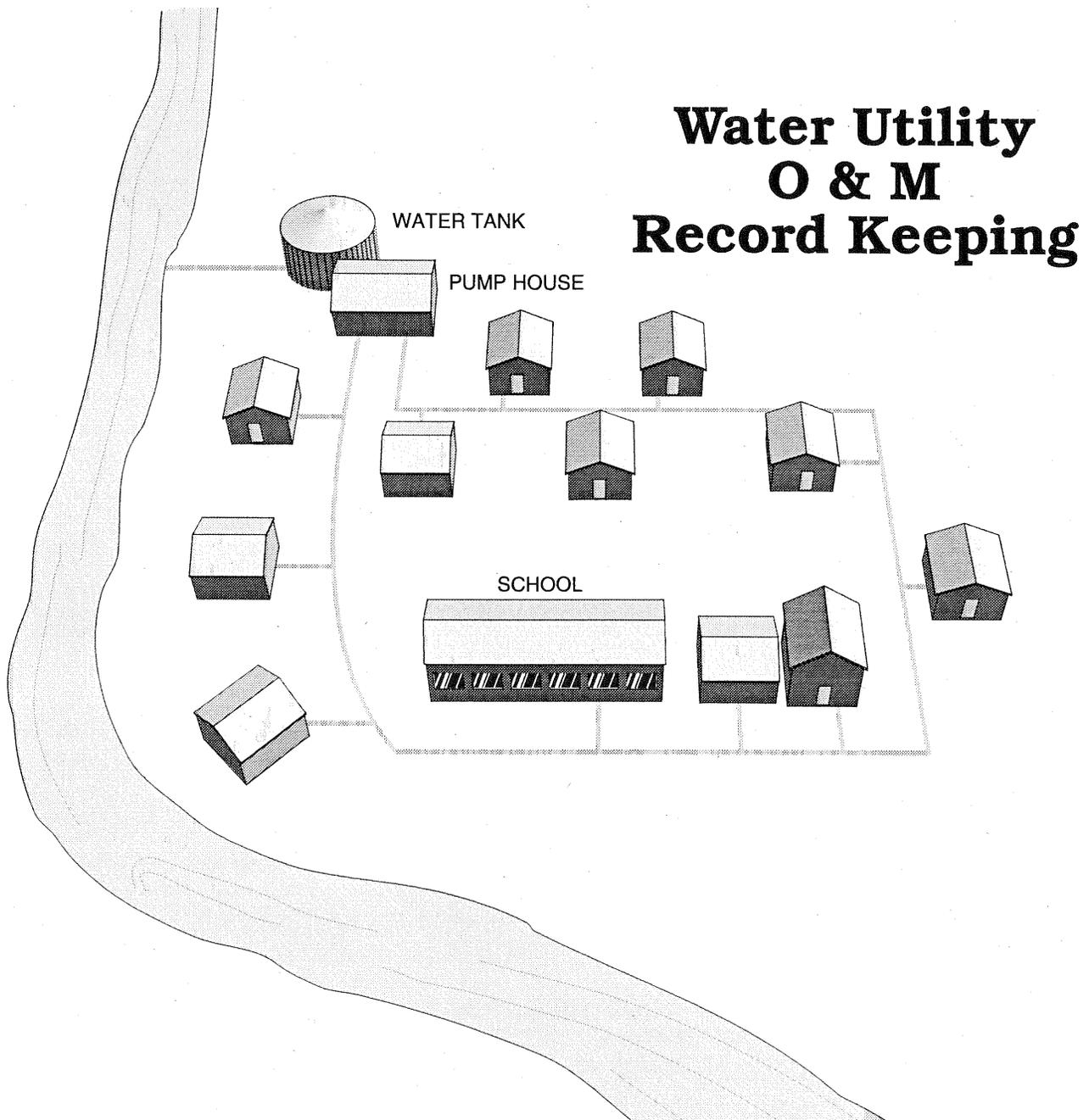


O & M of Small Water Systems



Alaska Department of Environmental Conservation
Skeet Arasmith

O & M of Small Water Systems

Funding for Development - Alaska Department of Environmental Conservation.

Development - Rolfe Stearns, Arasmith Consulting Resources Inc., Albany, Oregon.

Graphic Art - Kimon Zentz - Arasmith Consulting Resources Inc., Albany, Oregon.

Review team - Greg McPhee-Village Safe Water, Larry Strain-IHS Office of Environmental Health and Engineering, Linda Taylor-ADEC, Bill Fagan & Kerry Lindley-Department of Environmental Conservation, Jim Ginnaty-SEARHC.

Project Managers - Bill Fagan and Kerry Lindley.

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ACR Publications, Inc.
1298 Elm Street SW
Albany, Oregon
(503) 928-5211

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WATER UTILITY O & M RECORD KEEPING

WHAT IS IN THIS MODULE?

1. The uses of collected data.
2. The importance of organized record keeping.
3. Assigning responsibility for record keeping tasks.
4. Setting up water utility record keeping.
5. How to organize and store water utility documents.
6. Identifying O & M data to collect.
7. Scheduling data collection.

KEY WORDS

- Data
- Document
- Information
- Permanent Record
- Retention
- Data Collection
- Documentation
- Incident
- Records
- Transaction

WATER UTILITY O & M RECORD KEEPING INTRODUCTION

USES OF WATER UTILITY RECORDS

- Improve the reliability of equipment.
- Identify potential failures of equipment before failure occurs.
- Verify the operating conditions of equipment.
- Reduce repair maintenance cost.
- Identify problems before there is a failure.
- Tune the various water system processes for optimal performance and the best return on expenditures for operating materials and services.
- Provide the basis of planning, budgeting and engineering studies.
- O & M records are the basis of the water superintendent's communications with council and regulators.
- Isolate operating costs.
- Locate and stake system components in preparation for utility construction.
- Good O & M records help regulators and vendors provide phone support.

WHY WE NEED A SYSTEMATIC APPROACH TO DATA COLLECTION AND RECORD KEEPING

Need

One of the frustrations we all feel is the one that goes with trying to find a **document**¹ that we just know is somewhere at the plant, in the office, at home or, ... We know we have it, we put some it place so we would be able to find it, but now that we need it we have no idea where it is. There is a solution. The solution is called "Information Management." Information management is the process of managing daily **information**² in a manner that allows easy access and retrieval.

PROBLEMS TO PREVENT

Memory Loss

Individuals cannot retain the mass of operational data in their memory and usually do not even try. However, people do put off writing down **data**³ and then they

¹ **Document** - Printed representation of information including studies, plans, reports, records of transactions, records of monitoring and records of activities.

² **Information** - The organization's knowledge about its resources, activities and technologies. This knowledge may be represented in printed, microfiche or digital media.

³ **Data** - Raw information, usually in a numeric format.

forget to record it or don't remember it accurately.

Because data about physical assets is easier to remember, workers sometimes never intend to record it. They just "keep it in their head". When the walking memory bank leaves the organization, the data, however fuzzy, is lost.

Held Hostage

Sometimes employees intentionally fail to record data, hoping to increase their hold over management. "Be nice or I won't remember the data you need."

Private Methods

Almost as difficult are employees who record the data, but write it on scraps of paper in their own private notations that no one else understands.

Data must be accessible. If it cannot be found, data is worthless. Private methods of filing or no method of filing is in some ways worse than not recording the data in the first place. The utility paid for the labor to collect and record the data. Losing the water system's data is just as improper as losing its money or tools.

Loss of Original Documents

Loss of ownership records (deeds and easements) and agreements can impair the operation of a utility. For example, the right to impound water may not be substantiated; the control of forest practices in your watershed may not be possible if your utility cannot document a written agreement.

Alteration of Records

An unauthorized employee could access the accounting records to alter the records of payments received and then destroy the original contract between the city and a developer, who could then claim that she had fulfilled all financial obligations to the city.

Control of Updates

Maps, schematics and asset cards must be constantly updated to be reliable. Not only must updates be regular and accurate, but the manner and symbology must be consistent.

Unauthorized Destruction

Only one person should be authorized to determine when and if a record may be destroyed. Unauthorized destruction of public records is a serious offense, in some ways worse than theft or vandalism. The state regulates the length of time many documents must be retained.

Congestion in the Office and Files

The flip side of wanton destruction of public records is the paralysis of saving everything. Congestion breeds disorganization and eventually no one can find anything except what they keep filed using their own secret system.

Once the city knows what must be retained for how long, the staff can determine what records they use all of the time. These are active records.

- Store active records in office.

Documents that must be retained, but are no longer used on a regular basis, are called semi-active.

- Keep semi-active records in less valuable storage area until they are destroyed.

Some documents must be kept forever. These are called **permanent documents**⁴.

- Store permanent documents in secure, fire resistant storage units or a vault.

⁴ **Permanent Documents** - Documents which must be preserved by the city forever. Typical instances, are council minutes, property transactions, street vacations.

ASSIGN RESPONSIBILITIES FOR RECORD KEEPING MANAGEMENT

- Determines information needs of city.
- Assigns responsibility for updating, filing, controlling source documents.
- Oversees the organization and protection of data.
- Establishes policies and procedures addressing:
 1. How record keeping system is to be organized.
 2. Procedures for recording **transactions**⁵ and collecting data.
 3. Who updates and controls which originals.
 4. Retention schedule.
 5. Protecting data through backups, off site storage and disaster recovery plan.

