

Recycled Water Landscape Irrigation User's Manual



City of Poway

May 1998

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Table of Contents

Foreword	1
Section 1 Introduction	1-1
1.1 Purpose.....	1-1
1.2 Purpose and Definition of Recycled Water.....	1-1
1.3 User’s Summary.....	1-1
1.4 Regulatory Documents.....	1-3
Section 2 General Provisions	2-1
2.1 Specific Authority	2-1
2.2 Local Authority	2-1
2.3 Amendments	2-1
2.4 System Responsibility.....	2-1
2.5 User’s Permits	2-2
2.6 Protection of Public Health.....	2-2
2.7 Authorized Uses.....	2-2
2.8 Approved Use Areas	2-2
2.9 Rate and Fee Schedule	2-2
2.10 Liability.....	2-3
2.11 Contingency Reservation	2-3
Section 3 Requirements for Operation	3-1
3.1 General	3-1
3.2 Conditions of Service.....	3-1
3.3 Design Approval	3-4
3.4 Service Start-Up.....	3-4
3.5 Inspection.....	3-4
3.6 Surveillance.....	3-4
3.7 Personnel Training	3-5
3.8 Periods of Operation	3-5

3.9 Maintenance	3-5
3.10 Modifications	3-6
3.11 Cross-Connection Program	3-6
3.12 Emergency Procedures.....	3-7
Section 4 Marking and Equipment.....	4-1
4.1 General.....	4-1
4.2 Piping.....	4-1
4.3 Valves	4-3
4.4 Backflow Prevention Assemblies	4-3
4.5 Sprinkler Heads.....	4-7
4.6 System Control Devices.....	4-7
4.8 Posting Approved Use Area.....	4-7
Section 5 Site-Specific Details	5-1
5.1 Local Contacts	5-1
5.2 Specific Guidelines	5-2
5.3 Summary of Steps to Obtain Recycled Water Service	5-3
Section 6 Definitions	6-1
Appendix	
Figures	
1 Warning Signs.....	4-2
2 Placement of Warning Tags.....	4-4

Foreword

This Recycled Water User's Manual has been compiled through the efforts of public and private sector purveyors, consultants, and State of California and County of San Diego health officials for users of the City of Poway Recycled Water Distribution System. Although the majority of this manual is generic for the use of recycled water within California, users outside of the City of Poway or outside of San Diego County in general may be faced with slightly different regulations.

Within the City of Poway, various users or individual sites may have specific requirements for that site only. These specifics are outlined in the individual User's Permits and specified in the Site-Specific Details section. This section is tailored to each specific site for which an approved User's Permit has been issued and should not be considered as an approved variance for any other site. Any questions regarding the approved use of recycled water within any specific site should be addressed to the recycled water purveyor.

Section 1

Introduction

1.1 Purpose

The purpose of this manual is to offer the user of a recycled water system a resource for the day-to-day operation and control of that system. This manual is designed specifically to give the user information necessary to be in compliance with existing regulations for the operation of his recycled water system. Every effort has been made to ensure that this manual is in compliance with existing codes, laws, statutes, and regulations of the State of California, regulatory agencies, City of Poway Rules and Regulations, and local governing bodies pertaining to the currently approved use of recycled water. This manual is not intended to supersede any existing codes, laws, statutes, regulations (or AWWA California-Nevada Sections “Guidelines for Distribution of Nonpotable Water”) pertaining to the use of recycled water. Since codes, laws, statutes, and regulations can change without the express approval or knowledge of the City, the City assumes no liability for errors in this manual. It is the responsibility of the user to check with the permitting agency prior to initiating any operational or physical changes to his system.

1.2 Purpose and Definition of Recycled Water

Life cannot be maintained without an adequate supply of potable water. Supplies of potable water are dwindling, yet demand is increasing. During years of drought, this problem becomes even more acute. One solution is to satisfy nonpotable demands with recycled water. The reclaiming of water for nonpotable demands allows the potable water supply to be used for its primary function—human consumption.

Recycled water is a tertiary treated water, whose origin is the City of San Diego North City Water Reclamation Plant, treated to comply with California Code of Regulations, Title 22, Chapter 3. It is colorless and odorless and is allowable for human contact but not for human consumption. The sensible use of recycled water affords an excellent choice for nonpotable applications. Properly managed, recycled water is safe to use with a very limited health hazard, acknowledging that cross-connection with a potable water system is strictly prohibited.

1.3 User’s Summary

This summary is intended to be a brief overview of the contents of this document. Additional information on any point can be obtained by referring to the indicated reference point in this manual, or contact the City of Poway. It is recommended that the entire document be reviewed in depth and understood before operating your recycled water system.

- Recycled water shall be made available to any approved applicant for currently approved uses (Section 2.5).
- The user is responsible for the design, operation, and compliance of his or her recycled water system (Section 2.4).
- Recycled water will be used only in approved areas for approved uses by approved users (Section 2.7 and 2.8).
- A step-by-step summary for applying for recycled water service is included in Section 5.3.
- All recycled water systems will require periodic inspections **and have a designated Recycled Water Supervisor** to act as liaison with the City (Sections 3.5 and 3.7).
- All maintenance personnel must be trained in the operation and maintenance of recycled water (Section 3.7).
- Maintenance must be performed in a manner that assures that the recycled water system is in compliance with all current codes, laws, regulations, and statutes pertaining to the operation of a recycled water system (Section 3.9).
- Hours of operation are normally during periods of minimal public use, 10 p.m. to 6 a.m. (Section 3.8).
- Emergency situations, such as unauthorized discharge or contamination of the potable system, must be dealt with swiftly and appropriately (Section 3.12).
- All materials used in the recycled water system just be approved for use with recycled water. Pipes, valves, sprinkler heads, and storage tanks must be kept leak-free and must be properly labeled as to their recycled water use (Sections 4.2, 4.3, 4.4, and 4.5).
- “RECYCLED WATER - DO NOT DRINK” signs with the Do Not Drink symbol, in English and Spanish, must be properly placed and evident to all personnel (Section 4.1).
- The user’s recycled water system must be maintained so as not to allow conditions such as ponding, runoff, windblown spray, overspray in unapproved areas, or other unapproved uses to exist (Section 3.2).
- Drinking fountains must be protected from exposure to recycled water application (Section 3.2).
- Cross connections are strictly prohibited (Sections 3.1 and 3.2).
- Reuse of any device or devices used for the application of recycled water on a potable water system is strictly prohibited (Sections 3.1).
- Any site that has both a potable water system and a recycled water system present must protect the potable water system (Sections 3.1 and 3.2).

- The recycled water system must be protected from contamination (Section 3.2).
- Violations as to the use of recycled water will not be tolerated, and corrective action must be taken as soon as the violation is apparent (Section 3.2).
- Enforcement of all existing laws, codes, rules, regulations, and statutes shall be the responsibility of the City, State, and local regulatory agencies, with the right of appeal (Section 3.2).
- Any decisions of the City's governing board, with the approval of the regulatory agencies, are final (Section 3.2).

1.4 Regulatory Documents

Several documents are available that regulate the use of recycled water. The City has adopted *Rules and Regulations for Recycled Water Service*. For a copy of this publication, contact Doug Hiliker, City of Poway (619-679-5435). The purpose of the *Rules and Regulations for Recycled Water Service* is to establish procedures, specifications, and limitations for the safe and orderly development and operation of recycled water facilities and systems in the City's service area.

Other publications that provide regulations for the development of a recycled water system include:

- American Water Works Association, California/Nevada Section, Reclaimed Water Committee, *Guidelines for the On-Site Retrofit of Facilities Using Disinfected, Tertiary Recycled Water*. Contact Richard Carlson, San Diego County Department of Environmental Health (619-515-6770).
- State of California, Department of Health Services, *Guidelines for the Use of Reclaimed Water*. Contact Toby Roy, State of California, Department of Health Services - San Diego Region (619-525-4159).
- County of San Diego, Department of Environmental Health, *Recycled Water Plan Check and Inspection Manual*. Contact Richard Carlson, San Diego County Department of Environmental Health (619-515-6770).

This User's Manual was compiled in an effort to be in compliance with all codes, laws, statutes, and regulations from all regulatory agencies.

Section 2

General Provisions

2.1 Specific Authority

Various regulations for recycled water use are outlined in the City's Resolution (Policy) No. 97-087.

2.2 Local Authority

Rules and regulations for the end use of recycled water are established by the San Diego Regional Water Quality Control Board, the State of California Department of Health Services Environmental Management Branch, and the San Diego County Department of Environmental Health. These rules and regulations are enforced by the City. All facilities using recycled water shall be designed and operated to meet the standards of the local governing codes, rules, and regulations.

2.3 Amendments

From time to time there may be amendments to existing regulations. These amendments may be made without the consent of the user or City. These amendments will be enforced upon their effective date.

2.4 System Responsibility

It shall be the responsibility of the user to maintain said recycled water system beyond the point of connection, usually the meter, with the City's distribution system. It is the responsibility of the user to ensure that the recycled water is being applied within the guidelines established by all rules and regulations regarding the use of recycled water. The user is also responsible for the following:

- Maintenance of the user's recycled water system.
- Ensuring that all materials used during the design, construction, and maintenance of the system are approved for recycled water use.
- Obtaining all permits and payment of all fees required for the establishment, operation, and maintenance of the user's recycled water system.
- Reporting any and all violations and emergencies to the required local governing agencies.
- Obtaining prior authorization from the City and any required regulatory agency before making any modifications to the approved recycled water system.

The City is responsible for the recycled water and recycled water system up to the point of connection to the user.

2.5 User's Permits

All recycled water systems must operate under the conditions set forth in the User's Permit. A potential user shall complete and submit to the City an Application for Recycled Water Service (Rules and Regulations, Appendix B). Upon acceptance of the application, the City will issue a Permit for Recycled Water Service. The user is responsible for any and all fees associated with the permit process. The City reserves the right to alter, on a case-by-case basis, the permit process with the approval of the regulatory agencies.

2.6 Protection of Public Health

The City reserves the right to take any action necessary with respect to the operation of the user's recycled water system to safeguard the public health.

2.7 Authorized Uses

The use of recycled water is limited to those uses approved by the State of California Department of Health Services, the San Diego Regional Water Quality Control Board, and the San Diego County Department of Environmental Health. Any other use of recycled water is prohibited without the prior approval, on a case-by-case basis, of the City and health agencies. The City may grant approval for other uses only after approval of the appropriate regulatory agency has been obtained.

2.8 Approved Use Areas

Recycled water may only be used in areas approved by the City. Approval will only be granted after the proper application procedure has been followed. In all cases, approval by the City will be contingent upon the complete satisfaction of the requirements of the applicable regulatory agencies. At no time, without the prior written approval of the City, shall a user supply recycled water to an adjoining property of a different permittee or to the property of the same user across a street or alley, nor shall the user give or sell recycled water to another party. Should the property become subdivided, the service shall be considered as belonging to the parcel it enters directly.

