service: Several national companies and some local ones provide portable dehumidification equipment that can dry out buildings, furnishings, and collections on-site.
Equipment Rental Company: Provides rental of maintenance, repair and other equipment. May also rent emergency/portable generators, heavy duty work lighting and power cables for use in temporary work/recovery areas.
Fire Restoration: Companies that provide smoke odor removal for buildings and furnishings. A few also deodorize and clean affected materials in the collection. Some will trim soot-damaged books and arrange for rebinding.
Freeze-Drying Service: May provide vacuum (thermal) drying or vacuum freeze-drying of collections. It is important to know which method each vendor uses. Several national companies provide this service, using portable equipment and mobile salvage teams.
Fumigation Service: Treats mold-infested materials.
Magnetic Media Restoration: Recovers and duplicates magnetic media including computer tapes, audio cassettes, videotapes, etc.
Microform Restoration: Cleans and duplicates microform materials.

Moving and Relocation Service: May be needed if operations must be moved to another location.
Mycologist: Assists in identifying source of mold outbreak and may assist in recommending treatments and evaluating fumigation services.
Smoke and Soot Removal: see "Fire restoration."
Space, Drying: Off-site area in which drying operations can be carried out.
Space, Office and Storage: Off-site space in which routine office functions can be carried out or in which unaffected materials can be housed, if the building is unsuitable.
Trailer Rental (cargo and mobile home/office): May provide off-site space in which drying or other operations can be carried out if the building is significantly damaged.
Trucking Service: Provides transportation of materials to off-site storage space, freezer facilities, or restoration services.
Trucking Service, Refrigerated: Provides transportation of materials to off-site storage space, freezer facilities, or restoration services. Used when mold is a risk and warrants refrigeration, or when previously frozen materials are transported.

Videotape Restoration: Cleans, stabilizes, and duplicates damaged videotape materials.
Others as needed:

D-5-4 National and Regional Suppliers, Service Providers and Information Assistance Resource List

Inclusion in this list does not imply endorsement, and omission of any supplier from this list does not indicate censure.

Since most of the firms included on this list have been involved in disaster recovery operations in government offices, libraries, archives, and records centers, they are likely to be sensitive to the special requirements of a wide range of record media formats.

Traditional archival, conservation and library suppliers carry many basic disaster recovery supplies such as Mylar, blotting paper, etc. You may request their catalogs by letter, phone, or, in many cases, online.

You can identify many other local resources through the Yellow Pages. Look under headings such as: *dehumidifying equipment*, which also includes firms that provide dehumidification services on-site and/or at their plants; *fire and water damage restoration*; *janitor service* for assistance with basic clean-up; *pest control services*, which will include fumigation as well as extermination; *smoke odor counteracting service* for firms that specialize in cleaning and deodorizing; and *water damage restoration*.

Before including any organization in your records disaster preparedness, response, and recovery plan's list of suppliers and service providers, contact the company to verify the information, identify a contact person, gather cost estimates, ascertain other specific terms, and evaluate their knowledge and ability to provide the supplies and services you will need.

Data Recovery Services

Excalibur, Inc. — Salvage of Computer Media
Data Recovery Division
101 Billerica Ave. Building 5
North Billerica MA 01862
(800) 726-3669

MJF Associates — Data Recovery Service
10692 Crestwood Drive
Manassas, VA 22110
(800) 544-3282

National Media Laboratory — Restoration of Recorded Sound and Video
P. O. Box 33015
St. Paul, MN 55133-3015
(612) 736-8147

Restoration Technologies, Inc. — Recovery of Electronic Equipment
1183 North Elsworth Avenue
Villa Park, IL 60181
(800) 421-9290

Information And Referrals

American Institute for Conservation — Referral to Conservators
1717 K Street, N.W., Suite 301
Washington, DC 20006
(202) 452-9545

International Association of Refrigerated Warehouses — Publishes annual directory of members refrigerated warehouses
7315 Wisconsin Avenue, Suite 1200 North
Bethesda, MD 20814
(301) 652-5674

Library of Congress — Information
National Preservation Program Office
LM-G07
Washington, DC 20540
(202) 707-1840

National Archives and Records Administration — Information
Conservation Lab
8601 Adelphi Road, Room 1400
College Park, MD 20740-6001
(301) 713-6700

National Center for Film and Video Preservation — Information
American Film Institute
2021 North Western Avenue
P. O. Box 27999
Los Angeles, CA 90027
(213) 856-7637

National Fire Protection Association — Information on Fire Safety Standards & Practices
1 Batterymarch Park
Quincy, MA 02269
(800) 344-3555

Northeast Document Conservation Center — Information and Referrals on Conservation Treatment
100 Brickstone Square
Andover, MA 01810
(508) 470-1010
nedcc@world.std.com

