Attachment C

San Francisco Department of Public Health's Director's Rules and Regulations Regarding Operation of Alternate Water Source Systems

San Francisco Department of Public Health

Director's Rules and Regulations Regarding the Operation of Alternate Water Source Systems

August 2017

Authority

Article 12C of the San Francisco Health Code established Permitting requirements for the use of alternate water sources and set Permit and annual fees. The San Francisco Department of Public Health (SFDPH) is authorized to perform duties associated with regulating the internal uses of Alternate Water Source Systems through its general authority to provide for the preservation, promotion, and protection of the health of the inhabitants of the City and County [San Francisco Charter Sec.4.110]. Additionally, Articles 11 and 12A of the City's Health Code authorize SFDPH Environmental Health Branch (SFDPH-EH) to investigate and abate any nuisance, activity, or condition that the SFDPH-EH deems to be a threat to public health and safety, and to investigate and abate any cross-connection risks between municipally supplied potable water, alternate water source systems, and sanitation systems in both public and private facilities. The Health Code authorizes the SFDPH-EH to order a person to vacate property, cease prohibited activities, abate unsafe or unsanitary conditions, and pay penalties for violations.

Role

The San Francisco Department of Public Health is the permitting agency for the operation of Alternate Water Source Systems in Residential Buildings containing three or more dwelling units, in Mixed-use and Non-residential Buildings, and where Alternate Water Source Systems are shared across property lines or in multiple structures. SFDPH-EH is responsible for ensuring that Alternate Water Source Systems are in compliance with applicable laws. SFDPH-EH performs ongoing monitoring, review, and inspections of permitted Alternate Water Source Systems to ensure such compliance is maintained.

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1. Definitions

Air Gap: A physical break between a supply pipe and a receiving vessel as set forth in the California Plumbing Code, Chapter 6, Section 603.

Alternate Water Source: A source of Non-Potable Water that includes Graywater, Rainwater, Stormwater, Foundation Drainage, Blackwater and/or any other source approved by the Director.

Alternate Water Source System or Non-potable Water System: The system of facilities necessary for providing Non-potable Water for use in a Development Project, including but not limited to all collection, treatment, storage, and distribution facilities.

Alternate Water Source System Engineering Report or Non-potable Engineering Report (Engineering Report): Report submitted by Project Applicant to the Director describing the Alternate Water Source System in accordance with these Rules and Regulations.

Annual License Fee: License fee paid annually to the Tax Collector pursuant to as provided in the San Francisco Business and Tax Regulations Code Section 249.24.

As-Builts: Final as-built architectural drawings.

Blackwater: Wastewater containing bodily or other biological wastes, as from toilets, dishwashers, kitchen sinks and utility sinks.

Certified Laboratory: An environmental testing laboratory certified by the California Environmental Laboratory Accreditation Program or the National Environmental Laboratory Accreditation Program (NELAP). Laboratories must be certified to perform each test for which they are providing results.

Continuous Verification Monitoring or Continuous Monitoring: Ongoing confirmation of system performance using sensors for continuous observation of selected parameters, including surrogate parameters that are correlated with pathogen log reduction target requirements.

Development Project: Construction of new buildings as defined in Section 12C.2 of Health Code Article 12C.

Director: The Director of the San Francisco Department of Public Health or any individual designated by the Director to act on his or her behalf, including, but not limited, to health inspectors.

Discharge Monitoring Report (DMR): A report documenting the operation and water quality results of an Alternate Water Source System permitted under these Rules and Regulations.

Disinfection: A physical or chemical process, including but not limited to, ultraviolet radiation, ozonation, and chlorination that is used for removal, deactivation or killing of pathogenic microorganisms.

District-scale Project: A Development Project entailing the sharing of an Alternate Water Source System serving two or more parcels or for use in multiple structures, whether under the jurisdiction of one entity or several.

Enforceable Legal Agreement: A legally enforceable agreement defining the roles and responsibilities of each property owner or entity acting as a Permittee, Supplier, or User of an Alternate Water Source System.

First Flush Diverter: A device operated by mechanical float valves or other types of automatic control that diverts a quantity of Rainwater collected from a surface following the onset of a rain event. Rainwater systems for subsurface or surface non-spray irrigation seeking to qualify for a permit exemption must have a first flush diverter that does not require manual operation, followed by a 100 µm filter or better.