All recycled water used on any premises where a recycled water meter is installed shall pass through the meter.

2.9 Rate and Fee Schedule

All rates and fees concerning recycled water service shall be fixed by and established by the City.

2.10 Liability

The City assumes no responsibility for the operation or maintenance of any user's recycled water system beyond the City's point of connection with the user and beyond that which it retains with respect to violations of the regulatory agency requirements. The user assumes all liability and responsibility of every other kind to the end that the City shall be kept whole and blameless at all times in any claim resulting from matters involving quantities, quality, time or occasion of delivery, or any other phase of the maintenance, operation, and service of the user's system. The City shall not be liable for any water damage or other damage caused by the user due to defective or broken plumbing or faulty service, nor shall the City be liable for damage caused by the user's facilities.

2.11 Contingency Reservation

If, at any time during construction or operation of the recycled water system, real or potential hazards are evidenced, the City reserves the right and has the authority to terminate immediately, without notice, recycled water service in the interest of protecting the public health.

Section 3

Requirements for Operation

3.1 General

Recycled water service shall be provided by the City only to those users who have a current User's Permit for such service, unless otherwise determined by the City. This service and/or User's Permit can be revoked at any time.

Recycled water service shall be available only in accordance with all applicable federal, state, and local statutes, ordinances, regulations, contracts, and any other requirements including the California Water Code, the California Code of Regulations Title 22, and requirements and regulations imposed by the California Regional Water Quality Control Board - San Diego region, State of California Department of Health Services Environmental Management Branch, and San Diego County Department of Environmental Health.

3.2 Conditions of Service

The City reserves the right to revoke a User's Permit if all or any of the service conditions are not satisfied at all times. Service to a user may be terminated at any time if:

- The quality of the recycled water does not comply with the requirements of the regulatory agencies.
- If the user's operation does not conform with all appropriate regulations.
- There is nonpayment of service fees and charges.

The City reserves the right to control and schedule the use of recycled water if control and scheduling are necessary to maintain acceptable working conditions within the City's recycled water distribution system. These and other service conditions will be administered by the City at its discretion.

If the available service pressure is higher than the user can accept, the user shall be responsible for providing a pressure-reducing valve downstream of the service meter. If available pressure is lower than what the user needs, the user shall be responsible to provide booster pumping downstream of the meter. Any pumping of recycled water requires the prior written approval of the City.

Conditions that directly or indirectly cause the following, whether by design or system operation, are strictly prohibited:

- **Runoff Conditions.** Conditions that directly or indirectly cause a runoff outside of the approved user area.
- **Ponding Conditions.** Conditions that directly or indirectly cause a ponding outside of or within the approved use area.
- **Windblown Spray Conditions.** Conditions that directly or indirectly permit windblown spray to pass outside of the approved use area.
- **Unapproved Uses.** Use of recycled water for any purpose other than those explicitly approved in the current effective User's Permit issued by the City and without the prior knowledge and approval of the appropriate regulatory agencies, is strictly prohibited.
- **Disposal in Unapproved Areas.** Disposal of recycled water for any purpose, including approved uses, in areas other than those explicitly approved in the current effective User's Permit issued by the City and without the prior knowledge and approval of the appropriate regulatory agencies, is strictly prohibited.
- **Cross Connections.** Cross connections, as defined by the California Code of Regulations, Title 17, resulting from the use of recycled water or from the physical presence of a recycled water service, whether by design or system operation, are strictly prohibited.
- **Drinking Fountains.** Drinking fountains located within the approved use area designed by the User's Permit shall be protected from contact with recycled water, whether by windblown spray or by direct application through irrigation or other approved Use. Lack of such protection, whether by design or system operation, is strictly prohibited.
- **Hose Bibs.** Use or installation of hose bibs on any user's recycled water system that presently operates or is designed to operate with recycled water, regardless of the hose bib construction or identification, is strictly prohibited.

3.2.1 Protection of Potable Water Systems

On premises where both potable water and recycled water exist, the potable supply must be protected from contamination at all times. This is done in accordance with the approved site-specific drawings and User's Permit. At no time shall there be a physical connection between the recycled water system and the potable water system anywhere on the user's premises.

If a reduced pressure principle backflow prevention device is approved, it must be tested at least annually.

3.2.2 Protection of the Recycled Water System

Backflow protection is not normally required on recycled water systems. However, the City must maintain the quality of the distribution system. To this end, the City must ensure that the quality of the

recycled water provided is not compromised by an activity of the User. Therefore, the City may require approved backflow protection at a recycled water service connection or at specific on-site locations where said use could degrade the quality of the recycled water distribution system. Backflow prevention devices must be approved by the City and regulatory agencies, be properly maintained. In addition, both the recycled and potable systems shall be checked annually with the appropriate dye or pressure test to ensure that a cross-connection does not exist. These tests must be done in conjunction with the City and the local health agency. Records must be maintained for a minimum of three years.

3.2.3 Violations

The City reserves the right to determine if a violation of the conditions under which the User's Permit was issued has occurred. Violations may include noncompliance of any of the following prohibitions: runoff conditions, ponding conditions, windblown spray conditions, unapproved uses, disposal in unapproved areas, cross connections, unprotected drinking fountains and use of hose bibs, whether willful or by accident. Any willful or accidental violation of any existing federal, state, or local ordinance, code, law, or statute regulating the use of recycled water constitutes a violation.

3.2.4 Notification

It is the responsibility of the user to notify the City of any failure in said recycled water system, or operation, whether or not he/she believes a violation has occurred. It is also the responsibility of the user to notify the City of any violation that might occur as a result of any action of the user or his or her personnel might take during the operation of said recycled water system. If there are any doubts as to whether a violation has occurred, it is the responsibility of the user to report each occurrence to the City so a determination can be made.

3.2.5 Corrective Action

If the City's investigation reveals that a violation has occurred, the City shall immediately notify the users. It is the responsibility of the user to immediately initiate corrective action to eliminate the violation condition. If, in the opinion of the City, the violation constitutes an immediate hazard to the public health, the City shall immediately terminate service to the user. It shall be at the discretion of the City to determine if a violation has been corrected.

3.2.6 Enforcement

The City shall enforce all existing rules and regulations pertaining to the use of recycled water and/or recycled water systems. Regulations concerning the use of any recycled water or recycled water system shall be applied with equal force and effect to any person, persons, or firm, public or private. There shall be no deviations from these regulations except upon written authorization of the City, acting within any and all applicable regulations.

3.3 Design Approval

Prior to the construction of any new, or renovation of an existing, recycled water system, the design of such system must be approved by the City. Approval shall be contingent upon evidence that all applicable design requirements, rules, and regulations for a recycled water system are satisfied.

3.4 Service Start-Up

Following acceptance of the user's recycled water system by the City, the user may request regular service start-up. Upon receipt of the start-up request, the City will notify the appropriate regulatory agencies and schedule a final inspection to include regulatory agency representatives. The City shall confirm a start-up to the user and the regulatory agencies.

3.5 Inspection

The City and/or the San Diego County Department of Environmental Health or its authorized agencies shall inspect the construction of the user's recycled water system to ensure that it is in compliance with the approved construction plans, rules, and regulations. The San Diego County Department of Environmental Health shall be involved in all phases of planning, construction, and start-up, along with the City's representative and, in some cases, representatives of the San Diego Regional Water Quality Control Board and the State of California Department of Health Services (Office of Drinking Water). This inspection is to ensure that the proper equipment was used, that spray patterns are adjusted to ensure proper coverage without excessive overlapping, and that there are no cross connections with the potable water system. Conditions that might create runoff, ponding, or windblown spray, especially on slopes, will be corrected. Spray patterns will be checked to see they do not encroach upon public facilities such as drinking fountains or areas outside the approved use area. After correction and verification, the system will be permitted to utilize recycled water. During the lifetime of the recycled water system, the City shall periodically inspect the recycled water system to ensure compliance with any and all applicable rules and regulations.

3.6 Surveillance

It is the responsibility of the user to provide surveillance and supervision of said recycled water system in a manner that assures compliance at all times with current regulations. The user shall designate a Recycled Water Supervisor with the approval of the City to provide liaison with the City. This person shall be available to the City at all times, shall have the authority to carry out any requirements of the City, and shall be responsible for the installation, operation, and maintenance of the recycled and potable water systems as well as prevention of potential hazards. The City must be notified immediately of any change in this position. The City shall provide periodic inspections of the user's system and report any and all violations to the appropriate regulatory agency with applicable procedures that have been established by law, code, permit, or practice.

3.7 Personnel Training

It is the responsibility of the user that all operations personnel are trained and familiar with the use of recycled water. Any training program should include, but not be limited to, the following:

- Operations personnel must be aware that recycled water, although highly treated, is nonpotable.
- Operations personnel must understand that conditions such as ponding and runoff are not allowed.
- Good personal hygiene must be followed.
- At no time shall recycled water be used for human consumption.
- Operations personnel must understand that working with recycled water is safe provided that good common sense is used and appropriate regulations are followed.
- Operations personnel must understand that there is never to be a direct connection between the recycled water system and the potable water system.

All new employees shall be trained in the proper use of recycled water. The Recycled Water Supervisor should be held accountable to ensure that employees are not using recycled water in a careless or hazardous manner.

3.8 Periods of Operation

Operation of the user's recycled water system shall occur during periods of minimal use of the approved area by the general public. This is usually between the hours of 10 p.m. and 6 a.m. Operation during other times may be requested of the City and considered on a case-by-case basis with the approval of the regulatory agencies. Any additional regulations, such as on-site supervision during application, must be strictly adhered to. Consideration shall be given to allow a maximum dry-out time before the area is to be used by the public. At no time will recycled water be applied at a rate that is greater than the infiltration rate of the soil. Automatic control systems will be used and programmed to prevent ponding and runoff of recycled water. The recycled water system will not be allowed to operate for periods longer than needed to satisfy the landscape water requirements. The recycled water system shall be operated so as to prevent overspray or windblown spray into nonapproved areas.

3.9 Maintenance

The user shall institute a preventive maintenance program that will ensure that the recycled water system remains in compliance at all times. A preventive maintenance program should include, but not be limited to, the following:

- Regular inspections shall be conducted by the Recycled Water Supervisor of the entire recycled water system including sprinkler heads, spray patterns, piping and valves, pumps, controllers, etc. Any discrepancies shall be corrected immediately.
- All warning signs shall be checked for their proper placement and readability. Damaged or unreadable signs shall be replaced.
- Special attention should be given to spray patterns to eliminate ponding, runoff, and windblown spray conditions.
- A record keeping system should be established and accurate records of all inspections, modifications, and repair work maintained.