Pest Control Services, Inc. — Consultation on Pest Control, Mold, and Fumigation
14 East Stratford Avenue
Lansdowne, PA 19050
(610) 284-6249
bugman22@aol.com

SOLINET
(Southeastern Library Network, Inc.) — Information & Referrals, Disaster Planning & Training
1438 West Peachtree Street, N.W., Suite 200
Atlanta, GA 30309-2955
(800) 999-8558 national WATS

Recovery Services

American Freeze-Dry, Inc. — Variety of Recovery Services
411 White Horse Pike
Audubon, NJ 08106
(609) 546-0777

Blackmon-Mooring-Steamatic Catastrophe, Inc.
(BMS-CAT) — Various Recovery Services
303 Arthur Street
Fort Worth, TX 76107
(817) 332-2770, 24-hour hotline: (800) 433-2940

Disaster Recovery Services — Full Recovery Services
414 Blue Smoke Court West
Fort Worth, TX 76105
(800) 856-3333

Eastman Kodak Co. — Reprocessing - at No Charge - of Kodak Film and Microfilm
(800) EKC-TEST (800-352-8378): 24-hour hotline

Film Technology — Restoration of 16- and 35 mm Movie Film
726 North Cole Avenue
Hollywood, CA 90038
(213) 464-3456

Fuji Photo Film, USA, Inc. — Reprocessing of Fuji film & Microfilm
(800) 366-3854
Contact nearest Fuji office, and ask for technical specialist
in the Document Products Office to arrange for salvage

Midwest Freeze Dry — Vacuum Drying
7326 North Central Park
Skokie, IL 60076
(847) 679-4756

Munters Moisture Control Services — Dehumidification and Vacuum Drying
Munters has regional offices throughout the country;
contact the national headquarters
(800-422-6379) or regional office, Kent WA 253-859-6340.

Re-Oda Chemical Engineering Co. — Cleaning and Deodorizing of Fire-Damaged Materials
100 Industrial Parkway
P. O. Box 424
Chagrin Falls, OH 44022
(216) 247-4131 (call collect)

SOLEX Environmental Systems, Inc. — On-site Dehumidification & Selected Other Services
P. O. Box 460242
Houston, TX 77056
(800) 848-0484 or (713) 963-8600

Sterilizing Services — Ethylene Oxide Fumigation
Cumberland Industrial Park
Cumberland, RI 02864
(800) 556-6462

Unsmoke Systems, Inc. — Variety of Recovery Services and Supply & Equipment Sale
1135 Braddock Avenue
Braddock, PA 15104
(800) 332-6037

Wei T'o Associates, Inc. — Freeze-dry & Extermination Machines
P. O. Drawer 40
21750 Main Street, Unit 27
Matteson, IL 60443
(708) 747-6660

Supplies

Emergency Supplies for Collections — Disaster Response and Recovery Supplies
P. O. Box 3902
Seattle, WA 98124-3902
(800) 929-6886
(206) 323-4153

Lab Safety Supply — Wide Range of Protective Clothing and Safety Supplies
P.O. Box 1368
Janesville, WI 53547-1368
(800) 356-0783

ProText — Collapsible Polyethylene Boxes & Emergency Supply Kits
3515 Leland Street
Bethesda, MD 20815
(301) 718-1659

D-5-5 Professional Consultants in the Pacific-Northwest Region

The following list includes some of the professional consultants in the pacific-northwest that provide document and data recovery consultation and/or services that may be useful in carrying out disaster recovery activities. Inclusion in this list does not imply endorsement, and omission of any professional consultant or consulting service from this list does not indicate censure.

Alice Bear — Specialty: works of art on paper
P.O. Box 24262
Seattle, WA 98124
(206) 323-5219

Archives and Records Management Division — Specialty: government records
Office of the Secretary of State — Freeze drying services
1129 Washington St. SE
P.O. Box 40238
Olympia, WA 98504
(360) 753-1801

Argentum Photographic Services — Specialty: photographs, film
1615 2nd Avenue
Seattle, WA 98101
(206)-628-9027
Rod Slemmons - Consultant

Gudrun Aurand — Book and Document
Restoration
NW 321 Harrison
Pullman, WA 99163
(509) 334-9732

Conservation Associates of the Pacific Northwest (CAPNW) — Contact for referrals to conservators for all materials
2225 Crestline Blvd. N.W.
P.O. Box 2756 Olympia, WA. 98507-2756

James Conway
Timemark Photo Conservation Services — Photographic recovery
618 Main St.
Oregon City, OR 97015

DR. CPR LLC Specialty: Disaster recovery
consultation
2225 Crestline Blvd. Textual records and book restoration
Olympia, Wa. 98502
(360) 754-2093