Foundation Drainage: Nuisance groundwater that is extracted to maintain a building's or facility's structural integrity and would otherwise be discharged to the sanitary sewer system. Foundation Drainage does not include non-potable groundwater extracted for a beneficial use that is subject to City groundwater well regulations.

Graywater: Untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. Graywater includes, but is not limited to, wastewater from bathtubs, showers, bathroom sinks, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers.

Human Contact Water Use: A use of water which has the potential for human exposure by breathing or by direct contact with skin or eyes. Human Contact Water Uses include, but are not limited to, toilet flushing, spray irrigation, and cooling towers.

Instructions for Alternate Water Source System Annual Reports: Instructions, form or template developed by the Director identifying and describing the required elements of the Alternate Water Source System Annual Report.

Instructions for Alternate Water Source System Engineering Reports: Instructions, form or template developed by the Director identifying and describing the required elements of the Alternate Water Source System Engineering Report.

Log Reduction: The removal of a pathogen or surrogate in a unit process expressed in log units. A 1-log reduction equates to 90-percent removal, 2-log reduction to 99-percent removal, 3-log reduction to 99.9-percent removal, and so on.

Log Reduction Credit: The log reduction value (LRV) credited by SFDPH-EH to a treatment technology based the technology's ability to remove or inactivate pathogens and proposed surrogate parameter for continuous monitoring.

Log Reduction Target (LRT): The log reduction target for the specified pathogen group (i.e., viruses, bacteria, or protozoa) to achieve the agreed level of risk to individuals (e.g., 10^{-4} infection per year).

Mixed-use Building: A building containing both dwelling units and other Non-residential spaces.

Multi-family Building: A Residential Building containing three or more dwelling units.

Non-Potable Water: Non-potable water collected from alternate water sources, treated, and intended to be used on the Project Applicant's site or District parcels and is suitable for direct

beneficial use. Non-potable water is not of drinking water quality, but may still be used for many other purposes, depending on its quality.

Non-residential Building: A building that contains occupancies other than dwelling units.

Operations and Maintenance Manual: Document providing comprehensive information on the Alternate Water Source System operation, maintenance, and repair.

Permit: Permit to operate an Alternate Water Source System issued and enforced by SFDPH.

Permittee: The Person(s) who holds a valid permit granted by the Director to operate an Alternate Water Source System, and his or her agents, employees, and others acting at his or her direction. The Permittee is the Responsible Party as defined in Section 12C.2 of Health Code Article 12C. The Permittee is responsible for maintaining a permit, assuring that water collection, treatment, use, and water quality monitoring and reporting are consistent with the approved engineering report, the Operations and Maintenance Manual, these Rules and Regulations, and applicable state and local laws. A Permittee may also be the Supplier and/or User.

Person: Any natural person, corporation, sole proprietorship, partnership, association, joint venture, limited liability corporation, or other legal entity.

Project Applicant: The Person(s) or entity(s) applying for initial authorization to install an Alternate Water Source System. The Project Applicant is the Responsible Party as defined in Section 12C.2 of Health Code Article 12C. The Project Applicant is responsible for applying for the permit, assuring that the Alternate Water Source System is installed consistent with the approved Engineering Report, the Operations and Maintenance Manual, these Rules and Regulations, and applicable state and local laws. The Project Applicant becomes the Permittee upon issuance of the first Permit to operate.

Rain Event: For the purposes of informing the Director’s decision on the length of the Initial System Start-up Period during system startup for Rainwater and Stormwater sourced systems, each Rain Event is the occurrence of precipitation in an amount exceeding 0.50 inches reported at the National Weather Service San Francisco station (SFOC1), or other applicable location as determined by the Director, preceded and followed by a minimum of 1 hour where less than 0.05 inches precipitation are reported.

Rainwater: Precipitation collected from roof surfaces or other manmade, above ground collection surfaces. Hydrocarbon-based fuels, hazardous materials, or fertilizers are prohibited to be stored or used on such surfaces.

Residential Building: A building that contains only dwelling units.

SFDBI-PID: San Francisco Department of Building Inspection, Plumbing Inspection Division

SFDPH-EH: San Francisco Department of Public Health, Environmental Health

SFPUC: San Francisco Public Utilities Commission

SFPW: San Francisco Public Works Department

Site Supervisor: In a District-scale Project, the qualified person or entity designated by a User and/or a Supplier to oversee the operation and maintenance of the on-site distribution system

and/or collection system and act as a liaison to the Treatment System Manager and/or Permittee.