In addition to deficiencies found during inspections, broken sprinkler heads, faulty spray patterns, leaking pipes or valves, etc., shall be repaired as soon as the malfunction becomes apparent.

A periodic check should be made for cross-connections using the following method:

- Shut off the recycled water supply source. Open the irrigation system, allowing the pressure to dissipate. If the pressure will not dissipate and the system continues to flow water, a cross-connection may exist.
- If no cross connection exists, reactive the recycled water system and shut down the domestic supply source. Open the domestic system, allowing the pressure to dissipate. If the pressure will not dissipate and the system continues to flow water, a cross-connection may exist.

If testing reveals the presence of a cross-connection, both the reclaimed and potable water systems must be immediately shut down at the connection point with the City. The City, the San Diego County Department of Environmental Health, and the California Department of Health Services (Office of Drinking Water) must be immediately notified. Neither system may be reactivated until the cross-connection has been eliminated, all contamination has been removed, and the City and the health agency have been completely satisfied that no further concern exists.

3.10 Modifications

No modifications shall be made to any recycled water system by the user without the prior approval of the City. This includes modifications to the approved plans or to an operational system. Detailed plans of any modifications should be submitted to the City and the modifications inspected by the City prior to their being placed in operation. See Section 3.12 for emergency modifications.

3.11 Cross-Connection Program

Cross-connections with the potable water system at any point or at any time are strictly prohibited. Any installation that has both potable water and recycled water present **must** have an approved reduced

pressure principle backflow prevention assembly on the potable water supply at the potable water service connection. No device, hose, pipe, meter, valve, etc. that has been used in conjunction with recycled water shall be attached to the potable water system.

Backflow prevention assemblies must be of the approved type and installed as per approved plans. A maintenance program that includes at least annual testing by a tester certified by the San Diego County Department of Environmental Health must be implemented. Records of annual tests, repairs, and overhauls shall be kept by the user with copies forwarded to the City and the San Diego County Department of Environmental Health.

All provisions of Section 7601 of Chapter 5 of Title 17 of the California Code of Regulations, concerning protection of drinking water systems against cross-connections and backflow shall be strictly complied with.

3.12 Emergency Procedures

- **Unauthorized Discharge.** It is the responsibility of the user to report to the City any and all system failures that result in an unauthorized discharge of recycled water. An immediate oral report, followed by a written report, is required.
- **Contamination of Drinking Water.** In the event of contamination of the potable water system due to a cross-connection on the user's premises, the San Diego County Department of Environmental Health, the California Department of Health Services (Office of Drinking Water), and the City shall be immediately notified by the user so that appropriate measures may be taken to immediately correct the contamination or pollution problem. (See Section 5.1 for contact persons.)
- **Emergency Modifications.** Emergency modifications or repairs can be made by the user to said system without the prior approval of the City to prevent contamination, damage, or a public health hazard. As soon as possible, the user shall notify the City of such emergency modifications and file a written report.

Section 4

Marking and Equipment

4.1 General

All materials, apparatus, piping, valves, controllers, sprinkler heads, pumps, etc. shall be approved for use with a pressurized recycled water system and installed as per approved plans. The recycled water system must conform to the American Water Works Association (AWWA) California-Nevada Section's *Guidelines for Distribution of Nonpotable Water*. Deviations shall not be allowed without prior approval. System installation shall conform with the Uniform Plumbing Code and all other local codes, rules, and regulations. The approved area shall be clearly marked, and all facilities using recycled water shall be marked, "RECYCLED WATER - DO NOT DRINK" in English and Spanish. The Do Not Drink symbol (Figure 1) shall be present on all signs.

4.2 Piping

All piping shall be installed according to the approved plans and marked as required. Installation shall be in accordance with the latest edition of *International Association of Plumbing and Mechanical Officials (IAPMO) Standard IS-8* with IAPMO listed fittings, primers, and solvents, except the exposed piping need not be wrapped or protected from sunlight. All recycled waterlines (pressure/nonpressure), valve boxes, and appurtenances shall be identified to clearly distinguish between recycled water and potable water systems.

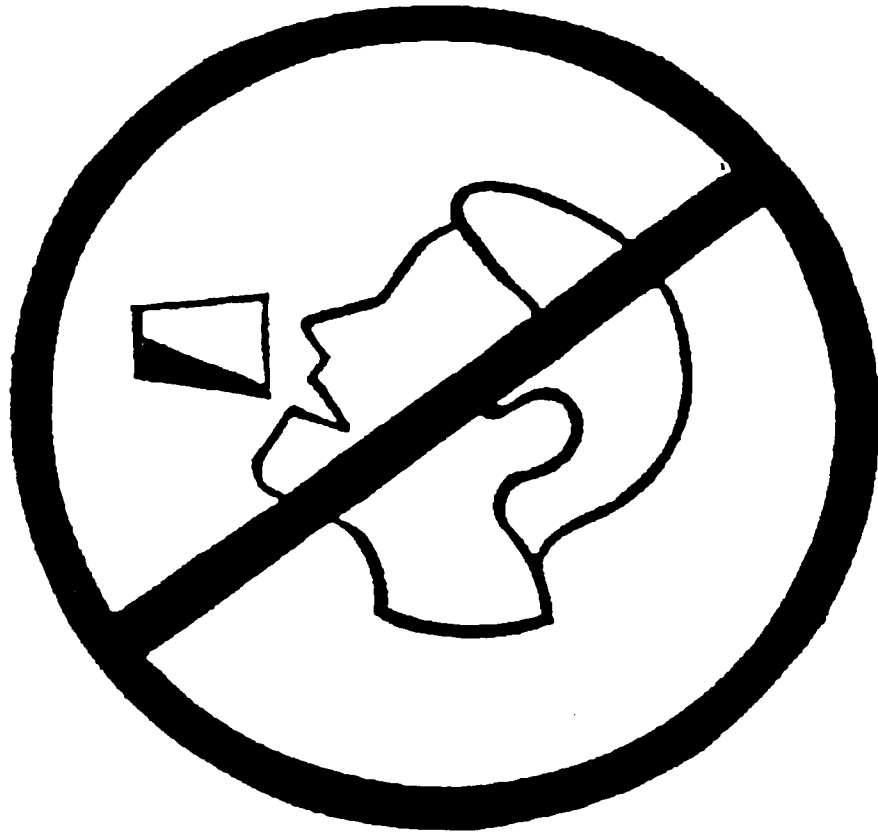
All buried recycled waterlines (pressure/nonpressure) shall be identified by continuous lettering on 3-inch minimum width, purple tape with 1-inch black or white contrasting lettering bearing the continuous wording "CAUTION - RECYCLED WATER" permanently affixed at 10-foot intervals atop all horizontal piping, laterals, and mains. Identification tape shall extend to all valve boxes and/or vaults and exposed piping.

The use of purple colored pipe with the continuous wording "CAUTION - RECYCLED WATER" printed on opposite sides of the pipe is an accepted alternative to warning tape.

Identification tape is not necessary for extruded color PVC with continuous wording "POTABLE WATER" printed in contrasting lettering on opposite sides of the pipe.

Exposed piping, valve boxes, vaults, quick-coupling valves, outlets, and related appurtenances shall be color coded and labeled or tagged to differentiate recycled water from potable water.

Buried irrigation pipe shall be PVC schedule 40 appropriate marked. Piping buried under pavement shall be sleeved with the sleeve being twice the diameter of the irrigation pipe, i.e., a 2-inch sleeve required for a 1-inch irrigation pipe. Partially buried pipe shall have purple marking tape attached to the



Do Not Drink Symbol

CITY OF POWAY
RECYCLED WATER DISTRIBUTION SYSTEM
WARNING SIGNS

FIGURE 1

top of the pipe extending its entire length. Flexible conduits or hoses shall be clearly marked "CAUTION - RECYCLED WATER" with each adapter or fitting painted purple.

Tags shall be identified with the appropriate wording on both sides. Tags identifying recycled water shall have the appropriate wording on one side and symbol on the opposite side. A variety of warning tags that are acceptable, as well as placement, are shown in Figure 2 (a, b, c, d, e, f).

4.3 Valves

4.3.1 Quick-Coupling Valves

Quick-coupling valves shall be the Nelson 42 with 40K key or approved equal made specifically for recycled water use. Quick-coupling valves shall be 3/4-inch or 1-inch nominal size and of brass construction with a normal working pressure of 150 psi. The cover shall be permanently attached and made of rubber or vinyl, purple in color, and provided with a lock. In order to prevent unauthorized use, the valve shall be operated only with a special coupler key with an acme thread for opening and closing the valve. Quick-coupling valves shall be installed approximately 12 inches from walks, curbs, headboards, or paved areas, tagged with warning tag and installed in a marked valve box. Figure 2c shows the placement of the warning tag.

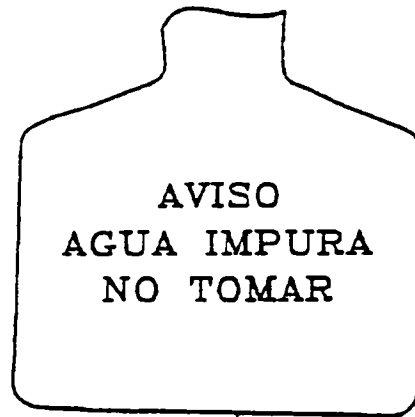
Gate valves shall be installed in a marked valve box with crushed rock in the base with a warning tag on the valve operator. Figure 2d shows the proper placement of the warning tag.

4.3.2 Remote Control Valves

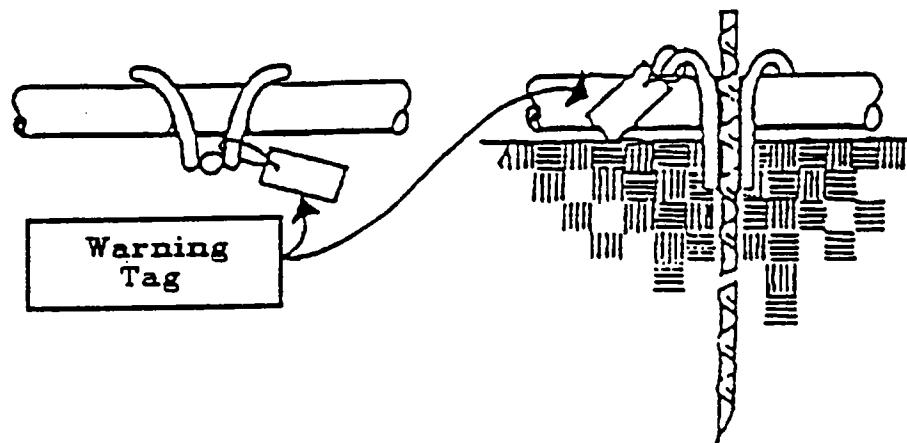
Remote control valves shall be installed in a marked valve box with crushed rock in the base with a warning tag on the operator. Figure 2f shows the proper placement of the warning tag. For each valve system, remote control valves shall be adjusted so the most remote sprinkler heads operate at the pressure recommended by the manufacturer and give a uniform distribution of water by the sprinkler heads.

