MINIMUM STANDARDS

FOR

PUBLIC WATER SYSTEMS

May, 2000

Drinking Water Permitting & Engineering Program
Georgia Environmental Protection Division
205 Butler Street, S.E.
Floyd Towers East, Suite # 1362
Atlanta, Georgia 30334

Revision: 05172000.OES.2.0.2nd Edition

TABLE OF CONTENTS

MINIMUM STANDARDS FOR PUBLIC WATER SYSTEMS

FOREWORD

This publication has been prepared to provide minimum design criteria and establish certain standards in the development and construction of public water supply systems. This document would help water system owners, operators, professional engineers, and the public in general understand about the standards used in the design and construction of public water supply systems. We consider these standards to be dynamic and subject to periodic updates and revisions, as necessary, to conform with the latest drinking water regulations. If you are planning to develop a new public water supply system, or make additions, extensions, repairs, improvements or modifications to an existing public water system, please make sure that you are using the latest edition of the "Minimum Standards for Public Water Systems".

There has been no attempt to include or address every situation in this publication. Certainly, there may be occasions when these standards may not apply or cover. In those circumstances, the design of the facilities should meet the needs of the particular situation. Nothing in these minimum standards should be construed as preventing the professional engineer from recommending or the Georgia Environmental Protection Division from approving more effective treatment where local conditions dictate such action. You must contact the Drinking Water Permitting and Engineering Program of the Division for clarification and guidance prior to any construction. Any exceptions will be handled on an individual basis. However, it must be understood that development and operation of all public water systems are required, by law, to comply with the Georgia Rules for Safe Drinking Water, Chapter 391-3-5, promulgated under the Georgia Safe Drinking Water Act.

Should at any time an experimental installation, made based on engineering data, fail to produce results satisfactory to the Division, then immediate steps must be taken to replace it by a conventional installation approved by the Division.

The term “Division” as used herein refers to the Georgia Environmental Protection Division, Drinking Water Permitting and Engineering Program. Other terms, such as “shall” and “must” are intended to mean mandatory procedures. The terms “should,” “recommended,” and “preferred,” indicate desirable procedures or methods.

The Recommended Standards for Water Works, 1992 Edition, "Great Lakes Upper Mississippi River Board of State Public Health & Environmental Managers", commonly known as the "Ten-State Standards” were used as a guide in the preparation of Georgia’s Minimum Standards for Public Water Systems.

PART 15 - FLUORIDATION

15.1.0 GENERAL - Sodium fluoride, sodium silicofluoride and hydrofluosilicic acid shall conform to the applicable AWWA standards. Other fluoride compounds which may be available must be approved by the Division.

15.1.1 FLUORIDE COMPOUND STORAGE

a. Fluoride chemicals should be isolated from other chemicals to prevent contamination.

b. Compounds shall be stored in covered or unopened shipping containers and should be stored inside a building.

c. Bulk storage units and day tanks, drums in use and unsealed storage units for hydrofluosilicic acid should be vented to the atmosphere at a point outside any building.

d. Bags, fiber drums and steel drums should be stored on pallets.

15.1.2 CHEMICAL FEED EQUIPMENT AND INSTALLATIONS

15.1.2.1 GENERAL - In addition to the requirements listed under "Chemical Application" in this document, the fluoride feed equipment shall meet the following requirements:

a. shall provide scales, loss-of-weight recorders or liquid level indicators, as appropriate for dry or acid chemical feeds. Dry volumetric feeders are to have percent-of cycle timer or variable speed drive. A minimum of 35-gallon dissolver with mechanical mixer.