CITY CLERK

- Updates the **records**⁶ **retention**⁷ schedule in coordination with DCRA.
- Coordinates the development and maintenance of records about the water system documents.
- Develops the data back up and offsite storage plan.
- Develops a plan for recovering from disasters, such as fire and water damage.
- Monitors the **data collection**⁸, data update and data back up activities of the water utility. Brings any deficiencies to the immediate attention of the governing body.

WATER SUPERINTENDENT

- Determines data to be collected.
- Coordinates the collection of data.
- Develops methods to update maps and other as-built **documentation**⁹.
- Oversees the collection, filing, summarizing and retention of the O & M information and records.

⁵ **Transactions** - The act of several parties doing business; for example, receiving payment on a water bill, receiving a shipment of goods for inventory, billing a customer or purchasing an asset.

⁶ **Records** - A written account of an event, transaction, proceeding or condition of an asset or technical process at a particular point in time.

⁷ **Retention** - Holding documents in the city's possession in a well preserved condition for a mandated period of time.

⁸ **Data Collection** - The recording of measurement of present conditions. Manual data collection implies the observation of readouts from measuring instruments and the subsequent recording of the readout value in a notebook or a digital recording device.

⁹ **Documentation** - Supporting references and record of activities necessary to understanding the scope and details of completed projects necessary to understanding the operation of processes and individual pieces of equipment.

OPERATORS

Collect and Record Data

- Customer complaints.
- Maintenance records including parts and labor costs.
- Fuel and chemical supply consumption with costs.
- Production and unaccounted water loss records.
- Treatment facility records.
- Sampling and test results.
- Pump and motor history.
- Costs per unit of water production.

Update Asset Records

- Update as-built drawings after every service tap, line extension or other system improvement.
- Keep an accurate inventory of quantities on hand, their cost and how old the items are.

SET UP WATER UTILITY RECORD KEEPING DETERMINE RECORD KEEPING POLICIES AND SET UP RECORDS ABOUT INFORMATION RESOURCES

Information is an intangible resource that can be stored on physical media such as paper, computer disks or microfiche. Every city is responsible for identifying, cataloging, storing and protecting its documents.

On page 40 you will find a worksheet which will assist you in the inventory and description of your documents. The following items should be included in the record for each type of document your city possesses.

NAME OF DOCUMENT

Many reports and records that a city and its water utility must keep are identified in state statutes and administrative rules. Use the same name for your documents as the state does.

ESTABLISH A METHOD OF GROUPING AND SORTING DOCUMENTS

The ability to group and then sort documents allows us to print different lists of our document inventory. Each list can group the inventory by a different classification. Utility documents may be grouped (sorted) by the following: Function; Activity/Resource; Document Class or Importance.

BY UTILITY FUNCTION

- Customer Service
- Maintenance
- Operations
- Supervision
- Engineering
- Administration

BY ACTIVITY OR RESOURCE

There are many types of activities performed by utility staff. These activities may be assigned to different utility functions in different utilities, depending upon the organization of the utility. For example, Customer Accounting may be assigned to either the Customer Service or the Administrative functions.

Each utility function is responsible for certain system resources. For example, by applying other resources such as money, supplies from inventory and personnel hours, the Maintenance function keeps all pumps in running order. Activity records track the use of money, inventory and personnel hours to perform

tasks that produce a product, service or the maintaining of a fixed asset. Resource records track the accumulated condition of a fixed asset, inventory, finances or information.

Activity

Activities typically performed include Purchasing, Monitoring, Construction, Plant Operations, Emergency Management, Supervision, Risk Management, Design and Commercial.

Resource

- **Fixed Assets** include land, plant and equipment. Plant includes buildings, structures and appurtenances such as valves, hydrants and service connections. Equipment includes vehicles, power tools, pumps, motors and control systems.
- **Inventories** include operating supplies, repair and spare parts and materials for capital improvements.
- **Personnel.**
- **Financial Assets** include cash and investments, money owed to others, money others owe to the utility and the current value of the utility's inventory and fixed assets.
- **Information,** of course, includes the organization's knowledge about its resources, activities and technologies. This knowledge may be represented in printed, microfiche or digital media.

BY DOCUMENT CLASS

Information

- **Regulations** include federal and state statutes and administrative rules, local government ordinances and water utility policies and procedures.
- **Plans** include long term plans, background studies for plans, operating plans, emergency plans and budgets.
- **Reports** refer to summaries and analyses of data generated internally, including monthly reports to DEC and monthly financial reports.
- **Assessments** include self inspection documents such as water quality monitoring and evaluations prepared by parties outside the organization such as sanitary surveys, vulnerability appraisals and financial audits.
- **Technical References** include technical publications and training materials.

Data

Activity Records

- Construction records include all correspondence,

budgets, drawings, maps and inspection logs stored in a project by project basis.

- Transactions include turn on/off, service hookup, purchases, receipt of goods, customer billing and cash receipts.
- **Incident**¹⁰ Logs consist of brief descriptions of irregular events such as customer complaints, accidents and emergencies.
- Monitoring Logs include forms updated on a daily, weekly or monthly basis with readings taken from process control monitoring, gauges and from operator calculations.

Asset Records

- Surveys of lots and plats.
- Maps of lots, streets and utilities.
- Drawings of buildings and utility structures.
- Cards for pumps, motors, valves, hydrants and service connections.

BY IMPORTANCE TO THE UTILITY

- Non-essential - The loss of this category of documents would not prevent the utility from restoring normal operations.
- Important - The loss of these records would impair the utility's ability to restore normal operations, and the cost of replacing the records would be substantial.
- Vital - Records in this category are irreplaceable and they would prevent the utility from continuing operations.

DOCUMENT TYPE NUMBER (OPTIONAL)

If your city decides to assign an identifying number to each **type** of record, we recommend a segmented numbering system that minimally includes the function, activity/resource and an ID number. This convention parallels the numbering convention plant and equipment assets which is introduced in the next section.

LOCATION AND ACCESS

Location of Original

If the document is deemed vital.

Copies

Indicate which city positions would normally receive copies of originals and updates to originals of documents. For example, how often does the council cham-

¹⁰ **Incident** - A definite and unique occurrence, an event as distinct from the repeating steps of a process.

ber and the city manager/city administrator receive a blueprint of the water distribution system.

Access

Note any restrictions on employees viewing copies of a document type. Is any one restricted from viewing the accounts receivable records?

FILING METHOD

There are five basic methods of physically organizing documents. A family of documents may be assigned one method while another document type may be assigned another method. Many factors determine which filing method an utility chooses for each type of document. These factors include the following:

How many people use the filed records?

Are the records confidential personnel files?

Are the original records distributed throughout the organization, or are they centralized under one person's control?

The record for each document should indicate the method of filing used at each location, if the method varies.

Subject

When the contents of the records is more important than the name of the party referenced, filing by subject is most useful. Records within each subject folder are arranged chronologically or alphabetically. Subject folders are usually arranged alphabetically within their storage drawer.

Chronological

Records are usually stored by calendar date within other types of folders, usually subject. All types of monitoring logs are best stored by date within subject folders.

Geographic

When the location name is the key field in the record, filing by geography is the most useful. Documents related to specific properties such as service connection data, agreements, liens and easements are best filed by location or tax lot parcel.

Monitoring logs are best stored within subject by location or date.

Numeric

In utility record keeping, there are two main reasons we would employ the numeric filing method:

- We wish to keep information confidential by separating the information from any identification of the person or organization within that information. A separate index holds the relation of the person and the ID number.
- When a utility computerizes any of its records, it typically assigns numbers in place of names for cus-

tomers, vendors, inventory, personnel and assets. A separate index relates the ID number to the name.

1. Numbers may be assigned sequentially as customers, vendors, inventory or assets are added.
2. Or the numbering schema may be intelligent, in which case it will consist of two or more segments that allow users to embed different classifications within the number. Our recommended method of numbering plant and equipment assets involves coding each asset with a segmented number.

Alphabetic

In manual record keeping, customers, vendors, documents and employees are usually referenced by their proper name. We recommend that manual systems catalogue their plant and equipment assets by a segmented numbering system.

Records are otherwise stored alphabetically within other types of folders, usually subject.

CONTROLS

Data Collection

Show who has responsibility for collecting data or recording transactions.

Ownership of Data

Determine which position has the sole authority and responsibility to update the original. For example, only one position should process cash receipts and create the daily log of cash receipts; another position would control the bookkeeping. Another example, if the water superintendent position owns the master distribution map, the operator may collect data on new services but may not update the master map from this data. Data ownership means that responsibility for updating a document must be assigned and that authority to update must be severely restricted, often to only one position.

Retention Schedule

The record of every document type must show the length of time which the state or the city has determined this type of document must be retained, that is, stored and protected from damage or loss.

Movement of Documents

If office space and filing equipment is limited, the city should establish a schedule of when to move documents from active to semi active storage. For example, the water superintendent may only need to refer to monitoring results for the previous 24 months. The remaining documents that must be retained could be stored in a dry, secure storage area.

Archiving

Indicate when to move documents which must be retained permanently to archive storage.

Decision to Destroy

The city must establish a process for the records manager, whether it is the city clerk or the city manager,

to authorized the destruction of documents, even when their retention period has expired.

DATA PROTECTION

Back Up Copy

Indicate every document for which a backup copy must be made and note who has been assigned that responsibility.

Off Site Storage

Indicate the off site storage site where the backup copy of a document is to be stored. Safe deposit boxes and separate municipal buildings are good candidates.