4.4 Backflow Prevention Assemblies

Backflow prevention assemblies on recycled water systems must be of an approved type and installed as per approved plans. Backflow prevention assemblies must be maintained so as to assure satisfactory operating condition. This includes annual testing of backflow prevention assemblies by a tester certified by the San Diego County Department of Environmental Health and the keeping of accurate records. Backflow prevention assemblies must be conspicuously labeled "RECYCLED WATER - DO NOT DRINK" in both English and Spanish. Backflow testing equipment used for recycled water must not be reused on potable water systems.



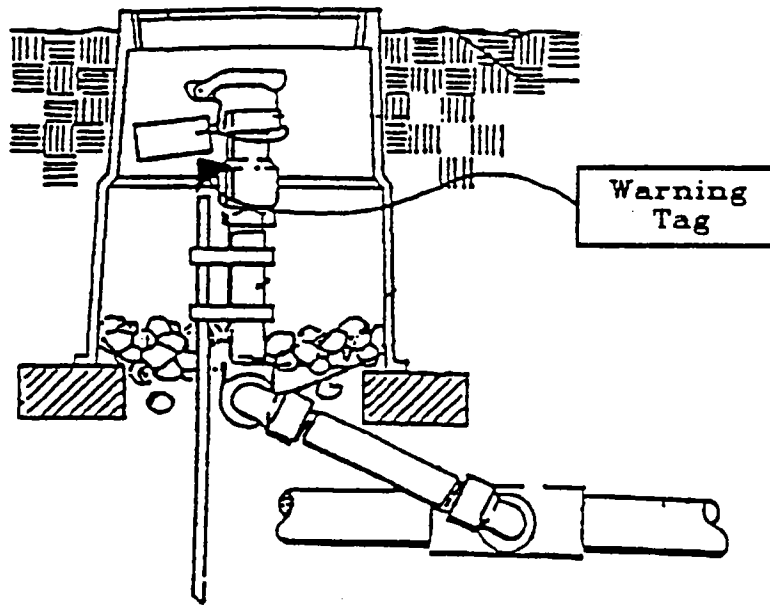
Sample Warning Tag
Background Purple with Black Lettering



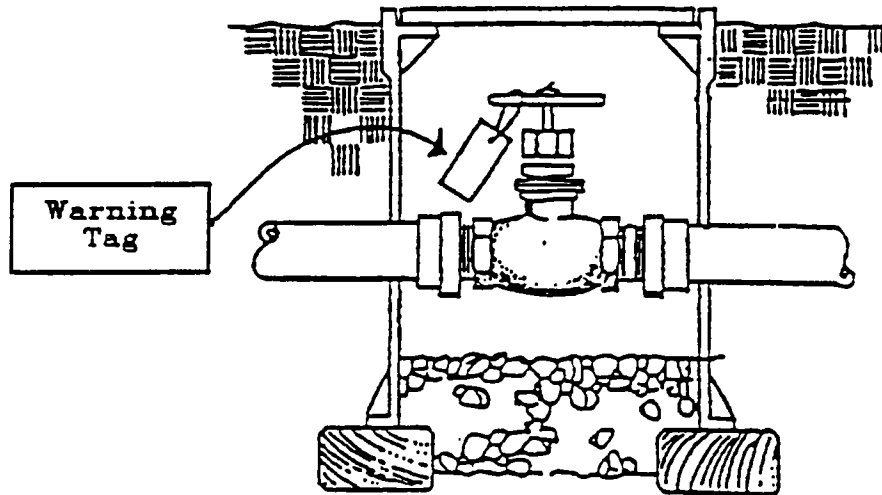
Pipe Stabilizer

CITY OF POWAY
RECYCLED WATER DISTRIBUTION SYSTEM
PLACEMENT OF WARNING TAGS

FIGURE 2



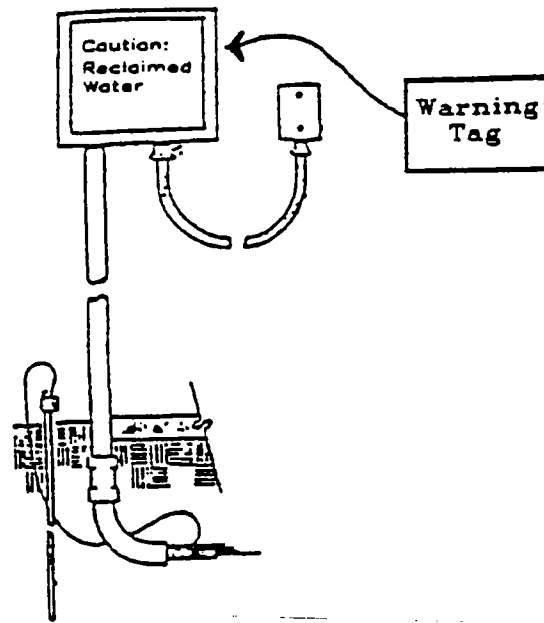
Quick Coupler Valve



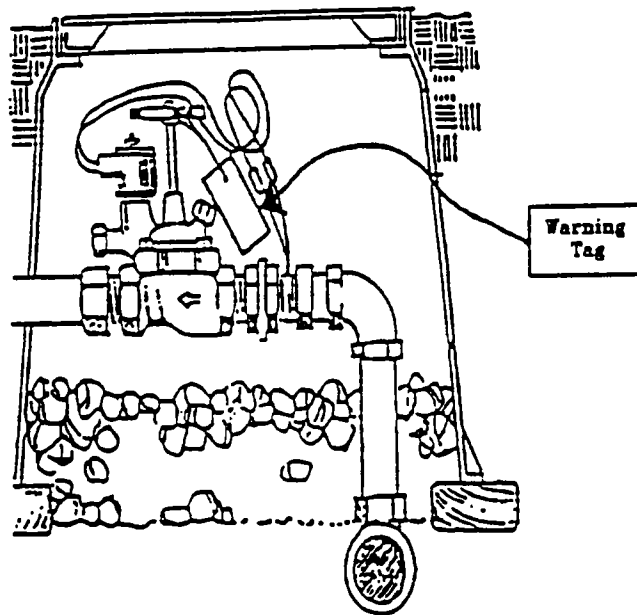
Gate Valve

CITY OF POWAY
RECYCLED WATER DISTRIBUTION SYSTEM
PLACEMENT OF WARNING TAGS

FIGURE 2



Automatic Controller



Remote Control Valve

**CITY OF POWAY
 RECYCLED WATER DISTRIBUTION SYSTEM
 PLACEMENT OF WARNING TAGS**

FIGURE 2

4.5 Sprinkler Heads

Sprinkler heads shall be of the size, type, pressure, radius of flow, and discharge as indicated on the approved plans. All sprinkler heads, permanent or temporary, shall be of the approved type for use with recycled water, creating the minimum amount of atomization. Impact type sprinkler heads shall not be used. Drainage through sprinkler heads is prohibited. An antidrain valve shall be installed in the sprinkler riser as needed. Anchors on sprinkler risers shall be provided as needed and maintained. Sprinkler heads shall be kept in good repair at all times.

4.6 System Control Devices

System controllers shall be automatic with multiple start/stop times for any 24-hour period and installed as per the approved plans abiding by all local codes. Two color-coded diagrams shall be prepared for the station and system for each controller. Each diagram shall be sealed in plastic with one copy to be placed in the controller box and the other given to the City. All controllers shall be marked with the words "RECYCLED WATER" in both English and Spanish.

4.8 Posting Approved Use Area

Posting the use of recycled water shall be required at the entrance of the user's facility. Equipment should be appropriately identified as part of the recycled water system. Additional signing may be required by the regulatory agency on a case-by-case basis. Signs bearing the words "RECYCLED WATER - DO NOT DRINK" in both English and Spanish with the Do Not Drink symbol shall be placed at adequate intervals around and throughout the approved use area so as to be easily seen by the public and on-site employees.

Section 5

Site-Specific Details

5.1 Local Contacts

Site: _____

Location: _____

Supervisor: _____ Phone: _____

City of Poway Contacts

Water Operations: _____ Phone: _____

Supervisor: _____ Phone: _____

Reclaimed Water Inspector: _____ Phone: _____

City's Engineer: _____ Phone: _____

San Diego County Contacts

Department of Environmental Health: _____ Phone: _____

State of California Contacts

Regional Water Quality Control Board: _____ Phone: _____

Department of Health Services
Environmental Management Branch _____ Phone: _____

Department of Health Services
Office of Drinking Water _____ Phone: _____

5.3 Summary of Steps to Obtain Recycled Water Service

- Potential user contacts the City for recycled water.
- Potential user must have irrigation plans drawn by a registered landscape architect.
- Potential user submits an Application for Recycled Water Service and pays the application fee and required deposit. At this time, the user agrees to comply with the Rules and Regulations and all other applicable governing documents.
- City reviews the application package and determines if the property to be served is in a suitable area for recycled water use.
- Potential user submits two sets of blueprints for the recycled water system and pays a plan check fee.
- City notifies the San Diego County Department of Environmental Health of the submitted application.
- City forwards one copy of the application package and one set of blueprints to the San Diego County Department of Environmental Health for review.
- City completes plan check and returns to the potential users for corrections.
- Potential user constructs the recycled water system under the supervision of the City.
- Potential user submits to the City as-built plans and test certification for backflow prevention devices.
- User, the user's Recycled Water Supervisor, the City, and a representative of the San Diego County Department of Environmental Health perform the final inspection and operational testing. The entire system will be carefully inspected, and, if found to be in compliance, the user will be issued a Recycled Water Use Permit by the City. Recycled water service will be initiated.
- City confirms service to RWQCB and state and county health departments.

Section 6

Definitions

Whenever the following terms, or pronouns used in their place, occur in this manual, the intent and meaning shall be interpreted as follows:

Applicant - An Owner or his authorized representative who applies for recycled water service under terms of the appropriate regulations. An approved applicant becomes a user.

Approved Backflow Prevention Assembly - A device installed to protect the potable water supply from contamination by nonpotable water and approved by the State of California.

Approved Use - An application of recycled water in a manner, and for a purpose, designed in a user agreement issued by the City and in compliance with any and all applicable regulatory agency requirements.

Approved Use Area - A site with well-defined boundaries, designated in a user agreement issued by the City to receive recycled water for an approved use and acknowledged by any and all applicable regulatory agencies.

Chief Executive Officer - The highest ranking management official of the City.

Construction Use - An approved use of recycled water to support approved construction activities, such as soil compaction and dust control during grading.