b. feeders shall be accurate to within 5 % of any desired feed rate;

c. fluoride compound shall not be added before lime-soda softening or ion exchange softening;

d. the point of application of hydrofluosilicic acid, if into a horizontal pipe, shall be in the lower half of the pipe;

e. a fluoride solution shall be applied by a positive displacement pump having a stroke rate not less than 20 strokes per minute;

f. anti-siphon devices shall be provided for all fluoride feed lines and dilution water lines;

g. a device to measure the flow of water to be treated is required;

h. the dilution water pipe shall terminate at least two pipe diameters above the solution tank;

i. water used for sodium fluoride dissolution shall be softened if hardness exceeds 75 mg/l as calcium carbonate;

j. fluoride solutions shall not be injected to a point of negative pressure;

k. the electrical outlet used for the fluoride feed pump should have a nonstandard receptacle and shall be interconnected with the well or service pump;

l. saturators should be of the upflow type and be provided with a meter and backflow protection on the makeup water line.

15.1.3 PROTECTIVE EQUIPMENT - Protective equipment, as outlined in Part 19, titled "Chemical Application" shall be provided for operators handling fluoride compounds.

15.1.4 DUST CONTROL

a. Provision shall be made for the transfer of dry fluoride compounds from shipping containers to storage bins or hoppers in such a way as to minimize the quantity of fluoride dust which may enter the room in which the equipment is installed.

b. The enclosure shall be provided with an exhaust fan and dust filter which place the hopper under a negative pressure. Air exhausted from fluoride handling equipment shall discharge through a dust filter to the outside atmosphere of the building.

c. The disposal of empty bags, drums or barrels shall be in a manner to minimize exposure to fluoride dusts.

d. A floor drain should be provided to facilitate the hosing of floors.

15.1.5 TESTING EQUIPMENT - Equipment shall be provided for measuring the quantity of fluoride in the water. Such equipment shall be acceptable to the Division.

PART 19 - CHEMICAL APPLICATION

19.1.0 GENERAL - All chemicals that come into contact with the drinking water during its treatment shall be certified for conformance with the NSF Standard 60.

19.1.1 DESCRIPTION: Plans and specifications describing the water treatment plants (new, modified or expanded) shall include the chemicals and chemical feed equipment to be used in the treatment process. Plans and Specifications shall include:

a. descriptions of feed equipment, including maximum and minimum feed ranges;

b. location of feeders, piping layout and points of application;

c. storage and handling facilities;

d. specifications for chemicals to be used;

e. operating and control procedures including proposed application rates; and

f. descriptions of testing equipment and procedures.

19.1.2 CHEMICAL APPLICATION - Chemicals shall be applied to the water at such points and by such means as to:

a. assure maximum efficiency of treatment and good mixing of the chemicals with the water;

b. assure maximum safety to consumer and the operators;

c. provide maximum flexibility of operation through various points of application, when appropriate; and,

d. prevent backflow or back-siphonage at all feed points.

19.1.3 FEED EQUIPMENT

a. Number of Feeders: Where chemical feed is essential for the production of safe drinking water, or necessary for continuous operation and for the protection of the water supply:

1. a minimum of two feeders shall be provided;

2. a standby unit or a combination of units of sufficient capacity should be available to replace the largest unit during shut-downs;

3. where a booster pump is required, duplicate equipment should be provided and, when necessary, a standby power.

b. Additional Considerations: A separate feeder must be used for each chemical applied. In addition, spare parts should be available for all feeders to replace parts which are subject to wear and damage.

19.1.4 GENERAL EQUIPMENT DESIGN AND CAPACITY - General equipment design shall be such that:

a. feeders will be able to supply, at all times, the necessary amounts of chemicals at an accurate rate, throughout the range of feed;

b. feeders are adjustable to handle all plant flow rates;

c. chemical-contact materials and surfaces are resistant to the aggressiveness of the chemical solution;

d. corrosive chemicals are introduced in such a manner as to minimize potential for corrosion;

e. chemicals that are incompatible are not stored or handled together;

f. all chemicals are conducted from the feeder to the point of application in separate conduits;

g. chemical feeders are as near as practical to the feed point;

h. positive displacement type solution feed pumps shall be used to feed liquid chemicals, and shall not be used to feed chemical slurries;

i. chemicals are fed by gravity where practical, and shall not be siphoned into the water supply;

j. service water supply shall be protected from contamination by the chemical solutions. It should be equipped with backflow prevention devices or an air gap should be provided between the supply line and the solution tank;

k. no direct connection shall exist between any sewer and a drain or overflow from the feeder or solution chamber or tank. All drains shall terminate at least six inches or two pipe diameters, whichever is greater, above the overflow rim of a receiving sump, conduit or waste receptacle.