PLANT AND EQUIPMENT ASSET RECORDS

About the Numbering System

The asset identification numbering system proposed here is made up of three sections. The first section identifies the area of the facility, the second identifies the class of equipment and the last number identifies the specific piece of equipment. This system was developed to be used in conjunction with a computerized database. If there is no intent to ever use a computer database to store this data then the numbering system can be reduced to the last section of the number system.

Where to Start

Start the asset identification process by making a brief listing of the major areas of the facility. Typical major areas for a small water system would be; raw water, treatment, heating system, disinfection/fluoridation, distribution lines, storage, services, valves/hydrants, building/grounds.

Assign Number

Assign a general number grouping to each of these groups. A recommended number group would be:

Number	Area
100	Raw water
200	Treatment
300	Heating system
400	Disinfection/fluoridation
500	Distribution lines - includes pressure pumping if it is used and utilidors
600	Storage
700	Services
800	Valves/hydrants
900	Building/grounds

Gather Equipment Data

For each piece of equipment in the system, use the "Equipment Identification Data" form to collect the initial data. In most cases, the manufacturers name will be available but not the supplier.

Assign Class

Using the equipment classification identification system provided at the end of this module, assign an equipment class identification to each piece of equipment. Place the class identification on the "Equipment Identification Data" sheet.

Assign ID Number

One of the easiest ways to assign identification numbers to a piece of equipment is to assign the number in order that water flows through the facility. The first character of the number that is assigned must be the same as the first character of the area number. For instance, the pump for the well could be numbered 110, the motor for that pump could be numbered 120

or 111. The 100 series is for all raw water equipment. If there are two wells the equipment for well #1 could use the numbers between 101 and 149, well #2 could use numbers between 150 and 199. Place the number on the "Equipment Identification Data" sheet.

The Complete Number

The complete number would then be composed of up to three levels. Area - Class - Individual ID.

Example

A typical number might be 200 - T - 201. This is the treatment area. This piece of equipment is a tank and is numbered 201.

Equipment ID Number

Because the last three numbers of the equipment number are unique, the equipment need only be referred to by this code if you so choose. However, utilizing the entire number helps to identify the piece of equipment more completely.

Files

Establish a set of files, grouped by the area number. Use one hanging file tag for each major area. Make one file folder for each piece of equipment. Place a copy of the equipment data information and manufacturers O & M manual in the folder.

Notebook

Place the data forms in a notebook divided by area.

Expanded Equipment Data

This text includes expanded equipment data cards for; general equipment, pumps, motors valves and fire hydrants. Most of these cards can be copied onto 5 X 7 cards. The cards can be used if you wish to expand the quantity of data collected from each major piece of equipment.

INVENTORY RECORDS

VENDORS

Vendor Information

One of the major difficulties in obtaining spare and repair parts is determining the correct vendor for a piece of equipment. The most likely sources of information about vendors are:

- Past records - invoices that are filed at the plant or city hall.
- The PHS listing of vendors.
- The manufacturers. You can call a manufacturer directly and ask for the name and phone number of the local representative.
- The local RMW.
- Other vendors - vendors that you are presently using will often provide information on where to locate a vendor of a product that they do not stock.

Vendor ID

Fill out the "Vendor Data" form with the appropriate information. List the equipment ID number for the pieces of equipment that this vendor supplies. If you do not use equipment ID numbers then list the equipment by name.

Vendor Number

While it is not required, it is desirable to assign a number to each vendor. There are several ways to assign vendor numbers including;

- Using the existing numbers used by the accounts payable department.
- Using the state vendor ID numbers.
- Using state business license numbers.
- Establish your own number system.

Phone Numbers

Place the vendor name, address and phone number in your Roladex.

Notebook

Place the vendor data forms in a notebook, sorted by vendor ID.

SPARE PARTS

Data Collection

Fill out one portion of the "Spare Parts Listing" form for each piece of data. Enter the equipment ID, description and vendor number of name.

Determining Spare Parts Needs

In order to determine what spare parts are needed do the following:

- Look at each piece of equipment, one at a time. Think only about this equipment.
- What has your past experience told you about spare parts needs? What appears obvious? Oil, belts, valve seats, springs, etc.

- Review the manufacturers O & M manual looking for those items that are indicated as critical spare parts.
- Ask the RMW.
- Call and ask the vendor for recommendations.

Listing Parts

On the bottom of each "Spare Parts Listing" list the manufacturers part number and a description of the part.

Checking Inventory

Compare the listing of spare parts to those on hand. List all missing parts on another sheet of paper. Give part number, description, equipment ID and vendor ID or name.

Pricing

Call or send a FAX to the vendor and obtain current prices for each spare part needed. Prioritize the spare parts. Determine those items that are critical and those that are nice to have. Total these cost by category and provide a listing of parts and cost to the city manager.

Notebook

Place the spare parts listings in a notebook, sorted by equipment ID. A second copy of the spare parts listing may be filed in the equipment file.

SUPPLIES AND EQUIPMENT FOR TESTING

List Test

Make a list of all normal testing that is performed at least once a month. This will include water quality and boiler testing.

Equipment

For each test make a list of the laboratory equipment and reagents required. This information may be obtained from the RMW or from a supplier such as HACH.

ACTIVITY RECORDS

SCHEDULING WORK

Weekly Listing

Page 32 can be used to develop a schedule for the week. List all routine activities from the check list and calendar. List all sampling and testing activities. List all repair work that must be done this week. List the hours assigned to each task. Compare these hours with the hours available. When there is not enough time to complete all of the tasks, move the lower priority task to another day or week.

HANDLING REPAIRS

Work Orders

Using page 33, add the name of the community and print an adequate number of work orders. When a problem is identified that is not an emergency, fill in the appropriate work order data.

Estimates

Make a list materials needed to complete the work. Estimate material cost. Check to see if the materials are available. If they must be ordered, when can you expect them to arrive. List the labor hours and estimated cost. List any special equipment, personnel or skills required to complete this work.

Estimate Completion

Based on the estimates, set an expected completion date.

Schedule

Place the work order into the scheduling system.

SETTING UP DOCUMENT STORAGE

EQUIPMENT

What is Needed

There are a wide variety of ways to store and retrieve information, this is one suggestion that is being used by other operators with a high degree of success.

There are five things that are needed:

- Four drawer file cabinet.
- Map flat file cabinet.
- Two drawers in a fire resistant file safe.
- 5 to 6 foot high by 3 foot wide by 1 foot deep bookshelf.

File Cabinet Drawers

Label the drawers:

- Reports and Test Results.
- Assets and Maintenance.
- General Information.
- Operations, Scheduling and Purchasing.

Fire Safe

Label the drawers:

- Construction Records.
- Water Utility Archive.

INFORMATION STORAGE

BOOK SHELF STORAGE

REGULATIONS

State

- State Drinking Water Regulations.
 1. Alaska Water Treatment Guidance Manual.
 2. Alaska Drinking Water Procedures Manual.
 3. Alaska Administrative Code 18 AAC 80.
 4. Special DEC information, such as Operator Certification.
- State Safety Regulations.
- State Water Resources Regulations.
- State Budget and Audit Regulations.

City

- Municipal Charter.
- Community Comprehensive Plan.
- Land Division Ordinance.
- Purchasing Ordinance.

Water Utility

- Water System Design and Construction Standards.
- Water Utility Ordinance establishing rules and regulations for the operation and expansion of the water utility. Such an ordinance typically contains provisions for:
 1. Defining the service area.
 2. Extending distribution mains.
 3. Application for service.
 4. Making service connections; customer plumbing and required inspection thereof before connection is made.
 5. Process for collecting overdue accounts receivable, termination of service for failure to pay.
 6. Limitation on the waste of water.
 7. Process for handling customer complaints.
 8. Authorization for the council to set rates through a fee schedule.
- Schedule of Water Utility Charges.
- Water Utility Policies: Customers, Finance, Employees and Safety.
- Updated employee handbook (include safety procedures).
- Establishes a process for immediate notification and response to safety hazards.
- The O & M Manual which should consist of:
 1. Design Criteria.
 2. System Overview.
 3. Description of System Components.
 4. Startup, Normal Operation and Shutdown.
 5. Trouble Shooting each component.
 6. Process Control and Periodic Product Testing.
 7. Record keeping and Reporting.
 8. Maintenance of Equipment that comprises each component.
- Operations and Preventive Maintenance Program to identify operational duties and to schedule service of equipment and system components before they fall into disrepair. Such a program can provide hard data to complete the operating plan and budget, such as the number of operator hours and actual costs of operation and maintenance. The data can

also be used to determine the replacement schedule for the replacement reserve program mentioned below. The program can also be an oversight tool for the city management to track the cost, time and completion date of the operator's assigned work.

- Safety Program that the utility must develop and maintain is a series of federal and state mandated worker safety programs, covering safety committees, excavation safety, confined space entry, hazard communication, fire prevention, personal protective equipment, as well as accident reporting and investigation which should include:
 1. Hazard Communication Program.
 2. Confined Space Entry Program.
 3. Hazardous material handling procedures.
 4. Competent Person Program.
 5. Lockout/Tagout procedures.
 6. Personal Protective Equipment purchasing and maintenance plan.