Spray irrigation: A method of applying water for beneficial use by plants where the water emits from a fixture or device into the air before coming into contact with the soil, ground or plant surface.

Stormwater: Precipitation collected from at-grade or below grade surfaces or from any surface where hydrocarbon-based fuels, hazardous materials, or fertilizers are stored or used shall also be categorized as stormwater.

Subsurface irrigation: A method of applying water for beneficial use by plants where the water is delivered beneath the soil surface.

Supplier: An entity that supplies an untreated Alternate Water Source to the Alternate Water Source System for treatment and reuse. A Supplier may also be a Permittee and/or User.

Surface non-spray irrigation: A method of applying water for beneficial use by plants where the water is delivered directly at the ground plane via hardware such as a drip emitters or soaker hoses.

Surrogate Parameter: A measurable physical or chemical property that has been demonstrated to provide a direct correlation with the concentration of an indicator compound, can be used to monitor the efficiency of trace organic compounds removals by a treatment process, and/or provide indication of a treatment process failure.

Treatment System Manager: The qualified person or entity responsible for the daily management and oversight of the Alternate Water Source System. The Treatment System Manager may also be the Permittee or an entity contracted by the Permittee.

User: An entity that accepts treated water from an Alternate Water Source System for beneficial purposes within its area of occupancy. A User may also be a Permittee and/or Supplier.

Validation Report: Report documenting a detailed technology evaluation study that was conducted to challenge the treatment technology over a wide range of operational conditions. The validation report shall include evidence of the treatment technology's ability to reliably and consistently achieve the log reduction value, including information on the required operating conditions and surrogate parameters that require continuous monitoring.

2. Allowed Alternate Water Sources

Collection, storage and/or treatment and subsequent reuse of the following alternate water sources may be permitted under these Rules and Regulations:

- Rainwater
- Stormwater
- Graywater
- Foundation Drainage
- Blackwater

Other alternate sources of water may be considered if approved under the variance procedure described in **Section 11**.

3. Allowed Uses

The following uses may be permitted under these Rules and Regulations:

- Indoor Reuse
  - Toilet and urinal flushing
  - Priming drain traps
  - Clothes washing
- Outdoor Reuse
  - Subsurface irrigation
  - Drip or other surface non-spray irrigation
  - Spray irrigation
  - Decorative fountains and impoundments
  - Cooling applications
  - Dust control/street cleaning

Other uses of Alternate Water Sources may be allowed if approved under the variance procedure described in **Section 11**.

4. SFDPH Permit Requirements

A permit from SFDPH-EH is required for the operation of Alternate Water Source Systems at Multi-family Buildings, Mixed-use Buildings, and Non-residential Buildings with the following four exceptions:

- Permit Exception 1: Rainwater systems having a first flush diverter and a 100 µm filter which are used solely for subsurface irrigation or for surface non-spray irrigation;
- Permit Exception 2: Graywater systems used solely for subsurface irrigation;
- Permit Exception 3: Foundation Drainage systems used solely for subsurface irrigation.
- Permit Exception 4: Stormwater systems used solely for subsurface irrigation.

The above four types of Alternate Water Source Systems do not require a permit under San Francisco Health Code Article 12C.

The Director shall issue a Permit to the Project Applicant after all applicable requirements in these Rules and Regulations are met. A Permit to operate will be valid for one year from the date of issuance. Permits must be renewed annually by the Permittee as specified in this Section.

Systems being operated without a valid Permit shall be subject to penalty.

a. Permit Application

The following are required elements for an Alternate Water Source System Permit application:

Water Budget Application: Project Applicants shall submit a Water Budget Application for review and approval by the General Manager of the SFPUC. The Water Budget Application shall include a description and location of the proposed or existing Alternate

Water Source System, the project's water budget, and other applicable information. The Water Budget Application must identify all User(s) and Supplier(s) data.

Application for a Permit and Fee: Project Applicants shall submit an Application for a Permit to Operate an Alternate Water Source System (Permit Application) to the Director accompanied by the appropriate fee as shown in the SFDPH-EH schedule of fees. District-scale Projects may be charged an additional hourly rate for permit application review and approval.

Engineering Report Approval: Project Applicants shall submit an Alternate Water Source System Engineering Report (Engineering Report) to the Director for review and approval. The Engineering Report shall be prepared by a qualified engineer licensed in California and experienced in the field of wastewater treatment, and shall include all items in the Instructions for Alternate Water Source System Engineering Reports. The Engineering Report will not be reviewed unless and until all appropriate fees have been paid to SFDPH-EH. The Director may request revisions to initial and subsequent Engineering Report submittals. The Director shall make reasonable efforts to provide a response to project applicants within 30 days of receipt of an initial or revised Engineering Report.