Cross-Connection - Any unprotected connection between any part of a water system used or intended to supply water for drinking purposes and any source or system containing water or substance that is not or cannot be approved as safe, wholesome, and potable for human consumption.

General Public - Any person or persons at large who may come in contact with facilities and/or areas where recycled water is approved for use.

Governing Board - An elected or appointed group or person whose responsibility it is to establish and enforce the City's policy.

Infiltration Rate - The rate at which the soil will accept water as applied during irrigation, expressed in inches per hour.

Inspector - Any person authorized by the City to perform inspections on or off the user's site prior to construction, during construction, after construction, and during operation.

Irrigation Period - The time, from start of water flow to cessation, which a specific area receives recycled water by direct irrigation application, regardless of how often the specific area is irrigated (the length of the duty cycle).

Irrigation Use - An approved use of recycled water for landscape irrigation as defined for recycled water under Title 22, Division 4, Article 4, of the California Administrative Code.

Landscape Impoundment - A body of recycled water that is used for aesthetic enjoyment or otherwise serves a function not intended to include public contact.

Nonpotable Water - The water that has not been treated for human consumption in conformance with the latest edition of the United States Public Health Service Drinking Water Standards, the California Safe Drinking Water Act, or any other applicable standards.

Off-Site - Designates or relates to recycled water facilities up to and including the water meter.

On-Site - Designates or relates to facilities owned and operated by the user.

Operations Personnel - An employee of a user, whether permanent or temporary, or any contracted worker whose regular or assigned work involves the supervision, operation, or maintenance of equipment on any portion of on-site facilities using recycled water.

Operator - Any person, persons, or firm who, by entering into an agreement with a user, is responsible for operating on-site facilities.

Owner - Any holder of legal title, contract purchaser, or lessee under a lease with an unexpired term of more than one (1) years, for property for which recycled water service has been requested or established.

Point of Connection - This is the point where the user's system ties to the City's system. This is usually at the water meter.

Ponding - retention of recycled water on the surface of the ground or other natural or man-made surface for a period of time following the cessation of an approved recycled water use activity such that a hazard or potential hazard to public health results.

Potable Water - That water which is pure and wholesome, does not endanger the lives or health of human beings, and conforms to the latest edition of the California Safe Drinking Water Act or other applicable standards.

Rate and Fee Schedule - The schedule of all rates, charges, fees, and assessments to be made in connection with the use of recycled water served by the City as approved or as amended by the City.

Recycled Water - Nonpotable water that is highly treated to the California Administrative Code Title 22, Division 4 of the Environmental Health Wastewater Reclamation Standards and used for approved purposes other than drinking water.

Recycled Water Supervisor - The user shall designate a Recycled Water Supervisor, with the approval of the City, to provide liaison with the City. This person shall be available to the City at all times, shall have the authority to carry out any requirements of the City, and shall be responsible for the installation, operation, and maintenance of the reclaimed and potable water systems as well as prevention of potential hazards.

Regulatory Agencies - Those public agencies legally constituted to protect the public health and water quality, such as the California Department of Health Services, San Diego Regional Water Quality Control Board, and the San Diego County Department of Environmental Health.

Runoff - A condition where recycled water is allowed to drain outside the approved irrigation area.

San Diego County Department of Environmental Health - This agency is the local health care agency and is located in San Diego.

Service - The furnishing of recycled water to a user through a metered connection to the on-site facilities.

State of California Department of Health Services - Shall be the State of California Department of Health Services Environmental Branch located in San Bernardino.

Unauthorized Discharge - Any release of recycled water that violates the rules and regulations of the City or any and all applicable federal, state, or local statutes, regulations, ordinances, contracts, or other requirements.

User - Any person, persons, or firm, including any public utility, municipality, or other public body or institution, issued a Permit for Recycled Water Service by the City. The user and owner may be one and the same.

User Permit - A permit issued by the City to a recycled water service applicant after the satisfactory completion of the service application procedures. This agreement constitutes a service agreement between the user and the City that legally binds the user to all conditions stated in the agreement and any and all applicable regulatory agency requirements.

Violation - Noncompliance with any condition or conditions of the User's Permit by any person, action, or occurrence, whether willfully or by accident.

Windblown Spray - Dispersed, airborne particles or recycled water capable of being transmitted through the air to locations other than that for which the direct application of recycled water is approved.

Appendix

Regulatory Document
Title 22 (Partial)

INTENT OF REGULATIONS

The intent of these regulations is to establish acceptable levels of constituents of reclaimed water and to prescribe means for assurance of reliability in the production of reclaimed water in order to ensure that the use of reclaimed water for the specified purposes does not impose undue risks to health. The levels of constituents in combination with the means for assurance of reliability constitute reclamation criteria as defined in Section 13520 of the California Water Code.

As affirmed in Sections 13510 to 13512 of the California Water Code, water reclamation is in the best public interest and the policy of the State is to encourage reclamation. The reclamation criteria are intended to promote development of facilities which will assist in meeting water requirements of the State while assuring positive health protection. Appropriate surveillance and control of treatment facilities, distribution systems, and use areas must be provided in order to avoid health hazards. Precautions must be taken to avoid direct public contact with reclaimed waters which do not meet the standards specified in Article 5 for nonrestricted recreational impoundments.

TABLE OF CONTENTS**CHAPTER 3. RECLAMATION CRITERIA****Article 1. Definitions****Section****60301. Definitions****Article 2. Irrigation of Food Crops****Section****60303. Spray Irrigation****60305. Surface Irrigation****Article 3. Irrigation of Fodder, Fiber, and Seed Crops****Section****60309. Fodder, Fiber, and Seed Crops****60311. Pasture for Milking Animals****Article 4. Landscape Irrigation****Section****60313. Landscape Irrigation****Article 5. Recreational Impoundments****Section****60315. Nonrestricted Recreational Impoundment****60317. Restricted Recreational Impoundment****60319. Landscape Impoundment****Article 5.I. Groundwater Recharge****Section****60320. Groundwater Recharge****Article 5.5. Other Methods of Treatment****Section****60320.5. Other Methods of Treatment****Article 6. Sampling and Analysis****Section****60321. Sampling and Analysis****Article 7. Engineering Report and Operational Requirements****Section****60323. Engineering Report****60325. Personnel****60327. Maintenance****60329. Operating Records and Reports****60331. Bypass**

Article 8. General Requirements of Design

Section

- 60333. Flexibility of Design
- 60335. Alarms
- 60337. Power Supply

..... Article 9. Alternative Reliability Requirements for Uses Permitting Primary Effluent

Section

- 60339. Primary Treatment

Article 10. Alternative Reliability Requirements for Uses Requiring Oxidized, Disinfected Wastewater or Oxidized, Coagulated, Clarified, Filtered, Disinfected Wastewater

Section

- 60341. Emergency Storage or Disposal
- 60343. Primary Treatment
- 60345. Biological Treatment
- 60347. Secondary Sedimentation
- 60349. Coagulation
- 60351. Filtration
- 60353. Disinfection
- 60355. Other Alternatives to Reliability Requirements

CHAPTER 3. RECLAMATION CRITERIA

Article 1. Definitions

60301. Definitions. (a) Reclaimed Water. Reclaimed water means water which, as a result of treatment of domestic wastewater, is suitable for a direct beneficial use or a controlled use that would not otherwise occur.

(b) Reclamation Plant. Reclamation plant means an arrangement of devices, structures, equipment, processes and controls which produce a reclaimed water suitable for the intended reuse.

(c) Regulatory Agency. Regulatory agency means the California Regional Water Quality Control Board in whose jurisdiction the reclamation plant is located.

(d) Direct Beneficial Use. Direct beneficial use means the use of reclaimed water which has been transported from the point of production to the point of use without an intervening discharge to waters of the State.

(e) Food Crops. Food crops mean any crops intended for human consumption.

(f) Spray Irrigation. Spray irrigation means application of reclaimed water to crops by spraying it from orifices in piping.

(g) Surface Irrigation. Surface irrigation means application of reclaimed water by means other than spraying such that contact between the edible portion of any food crop and reclaimed water is prevented.

(h) Restricted Recreational Impoundment. A restricted recreational impoundment is a body of reclaimed water in which recreation is limited to fishing, boating, and other non-body-contact water recreation activities.

(i) Nonrestricted Recreational Impoundment. A nonrestricted recreational impoundment is an impoundment of reclaimed water in which no limitations are imposed on body-contact water sport activities.

(j) Landscape Impoundment. A landscape impoundment is a body of reclaimed water which is used for aesthetic enjoyment or which otherwise serves a function not intended to include public contact.

(k) Approved Laboratory Methods. Approved laboratory methods are those specified in the latest edition of "Standard Methods for the Examination of Water and Wastewater", prepared and published jointly by the American Public Health Association, the American Water Works Association, and the Water Pollution Control Federation and which are conducted in laboratories approved by the State Department of Health.

(l) Unit Process. Unit process means an individual stage in the wastewater treatment sequence which performs a major single treatment operation.

- (m) **Primary Effluent.** Primary effluent is the effluent from a wastewater treatment process which provides removal of sewage solids so that it contains not more than 0.5 milliliter per liter per hour of settleable solids as determined by an approved laboratory method.
- (n) **Oxidized Wastewater.** Oxidized wastewater means wastewater in which the organic matter has been stabilized, is nonputrescible, and contains dissolved oxygen.
- (o) **Biological Treatment.** Biological treatment means methods of wastewater treatment in which bacterial or biochemical action is intensified as a means of producing an oxidized wastewater.
- (p) **Secondary Sedimentation.** Secondary sedimentation means the removal by gravity of settleable solids remaining in the effluent after the biological treatment process.
- (q) **Coagulated Wastewater.** Coagulated wastewater means oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated by the addition of suitable floc-forming chemicals or by an equally effective method.
- (r) **Filtered Wastewater.** Filtered wastewater means an oxidized, coagulated, clarified wastewater which has been passed through natural undisturbed soils or filter media, such as sand or diatomaceous earth, so that the turbidity as determined by an approved laboratory method does not exceed an average operating turbidity of 2 turbidity units and does not exceed 5 turbidity units more than 5 percent of the time during any 24-hour period.
- (s) **Disinfected Wastewater.** Disinfected wastewater means wastewater in which the pathogenic organisms have been destroyed by chemical, physical or biological means.
- (t) **Multiple Units.** Multiple units means two or more units of a treatment process which operate in parallel and serve the same function.
- (u) **Standby Unit Process.** A standby unit process is an alternate unit process of an equivalent alternative process which is maintained in operable condition and which is capable of providing comparable treatment for the entire design flow of the unit for which it is a substitute.
- (v) **Power Source.** Power source means a source of supplying energy to operate unit processes.
- (w) **Standby Power Source.** Standby power source means an automatically actuated self-starting alternate energy source maintained in immediately operable condition and of sufficient capacity to provide necessary service during failure of the normal power supply.
- (x) **Standby Replacement Equipment.** Standby replacement equipment means reserve parts and equipment to replace broken-down or worn-out units which can be placed in operation within a 24-hour period.
- (y) **Standby Chlorinator.** A standby chlorinator means a duplicate chlorinator for reclamation plants having one chlorinator and a duplicate of the largest unit for plants having multiple chlorinator units.
- (z) **Multiple Point Chlorination.** Multiple point chlorination means that chlorine will be applied simultaneously at the reclamation plant and at subsequent chlorination stations located at the use area and/or some intermediate point. It does not include chlorine application for odor control purposes.