PLANS

Plan Background Studies

- Background Studies for Comprehensive Plan including inventory of physical environment, community values survey, and analysis of community resources.
- Original Feasibility Study for water system.
- Vulnerability Assessment including vulnerability of water source to contamination, flooding, damage from severe winters and loss of electrical power.
- Risk Assessment including identification of safety hazards and other operational risks, identification of other risks such as **inviting nuisances**¹¹ and hazards in system facilities and operations.
- Operational Analysis including identification of organizational strengths and weaknesses, training needs, planning needs and plant deficiencies.

Long Term Plans

- Utility Enterprise Plan which is a long range plan that shows how the city plans to finance utility operation, maintenance, equipment replacement, system rehabilitation and system expansion out of user charges and connection fees. The basic purpose of such planning is to match the complexity and cost of construction, operation and maintenance with the ability of the community to financial-

¹¹ **Inviting Nuisance** - Any feature of the water system that attracts a person, lacking in sound judgment due to age of defect, to attempt an act that could result in personal injury to themselves or others. Example: A steel reservoir, sporting a ladder extending from the ground to the roof, that is not isolated by a security fence that cannot be scaled by an unassisted climber.

ly support the system through out its roughly 40-year life and to finance the replacement of system components as they wear out. The plan identifies:

1. The City 's growth management, development and financing policies and community values.
 2. The constraints created by the physical environment.
 3. All state, federal and local design standards.
 4. And assesses the physical plant, operations and maintenance and financial position.
 5. A strategic plan tying together capital improvements, operational improvements and long term finance.
- Capital Improvements Plan is the current five-year plan for extending the distribution system, making improvements to the central facilities (Source, Treatment and Storage) and rehabilitating worn out equipment and system components, such as a well and its pump. The plan includes: identification of the improvement, a schedule of when it is to be constructed or purchased and the method of financing the improvement.
 - Replacement and Renewal Plan is a disciplined approach to identifying when equipment and facilities are to be overhauled or replaced and how much it will cost at that future time. The utility then sets aside an annual amount out of the total user charges and if necessary a subsidy from the city's General Fund. In theory, this annual set aside will accumulate and be available to pay for the replacement of equipment or the rehabilitation of a facility when its scheduled useful life ends.
 - Facilities Plans for treatment plant and distribution system.

Operating Plans

- The Annual Operating Plan and Budget identifies what results the rate payers are purchasing with the dollars they pay to water utility employees. For example: How many water samples are taken monthly? How many pumps are rebuilt annually? Could positions be combined? Could the work be contracted to the private sector for less cost to the rate payer? For more information see the module on Preparing the Operating Budget.
- Operations Schedule.
- Well Head/Watershed Protection Plan.
- Water Management Plan.

- Sampling Plan (see Sampling and Testing Module).
- Notification Plan.
- Emergency Plan that every utility should prepare and practice. Emergency plans for responding to: substandard water quality, contamination of the source, fire, power outage, failure of crucial equipment such as pumps, or a spill of fuel or chlorine.
- Capital Improvements Budget.
- Replacement and Renewal Reserves Budget.
- Operating Budgets for past 5 years.

Budgets

REFERENCES

Technical Publications

- Equipment O & M manuals too large to place in the file cabinet.
- Manufacturers Catalogs.
- Trade Periodicals.

Safety Materials

- Material Safety Data Sheets.
- Safety Catalogs.

Training Materials

FILE CABINET STORAGE OF INFORMATION

REPORTS

Operations

- Monthly report to DEC - one folder for each year. One folder for each utility (keep water and wastewater reports separate).
- Monthly reports to council - filed by year.
- Operational data reports - filed by year.

Financial

Cost information needed for monthly report.

Safety

Safety Committee Minutes.

Corrective Actions

Reports of actions taken to correct violations for three (3) years after the action was taken.

Variance, Exemption, Permit Records Agreements and communications for five (5) years after expiration of the variance, exemption or permit.

WATER SYSTEM ASSESSMENTS

This drawer should contain the results of water quality tests and assessments of the water utility.

Set up a file folder for the results of scheduled routine and non-routine sampling and testing, as well as, any unscheduled tests. One folder for each year will make retrieval much easier.

Bacteriological Test Results

Retain copies of each routine and repeat bacteriologi-

cal test for five (5) years.

Disinfectant Residual Measurements Records of disinfectant residuals for at least twelve (12) months.

Turbidity Measurements The record of turbidity of raw and finished water and turbidity at the entrance to the distribution system must be retained for ten (10) years. These records may be summaries of the raw data and must include associated data on pH and water temperature. You may wish to keep additional process control data, such as hardness, alkalinity, dissolved solids and color with the turbidity data.

Chemical Test Results The results of inorganic and organic tests must be retained for ten (10) years. Keep the results of lead and copper monitoring in this folder.

Radioactive Substances The results of such tests must be retained for ten (10) years.

Secondary Contaminants The results of such tests must be retained for ten (10) years.

Sanitary Survey Reports Reports, communications and background material for ten (10) years.

**DATA STORAGE
FILE RESISTANT STORAGE
CONSTRUCTION PROJECTS**

Store each construction project in a separate section within the drawer. Each project should have the following folders:

- Contract Documents.
- Correspondence.
- Phone Log.
- Inspection Notebook.
- Inspection Photo Albums.
- Field Orders and Punch Lists.
- Originals of Cut Sheets for installed equipment.
- Project Surveys and Maps.
- Project As-Built Drawings.
- Project Close Out.
- Project Evaluation including cost spreadsheets by asset type, any grant audits and notes on engineer and contractor performance.

WATER UTILITY ARCHIVES

This drawer is set aside to accumulate originals of legal documents, backup copies and data and reports that must be retained for more than one year.

MAP DRAWER STORAGE

- Land Surveys.
- Elevation and plan view drawings of facilities.
- Copies of subdivision plats.

**FILE CABINET DATA STORAGE BY RESOURCE
ASSETS AND MAINTENANCE DRAWER
Source**

- Ownership records.

Service Connections

- Service Location Cards.
- Service Repair and Changes.
- Meter Records.
- Meter Replacements.

Equipment

In the assets file drawer, place hanging files for each piece of equipment. These files can be set up alphabetically by equipment name or type, or by the equipment identification number if one is used. Inside of each hanging folder place the following file folders:

- Manufacturers information - cut sheets.
- O & M Manuals for each piece of equipment.
- Spare parts information - including vendor data.
- Equipment Cards.
- PM Schedule for each asset.
- Copies of completed Work Orders.
- Repair History.

FILE CABINET DATA STORAGE BY ACTIVITY
GENERAL INFORMATION DRAWER

In the drawer marked information, place major alphabetical dividers. Between the dividers place hanging files for each major information category that you wish to keep information on. The following are some suggestions for files.

- Phone numbers.
- Budget - A copy of the existing budget, plus a folder in which to place ideas for next year.
- Changes and Ideas.

WATER OPERATIONS DRAWER
Customer Service

- Service Complaints.
- Resolution of Complaints.
- Customer Service contracts.
- Special agreements.

Inventory

- Vendors - Use a hanging file, with a file folder for each major vendor you use. This is the place to keep their phone numbers and line cards.
- Spare parts inventory.
- Tools inventory.
- Copies of outstanding purchase orders. Make a listing in the front that shows P.O. number, date that it was sent or called to a vendor. If it was a phone PO, then list the name of the person that took the order. The date that the material is to be shipped and the method of shipping.
- Packing Lists.
- Copies of purchase orders of materials that have been received.

Operations

In the operations drawer make hanging folders for at least the following:

- Completed work orders - by month.
- Backlog of work.
- Work orders in process.

Scheduling

In the scheduling drawer, make a set of files, one for each month of the year. Make a set of file folders numbered one through thirty one. These files will be used as a tickler file on upcoming tasks.

Example

Lets say it is the end of the month of July. Select the August file and place the 31 folders in the file. Place any notes, to-do items, state reports or other items that will need to be done in the next 31 days in the appropriate file folder.

When you receive information on when an item is to be completed or you want to make sure that you send in a special water sample, place the notification or a note in the correct months file.

As a day is finished the empty file folder is placed in the next months file. At the end of the month the notes are transferred to the appropriate files and you start all over again.

Other Scheduling Items

Besides the system described above you should have files folders for:

- Water testing schedule.
- PM schedule.
- Routine operations schedule.

O & M DATA TO BE COLLECTED

OPERATIONS

SOURCE

DAILY

- Total gallons produced to date.
- Gallons produced this period.
- Temperature and pH.

WEEKLY

- Stream flow.
- Precipitation.
- Conductivity.
- Condition of intake structure.
- Personnel hours consumed in operations, monitoring and travel.
- Mileage.

MONTHLY

- Well static level.
- Draw down.
- Well yield in gpm.
- Electric power consumed.

TREATMENT

DAILY

Production

- Average flow.
- Maximum flow.
- Minimum flow.
- Gallons of water produced.

Conditions

- Floc detention time.
- Sedimentation detention time.
- Filter surface loading.
- Headlosses after backwash.
- Quantity of backwash used.
- Length of filter runs.

Water Quality

- pH of raw and finished water.
- Temperature of raw and finished water.