Required Documents:

- If the Alternate Water Source System differs in any way from the approved Engineering Report, the Project Applicant must submit an updated Engineering Report to SFDPH-EH. Any modifications to the system are subject to review and approval by the Director.
- A finalized Operations and Maintenance Manual that complies with the requirements set forth in **Section 9** of these Rule and Regulations;
- An affidavit signed by the designated Treatment System Manager that verifies knowledge, skills, abilities and training to operate the permitted system;
- Evidence of a contract with a certified laboratory to perform water quality analysis;
- System construction verification provided to SFDPH-EH on company letterhead, signed and stamped by qualified engineer licensed in California stating that the Alternate Water Source System was constructed in accordance with the approved Engineering Report, professionally certified plans, specifications and applicable sections of state and local code. SFDPH-EH may request to be present during system construction verification; and
- Evidence of satisfactory performance upon cross connection wet-test overseen by certified personnel from the San Francisco Public Utilities Commission Water Quality Division or other certified personnel as determined by the Director;

Enforceable Legal Agreement (for District-scale Projects only): Project Applicants for District-scale Projects shall provide to the Director an executed legally Enforceable Legal Agreement defining the roles and responsibilities of each property owner or entity with regard to the Alternate Water Source System. The Permittee and each of the Suppliers and Users shall be included in, and signatories to the agreement. The agreement shall be recorded.

b. Permit Issuance

After the system is installed and all required elements and procedures in these Rules and Regulations are completed and approved by the Director, SFDPH-EH will issue a Permit for the Operation of the Alternate Water Source System to the Permittee. The Permit requires compliance with all requirements of these Rules and Regulations, and will require increased monitoring and reporting frequencies in the Conditional Startup Mode before the Final Use Mode is granted.

Conditional Startup Mode Permit:

The Conditional Startup Mode allows for an initial system start-up period to operate the Alternate Water Source System and confirm the system is performing per the approved Engineering Report and pursuant to the requirements of Article 12C.

Duration: The duration of the Conditional Startup Mode period shall be 180 days, unless the Director determines that a shorter or longer start-up period will best serve the public health. The Conditional Startup Mode allows for field verification of the alternate water source system treatment processes, instrumentation, water quality sampling, etc. The Conditional Startup Mode period may be extended for an additional 90 days by the Director.

Monitoring and Reporting: During the Conditional Startup Mode period, applicable surrogate parameters shall be monitored and water samples shall be analyzed by a Certified Laboratory at the applicable frequencies required in **Sections 6 – 7**. The Treatment System Manager shall submit results of laboratory analysis along with a completed and signed Discharge Monitoring Report to SFDPH-EH at the frequencies required in **Sections 6 – 7**.

Bypass Conditions: During Conditional Startup Mode, the alternate water source shall be treated and diverted to the sanitary sewer. All fixtures in the building shall be operated using the municipally supplied make-up water source. The Director may allow rainwater treatment systems to forego or end bypass conditions prior to the end of the Conditional Startup Mode upon written approval.

During Conditional Startup Mode, systems must comply with all requirements of the permit as set forth in these Rules and Regulations.

Final Use Mode Permit and Ongoing Permit Conditions

Duration: Upon completion of the Conditional Startup Mode period, the Director will revise the Permit to Final Use Mode. The Final Use Mode applies as long as all permit conditions and requirements are met.

Monitoring and Reporting: During Final Use Mode, applicable surrogate parameters shall be monitored and water samples shall be analyzed by a Certified Laboratory as applicable. at the frequencies required in **Sections 6 – 7**. The Treatment System Manager shall submit results of laboratory analysis along with a completed and signed Discharge Monitoring Report to SFDPH-EH at the frequencies required in **Sections 6 – 7**. Subject to the treatment processes utilized in the Alternate Water Source System, it may be possible to minimize or eliminate water quality sampling requirements after the Conditional Startup Mode

by continuously monitoring treatment system performance via surrogate parameters as detailed in **Sections 6 – 7**.

Applicable sampling, analysis and reporting requirements must be continually met for the permit to remain valid.

During Final Use Mode, systems must comply with all requirements of the permit as set forth in these Rules and Regulations.