l. Dry Chemical Feeders shall:

(A) measure chemicals volumetrically or gravimetrically;

(B) provide adequate solution water and agitation of the chemical in the solution pot;

(C) provide gravity feed from solution pots; and,

(D) completely enclose chemicals to prevent emission of dust to any of the operating areas.

m. Positive Displacement Solution Pumps shall be used to feed liquid chemicals, but shall not be used to feed chemical slurries. Pumps must be sized to match or exceed maximum head conditions found at the point of injection.

n. Liquid Chemical Feeders shall be such that chemical solutions cannot be siphoned into the water supply, by assuring discharge at a point of positive pressure, or providing vacuum relief, or providing a suitable air gap, or other suitable means or combinations as necessary.

19.1.5 LOCATION OF CHEMICAL FEED EQUIPMENT - Chemical feed equipment shall:

a. be located in a separate room to reduce hazards and dust problems;

b. be conveniently located near points of application to minimize length of feed lines;

c. be readily accessible for servicing, repair, calibration and observation of operation;

d. be located such that the flow to the rapid mix is by gravity;

e. shall be located and protective curbing provided (containment), so that chemicals from equipment failure, spillage or accidental drainage shall not enter the water through conduits, treatment or storage basins, or result in hazardous or unpermitted discharge.

19.1.6 FEEDER CONTROLS

a. Feeders may be manually or automatically controlled, with automatic controls being designed so as to allow override by manual controls.

b. Process must be manually started following shutdowns.

c. At automatically operated facilities, chemical feeders shall be electrically interconnected with the well or service pump and should be provided a nonstandard electrical receptacle.

d. Chemical feed rates shall be proportional to flow.

e. A means to measure water flow must be provided in order to determine chemical feed rates.

f. Provisions shall be made for measuring the quantities of chemicals used.

19.1.7 WEIGHING SCALES

a. shall be provided for weighing cylinders, at all plants utilizing chlorine gas;

b. shall be provided to measure fluoride solution feed;

c. should be provided for volumetric dry chemical feeders; and

d. should be accurate to measure increments of 0.5 % of load.

19.1.8 IN-PLANT WATER SUPPLY – Service water supply shall be:

a. only from a safe, approved source. It can be obtained from a location sufficiently downstream of any chemical feed point to assure adequate mixing.

b. ample in quantity and adequate in pressure;

c. provided with means for measurement when preparing specific solution concentrations by dilution;

d. properly treated for hardness, when necessary;

e. properly protected against backflow, by appropriate mean such as:

1. an air gap between fill pipe and maximum flow line of solution or dissolving tank equivalent to 2 pipe diameters but not less than 6 inches; or

2. an approved reduced pressure backflow preventer, consistent with the degree of hazard, aggressiveness of chemical solution, back pressure sustained, and available means for maintaining and testing the device; or

3. a satisfactory vacuum relief device.

f. Where a booster pump is required, duplicate equipment should be provided and, when necessary, standby power.