Barbara Engstrom Professional Conservator
Northshore Art Conservation
1505 - 10th Pl. North
Edmonds, WA 98020

First Team-Titan Storage, vaulting, recovery, hot-site
4949 Randolph Rd. N.E.
Moses Lake WA 98837
(509) 762-1332

Pacific Northwest Paper Conservation Services
P.O. Box 4794
215 2nd Ave. South #408
Seattle, WA 98104

NARA, Pacific-Alaska Region
6125 Sandpoint Way N.E.
Seattle, WA 98115
(206) 526-6501

Mary Ellen (Micki) Ryan Archival & Historical Collections Management Consultant
Research & Museum Services
P.O. Box 1309
Issaquah, WA 98027-1309

Daniel-Harry Steward
110 Harvard Ave. E.
Seattle, WA. 98102-5714
(206) 329-0127

Thompson Conservation Laboratory Specialty: textual records, rare books
1417 N.W. Everett
Portland, OR
(503)248-0046

Mark C. Valentine
1501 W. Horizon Dr.
Mukilteo, WA. 98275

APPENDIX E

MEDIA TYPES AND METHODS OF RECOVERY

Appendix E consists of information on common media types and methods of recovery, emphasizing drying which is the most prevalent records disaster problem. (See Manual, Part III for a related decision chart.)

(1) Media Types

- **Plain paper:** Encountered everywhere in the office environment. Manufactured after the 1850's, usually highly acidic, frequently made of short fiber ground wood, disintegrates easily when either wet, or too dry.

- **Coated Papers:** Glossy papers coated with clay, photographic, film emulsions or fillers. Examples: photographic papers, architectural and engineering drawings on "vellum" papers, magazines, catalogs, annual reports, lithographic and "thermo" treated papers. Leaves of such papers readily adhere to one another when wet or heated.

- **Rag Paper:** Manufactured mostly before 1850, but on a declining scale even to the present day. Long fibered, very durable. Used for fine stationary, official documents and records, well bound books and other records used through the 19th century.

  Note: All paper has, or should have, a natural moisture content of 6 – 8 percent. Lower moisture content will cause the paper to become brittle and disintegrate.

- **Linen:** Not a paper, but a coated woven cloth, used through the mid-20th century, for architectural and engineering drawings. Cloth itself is comparatively durable, and is not damaged by water, but many coatings are water soluble.

- **Photographic Films:** Most camera original photographic media consists of a plastic base coated with a silver halide emulsion. Examples of these are microfilm, X-rays, slides, motion picture and still photography negatives. Allowed to dry in contact the emulsions can partially adhere to the opposite film base. If heated above 90 degrees Fahrenheit, the plastic base will warp and the emulsion will become "tacky" and adhere to an adjacent base or another smooth surface such as glass or metal. (See Recovery of Microfilms, Films, Appendix C-3-9.)

- **Electronic Media:** Magnetic tape, magnetic disks, optical disks, CDs and hard drives are all subject to damage. The best defense is prevention, including duplication and backup procedures. Electronic media can sometimes be dried and salvaged. Copy the information onto fresh media. Don't put contaminated disks into systems as further damage may occur to equipment. Drying and restoration are best left to information systems professionals. (See Recovery of Electronic Records, Appendix C-3-10).

(2) Drying Methods:
There are six commonly used drying methods and processes, each with an array of advantages and disadvantages. Some are preferable for drying specific type of media than others. (See Manual Part III for Decision Chart.)

Interleaving:

- **Description**: Document or book leaves are separated and then interleaved with absorbent paper, such as blotter paper or blank newsprint, then weighted. The absorbent paper draws moisture from the wet records. The absorbent should be replace about every 30 minutes until the documents are dry.

- **Preferred** for small quantities of moderately wet paper materials, photos and clay-coated papers.

- **Advantages**: Can be done by agency staff and/or volunteers locally, in almost any available space with normal room conditions, 70-75 Fahrenheit, 50-55 percent RH. Easy to monitor. Materials stay "at home" and are accessible for reference. No over-drying and limits warping. Considered low-cost.

- **Disadvantages**: Labor intensive. High mold potential.

Air Drying:

- **Description**: Documents are backed with absorbent material and spread out on tables or placed in sorters to dry.

- **Preferred** for small quantities of moderately wet paper materials.

- **Advantages**: Can be done by agency staff and/or volunteers locally, in almost any available space with normal room conditions, 70-75° Fahrenheit, 50-55 percent RH. Easy to monitor. Materials stay "at home" and are accessible for reference. No over-drying. Considered low-cost.