- Alkalinity of raw and finished water.
 - Turbidity of raw and finished water.
 - Hardness.
 - Fluoride.
 - Chlorine.
- Residuals**
- Alum.
 - Polymer.
 - Chlorine.
 - Lime (Soda Ash).
 - Fluoride.
- Chemical Dosage**
- Alum.
 - Polymer.
 - Chlorine.
 - Lime (Soda Ash).
 - Fluoride.
- Chemical Usage**
- Alum.
 - Polymer.
 - Chlorine.
 - Lime (Soda Ash).
 - Fluoride.
- WEEKLY**
- Personnel hours consumed in operations, monitoring and travel.
 - Mileage.
 - Electricity consumption.
 - Fuel consumption.
- Energy Consumption**
- Pumps.
 - Stand-by engines.
 - Boilers.
- Equipment Operation**
- DISTRIBUTION**
- DAILY**
- Storage levels in reservoirs.
 - Daily consumption.
 - Estimated total water used for flowing hydrants.
 - Estimated total water used for distribution blow off.
- MAINTENANCE**
- PUMPS**
- Pumping hours from hour meter.
 - Pump suction pressure.

- Pump discharge pressure.
- Motor amperage and voltage.
- Flow.

VALVES

- Date exercised.

HYDRANTS

- Flow test data, including static pressure, flow rate and residual pressure.
- Date and materials for repair.

SERVICE CONNECTIONS

- Location and length of service.
- Meter serial number.

SCHEDULING O & M DATA COLLECTION

Data Form

Use one "Operations Data" form for each of the major process areas described above. For each process unit or piece of equipment:

- List all routine inspections, list what is to be looked at, what meters are to be read, what data is to be collected, what measurements are to be made and what calculations are to be made.
- Assign frequency for each task. Use the frequency key at the top of the page.
- Assign priority to each task. A simple priority system could be:
 - 1 - Do on the day it is assigned.
 - 2 - Do within 1 week of assigned date.
 - 3 - Do within 1 month of assigned date.
- Assign the amount of time required to do the inspection. If there is a daily visit to a single location - then assign the amount of time required for the complete inspection not each step of the inspection.

Group Activities

Group the activities into daily, weekly, monthly, quarterly, etc. activity. If you are using a computer, this is a simple sort. Other wise group the activities by recopying the data onto a blank form.

Data Collection

Review the activities. Use a highlighter or some other means to identify those activities that require gathering data. (Temperatures, meter readings, etc.) Place the data collection task onto a data collection form. A blank form can be found on page 34. On page 35 is a typical chlorine room data collection form. Alter the forms to meet your needs.

Sample Site Plan

On a map of the community, mark all routine and non routine sample sites.

Testing and Sampling

Using a second highlighter, review the data and mark all activities that require the collection of samples or testing. (Monthly Bac-T samples, chlorine and fluoride residuals are examples.) Place daily, weekly and monthly sampling and testing activities on a separate data form. Use the blank form on page 34 or develop your own.

Other Activities

Make a check list of all other activities that must be performed daily, weekly or monthly. The form used for data collection can be used for this task. List the activities along the top, and simply check off when they are done.

Less Frequently than Monthly

Place those sampling, testing and routine inspection

activities that are performed quarterly, semiannually or annually on a calendar.

Data Forms

On pages 36 and 37 are two samples of data forms developed by other communities for collecting electrical and pumping data. Use them as is or alter them to meet your purpose.

O & M of Small Water Systems

Date	City of												
31													
30													
29													
28													
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7													
6													
5													
4													
3													
2													
1													

Water Utility O & M Record Keeping

Chlorine Station Data Sheet							Month		
Day	Meter Reading	Quantity Used	Cylinder Wt.	Pounds Used	Dosage, mg/l	Rotometer Position			Operator
31									
30									
29									
28									
27									
26									
25									
24									
23									
22									
21									
20									
19									
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14									
13									
12									
11									
10									
9									
8									
7									
6									
5									
4									
3									
2									
1									
Total:									

City of _____, Alaska
Water Treatment Plant Pump History Data Collection Form

Date / /
 month day year

Operator(s) _____

Time of Day _____ : _____ am pm

Clear Well Level _____ ft

Discharge Pressure _____ psi

Power Factor _____

Flow _____ gpm

Differential gauge on
backwash pump _____ psi

Pump	
<input type="checkbox"/>	Backwash #1
<input type="checkbox"/>	Backwash #2
<input type="checkbox"/>	Jockey
<input type="checkbox"/>	Pump 2
<input type="checkbox"/>	Pump 3

Voltage Leads 1 - 3	Voltage Leads 1 - 2	Voltage Leads 2 - 3

Amperage Lead 1	Amperage Lead 2	Amperage Lead 3

Date / /
 month day year

Operator(s) _____

Time of Day _____ : _____ am pm

Clear Well Level _____ ft

Discharge Pressure _____ psi

Power Factor _____

Flow _____ gpm

Differential gauge on
backwash pump _____ psi

Pump	
<input type="checkbox"/>	Backwash #1
<input type="checkbox"/>	Backwash #2
<input type="checkbox"/>	Jockey
<input type="checkbox"/>	Pump 2
<input type="checkbox"/>	Pump 3

Voltage Leads 1 - 3	Voltage Leads 1 - 2	Voltage Leads 2 - 3

Amperage Lead 1	Amperage Lead 2	Amperage Lead 3

Date / /
 month day year

Operator(s) _____

Time of Day _____ : _____ am pm

Clear Well Level _____ ft

Discharge Pressure _____ psi

Power Factor _____

Flow _____ gpm

Differential gauge on
backwash pump _____ psi

Pump	
<input type="checkbox"/>	Backwash #1
<input type="checkbox"/>	Backwash #2
<input type="checkbox"/>	Jockey
<input type="checkbox"/>	Pump 2
<input type="checkbox"/>	Pump 3

Voltage Leads 1 - 3	Voltage Leads 1 - 2	Voltage Leads 2 - 3

Amperage Lead 1	Amperage Lead 2	Amperage Lead 3

Pump Data Card		
Location _____	Asset ID# _____	
Brand _____	No. of Stages _____	Packing Size _____
Model _____	Column Size _____	No. of Stages _____
Configuration _____	Suction Size _____	Impeller Type _____
Serial No. _____	Discharge Size _____	Impeller ID _____
Shaft size _____	Column Size _____	Lubricant _____
Shutdown Head _____	gpm _____	Lube Frequency _____
Outboard or Upper Berg _____	Inboard or Lower Berg _____	
Date Installed _____		
Cost _____	Vendor _____	
Date Removed _____	Reason for Removal _____	
Notes: _____		

Motor Data Card		
Location _____	Asset ID# _____	
Brand _____	Frame _____	Heater No. _____
Model _____	Class Design _____	S.F. _____
H.P. _____	Volts _____	Starter Size _____
Serial No. _____	Amps _____	Lubricant _____
Type _____	Frequency _____	Lube Frequency _____
Code _____	Phase _____	
Outboard or Upper Berg _____	Inboard or Lower Berg _____	
Date Installed _____		
Cost _____	Vendor _____	
Date Removed _____	Reason for Removal _____	
Notes: _____		

RECORD KEEPING WORKSHEET

Complete this worksheet for your utility. Fill in the empty fields regarding where the original is located and who is responsible for updating data records. Complete the description fields and decide on filing methods. This is only a partial list of records which a water utility should maintain. Your utility will have more types of records than those listed here.

DOCUMENT :UTILITY METER BOOKS
 FUNCTION: Administration
 COMPONENT: Commercial
 DOCUMENT CLASS: Data Log - Annual
 FILING METHOD: By Date within Subject
 LOCATION:
 OWNER:
 RETENTION: 2 years
 DESCRIPTION: Documents reading of utility meters, including identity of meter reader, prior reading, date read, current reading, account number, reason for turnoff, meter change out and observations

DOCUMENT: EMERGENCY INCIDENT RECORDS
 FUNCTION: Administration
 COMPONENT: Emergency Mgmt
 DOCUMENT CLASS: Incident Logs
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION: Permanent
 DESCRIPTION: Describes utility's response during and after an emergency incident. Includes photos, damage reports, incident logs, financial documentation

DOCUMENT: EMERGENCY OPERATIONS & MGMT PLANS
 FUNCTION: Administration
 COMPONENT: Emergency Mgmt
 DOCUMENT CLASS: Plan
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION: Permanent
 DESCRIPTION: Records documenting the development, implementation, and updating of emergency operations and management plans

DOCUMENT: VULNERABILITY ASSESSMENTS
 FUNCTION: Administration
 COMPONENT: Emergency Mgmt
 DOCUMENT CLASS: Assessment
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION: 30 years
 DESCRIPTION: Inventory and evaluation of potential natural and man-made hazards in the city. Data includes classification of hazards, location, vulnerability assessment, hazard histories, potential maximum risks and probability of occurrence

DOCUMENT: ANNUAL CAPITAL BUDGET
 FUNCTION: Administration
 COMPONENT: Financial
 DOCUMENT CLASS: Plan
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION: Permanent
 DESCRIPTION:

DOCUMENT: ANNUAL OPERATING BUDGET
 FUNCTION: Administration
 COMPONENT: Financial
 DOCUMENT CLASS: Plan
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION: Permanent
 DESCRIPTION:

Water Utility O & M Record Keeping

DOCUMENT: CAPITAL IMPROVEMENTS
 PLAN
 FUNCTION: Administration
 COMPONENT: Financial
 DOCUMENT CLASS: Plan
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION: Permanent
 DESCRIPTION:

DOCUMENT: CUSTOMER RECORDS
 FUNCTION: Administration
 COMPONENT: Financial
 DOCUMENT CLASS: Transaction
 FILING METHOD: By Customer Account
 LOCATION:
 OWNER:
 RETENTION: 2 years
 DESCRIPTION: Includes changes to customer accounts: applications for service, utility bills, adjustments, receipt of payments and security deposit records