Bypass Conditions: All Alternate Water Source Systems shall immediately divert the alternate water source to the sanitary sewer system upon receipt of the results of any water quality test sample that does not meet the water quality requirements of the Permit or indication of a process malfunction based on continuous monitoring. Systems required to divert to the sanitary sewer may resume normal operation after the Director receives and approves documentation of three (3) consecutive days of full compliance along with a letter explaining why the performance was compromised and what actions were taken to prevent it from reoccurring.

c. Permit Renewal

Every Permittee shall renew their Permit annually by paying to the Office of the Treasurer and Tax Collector of the City and County of San Francisco the annual License fee set forth in Section 249.24 of the San Francisco Business and Tax Regulation Code. Upon the failure of the Permittee to pay such fees, the Permit shall be considered null and void until the Permittee pays the fees and any penalties that might be assessed by the Director.

The Alternate Water Source System Permit shall be considered null and void if it is determined that the system was built without applicable building and plumbing permits issued by the SFDBI, and, where applicable, encroachment permits issued by Department of Public Works.

d. Permit Modification

The Director may order the modification of any Permit issued under these Rules and Regulations upon: (1) a written application from the Permittee or (2) receipt of evidence that the operation may (A) violate any provisions of these Rules and Regulations or (B) endanger the public health.

Changes to the Alternate Water Source System, including but not limited to changes in source water, end uses, treatment or other system components, may require permit modification.

In a District scale Project, the Director may order the modification of any Permit issued under these regulations given any changes in the roles of Supplier, Permittee, and or User as submitted to the Director.

Except where the Permittee requests Permit modification, if the Director determines that a Permit issued under these Rules and Regulations is required to be modified, the Director shall serve such order on the Permittee, either by personal service or by certified mail return receipt requested, and the modification shall be effective and final thirty (30) days after the service of such order unless appealed by the Permittee. Within

thirty (30) days from the service of the order, the Permittee may appeal the modification order to the Director. The Director shall conduct an administrative hearing upon the filing of an appeal by the Permittee in accordance with **Section 12**.

Alternate Water Source System Permittees will be charged an hourly rate for review and approval of permit modifications.

e. Permit Transfer

Permits to operate Alternate Water Source Systems are not automatically transferable. New owners must submit documentation that they can and will properly operate an Alternate Water Source System. The Director may approve or deny the transfer of a permit. The system may not be operated in absence of a current Permit. Permit transfer requests require written application to the Director.

A new SFPUC Water Budget Application is not required in order to request a Permit transfer for an existing system in which construction and operation are consistent with a previously accepted Engineering Report.

5. System Design Requirements

a. Cross Connection Control and Make-up Water Supply

Cross connection testing shall be completed in accordance with Article 12A of the San Francisco Health Code and the California Plumbing Code prior to initial operation of the system and at intervals thereafter as mandated.

The municipal water connection serving properties with alternate water source systems must be protected by a containment Reduced Pressure Principle Backflow Prevention Device (RP) within 25 feet downstream of the point of connection or water meter to protect the City's public water and/or recycled water system.

As shown in Table 1, Alternate Water Source Systems must include municipally supplied make-up water **via an air gap** except:

- Make-up Water Supply Exception 1: Irrigation-only systems are not required to include a municipally supplied make-up;
- Make-up Water Supply Exception 2: Rainwater harvesting systems that do not specify an isolation air-gap at the point of municipally supplied make-up may alternatively specify an isolation RP at the point of potable make-up to the Alternate Water Source System.

Table 1: Make-up Supply and Cross Connection Protection

	Rainwater Source Systems	All other Alternate Water Sources
Municipally supplied make-up water source[1]	Required	Required
Service Meter Protection	Containment RP[2] required <25 ft. downstream of municipally supplied water service meter	Containment RP required <25 ft. downstream of municipally supplied water service meter
Protection at the point of municipally supplied make-up to the Alternate Water Source System	Isolation air gap OR Isolation RP	Isolation air gap
Notes: 1. Irrigation-only systems are not required to include a municipally supplied make-up. 2. RP = Reduced Pressure Principle Backflow Prevention Device		

b. Fail-Safe Mechanisms

All systems must be equipped with features that result in a controlled and non-hazardous automatic shutdown of the process in the event of a malfunction.

c. Flow Meter

All properties collecting, treating, receiving, or distributing water from an Alternate Water Source System shall include a flow meter on the treated Alternate Water Source distribution system and a flow meter on the potable make-up water pipeline to the Alternate Water Source System.