- **Disadvantages**: Labor intensive. Requires large space and tables or shelves. High mold potential. Leaves are often warped and distorted and require flattening.

Note: Interleaving and air drying are the oldest and most commonly used methods of drying. They are often thought to be the same process because they are often used simultaneously. The difference is that interleaving depends on absorption as the primary means of drying, while air drying depends on air circulation as the primary means. These methods are described in further detail in Appendix C-3-6.

Desiccant Drying:

- **Description**: Initially used for drying out buildings, holds of ships and large containers. Employs large desiccant dehumidifiers that pump air into an area under specific air velocity, temperature and humidity (75-80° Fahrenheit, 20 RH), to take moisture out of the air, and, by evaporation, out of documents. Documents are placed on vertical wire racks to permit air circulation. Requires outside commercial firm.

- **Preferred** for large quantities of most paper materials from slight to heavy water damage. Also preferred for photographic materials.

- **Advantages**: Speed, can take as little as 20 days. Scaleable to volume. Can handle large quantities. Records are accessible for reference. No over drying. Can be set up on-site by commercial provider. Does not require cold storage stabilization due to volume.

- **Disadvantages**: Poor results with clay-coated papers. Mold may lay dormant. Considered expensive.

Vacuum Thermal Drying:

- **Description**: Employs a vacuum chamber to batch dry materials at variable temperatures and vacuum levels which draws and expels moisture.

- **Preferred** for moderate quantities, and smoke damaged materials.

- **Advantages**: Effective non-chemical fumigation and smoke removal. Destroys mold. Can be done on site using portable commercial chambers.

- **Disadvantages**: Poor results with clay-coated papers. Over-drying can occur. Not suitable for saturated papers, particularly books.

Freeze Drying: There are three options for freeze-drying, all of which employ "sublimation." Sublimation is the process of converting H2O in its solid state (ice) directly to its gaseous state (vapor), by- passing the intermediate liquid state (water). It functions exactly like a self defrosting kitchen freezer, alternating freezing and heating to produce condensation, in combination with pressure to evacuate the vapor. The primary difference between the three is speed or rate of drying.

1. **Cold storage**-Primarily used for stabilizing wet materials to prevent further damage. However, it can also dry the records if left long enough, 4 to 24 months, depending on the level of saturation.
   - **Useful** for voluminous materials that are not required for extended periods of time and when funds for more costly methods are not available
   - **Advantages**: Handles large volumes. Inexpensive. Damage stopped. Will not over-dry. Readily available in many locations. (Public ports often have huge cold storage facilities.)
   - **Disadvantages**: Very Slow. Access for reference difficult.

2. **Freeze Drying Chambers-Large** (grocery store size) self defrosting freezers, specially engineered to achieve temperatures below -50 F to produce ice crystals quickly and rapidly bring the temperature up to near thawing to effect sublimation of ice crystals. Vapor is removed by low level negative pressure.

   - **Preferred** for wide range of materials in small quantities, not needed quickly. Will kill mold.

   - **Advantages**: Damage is stopped. Medium cost, cannot over-dry.

- **Disadvantages**: Limited capacity (under 12 cubic feet in most cases.) Not readily available from commercial providers. Slow; 1 - 4 month cycle, depending on saturation. Documents are not readily available for reference. NOTE: The State Archives has two such units available that can be used by local agencies.

3. **Vacuum Freeze Drying**: Employs ultra low negative pressure and supplemental heat resulting in **rapid** sublimation of ice crystals.

    - **Preferred** for coated papers and saturated books...

    - **Advantages:** Fast. Suitable for a wide range of materials. Greater capacity than freeze dry chambers. Will kill mold.

    - **Disadvantages:** comparatively expensive. Not available locally (in Washington State). Requires shipment via refrigerated carrier. Materials not readily available for reference. Over-drying can occur.

(3) Factors to consider in selecting a method of drying:

- **Volume of Media** – Is the volume such that the records must be stabilized by freezing before being dried; or shipped via refrigerator carrier to a large drying facility out of state; or desiccation humidification systems used on site.
- **Type of Media** – Are coated papers, photographs, and linen drawings and books damaged that are best dried by certain methods?
- **State and Degree of Damage** - Is there fire, mud or contamination damage that requires cleaning the records before they are dried? How wet are the records, completely saturated or just wet on one or more edges. Are records moldy?
- **Sensitivity of the Media** – Does the media have coatings or emulsions that may be salvaged only through certain drying processes?
- **Location of the Drying Facility** – Can the drying be done on site or does the material have to be shipped out of state in order to use the selected method?
- **Reference Accessibility** –Is access needed during the drying process?
- **Available Funds** -- Cost may dictate what is possible.

Note: See Manual Part III, Decision Chart, to help select the most appropriate drying method.