19.2.0 STORAGE OF CHEMICALS

a. Space should be provided for:

1. at least 30 days of chemical supply;

2. convenient and efficient handling of chemicals;

3. dry storage conditions;

4. a minimum storage volume of 1-1/2 truck loads where purchase is by truck load lots;

5. protection against excessive, damaging or dangerous extremes in temperature.

b. Storage tanks and pipelines for liquid chemicals shall be specific to the chemicals and not for alternates.

c. Chemicals shall be stored in covered or unopened shipping containers, unless the chemical is transferred into an approved storage unit.

d. Liquid chemical storage tanks must:

1. have a liquid level indicator;

2. have an overflow and a receiving basin or drain capable of receiving accidental spills or overflows;

3. provide for protection against freezing and/or loss from solution due to temperature drop.

19.2.1 SOLUTION TANKS

a. A means which is consistent with the nature of the chemical solution shall be provided in a solution tank to maintain a uniform strength of solution.

b. Continuous agitation shall be provided to maintain slurries in suspension.

c. Two solution tanks of adequate volume may be required for a chemical to assure continuity of supply in servicing a solution tank.

d. Each tank shall be provided with a drain,

1. No direct connection between any tank or drain and a sewer shall be allowed; and

2. Any drain must terminate at least 2 pipe diameters above the overflow rim of a receiving sump, conduit or waste receptacle.

e. Means shall be provided to indicate the solution level in the tank.

f. Make-up water shall enter the tank above the maximum solution level, providing an air gap of 2 pipe diameters but not less than 6 inches, or shall be protected with an approved backflow prevention devices.

g. Chemical solutions shall be kept covered. Large tanks with access openings shall have such openings curbed and fitted with overhanging covers.

h. Subsurface locations for solution tanks shall:

1. be free from sources of possible contamination; and,

2. assure positive drainage for groundwaters, accumulated water, chemical spills and overflows.

i. Overflow pipes, when provided, should:

1. be turned downward, with the end screened;

2. have a free fall discharge; and

3. be located where noticeable.

j. Acid storage tanks must be vented to the outside atmosphere, but not through vents in common with day tanks.

k. Each tank shall be provided with a valved drain and protected against backflow.

l. Solution tanks shall be located and protective curbings provided so that chemicals from equipment failure, spillage or accidental drainage shall not enter the water in conduits, treatment or storage basins.

19.2.2 DAY TANKS

a. Day tanks shall be provided where bulk storage of liquid chemical is provided.

b. Day tanks should hold no more than a 30 hour supply.

c. Day tanks shall be scale-mounted, or have a calibrated gauge painted or mounted on the side if liquid level can be observed in a gauge tube or through translucent sidewalls of the tank. In opaque tanks, a gauge rod extending above a reference point at the top of the tank, attached to a float may be used. The ratio of the area of the tank to its height must be such that unit readings are meaningful in relation to the total amount of chemical fed during a day.

d. Hand pumps may be provided for transfer from a carboy or drum. A tip rack may be used to permit withdrawal into a bucket from a spigot. Where motor-driven transfer pumps are provided, a liquid level limit switch and an over-flow from the day tank, must be provided.

e. A means which is consistent with the nature of the chemical solution shall be provided to maintain uniform strength of solution in a day tank. Continuous agitation shall be provided to maintain chemical slurries in suspension.

f. Tanks shall be properly labeled to designate the chemical contained.

19.3.0 CHEMICAL FEED LINES

a. should be as short as possible, and

1. of durable, corrosion-resistant material;

2. easily accessible throughout the entire length;

3. protected against freezing;

4. easily cleaned;

5. lime feed lines should be designed so that they can be easily replaced;

6. avoid sharp bends when possible.

b. should slope upward from the chemical source to the feeder when conveying gases;

c. should introduce corrosive chemicals in such manner as to minimize potential for corrosion;

d. shall be designed consistent with scale-forming or solids depositing properties of the water, chemical, solution or mixtures conveyed;

e. shall not carry chlorine gas beyond chlorine storage and feeder room(s) except under vacuum;

f. should be color coded.