(aa) **Alarm.** Alarm means an instrument or device which continuously monitors a specific function of a treatment process and automatically gives warning of an unsafe or undesirable condition by means of visual and audible signals.

(bb) **Person.** Person also includes any private entity, city, county, district, the State or any department or agency thereof.

NOTE: Authority cited: Section 208 Health and Safety Code and Section 13521, Water Code.
Reference: Section 13521, Water Code.

History: 1. New Chapter 4 (60301-60257, not consecutive) filed 4-2-75; effective thirtieth day thereafter (Register 75, No. 14).
2. Renumbering of Chapter 4 (Sections 60301-60357, not consecutive), filed 10-14-77; effective thirtieth day thereafter (Register 77, No. 42).

Article 2. Irrigation of Food Crops

60303. Spray Irrigation. Reclaimed water used for the spray irrigation of food crops shall be at all times an adequately disinfected, oxidized, coagulated, clarified, filtered wastewater. The wastewater shall be considered adequately disinfected if at some location in the treatment process the median number of coliform organisms does not exceed 2.2 per 100 milliliters and the number of coliform organisms does not exceed 23 per 100 milliliters in more than one sample within any 30-day period. The median value shall be determined from the bacteriological results of the last 7 days for which analyses have been completed.

60305. Surface Irrigation. (a) Reclaimed water used for surface irrigation of food crops shall be at all times an adequately disinfected, oxidized wastewater. The wastewater shall be considered adequately disinfected if at some location in the treatment process the median number of coliform organisms does not exceed 2.2 per 100 milliliters, as determined from the bacteriological results of the last 7 days for which analysis have been completed.

(b) Orchards and vineyards may be surface irrigated with reclaimed water that has the quality at least equivalent to that of primary effluent provided that no fruit is harvested that has come in contact with the irrigating water or the ground.

60307. Exceptions. Exceptions to the quality requirements for reclaimed water used for irrigation of food crops may be considered by the State Department of Health on an individual case basis where the reclaimed water is to be used to irrigate a food crop which must undergo extensive commercial, physical or chemical processing sufficient to destroy pathogenic agents before it is suitable for human consumption.

Article 3. Irrigation of Fodder, Fiber, and Seed Crops

60309. Fodder, Fiber, and Seed Crops. Reclaimed water used for the surface of spray irrigation of fodder, fiber, and seed crops shall have a level of quality no less than that of primary effluent.

60311. Pasture for Milking Animals. Reclaimed water used for the irrigation of pasture to which milking cows or goats have access shall be at all times an adequately disinfected, oxidized wastewater. The wastewater shall be considered adequately disinfected if at some location in the

treatment process the median number of coliform organisms does not exceed 23 per 100 milliliters, as determined from the bacteriological results of the last 7 days for which analyses have been completed.

Article 4. Landscape Irrigation

60313. Landscape Irrigation. (a) Reclaimed water used for the irrigation of golf courses, cemeteries, freeway landscapes, and landscapes in other areas where the public has similar access or exposure shall be at all times an adequately disinfected, oxidized wastewater. The wastewater shall be considered adequately disinfected if the median number of coliform organisms in the effluent does not exceed 2.2 per 100 milliliters, as determined from the bacteriological results of the last 7 days for which analyses have been completed, and the number of coliform organisms does not exceed 240 per 100 milliliters in any two consecutive samples.

(b) Reclaimed water used for the irrigation of parks, playgrounds, schoolyards, and other areas where the public has similar access or exposure shall be at all times an adequately disinfected, oxidized, coagulated, clarified, filtered wastewater or a wastewater treated by a sequence of unit processes that will assure an equivalent degree of treatment and reliability. The wastewater shall be considered adequately disinfected if the median number of coliform organisms in the effluent does not exceed 2.2 per 100 milliliters, as determined from the bacteriological results of the last 7 days for which analyses have been completed, and the number of coliform organisms does not exceed 23 per 100 milliliters in any sample.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code.
Reference: Section 13520, Water Code.

History: 1. Amendment filed 9-22-78; effective thirtieth day thereafter (Register 78, No. 38).

Article 5. Recreational Impoundments

60315. Nonrestricted Recreational Impoundment. Reclaimed water used as a source of supply in a nonrestricted recreational impoundment shall be at all times an adequately disinfected, oxidized, coagulated, clarified, filtered wastewater. The wastewater shall be considered adequately disinfected if at some location in the treatment process the median number of coliform organisms does not exceed 2.2 per 100 milliliters and the number of coliform organisms does not exceed 23 per 100 milliliters in more than one sample within any 30-day period. The median value shall be determined from the bacteriological results of the last 7 days for which analyses have been completed.

60317. Restricted Recreational Impoundment. Reclaimed water used as a source of supply in a restricted recreational impoundment shall be at all times an adequately disinfected, oxidized wastewater. the wastewater shall be considered adequately disinfected if at some location in the treatment process the median number of coliform organisms does not exceed 2.2 per 100 milliliters, as determined from the bacteriological results of the last 7 days for which analyses have been completed.

60319. Landscape Impoundment. Reclaimed water used as a source of supply in a landscape impoundment shall be at all times an adequately disinfected, oxidized wastewater. The

wastewater shall be considered adequately disinfected if at some location in the treatment process the median number of coliform organisms does not exceed 23 per 100 milliliters, as determined from the bacteriological results of the last 7 days for which analyses have been completed.

Article 5.1 Groundwater Recharge

60320. Groundwater Recharge. (a) Reclaimed water used for groundwater recharge of domestic water supply aquifers by surface spreading shall be at all times of a quality that fully protects public health. The State Department of Health Services' recommendations to the Regional Water Quality Control Boards for proposed groundwater recharge projects and for expansion of existing projects will be made on an individual case basis where the use of reclaimed water involves a potential risk to public health.

(b) The State Department of Health Services' recommendations will be based on all relevant aspects of each project, including the following factors: treatment provided; effluent quality and quantity; spreading area operations; soil characteristics; hydrogeology; residence time; and distance to withdrawal.

(c) The State Department of Health Services will hold a public hearing prior to making the final determination regarding the public health aspects of each groundwater recharge project. final recommendations will be submitted to the Regional Water Quality Control Board in an expeditious manner.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code.
Reference: Section 13520, Water Code.

History: 1. New Article 5.1 (Section 60320) filed 9-22-78; effective thirtieth day thereafter (Register 78, No. 38).

Article 5.5. Other Methods of Treatment

60320.5. Other Methods of Treatment. Methods of treatment other than those included in this chapter and their reliability features may be accepted if the applicant demonstrates to the satisfaction of the State Department of Health that the methods of treatment and reliability features will assure an equal degree of treatment and reliability.

Note: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code.
Reference: Section 15320, Water Code.

History: 1. Renumbering of Article 11 (Section 60357) to Article 5.5 (Section 60320.5) filed 9-22-78; effective thirtieth day thereafter (Register 78, No 38).

Article 6. Sampling and Analysis

60321. Sampling and Analysis. (a) Samples for settleable solids and coliform bacteria, where required, shall be collected at least daily and at a time when wastewater characteristics are most demanding on the treatment facilities and disinfection procedures. Turbidity analysis, where required, shall be performed by a continuous recording turbidimeter.

(b) For uses requiring a level of quality no greater than that of primary effluent, samples shall be analyzed by an approved laboratory method of settleable solids.

(c) For uses requiring an adequately disinfected, oxidized wastewater, samples shall be analyzed by an approved laboratory method for coliform bacteria content.

(d) For uses requiring an adequately disinfected, oxidized, coagulated, clarified, filtered wastewater, samples shall be analyzed by approved laboratory methods for turbidity and coliform bacteria content.

Article 7. Engineering Report and Operational Requirements

60323. Engineering Report. (a) No person shall produce or supply reclaimed water for direct reuse from a proposed water reclamation plant unless he files an engineering report.

(b) The report shall be prepared by a properly qualified engineer registered in California and experienced in the field of wastewater treatment, and shall contain a description of the design of the proposed reclamation system. The report shall clearly indicate the means for compliance with these regulations and any other features specified by the regulatory agency.

(c) The report shall contain a contingency plan which will assure that no untreated or inadequately-treated wastewater will be delivered to the use area.

60325. Personnel. (a) Each reclamation plant shall be provided with a sufficient number of qualified personnel to operate the facility effectively so as to achieve the required level of treatment at all times.

(b) Qualified personnel shall be those meeting requirements established pursuant to Chapter 9 (commencing with Section 13625) of the Water Code.

60327. Maintenance. A preventive maintenance program shall be provided at each reclamation plant to ensure that all equipment is kept in a reliable operating condition.

60329. Operating Records and Reports. (a) Operating records shall be maintained at the reclamation plant or a central depository within the operating agency. These records shall include: all analyses specified in the reclamation criteria; records of operational problems, plant and equipment breakdowns, and diversions to emergency storage or disposal; all corrective or preventive action taken.

(b) Process or equipment failures triggering an alarm shall be recorded and maintained as a separate record file. The recorded information shall include the time and cause of failure and corrective action taken.

(c) A monthly summary of operating records as specified under (a) of this section shall be filed monthly with the regulatory agency.

(d) Any discharge of untreated or partially treated wastewater to the use area, and the cessation of same, shall be reported immediately by telephone to the regulatory agency, the State Department of Health, and the local health officer.

60331. Bypass. There shall be no bypassing of untreated or partially treated wastewater from the reclamation plant or any intermediate unit processes to the point of use.

Article 8. General Requirements of Design

60333. Flexibility of Design. The design of process piping, equipment arrangement, and unit structures in the reclamation plant must allow for efficiency and convenience in operation and

maintenance and provide flexibility of operation to permit the highest possible degree of treatment to be obtained under varying circumstances.

60335. Alarms. (a) Alarm devices required for various unit processes as specified in other sections of these regulations shall be installed to provide warning of:

- (1) Loss of power from the normal power supply.
- (2) Failure of a biological treatment process.
- (3) Failure of a disinfection process.
- (4) Failure of a coagulation process.
- (5) Failure of a filtration process.
- (6) Any other specific process failure for which warning is required by the regulatory agency.