d. Overflow

All properties collecting, treating, receiving, or distributing water from an Alternate Water Source System shall include overflow connections to the sanitary sewer system with an air gap or other approved backflow prevention device.

e. California Plumbing Code Compliance

All properties collecting, treating, receiving, or distributing water from an Alternate Water Source System shall include components or design features as required by the California Plumbing code, specifically:

(1) Signage as required by the California Plumbing Code; signage shall be maintained in good condition and free from damage or removal;

(2) For rainwater systems, a first flush diverter or debris excluder as required by the California Plumbing Code;

(3) Tanks that receive and/or store untreated graywater and/or blackwater shall be properly vented per the California Plumbing Code.

f. Irrigation System Requirements

Alternate Water Source Systems providing non-potable water for irrigation purposes shall be designed and operated in accordance with the following:

- The treatment, storage, distribution, reuse, or discharge of Alternate Water Sources shall not create a nuisance.
- Treated Alternate Water Sources shall not be applied to designated irrigation areas during periods when soils are saturated and could lead to runoff.
- Treated Alternate Water Sources shall not be allowed to escape the designated irrigation areas as surface flow or spray that would either pond and/or enter surface waters.
- Irrigation spray or runoff caused by irrigation shall not enter a dwelling or food handling facility, and shall not contact any drinking water fountain, unless specifically protected with a shielding device.

g. Cooling Application Requirements

Alternate Water Source Systems using treated blackwater in conjunction with an air conditioning facility, utilizes a cooling tower, or otherwise creates a mist that could come into contact with employees, members of the public, or building occupants, the cooling system shall comply with the following:

- A drift eliminator shall be used whenever the cooling system is in operation.
- A chlorine or other biocide shall be used to treat the cooling system recirculating water to minimize the growth of Legionella and other microorganisms.

6. Water Quality Requirements

A Project Applicant shall design and operate an Alternate Water Source System such that the Alternate Water Source receives treatment that achieves the water quality requirements in this Section.

a. Blackwater Treatment Systems

Blackwater must be oxidized, filtered, and disinfected prior to use for non-potable applications. Blackwater treatment systems shall meet the water quality requirements established in Table 2.

- Oxidized effluent means an alternate water source that has been stabilized, is nonputrescible, and contains dissolved oxygen.
- Filtered effluent means an oxidized effluent that has passed through a media filter or microfiltration, ultrafiltration, nanofiltration, or reverse osmosis membrane to meet established turbidity requirements.
- Disinfected effluent means oxidized and filtered effluent that has been disinfected to meet the established pathogenic microorganism control requirements.
    - Pathogenic microorganism control for virus and protozoa is achieved by meeting log reduction targets in Table 2.
    - Pathogenic microorganism control for bacteria is achieved by meeting requirements in Table 2. Total coliform sampling shall be conducted at least once daily when the treatment plant is in operation. The samples shall be taken from the disinfected effluent and shall be analyzed by a certified laboratory.
- For blackwater treatment systems utilizing ultraviolet light (UV) disinfection:
    - The design UV dose shall be at least 80mJ/cm^2.
    - The filtered effluent UV transmittance shall be 65 percent or greater.

Table 2: Water Quality Requirements for Blackwater Treatment Systems

Parameter	Water Quality Limit	Monitoring Frequency
BOD_5	• The maximum concentration shall not exceed 25 mg/L at any time; and • The average concentration shall not exceed 10 mg/L utilizing the results of the last 4 weeks for which analyses have been completed (Start-Up).	Weekly, Monthly[1]
TSS	• The maximum concentration shall not exceed 30 mg/L at any time; and • The average concentration shall not exceed 10 mg/L utilizing the results of the last 4 weeks for which analyses have been completed (Start-Up).	Weekly, Monthly[1]
Virus	Treatment must achieve at least: • 8.5-log reduction in enteric virus for indoor reuse OR • 8.0-log reduction in enteric virus for outdoor reuse.	Continuously (via surrogate parameter(s))
Protozoa	Treatment must achieve at least 7.0-log reduction in parasitic protozoa.	Continuously (via surrogate parameter(s))
Bacteria[2]	Meet the Total Coliform requirements listed below: • The median concentration shall not exceed an MPN of 2.2 /100 mL utilizing the bacteriological results of the last seven days for which analyses have been completed; and • The maximum number shall not exceed an MPN of 23 /100 mL in more than one sample in any 30 day period; and • No sample shall exceed an MPN of 240 /100 ml at any time.	Daily
Turbidity	For media filter: • The median concentration shall not exceed 2 NTU within a 24-hour period; • The maximum shall not exceed 5 NTU more than 5 percent of the time within a 24-hour period; and • No sample shall exceed 10 NTU at any time. For membrane filter: • The maximum shall not exceed 0.2 NTU more than 5 percent of the time within a 24-hour period; and • No sample shall exceed 0.5 NTU at any time.	Continuously
Chlorine Residual	Over any 24-hour period, the average chlorine residual shall be within the range 0.5 – 2.5 mg/L.	Continuously
pH	At all times, the pH shall be between 6 and 9.	Weekly
Odor	The system shall not emit offensive odors.	n/a
Flow	At least one flow meter must be installed.	Continuously