19.4.0 HANDLING OF CHEMICALS

a. Carts, elevators and other appropriate means shall be provided for lifting chemical containers to minimize excessive lifting by operators.

b. Provisions shall be made for disposing of empty bags, drums or barrels by an approved procedure which will minimize exposure to dusts.

c. Provision must be made for the proper transfer of dry chemicals from shipping containers to storage bins or hoppers, in such a way as to minimize the quantity of dust which may enter the room in which the equipment is installed. Control should be provided by use of:

   1. vacuum pneumatic equipment or closed conveyor systems;

   2. facilities for emptying shipping containers in special enclosures; and/or

   3. exhaust fans and dust filters which put the hoppers or bins under negative pressure.

d. Provision shall be made for measuring quantities of chemicals used to prepare feed solutions and for easy calibration of solution pumps measured from the suction side.

e. Storage tanks and pipelines for liquid chemicals shall be specific to the chemicals and not for alternates.

f. Chemicals that are incompatible shall not be fed, stored or handled together.

g. Precautions shall be taken with electrical equipment to prevent explosions, particularly in the use of sodium chlorite and activated carbon.

h. Acids shall be kept in closed, acid resistant shipping containers or storage units. Acids shall not be handled in open vessels, but should be pumped in undiluted form from original containers, through suitable hose, to the point of treatment or to a covered day tank.

19.5.0 HOUSING

a. Structures, rooms and areas accommodating chemical feed equipment shall provide convenient access for servicing, repair and observation of operation.

b. Floor surfaces shall be smooth and impervious, slip-proof and well drained with 2.5 % minimum slope.

c. Vents from feeders, storage facilities and equipment exhaust shall discharge to the outside atmosphere above grade and remote from air intakes.

d. Open basins, tanks and conduits shall be protected from chemical spills or accidental drainage.

19.5.1 CHLORINE GAS FEED AND STORAGE SHALL BE:

a. enclosed and separated from other operating areas in order to prevent injury to personnel and damage to equipment;

b. provided with a shatter resistant inspection window installed in an interior wall, to permit viewing of the interior of the room and equipment;

c. constructed in such a manner that all openings between the chlorine room and the remainder of the plant are sealed;

d. provided with doors equipped with panic hardware, assuring ready means of exit and opening outward only to the building exterior;

e. provided with locks to prevent unauthorized entry;

f. Full and empty cylinders of chlorine gas should be:

1. isolated from operating areas;

2. restrained in position to prevent upset;

3. stored in rooms separate from ammonia storage; and,

4. stored in areas not in direct sunlight or exposed to excessive heat.

g. Where chlorine gas is used, the room shall be constructed to provide the following:

1. each room shall have a ventilating fan with a capacity which provides one complete air change per minute when the room is occupied;

2. the air outlet from the room shall be near the floor level and the point of discharge shall be so located as not to contaminate air inlets to any rooms or structures, or adversely affect the surrounding environment;

3. air inlets should be through louvers near the ceiling, and temperature controlled to prevent adverse affect on chlorinator;

4. louvers for chlorine room air intake and exhaust fan shall facilitate airtight closure;

5. separate switches for the fan and lights shall be located outside of the chlorine room, at the entrance. The exhaust fan should automatically be activated when the door is opened. Outside switches shall be protected from vandalism. A signal light indicating fan operation shall be provided at each entrance when the fan can be controlled from more than one point;

6. vents from feeders and storage shall discharge to the outside atmosphere, above grade;

7. the room location should be on the prevailing downwind side of the building away from entrances, windows, louvers, walkways, etc.;

8. floor drains are discouraged. Where provided, the floor drains shall discharge to the outside of the building and shall not be connected to other internal or external drainage systems;

9. Chlorinator rooms should be heated to 60^0 F, but should be protected from excessive heat. Cylinders and gas lines should be protected from temperatures above that of the feed equipment;

10. Pressurized chlorine feed lines shall not carry chlorine gas beyond the chlorinator room;

11. Gaseous feed chlorine installations shall be equipped with a gas detection device connected to an audible alarm to prevent undetected potentially dangerous leakage of chlorine gas.