DOCUMENT: ENTERPRISE PLAN
 FUNCTION: Administration
 COMPONENT: Financial
 DOCUMENT CLASS: Plan
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: PROPERTY DISPOSITION
 RECORDS
 FUNCTION: Administration
 COMPONENT: Financial
 DOCUMENT CLASS: Transaction
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: PURCHASE CONTRACTS
 FROM FORMAL BID PRO-
 CESSION
 FUNCTION: Administration
 COMPONENT: Financial
 DOCUMENT CLASS: Transaction
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION: 7 Years from substantial
 completion
 DESCRIPTION:

DOCUMENT: PURCHASE ORDERS
 FUNCTION: Administration
 COMPONENT: Financial
 DOCUMENT CLASS: Transaction
 FILING METHOD: By Sequence Number
 LOCATION:
 OWNER:
 RETENTION: 7 Years
 DESCRIPTION: Documents purchase transaction of goods and services not on contract

DOCUMENT: PURCHASE REQUISITIONS
 FUNCTION: Administration
 COMPONENT: Financial
 DOCUMENT CLASS: Transaction
 FILING METHOD: By Sequence Number
 LOCATION:
 OWNER:
 RETENTION: 7 Years
 DESCRIPTION: Records requests by operating departments for goods or services

DOCUMENT: RATE STUDIES
 FUNCTION: Administration
 COMPONENT: Financial
 DOCUMENT CLASS: Assessment
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: CONTRACTOR BOND
 AND INSURANCE
 RECORDS
 FUNCTION: Administration
 COMPONENT: Risk Mgmt
 DOCUMENT CLASS: Construction Record
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION: 10 yrs after substantial
 completion
 DESCRIPTION: Records include certificate of insurance coverage including limits and any special provisions

DOCUMENT: CONTRACTOR PERFORM-
 ANCE BOND RECORDS
 FUNCTION: Administration
 COMPONENT: Risk Mgmt
 DOCUMENT CLASS: Construction Record
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION: 10 yrs after substantial
 completion

O & M of Small Water Systems

<p>DESCRIPTION: Records include the performance guarantees or surety bonds posting by contractors who perform work for the utility</p>	<p>RETENTION: Permanent</p>
<p>DOCUMENT: NON-COMPLIANCE CORRECTIVE ACTION RECORDS</p>	<p>DESCRIPTION: Photographs and negatives showing topography, natural features and buildings, often with parcel lines and/or utility lines and structures superimposed on the original photographs</p>
<p>FUNCTION: Administration</p> <p>COMPONENT: Water Quality</p> <p>DOCUMENT CLASS: Correspondence</p> <p>FILING METHOD: Alphabetically by subject</p> <p>LOCATION:</p> <p>OWNER:</p> <p>RETENTION: 3 Years after action taken</p> <p>DESCRIPTION: Written record of city actions taken to correct violations of drinking water regulations. Includes incident logs, correspondence and reports</p>	<p>DOCUMENT: WELL HEAD PROTECTION AREAS</p> <p>FUNCTION: Engineering</p> <p>COMPONENT: Base Data</p> <p>DOCUMENT CLASS: Maps & Drawings</p> <p>FILING METHOD: Geographically</p> <p>LOCATION:</p> <p>OWNER:</p> <p>RETENTION:</p> <p>DESCRIPTION:</p>
<p>DOCUMENT: REGULATORY VARIANCE & EXCEPTION RECORDS</p> <p>FUNCTION: Administration</p> <p>COMPONENT: Water Quality</p> <p>DOCUMENT CLASS: Correspondence</p> <p>FILING METHOD: Alphabetically by subject</p> <p>LOCATION:</p> <p>OWNER:</p> <p>RETENTION: 5 Years</p> <p>DESCRIPTION:</p>	<p>DOCUMENT: BID DOCUMENTS</p> <p>FUNCTION: Engineering</p> <p>COMPONENT: Construction</p> <p>DOCUMENT CLASS: Construction Record</p> <p>FILING METHOD:</p> <p>LOCATION:</p> <p>OWNER:</p> <p>RETENTION: 7 Years from substantial completion</p> <p>DESCRIPTION: Contract specifications, invitation to bid or request for quotation, vendor pre qualifications, responses and bid abstract</p>
<p>DOCUMENT: SANITARY SURVEY RECORDS</p> <p>FUNCTION: Administration</p> <p>COMPONENT: Water Quality</p> <p>DOCUMENT CLASS: Assessment</p> <p>FILING METHOD:</p> <p>LOCATION:</p> <p>OWNER:</p> <p>RETENTION: Permanent</p> <p>DESCRIPTION: Written assessment by private consultant, city, state or federal agencies of sanitary condition of the municipal water system including source, treatments, storage, distribution and record keeping</p>	<p>DOCUMENT: FIELD ORDERS AND PUNCH LISTS</p> <p>FUNCTION: Engineering</p> <p>COMPONENT: Construction</p> <p>DOCUMENT CLASS: Construction Record</p> <p>FILING METHOD: By Date within Project</p> <p>LOCATION:</p> <p>OWNER:</p> <p>RETENTION:</p> <p>DESCRIPTION:</p>
<p>DOCUMENT: AERIAL PHOTOGRAPHS</p> <p>FUNCTION: Engineering</p> <p>COMPONENT: Base Data</p> <p>DOCUMENT CLASS: Maps & Drawings</p> <p>FILING METHOD: Geographically</p> <p>LOCATION:</p> <p>OWNER:</p>	<p>DOCUMENT: INSPECTION PHOTOS AND NOTEBOOKS</p> <p>FUNCTION: Engineering</p> <p>COMPONENT: Construction</p> <p>DOCUMENT CLASS: Incident Logs</p> <p>FILING METHOD: By Date within project</p> <p>LOCATION:</p> <p>OWNER:</p> <p>RETENTION:</p> <p>DESCRIPTION:</p>

Water Utility O & M Record Keeping

DOCUMENT: PROJECT CORRESPONDENCE & PHONE LOGS
 FUNCTION: Engineering
 COMPONENT: Construction
 DOCUMENT CLASS: Correspondence
 FILING METHOD: Alphabetically by subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: WELL DRILLING LOG & CONSTRUCTION RECORDS
 FUNCTION: Engineering
 COMPONENT: Construction
 DOCUMENT CLASS: Construction Record
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: MASTER FACILITY PLANS
 FUNCTION: Engineering
 COMPONENT: Design
 DOCUMENT CLASS: Plan
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: REAL PROPERTY AND ROW ACQUISITION RECORDS
 FUNCTION: Engineering
 COMPONENT: Site Control
 DOCUMENT CLASS: Transaction
 FILING METHOD: By Sequence; Indexed by location
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: MASTER AS-BUILT DISTRIBUTION MAPS
 FUNCTION: Supervision
 COMPONENT: Base Data
 DOCUMENT CLASS: Maps & Drawings
 FILING METHOD: Geographically
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: MASTER AS-BUILT PLANS FOR STRUCTURES
 FUNCTION: Supervision
 COMPONENT: Base Data
 DOCUMENT CLASS: Maps & Drawings
 FILING METHOD: Geographically
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: WATER USAGE BY CUSTOMER CLASS
 FUNCTION: Supervision
 COMPONENT: Commercial
 DOCUMENT CLASS: Reports
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: DISTRIBUTION OF PAYROLL TO COST CENTERS
 FUNCTION: Supervision
 COMPONENT: Cost Control
 DOCUMENT CLASS: Data Log - Annual
 FILING METHOD: By Date within Subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: OPERATING SUPPLIES PERPETUAL INVENTORY
 FUNCTION: Supervision
 COMPONENT: Cost Control
 DOCUMENT CLASS: Data Log - Annual
 FILING METHOD: By Date within Subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION: Geologic structure, well depth, location of intake, water rights documentation, original pump and water quality test

DOCUMENT: SPARE PART/REPAIR PART PERPETUAL INVENTORY
 FUNCTION: Supervision
 COMPONENT: Cost Control
 DOCUMENT CLASS: Data Log - Annual
 FILING METHOD: By Date within Subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

O & M of Small Water Systems

DOCUMENT: USE-OF-INVENTORY RECORDS
 FUNCTION: Supervision
 COMPONENT: Cost Control
 DOCUMENT CLASS: Data Log - Annual
 FILING METHOD: By Date within Subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: WORK ORDERS - SCHEDULED MAINTENANCE
 FUNCTION: Supervision
 COMPONENT: Cost Control
 DOCUMENT CLASS: Transaction
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: SERVICE COMPLAINTS
 FUNCTION: Supervision
 COMPONENT: Customer Service
 DOCUMENT CLASS: Incident Logs
 FILING METHOD: By Date within Subject
 LOCATION:
 OWNER:
 RETENTION: 2 years
 DESCRIPTION: Documents complaints; name, phone, address, description of problem, date and name of employee responding to complaint, disposition and date

DOCUMENT: WATER PRODUCTION VS CONSUMPTION REPORTS
 FUNCTION: Supervision
 COMPONENT: Distribution
 DOCUMENT CLASS: Reports
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION: Permanent
 DESCRIPTION:

DOCUMENT: WORK ORDERS - EMERGENCY REPAIRS
 FUNCTION: Supervision
 COMPONENT: Distribution
 DOCUMENT CLASS: Transaction
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: WORK ORDERS - WATER SERVICE CONNECTION
 FUNCTION: Supervision
 COMPONENT: Distribution
 DOCUMENT CLASS: Transaction
 FILING METHOD: By Sequence; Indexed by location
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: RECEIVING DOCUMENTS
 FUNCTION: Supervision
 COMPONENT: Inventory Control
 DOCUMENT CLASS: Transaction
 FILING METHOD: By Date
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: TECHNICAL MANUALS
 FUNCTION: Supervision
 COMPONENT: Library
 DOCUMENT CLASS: Reference
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: WORK ORDERS - METER CHANGE OUT
 FUNCTION: Supervision
 COMPONENT: Meters
 DOCUMENT CLASS: Transaction
 FILING METHOD: By Sequence; Indexed by location
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: WORK ORDERS - METER TEST AND CALIBRATION
 FUNCTION: Supervision
 COMPONENT: Meters
 DOCUMENT CLASS: Transaction
 FILING METHOD: By Sequence; Indexed by location
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: WORK ORDERS - SERVICE TURN ON/OFF
 FUNCTION: Supervision
 COMPONENT: Meters

Water Utility O & M Record Keeping

DOCUMENT CLASS: Transaction
 FILING METHOD: By Sequence; Indexed by location
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: DETAILED BUDGET OF CONTROLLABLE O & M COSTS

FUNCTION: Supervision
 COMPONENT: Planning
 DOCUMENT CLASS: Plan

FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: MASTER MAINTENANCE SCHEDULE

FUNCTION: Supervision
 COMPONENT: Planning
 DOCUMENT CLASS: Plan

FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: MASTER PERSONNEL SCHEDULE

FUNCTION: Supervision
 COMPONENT: Planning
 DOCUMENT CLASS: Plan

FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: WATER QUALITY - SAMPLING PLAN

FUNCTION: Supervision
 COMPONENT: Planning
 DOCUMENT CLASS: Plan

FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: CATALOGUES
 FUNCTION: Supervision
 COMPONENT: Purchasing
 DOCUMENT CLASS: Reference

FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: CUT SHEETS

FUNCTION: Supervision
 COMPONENT: Purchasing
 DOCUMENT CLASS: Reference

FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: HAZARD COMMUNICATIONS PROGRAM

FUNCTION: Supervision
 COMPONENT: Risk Mgmt
 DOCUMENT CLASS: Regulations

FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

Permanent
 Material Safety Data Sheets and Hazard Communication Plan with procedures for identifying, signing, handling and storing hazardous materials

DOCUMENT: MATERIAL DATA SAFETY SHEETS

FUNCTION: Supervision
 COMPONENT: Safety
 DOCUMENT CLASS: Reference

FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: SAFETY REGULATIONS

FUNCTION: Supervision
 COMPONENT: Safety
 DOCUMENT CLASS: Regulations

FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

O & M of Small Water Systems

DOCUMENT: WELL DRAW DOWN AND RECOVERY PUMPING TESTS
 FUNCTION: Supervision
 COMPONENT: Source
 DOCUMENT CLASS: Test Results
 FILING METHOD: By Date within Subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION: Date, time of day, time from commencement or cessation of pumping, pumping level, yield and cloudiness

DOCUMENT: STATE REPORT
 FUNCTION: Supervision
 COMPONENT: Treatment
 DOCUMENT CLASS: Reports
 FILING METHOD: By Month within Subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: WATER TREATMENT OPERATIONS REPORTS
 FUNCTION: Supervision
 COMPONENT: Treatment
 DOCUMENT CLASS: Reports
 FILING METHOD: By Month within Subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: BACKFLOW PREVENTION DEVICE TEST REPORT
 FUNCTION: Supervision
 COMPONENT: Water Quality
 DOCUMENT CLASS: Test Results
 FILING METHOD: By Date within Subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: CROSS CONNECTION CONTROL RECORDS
 FUNCTION: Supervision
 COMPONENT: Water Quality
 DOCUMENT CLASS: Assessment
 FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: WATER QUALITY - BACTERIOLOGICAL
 FUNCTION: Supervision
 COMPONENT: Water Quality
 DOCUMENT CLASS: Test Results
 FILING METHOD: By Date within Subject
 LOCATION:
 OWNER:
 RETENTION: 5 Years
 DESCRIPTION:

DOCUMENT: WATER QUALITY - INORGANICS
 FUNCTION: Supervision
 COMPONENT: Water Quality
 DOCUMENT CLASS: Test Results
 FILING METHOD: By Date within Subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: WATER QUALITY - LEAD/COPPER
 FUNCTION: Supervision
 COMPONENT: Water Quality
 DOCUMENT CLASS: Test Results
 FILING METHOD: By Date within Subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: WATER QUALITY - RADIOLOGICAL
 FUNCTION: Supervision
 COMPONENT: Water Quality
 DOCUMENT CLASS: Test Results
 FILING METHOD: By Date within Subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: WATER QUALITY - SECONDARY CONTAMINANTS
 FUNCTION: Supervision
 COMPONENT: Water Quality
 DOCUMENT CLASS: Test Results
 FILING METHOD: By Date within Subject
 LOCATION:
 OWNER:
 RETENTION: 10 Years
 DESCRIPTION: Written results of analysis of water samples to determine the level of secondary contaminants typically found in drinking water at levels that do not

Water Utility O & M Record Keeping

present a health risk but may affect taste, odor, color of water and may stain fixtures

DOCUMENT: WATER QUALITY - SYNTHETIC ORGANICS
 FUNCTION: Supervision
 COMPONENT: Water Quality
 DOCUMENT CLASS: Test Results
 FILING METHOD: By Date within Subject

LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: WATER QUALITY - TURBIDITY REPORTS
 FUNCTION: Supervision
 COMPONENT: Water Quality
 DOCUMENT CLASS: Test Results
 FILING METHOD: By Date within Subject

LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

10 Years
 Written results of analysis of water samples to determine the level of cloudiness caused by suspended particles. Includes date, time sample taken, tester, report number, turbidity unit values for routine and check samples

DOCUMENT: WATER QUALITY - VOLATILE ORGANICS
 FUNCTION: Supervision
 COMPONENT: Water Quality
 DOCUMENT CLASS: Test Results
 FILING METHOD: By Date within Subject

LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: WATER QUALITY COMPLAINTS
 FUNCTION: Supervision
 COMPONENT: Water Quality
 DOCUMENT CLASS: Incident Logs
 FILING METHOD: By Date within Subject

LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: WATER QUALITY REGULATIONS
 FUNCTION: Supervision
 COMPONENT: Water Quality
 DOCUMENT CLASS: Regulations

FILING METHOD:
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: BACKFLOW PREVENTION DEVICE LOCATIONS
 FUNCTION: Water Maintenance
 COMPONENT: Backflow Prevention
 DOCUMENT CLASS: Map Overlay
 FILING METHOD: Geographically

LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: BOOSTER MOTOR MAINTENANCE & REPAIR HISTORY
 FUNCTION: Water Maintenance
 COMPONENT: Booster Pumps
 DOCUMENT CLASS: Card
 FILING METHOD: By Equip ID within Subject

LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: BOOSTER PUMP MAINTENANCE & REPAIR HISTORY
 FUNCTION: Water Maintenance
 COMPONENT: Booster Pumps
 DOCUMENT CLASS: Card
 FILING METHOD: By Equip ID within Subject

LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: BUILDING MAINTENANCE & REPAIR HISTORY
 FUNCTION: Water Maintenance
 COMPONENT: Buildings
 DOCUMENT CLASS: Card
 FILING METHOD: By Equip ID within Subject

LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

O & M of Small Water Systems

DOCUMENT: DISTRIBUTION MAINS - EMERGENCY REPAIRS
 FUNCTION: Water Maintenance
 COMPONENT: Distribution Mains
 DOCUMENT CLASS: Map Overlay
 FILING METHOD: Geographically
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: DISTRIBUTION MAINS - SCHEDULED MAINTENANCE
 FUNCTION: Water Maintenance
 COMPONENT: Distribution Mains
 DOCUMENT CLASS: Map Overlay
 FILING METHOD: Geographically
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: HYDRANT LOCATIONS
 FUNCTION: Water Maintenance
 COMPONENT: Hydrants
 DOCUMENT CLASS: Map Overlay
 FILING METHOD: Geographically
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: HYDRANT SPECS, LOCATION & REPAIR HISTORY
 FUNCTION: Water Maintenance
 COMPONENT: Hydrants
 DOCUMENT CLASS: Card
 FILING METHOD: By Equip ID within Subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: HYDRANT TEST HISTORY
 FUNCTION: Water Maintenance
 COMPONENT: Hydrants
 DOCUMENT CLASS: Data Log - Annual
 FILING METHOD: By Date within Subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: CONSTRUCTION MATERIALS - PERPETUAL INVENTORY
 FUNCTION: Water Maintenance
 COMPONENT: Inventory
 DOCUMENT CLASS: Data Log - Annual
 FILING METHOD: By Date within Subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: RECEIVING LOG
 FUNCTION: Water Maintenance
 COMPONENT: Inventory
 DOCUMENT CLASS: Data Log - Annual
 FILING METHOD: By Date within Subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: SPARE PARTS - PERPETUAL INVENTORY
 FUNCTION: Water Maintenance
 COMPONENT: Inventory
 DOCUMENT CLASS: Data Log - Annual
 FILING METHOD: By Date within Subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: MAINTENANCE EQUIPMENT REPAIR RECORDS
 FUNCTION: Water Maintenance
 COMPONENT: Maintenance Equip
 DOCUMENT CLASS: Card
 FILING METHOD: By Equip ID within Subject
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: METER (CURB) BOX LOCATIONS
 FUNCTION: Water Maintenance
 COMPONENT: Meters
 DOCUMENT CLASS: Map Overlay
 FILING METHOD: Geographically
 LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: METER SPECS, LOCATION & REPAIR HISTORY
 FUNCTION: Water Maintenance
 COMPONENT: Meters