(b) All required alarm devices shall be independent of the normal power supply of the reclamation plant.

(c) The person to be warned shall be the plant operator, superintendent, or any other responsible person designated by the management of the reclamation plant and capable of taking prompt corrective action.

(d) Individual alarm devices may be connected to a master alarm to sound at a location where it can be conveniently observed by the attendant. In case the reclamation plant is not attended full time, the alarm(s) shall be connected to sound at a police station, fire station or other full-time service unit with which arrangements have been made to alert the person in charge at time that the reclamation plant is unattended.

60337. Power Supply. The power supply shall be provided with one of the following reliability features:

- (a) Alarm and standby power source.
- (b) Alarm and automatically actuated short-term retention or disposal provisions as specified in Section 60341.
- (c) Automatically actuated long-term storage or disposal provisions as specified in Section 60341.

Article 9. Alternative Reliability Requirements for Uses Permitting Primary Effluent.

60339. Primary Treatment. Reclamation plants producing reclaimed water exclusively for uses for which primary effluent is permitted shall be provided with one of the following reliability features:

- (a) Multiple primary treatment units capable of producing primary effluent with one unit not in operation.
- (b) Long-term storage or disposal provisions as specified in Section 60341.

Article 10. Alternative Reliability Requirements for Uses Requiring Oxidized, Disinfected Wastewater or Oxidized, Coagulated, Clarified, Filtered, Disinfected Wastewater

60341. Emergency Storage or Disposal. (a) Where short-term retention or disposal provisions are used as a reliability feature, these shall consist of facilities reserved for the purpose of storing or disposing of untreated or partially treated wastewater for at least a 24-hour period. The facilities

shall include all the necessary diversion devices, provisions for odor control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back equipment shall be either independent of the normal power supply or provided with a standby power source.

(b) Where long-term storage or disposal provisions are used as a reliability feature, these shall consist of ponds, reservoirs, percolation areas, downstream sewers leading to other treatment or disposal facilities or any other facilities reserved for the purpose of emergency storage or disposal of untreated or partially treated wastewater. These facilities shall be of sufficient capacity to provide disposal or storage of wastewater for at least 20 days, and shall include all the necessary diversion works, provisions for odor and nuisance control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back equipment shall be either independent of the normal power supply or provided with a standby power source.

(c) Diversion to a less demanding reuse is an acceptable alternative to emergency disposal of partially treated wastewater provided that quality of the partially treated wastewater is suitable for the less demanding reuse.

(d) Subject to prior approval by the regulatory agency, diversion to a discharge point which requires lesser quality of wastewater is an acceptable alternative to emergency disposal of partially treated wastewater.

(e) Automatically actuated short-term retention or disposal provisions and automatically actuated long-term storage or disposal provisions shall include, in addition to provisions of (a), (b), (c), or (d) of this section, all the necessary sensors, instruments, valves and other devices to enable fully automatic diversion of untreated or partially treated wastewater to approved emergency storage or disposal in the event of failure of a treatment process, and a manual reset to prevent automatic restart until the failure is corrected.

60343. Primary Treatment. All primary treatment unit processes shall be provided with one of the following reliability features:

- (a) Multiple primary treatment units capable of producing primary effluent with one unit not in operation.
- (b) Standby primary treatment unit process.
- (c) Long-term storage or disposal provisions.

60345. Biological Treatment. All biological treatment unit processes shall be provided with one of the following reliability features:

- (a) Alarm and multiple biological treatment units capable of producing oxidized wastewater with one unit not in operation.
- (b) Alarm, short-term retention or disposal provisions, and standby replacement equipment.
- (c) Alarm and long-term storage or disposal provisions.
- (d) Automatically actuated long-term storage or disposal provisions.

60347. Secondary Sedimentation. All secondary sedimentation unit processes shall be provided with one of the following reliability features:

- (a) Multiple sedimentation units capable of treating the entire flow with one unit not in operation.
- (b) Standby sedimentation unit process.
- (c) Long-term storage or disposal provisions.

60349. Coagulation.

(a) All coagulation unit processes shall be provided with the following mandatory features for uninterrupted coagulant feed:

- (1) Standby feeders.
- (2) Adequate chemical storage and conveyance facilities,
- (3) Adequate reserve chemical supply, and
- (4) Automatic dosage control.

(b) All coagulation unit processes shall be provided with one of the following reliability features:

- (1) Alarm and multiple coagulation units capable of treating the entire flow with one unit not in operation;
- (2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;
- (3) Alarm and long-term storage or disposal provisions;
- (4) Automatically actuated long-term storage or disposal provisions, or
- (5) Alarm and standby coagulation process.

60351. Filtration. All filtration unit processes shall be provided with one of the following reliability features:

- (a) Alarm and multiple filter units capable of treating the entire flow with one unit not in operation.
- (b) Alarm, short-term retention or disposal provisions and standby replacement equipment.
- (c) Alarm and long-term storage or disposal provisions.
- (d) Automatically actuated long-term storage or disposal provisions.
- (e) Alarm and standby filtration unit process.

60353 Disinfection.

(a) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with the following features for uninterrupted chlorine feed:

- (1) Standby chlorine supply,
- (2) Manifold systems to connect chlorine cylinders,
- (3) Chlorine scales, and
- (4) Automatic devices for switching to full chlorine cylinders.

Automatic residual control of chlorine dosage, automatic measuring and recording of chlorine residual, and hydraulic performance studies may also be required.

(b) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with one of the following reliability features:

- (1) Alarm and standby chlorinator;
- (2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;
- (3) Alarm and long-term storage or disposal provisions;
- (4) Automatically actuated long-term storage or disposal provisions; or
- (5) Alarm and multiple point chlorination, each with independent power source, separate chlorinator, and separate chlorine supply.

60355. Other Alternatives to Reliability Requirements. Other alternatives to reliability requirements set forth in Articles 8 to 10 may be accepted if the applicant demonstrates to the satisfaction of the State Department of Health that the proposed alternative will assure an equal degree of reliability.

REVISION RECORD FOR REGISTER 87, No. 23
(June 6, 1987)

TITLE 17. PUBLIC HEALTH

PART I. DEPARTMENT OF HEALTH SERVICES

This part of Register 87, No. 23, contains all the additions, amendments, and repeals affecting the above-entitled portion of the California Administrative Code which were filed with the Secretary of State from 5-30-87, to and including 6-6-87. The latest prior register containing regulations of the above agency is Register 87, No. 11 (3-14-87).

GROUP 4. DRINKING WATER SUPPLIES

DETAILED ANALYSIS

Article 1. General

Section

7583.

Definitions

7584.

Responsibility and Scope of Program

7585.

Evaluation of Hazard

7586.

User Supervisor

Article 2. Protection of Water System

Section

7601.

Approval of Backflow Preventers

7602.

Construction of Backflow Preventers

7603.

Location of Backflow Preventers

7604.

Type of Protection Required

7605.

Testing and Maintenance of Backflow Preventers

TITLE 17
(Register 87, No. 23--6-6-87)

DRINKING WATER SUPPLIES

§ T17-7583

Article 1. General

7583. Definitions.

In addition to the definitions in Section 4010.1 of the Health and Safety Code, the following terms are defined for the purpose of this Chapter:

- (a) "Approved Water Supply" is a water supply whose potability is regulated by a State or local health agency.
- (b) "Auxiliary Water Supply" is any water supply other than that received from a public water system.
- (c) "Air-gap Separation (AG)" is a physical break between the supply line and a receiving vessel.
- (d) "AWWA Standard" is an official standard developed and approved by the American Water Works Association (AWWA).
- (e) "Cross-Connection" is an unprotected actual or potential connection between a potable water system used to supply water for drinking purposes and any source or system containing unapproved water or a substance that is not or cannot be approved as safe, wholesome, and potable. By-pass arrangements, jumper connections, removable sections, swivel or changeover devices, or other devices through which backflow could occur, shall be considered to be cross-connections.
- (f) "Double Check Valve Assembly (DC)" is an assembly of at least two independently acting check valves including tightly closing shut-off valves on each side of the check valve assembly and test cocks available for testing the watertightness of each check valve.
- (g) "Health Agency" means the California Department of Health Services, or the local health officer with respect to a small water system.
- (h) "Local Health Agency" means the county or city health authority.
- (i) "Reclaimed Water" is a wastewater which as a result of treatment is suitable for uses other than potable use.
- (j) "Reduced Pressure Principle Backflow Prevention Device (RP)" is a backflow preventer incorporating not less than two check valves, an automatically operated differential relief valve located between the two check valves, a tightly closing shut-off valve on each side of the check valve assembly, and equipped with necessary test cocks for testing.
- (k) "User Connection" is the point of connection of a user's piping to the water supplier's facilities.
- (l) "Water Supplier" is the person who owns or operates the public water system.
- (m) "Water User" is any person obtaining water from a public water supply.

NOTE: Authority cited: Sections 208 and 4026, Health and Safety Code. Reference: Section 4026, Health and Safety Code.

HISTORY:

1. Repealer of Articles 1 through 10 and New Articles 1 through 4 (Sections 7583, 7588 through 7594, 7603 through 7605, and 7615 through 7622) filed 5-8-53; effective thirtieth day thereafter (Register 53, No. 8).
2. New section filed 5-26-87; operative 6-25-87 (Register 87, No. 23).

T17-7583. Purpose.

NOTE: Authority cited: Sections 208 and 4026, Health and Safety Code. Reference: Section 4026, Health and Safety Code.

HISTORY:

1. Repealer filed 5-26-87; operative 6-25-87 (register 87, No. 23).

7584. Responsibility and Scope of Program.

TITLE 17
(Register 87, No. 23-6-6-87)

DRINKING WATER SUPPLIES

§ T17-7583

The water supplier shall protect the public water supply from contamination by implementation of a cross-connection control program. The program, or any portion thereof, may be implemented directly by the water supplier or by means of a contract with the local health agency, or with another agency approved by the health agency. The water supplier's cross-connection control program shall for the purpose of addressing the requirements of Sections 7585 through 7605 include, but not be limited to, the following elements:

- (a) The adoption of operating rules or ordinances to implement the cross-connection program.
- (b) The conducting of surveys to identify water user premises where cross-connections are likely to occur.
- (c) The provisions of backflow protection by the water user at the user's connection or within the user's premises or both.
- (d) The provision of at least one person trained in cross-connection control to carry out the cross-connection program.
- (e) The establishment of a procedure or system for testing backflow preventers, and
- (f) The maintenance of records of locations, tests, and repairs of backflow preventers.

NOTE: Authority cited: Sections 208 and 4026, Health and Safety Code. Reference: Section 4026, Health and Safety Code.