19.6.0 SPECIAL PRECAUTIONS MUST BE TAKEN WITH:

a. Acids and Caustics

1. Acids and caustics shall be kept in closed corrosion-resistant shipping containers or storage units.

2. Acids and caustics shall not be handled in open vessels, but should be pumped in undiluted form from original containers through suitable hose, to the point of treatment or to day tanks.

3. Acid storage tanks must be vented to the outside atmosphere, but not through vents in common with day tanks.

4. Liquid caustic (50% sodium hydroxide solution) which is hazardous and may be lost from solution at low temperatures.

b. Sodium Chlorite for Chlorine Dioxide Generation: For Sodium Chlorite in chlorine dioxide generation, provisions shall be made for proper storage and handling of sodium chlorite to eliminate any danger of explosion.

1. Storage

(A) Sodium chlorite shall be stored by itself in a separate room and preferably shall be stored in an outside building detached from the water treatment facility. It must be stored away from organic materials which would react violently with sodium chlorite.

(B) The storage structures shall be constructed of noncombustible materials.

(C) If the storage structure must be located in an area where a fire may occur, water must be available to keep the sodium chlorite area cool enough to prevent decomposition from heat and the resultant explosive conditions.

2. Handling

(A) Care should be taken to prevent spillage.

(B) An emergency plan of operation should be available for the clean up of any spillage.

(C) Storage drums must be thoroughly flushed prior to recycling or disposal.

3. Feeders

(A) Positive displacement feeders shall be provided.

(B) Tubing for conveying sodium chlorite or chlorine dioxide solutions shall be Type 1 PVC, polyethylene or materials recommended by the manufacturer.

(C) Chemical feeders may be installed in chlorine rooms if sufficient space is provided or facilities meeting the requirements stated in this document shall be provided.

(D) Feed lines shall be installed in a manner to prevent formation of gas pockets and shall terminate at a point of positive pressure.

(E) Check valves shall be provided to prevent the backflow of chlorine into the sodium chlorite line.

c. Activated Carbon: Activated carbon, which is a potentially combustible material, requiring isolated, fireproof storage and explosion-proof electrical outlets, lights and motors in areas of dry handling.

d. Calcium Hypochlorite and Potassium Permanganate: Calcium hypochlorite and potassium permanganate, which may ignite spontaneously on contact with combustible substances.

e. Hydrofluosilicic Acid: Hydrofluosilicic acid, which is extremely corrosive. Fumes or spillage may damage equipment or structures.

19.6.0 CHEMICALS

a. Chemical containers shall be fully labeled to include:

1. chemical name, purity and concentration;

2. supplier name and address; and,

3. expiration date where applicable.

b. Chemicals shall be listed as meeting NSF Standard 60 and shall meet AWWA specifications, where applicable.

c. Provisions should be made for assay of chemicals delivered.

d. Chemicals shall not impart any toxic material to the water under recommended dosages.

19.7.0 OPERATOR SAFETY

a. Gases from feeders, storage and equipment exhausts shall be conveyed to the outside atmosphere, above grade and remote from air intakes.

b. Special provisions shall be made for ventilation of chlorine feed and storage rooms. See the applicable section in this document.

c. Respiratory protection equipment, meeting the requirements of the National Institute for Occupational Safety and Health (NIOSH) shall be available where chlorine gas is handled. It shall be stored at a convenient location that is easily accessible to the operator, but not inside any room where chlorine is used or stored. The units shall use compressed air and have at least a 30 minute capacity. Provision of a 30 minute backup cylinder is urged to prevent loss of utility while the primary air cylinder is being refilled or tested. It is preferred that the unit be compatible with or exactly the same as units used by the fire department responsible for the plant.

d. A bottle of ammonium hydroxide, 56 % ammonia solution, shall be available for chlorine leak detection.