Notes:

1. Systems shall be sampled weekly for BOD and TSS during the Conditional Startup Mode period, after which monthly sampling shall be performed. Based on the results, the Director may reduce the frequency of sampling as described in Section 11 of these Rules and Regulations.
2. Pathogenic microorganism control for bacteria is achieved by complying with water quality limits for total coliform. Total coliform sampling shall be conducted at least once daily when the treatment plant is in operation. The samples shall be taken form the disinfected effluent and shall be analyzed by a certified laboratory.

b. Graywater Treatment Systems

Graywater must be oxidized, filtered, and disinfected prior to use for non-potable applications. Graywater treatment systems shall meet the water quality requirements established in Table 3.

- Oxidized effluent means an alternate water source that has been stabilized, is nonputrescible, and contains dissolved oxygen.
- Filtered effluent means an oxidized effluent that has passed through a media filter or microfiltration, ultrafiltration, nanofiltration, or reverse osmosis membrane to meet established turbidity requirements.
- Disinfected effluent means oxidized and filtered effluent that has been disinfected to meet the established pathogenic microorganism control requirements.
    - Pathogenic microorganism control for virus and protozoa is achieved by meeting log reduction targets in ***Table 3***.
    - Pathogenic microorganism control for bacteria is achieved by complying with water quality limits for total coliform. Total coliform sampling shall be conducted daily during the Conditional Startup Mode. Based on the results, the Director may reduce the frequency of total coliform sampling during Final Use Mode or may allow surrogate parameter monitoring for systems that can meet log reduction targets as specified in ***Table 3***.

Table 3: Water Quality Requirements for Graywater Treatment Systems

Parameter	Water Quality Limit	Monitoring Frequency
BOD_5	• The maximum concentration shall not exceed 25 mg/L at any time; and • The average concentration shall not exceed 10 mg/L utilizing the results of the last 4 weeks for which analyses have been completed (Start-Up).	Weekly, Monthly[1]
TSS	• The maximum concentration shall not exceed 30 mg/L at any time; and • The average concentration shall not exceed 10 mg/L utilizing the results of the last 4 weeks for which analyses have been completed (Start-Up).	Weekly, Monthly[1]
Virus	Treatment must achieve at least: • 6.0-log reduction in enteric virus for indoor reuse OR • 5.5-log reduction in enteric virus for outdoor reuse.	Continuously (via surrogate parameter(s))
Protozoa	Treatment must achieve at least 4.5-log reduction in parasitic protozoa for all end use applications.	Continuously (via surrogate parameter(s))
Bacteria[2]	Treatment must achieve at least 3.5-log reduction in enteric bacteria AND/OR meet the Total Coliform requirements listed below: • The median concentration shall not exceed an MPN of 2.2 /100 mL utilizing the bacteriological results of the last seven days for which analyses have been completed; and • The maximum number shall not exceed an MPN of 23 /100 mL in more than one sample in any 30 day period; and • No sample shall exceed an MPN of 240 /100 ml at any time.	Continuously (via surrogate parameter(s)) Daily, Other[2]
Turbidity	For media filter: • The median concentration shall not exceed 2 NTU within a 24-hour period; • The maximum shall not exceed 5 NTU more than 5 percent of the time within a 24-hour period; and • No sample shall exceed 10 NTU at any time. For membrane filter: • The maximum shall not exceed 0.2 NTU more than 5 percent of the time within a 24-hour period; and • No sample shall exceed 0.5 NTU at any time.	Continuously
Chlorine Residual	Over any 24-hour period, the average chlorine residual shall be within the range 0.5 – 2.5 mg/L.	Continuously
pH	At all times, the pH shall be between 6 and 9.	Weekly
Odor	The system shall not emit offensive odors.	n/a
Flow	At least one flow meter must be installed.	Continuously