HISTORY:

1. New section filed 5-26-87; operative 6-25-87 (Register 87, No. 23).

7585. Evaluation of Hazard.

The water supplier shall evaluate the degree of potential health hazard to the public water supply which may be created as a result of conditions existing on a user's premises. The water supplier, however, shall not be responsible for abatement of cross-connections which may exist within a user's premises. As a minimum, the evaluation should consider: the existence of cross-connections, the nature of materials handled on the property, the probability of a backflow occurring, the degree of piping system complexity and the potential for piping system modification. Special consideration shall be given to the premises of the following types of water users:

- (a) Premises where substances harmful to health are handled under pressure in a manner which could permit their entry into the public water system. This includes chemical or biological process waters and water from public water supplies which have deteriorated in sanitary quality.
- (b) Premises having an auxiliary water supply, unless the auxiliary supply is accepted as an additional source by the water supplier and is approved by the health agency.
- (c) Premises that have internal cross-connections that are not abated to the satisfaction of the water supplier or the health agency.
- (d) Premises where cross-connections are likely to occur and entry is restricted so that cross-connection inspections cannot be made with sufficient frequency or at sufficiently short notice to assure that cross-connections do not exist.
- (e) Premises having a repeated history of cross-connections being established or re-established.

NOTE: Authority cited: Sections 208 and 4026, Health and Safety Code. Reference: Section 4026, Health and Safety Code.

HISTORY:

1. New section filed 5-26-87; operative 6-25-87 (Register 87, No. 23).

7586. User Supervisor.

The health agency and water supplier may, at their discretion, require an industrial water user to designate a user supervisor when the water user's premises has a multipiping system that convey various types of fluids, some of which may be hazardous and where changes in the piping system are frequently

TITLE 17

DRINKING WATER SUPPLIES

§ T17-7583

(Register 87, No. 23-6-6-87)

made. The user supervisor shall be responsible for the avoidance of cross-connections during the installation, operation and maintenance of the water user's pipelines and equipment.

NOTE: Authority cited: Sections 208 and 4026, Health and Safety Code. Reference: Section 4026, Health and Safety Code.

HISTORY:

1. New section filed 5-26-87; operative 6-25-87 (Register 87, No. 23).

T17-7588. Cross-connection.

NOTE: Authority cited: Sections 208 and 4026, Health and Safety Code. Reference: Section 4026, Health and Safety Code.

HISTORY:

1. Repealer filed 5-26-87; operative 6-25-87 (register 87, No. 23).

T17-7589. Approved Water Supply.

NOTE: Authority cited: Sections 208 and 4026, Health and Safety Code. Reference: Section 4026, Health and Safety Code.

HISTORY:

1. Repealer filed 5-26-87; operative 6-25-87 (Register 87, No. 23).

T17-7590. Auxiliary Supply.

NOTE: Authority cited: Sections 208 and 4026, Health and Safety Code. Reference: Section 4026, Health and Safety Code.

HISTORY:

1. Repealer filed 5-26-87; operative 6-25-87 (Register 87, No. 23).

T17-7591. Approved Check Valve.

NOTE: Authority cited: Sections 208 and 4026, Health and Safety Code. Reference: Section 4026, Health and Safety Code.

HISTORY:

1. Repealer filed 5-26-87; operative 6-25-87 (Register 87, No. 23).

T17-7592. Approved Double Check Valve Assembly.

NOTE: Authority cited: Sections 208 and 4026, Health and Safety Code. Reference: Section 4026, Health and Safety Code.

HISTORY:

1. Repealer filed 5-26-87; operative 6-25-87 (Register 87, No. 23).2

T17-7593. Air-gap Separation.

NOTE: Authority cited: Sections 208 and 4026, Health and Safety Code. Reference: Section 4026, Health and Safety Code.

HISTORY:

1. Repealer filed 5-26-87; operative 6-25-87 (Register 87, No. 23).

T17-7594. Approved Reduced Pressure Principle Backflow Prevention Device.

NOTE: Authority cited: Sections 208 and 4026, Health and Safety Code. Reference: Section 4026, Health and Safety Code.

HISTORY:

1. Repealer filed 5-26-87; operative 6-25-87 (Register 87, No. 23).

TITLE 17
(Register 87, No. 23--6-6-87)

DRINKING WATER SUPPLIES

§ T17-7583

Article 2. Protection of Water System

7601. Approval of Backflow Preventers.

Backflow preventers required by this Chapter shall have passed laboratory and field evaluation tests performed by a recognized testing organization which has demonstrated their competency to perform such tests to the Department.

NOTE: Authority cited: Sections 208 and 4026, Health and Safety Code. Reference: Section 4026, Health and Safety Code.

HISTORY:

1. New section filed 5-26-87; operative 6-25-87 (Register 87, No. 23).

7602. Construction of Backflow Preventers.

(a) **Air-gap Separation.** An Air-gap separation (AG) shall be at least double the diameter of the supply pipe, measured vertically from the flood rim of the receiving vessel to the supply pipe; however, in no case shall this separation be less than one inch.

(b) **Double Check Valve Assembly.** A required double check valve assembly (DC) shall, as a minimum, conform to the AWWA Standard C506-78 (R83) adopted on January 28, 1978 for Double Check Valve Type Backflow Preventive Devices which is herein incorporated by reference.

(c) **Reduced Pressure Principle Backflow Prevention Device.** A required reduced pressure principle backflow prevention device (RP) shall, as a minimum, conform to the AWWA Standard C506-78 (R83) adopted on January 28, 1978, for Reduced Principle Type Backflow Prevention Devices which is herein incorporated by reference.

NOTE: Authority cited: Sections 208 and 4026, Health and Safety Code. Reference: Section 4026, Health and Safety Code.

HISTORY:

1. New section filed 5-26-87; operative 6-25-87 (Register 87, No. 23).

7603. Location of Backflow Preventers.

(a) **Air-gap Separation.** An air-gap separation shall be located as close as practical to the user's connection and all piping between the user's connection and the receiving tank shall be entirely visible unless otherwise approved in writing by the water supplier and the health agency.

(b) **Double Check Valve Assembly.** A double check valve assembly shall be located as close as practical to the user's connection and shall be installed above grade, if possible, and in a manner where it is readily accessible for testing and maintenance.

(c) **Reduced Pressure Principle Backflow Prevention Device.** A reduced pressure principle backflow prevention device shall be located as close as practical to the user's connection and shall be installed a minimum of twelve inches (12") above grade and not more than thirty-six inches (36") above grade measured from the bottom of the device and with a minimum of twelve inches (12") side clearance.

NOTE: Authority cited: Sections 208 and 4026, Health and Safety Code. Reference: Section 4026, Health and Safety Code.

HISTORY:

1. New section filed 5-26-87; operative 6-25-87 (Register 87, No. 23).

7604. Type of Protection Required.

TITLE 17
(Register 87, No. 23-6-6-87)

DRINKING WATER SUPPLIES

§ T17-7583

The type of protection that shall be provided to prevent backflow into the public water supply shall be commensurate with the degree of hazard that exists on the consumer's premises. The type of protective device that may be required (listed in an increasing level of protection) includes: Double Check Valve Assembly--(DC), Reduced Pressure Principle Backflow Prevention Device--(RP), and an Air-gap separation--(AG). The water user may choose a higher level of protection than required by the water supplier. The minimum types of backflow protection required to protect the public water supply, at the water user's connection to premises with various degrees of hazard are given in Table 1. Situations which are not covered in Table 1 shall be evaluated on a case-by-case basis and the appropriate backflow protection shall be determined by the water supplier or health agency.

TABLE 1
TYPE OF BACKFLOW PROTECTION REQUIRED

Degree of Hazard	Minimum Type of Backflow Prevention
(a) Sewage and Hazardous Substances	
(1) Premises where the public water system is used to supplement the reclaimed water supply.	AG
(2) Premises where there are wastewater pumping and/or treatment plants and there is no interconnection with the potable water system. This does not include a single-family residence that has a sewage lift pump. A RP may be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(3) Premises where reclaimed water is used and there is no interconnection with the potable water system. A RP may be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(4) Premises where hazardous substances are handled in any manner in which the substances may enter the potable water system. This does not include a single-family residence that has a sewage lift pump. A RP may be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(5) Premises where there are irrigation systems into which fertilizers, herbicides, or pesticides are, or can be, injected.	RP
(b) Auxiliary Water Supplies	
(1) Premises where there is an unapproved auxiliary water supply which is interconnected with the public water system. A RP or DC may be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(2) Premises where there is an unapproved auxiliary water supply and there are no interconnections with the public water system. A DC may be provided in lieu of a RP if approved by the health agency and water supplier.	RP
(c) Fire Protection Systems	

TITLE 17
(Register 87, No. 23-6-6-87)

DRINKING WATER SUPPLIES

§ T17-7583

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| (1) Premises where the fire system is directly supplied from the public water system and there is an unapproved auxiliary water supply on or to the premises (not interconnected). | DC |
| (2) Premises where the fire system is supplied from the public water system and interconnected with an unapproved auxiliary water supply. A RP may be provided in lieu of an AG if approved by the health agency and water supplier. | AG |
| (3) Premises where the fire system is supplied from the public water system and where either elevated storage tanks or fire pumps which take suction from private reservoirs or tanks are used. | DC |
| (d) Dockside Watering Points and Marine Facilities | DC |
| (1) Pier hydrants for supplying water to vessels for any purpose. | RP |
| (2) Premises where there are marine facilities. | RP |
| (e) Premises where entry is restricted so that inspections for cross-connections cannot be made with sufficient frequency or at sufficiently short notice to assure that cross-connections do not exist. | RP |
| (f) Premises where there is a repeated history of cross-connections being established or re-established. | RP |

NOTE: Authority cited: Sections 208 and 4026, Health and Safety Code. Reference: Section 4026, Health and Safety Code.

HISTORY:

1. New section filed 5-26-87; operative 6-25-87 (Register 87, No. 23).

7605. Testing and Maintenance of Backflow Preventers.

- (a) The water supplier shall assure that adequate maintenance and periodic testing are provided by the water user to ensure their proper operation.
- (b) Backflow preventers shall be tested by persons who have demonstrated their competency in testing of these devices to the water supplier or health agency.
- (c) Backflow preventers shall be tested at least annually or more frequently if determined to be necessary by the health agency or water supplier. When devices are found to be defective, they shall be repaired or replaced in accordance with the provisions of this Chapter.
- (d) Backflow preventers shall be tested immediately after they are installed, relocated or repaired and not placed in service unless they are functioning as required.
- (e) The water supplier shall notify the water user when testing of backflow preventers is needed. The notice shall contain the date when the test must be completed.
- (f) Reports of testing and maintenance shall be maintained by the water supplier for a minimum of three years.

NOTE: Authority cited: Sections 208 and 4026, Health and Safety Code. Reference: Section 4026, Health and Safety Code.

HISTORY:

1. Repealer and new section filed 5-26-87; operative 6-25-87 (Register 87, No. 23).