e. Although the gaseous feed chlorine installations should be provided with appropriate leak repair kits, where ton containers are used, a leak repair kit approved by the Chlorine Institute must be provided. Continuous chlorine leak detection equipment is recommended. Where a leak detector is provided it shall be equipped with both an audible alarm and a warning light.

f. At least one pair of rubber gloves, a dust respirator of a type certified by NIOSH for toxic dusts, an apron or other protective clothing like rubber boots and goggles or face mask shall be provided for each operator in any shift who will handle dry chemicals, preparing chemical solutions, or cleaning up spills.

g. A deluge shower and/or eyewashing device should be installed where strong acids and alkalis are used or stored. A water holding tank that will allow water to come to room temperature should be installed in the water line feeding the deluge shower and eyewashing device, as necessary.

h. Other protective equipment and facilities should be provided as necessary.

PART 20 - LABORATORY FACILITIES

20.1.0 GENERAL

a. Laboratory equipment and facilities shall be compatible with the raw water source, intended design of the treatment plant, daily monitoring and the complexity of the treatment process involved.

b. Recognized laboratory procedures must be utilized and the testing equipment shall be acceptable to the Division.

c. Laboratory facilities and any other part of the water treatment plant should not be used for activities and/or purposes that are not pertinent to the operation of the plant or in the execution of the duties of the operator and/or the laboratory analyst.

20.1.1 LABORATORY SPACE AND FACILITIES

a. Laboratory facilities shall be located in a separate room from office/lunch activities and from the treatment units. Facilities shall be isolated by doors and not be located in the main traffic pattern.

b. Sufficient bench space, adequate ventilation, adequate lighting, storage room, laboratory sink, and auxiliary facilities shall be provided.

c. The bacteriological laboratory, if provided, shall be acceptable to the Division. It shall have adequate counter space and shall be located in a separate room or area.

20.1.2 SAMPLE TAPS - Sample taps shall be provided so that water samples can be obtained from each water source and from appropriate locations in each unit operation of treatment. Taps shall be consistent with sampling needs and not be of petcock type. Sample lines and pumps where applicable shall be sized to minimize time lag between point of sampling and point of sample collection.

20.1.3 RECORDS MAINTENANCE

20.1.3.1 GENERAL - Daily records of the operation of the water treatment facility and water distribution system, including the amount of water treated daily, results of the performance of daily tests pertinent to the control of the water treatment processes, jar tests, disinfectant residuals, tests performed in the water distribution system, and any test results and records as may be required by the Division shall be maintained by the water supplier. These records shall be kept on the premises or at a convenient location near the water plant.

20.1.3.2 RECORDS MAINTENANCE DURATION

a. Microbiological: Records of microbiological analyses shall be kept for not less than five (5) years.

b. Chemicals: Records of chemical analyses shall be kept for not less than ten (10) years.

c. Lead/ Copper: Original records of all lead and copper sampling data, analyses, reports, surveys, letters, evaluations, schedules, Division determinations, and any other related information shall be kept for not less than twelve (12) years.

d. Individual Filter Monitoring: Records of individual filter monitoring results that are taken under Rules for Safe Drinking Water, Chapter 391-3-5-.20(9)(c) shall be maintained for at least three (3) years.

e. Violations: Records of action taken by the system to correct violations of the Rules for Safe Drinking Water, Chapter 391-3-5, shall be kept for a period of not less than three (3) years after the last action taken with respect to the particular violation.

f. Inspections/Sanitary Survey Reports: Copies of any written reports, summaries or communications relating to sanitary surveys of the system conducted by the system itself, by a private consultant, or by any local, state or federal agency, shall be kept for a period not less than ten (10) years after completion of the sanitary survey involved.

g. Variance/ Exemption: Records concerning a variance or exemption granted to the system shall be kept for a period ending not less than five (5) years following the expiration of such variance or exemption.

- END –