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DOCUMENT CLASS: Card
 FILING METHOD: By Equip ID within Subject

LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: BLOW OFF & AIR RELIEF
 SPECS, LOCATION &
 REPAIR

FUNCTION: Water Maintenance
 COMPONENT: Misc. Appurtenances

DOCUMENT CLASS: Card
 FILING METHOD: By Equip ID within Subject

LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: PRESSURE REDUCING
 STATION SPECS & MAIN-
 TENANCE

FUNCTION: Water Maintenance
 COMPONENT: Misc. Appurtenances

DOCUMENT CLASS: Card
 FILING METHOD: By Equip ID within Subject

LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: SERVICE CONNECTION
 LOCATIONS

FUNCTION: Water Maintenance
 COMPONENT: Service Connection

DOCUMENT CLASS: Map Overlay
 FILING METHOD: Geographically

LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: SOURCE PUMP MAINTENANCE & REPAIR HISTORY

FUNCTION: Water Maintenance
 COMPONENT: Source

DOCUMENT CLASS: Card
 FILING METHOD: By Equip ID within Subject

LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: SOURCE PUMP MOTOR
 MAINTENANCE/REPAIR
 HISTORY

FUNCTION: Water Maintenance
 COMPONENT: Source

DOCUMENT CLASS: Card
 FILING METHOD: By Equip ID within Subject

LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: RESERVOIR MAINTENANCE & REPAIR RECORDS

FUNCTION: Water Maintenance
 COMPONENT: Water Storage

DOCUMENT CLASS: Card
 FILING METHOD: By Equip ID within Subject

LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: TREATMENT EQUIP
 MAINTENANCE/REPAIR
 HISTORY

FUNCTION: Water Maintenance
 COMPONENT: Treatment

DOCUMENT CLASS: Card
 FILING METHOD: By Equip ID within Subject

LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

DOCUMENT: TREATMENT MOTORS
 MAINTENANCE/REPAIR
 HISTORY

FUNCTION: Water Maintenance
 COMPONENT: Treatment

DOCUMENT CLASS: Card
 FILING METHOD: By Equip ID within Subject

LOCATION:
 OWNER:
 RETENTION:
 DESCRIPTION:

O & M of Small Water Systems

DOCUMENT: TREATMENT PUMPS
MAINTENANCE/REPAIR
HISTORY
FUNCTION: Water Maintenance
COMPONENT: Treatment
DOCUMENT CLASS: Card
FILING METHOD: By Equip ID within
Subject
LOCATION:
OWNER:
RETENTION:
DESCRIPTION:

DOCUMENT: WATER TREATMENT
EQUIP TEST/CALIBRA-
TION
FUNCTION: Water Maintenance
COMPONENT: Treatment
DOCUMENT CLASS: Data Log - Annual
FILING METHOD: By Year within Subject
LOCATION:
OWNER:
RETENTION:
DESCRIPTION:

DOCUMENT: VALVE LOCATIONS
FUNCTION: Water Maintenance
COMPONENT: Valves
DOCUMENT CLASS: Map Overlay
FILING METHOD: Geographically
LOCATION:
OWNER:
RETENTION:
DESCRIPTION: Brand, mfg., type, size,
serial no, open direction,
number of turns, history
of installation date, loca-
tion ID and Map ID

DOCUMENT: VALVE SPECS, LOCA-
TION, EXERCISE &
REPAIR HISTORY
FUNCTION: Water Maintenance
COMPONENT: Valves
DOCUMENT CLASS: Card
FILING METHOD: By Equip ID within
Subject
LOCATION:
OWNER:
RETENTION:
DESCRIPTION: Map plus location card
with location ID, valve ID,
install dates, type of valve
box and depth

DOCUMENT: DAILY VEHICLE USAGE
AND EXPENSE
RECORDS
FUNCTION: Water Maintenance
COMPONENT: Vehicles
DOCUMENT CLASS: Data Log - Monthly
FILING METHOD: By Month within Subject
LOCATION:
OWNER:
RETENTION:
DESCRIPTION:

DOCUMENT: FUEL RECORDS
FUNCTION: Water Maintenance
COMPONENT: Vehicles
DOCUMENT CLASS: Data Log - Annual
FILING METHOD: By Year within Subject
LOCATION:
OWNER:
RETENTION:
DESCRIPTION:

DOCUMENT: VEHICLE MAINTENANCE
AND REPAIR HISTORY
FUNCTION: Water Maintenance
COMPONENT: Vehicles
DOCUMENT CLASS: Card
FILING METHOD: By Equip ID within
Subject
LOCATION:
OWNER:
RETENTION:
DESCRIPTION:

DOCUMENT: DAILY BOOSTER PUMP-
ING BY STATION
FUNCTION: Water Operations
COMPONENT: Distribution
DOCUMENT CLASS: Data Log - Monthly
FILING METHOD: By Month within Subject
LOCATION:
OWNER:
RETENTION: 5 Years
DESCRIPTION:

DOCUMENT: DAILY WATER STORAGE
LEVEL
FUNCTION: Water Operations
COMPONENT: Distribution
DOCUMENT CLASS: Data Log - Monthly
FILING METHOD: By Month within Subject
LOCATION:
OWNER:
RETENTION: 5 Years
DESCRIPTION:

Water Utility O & M Record Keeping

DOCUMENT: DAILY WATER PRODUCTION BY SOURCE
 FUNCTION: Water Operations
 COMPONENT: Source
 DOCUMENT CLASS: Data Log - Monthly
 FILING METHOD: By Month within Subject
 LOCATION:
 OWNER:
 RETENTION: 5 Years
 DESCRIPTION: Well ID, day of month, cumulative meter reading, gallons pumped, static level, pumping level and draw down

DOCUMENT: DAILY WATER TREATMENT BOILER OPERATIONS
 FUNCTION: Water Operations
 COMPONENT: Treatment
 DOCUMENT CLASS: Data Log - Monthly
 FILING METHOD: By Month within Subject
 LOCATION:
 OWNER:
 RETENTION: 5 Years
 DESCRIPTION:

DOCUMENT: DAILY WATER TREATMENT CHEMICAL DOSAGE
 FUNCTION: Water Operations
 COMPONENT: Treatment
 DOCUMENT CLASS: Data Log - Monthly
 FILING METHOD: By Month within Subject
 LOCATION:
 OWNER:
 RETENTION: 5 Years
 DESCRIPTION:

DOCUMENT: DAILY WATER TREATMENT ENERGY & SUPPLIES USE
 FUNCTION: Water Operations
 COMPONENT: Treatment
 DOCUMENT CLASS: Data Log - Monthly
 FILING METHOD: By Month within Subject
 LOCATION:
 OWNER:
 RETENTION: 5 Years
 DESCRIPTION:

DOCUMENT: DAILY WATER TREATMENT PROCESS CONTROL
 FUNCTION: Water Operations
 COMPONENT: Treatment
 DOCUMENT CLASS: Data Log - Monthly
 FILING METHOD: By Month within Subject
 LOCATION:
 OWNER:
 RETENTION: 5 Years
 DESCRIPTION:

DOCUMENT: DAILY WATER TREATMENT PRODUCTION
 FUNCTION: Water Operations
 COMPONENT: Treatment
 DOCUMENT CLASS: Data Log - Monthly
 FILING METHOD: By Month within Subject
 LOCATION:
 OWNER:
 RETENTION: 5 Years
 DESCRIPTION:

DOCUMENT: DAILY WATER TREATMENT PUMP OPERATIONS
 FUNCTION: Water Operations
 COMPONENT: Treatment
 DOCUMENT CLASS: Data Log - Monthly
 FILING METHOD: By Month within Subject
 LOCATION:
 OWNER:
 RETENTION: 5 Years
 DESCRIPTION:

DOCUMENT: DAILY WATER TREATMENT PUMP OPERATIONS
 FUNCTION: Water Operations
 COMPONENT: Treatment
 DOCUMENT CLASS: Data Log - Monthly
 FILING METHOD: By Month within Subject
 LOCATION:
 OWNER:
 RETENTION: 5 Years
 DESCRIPTION:

DOCUMENT: WATER TREATMENT STAND-BY GENERATOR LOG
 FUNCTION: Water Operations
 COMPONENT: Treatment
 DOCUMENT CLASS: Data Log - Monthly
 FILING METHOD: By Month within Subject
 LOCATION:
 OWNER:
 RETENTION: 5 Years
 DESCRIPTION:

WATER UTILITY O & M RECORD KEEPING WORKSHEET

1. List three uses of collected data.

a. _____

b. _____

c. _____

2. Give three reasons why utility record keeping should be organized.

a. _____

b. _____

c. _____

3. What are five operator responsibilities for record keeping.

a. _____

b. _____

c. _____

d. _____

e. _____

4. What types of records need to be set up for water utility O & M record keeping.

a. _____

b. _____

c. _____

d. _____

e. _____

5. Outline the recommend method of physically organizing your water utility information.