Notes:

1. Systems shall be sampled weekly for BOD and TSS during the Conditional Startup Mode period, after which monthly sampling shall be performed. Based on the results, the Director may reduce the frequency of sampling as described in Section 11 of these rules and regulations.
2. Pathogenic microorganism control for bacteria is achieved by complying with water quality limits for total coliform. Total coliform sampling shall be conducted daily during the Conditional Startup Mode. Based on the results, the Director may reduce the frequency of total coliform sampling during Final Use Mode or may allow surrogate parameter monitoring for systems that can meet the specified log reduction targets as described in Section 11 of these rules and regulations. If total coliform testing sampling frequency is reduced to weekly or less, the maximum number shall not exceed an MPN of 2.2 /100 mL or additional sampling will be required.

c. Foundation Drainage Treatment Systems

Foundation drainage treatment systems shall meet the water quality requirements established in ***Table 4***.

- Pathogenic microorganism control for virus and protozoa is achieved by meeting log reduction targets in ***Table 4***.
- Pathogenic microorganism control for bacteria is achieved by complying with water quality limits for total coliform. Total coliform sampling shall be conducted weekly during the Conditional Startup Mode. Based on the results, the Director may reduce the frequency of total coliform sampling during Final Use Mode or may allow surrogate parameter monitoring for systems that can meet log reduction targets as specified in ***Table 4***.

Table 4: Water Quality Requirements for Foundation Drainage Treatment Systems

Parameter	Water Quality Limit	Monitoring Frequency
Virus	Treatment must achieve at least: • 3.5-log reduction in enteric virus for indoor reuse OR • 3.0-log reduction in enteric virus for outdoor reuse.	Continuously (via surrogate parameter(s))
Protozoa	Treatment must achieve at least: • 3.5-log reduction in parasitic protozoa for indoor reuse OR • 2.5-log reduction in parasitic protozoa for outdoor reuse.	Continuously (via surrogate parameter(s))
Bacteria[1]	Treatment must achieve at least: • 3.0-log reduction in enteric bacteria for indoor reuse OR • 2.0-log reduction in enteric bacteria for outdoor reuse AND/OR meet the Total Coliform requirements listed below: • No sample shall exceed an MPN of 2.2 /100 ml at any time or additional sampling will be required.	Continuously (via surrogate parameter(s)) Weekly, Other[1]
Turbidity	For media filter: • The median concentration shall not exceed 2 NTU within a 24-hour period; • The maximum shall not exceed 5 NTU more than 5 percent of the time within a 24-hour period; and • No sample shall exceed 10 NTU at any time. For membrane filter: • The maximum shall not exceed 0.2 NTU more than 5 percent of the time within a 24-hour period; and • No sample shall exceed 0.5 NTU at any time.	Continuously
Chlorine Residual	Over any 24-hour period, the average chlorine residual shall be within the range 0.5 – 2.5 mg/L.	Continuously
VOCs	See **Table 7**	Quarterly
Odor	The system shall not emit offensive odors.	n/a
Flow	At least one flow meter must be installed.	Continuously

Notes:

1. Pathogenic microorganism control for bacteria is achieved by complying with water quality limits for total coliform. Total coliform sampling shall be conducted weekly during the Conditional Startup Mode. Based on the results, the Director may reduce the frequency of total coliform sampling during Final Use Mode or may allow surrogate parameter monitoring for systems that can meet the specified log reduction targets as described in Section 11 of these Rules and Regulations.

d. Stormwater Treatment Systems

Stormwater treatment systems shall meet the water quality requirements established in ***Table 5***.

- Pathogenic microorganism control for virus and protozoa is achieved by meeting log reduction targets in ***Table 5***.
- Pathogenic microorganism control for bacteria is achieved by complying with water quality limits for total coliform. Total coliform sampling shall be conducted weekly during the Conditional Startup Mode. Based on the results, the Director may reduce the frequency of total coliform sampling during Final Use Mode or may allow surrogate parameter monitoring for systems that can meet log reduction targets as specified in ***Table 5***.

Table 5: Water Quality Requirements for Stormwater Treatment Systems

Parameter	Water Quality Limit	Monitoring Frequency
Virus	Treatment must achieve at least: • 3.5-log reduction in enteric virus for indoor reuse OR • 3.0-log reduction in enteric virus for outdoor reuse.	Continuously (via surrogate parameter(s))
Protozoa	Treatment must achieve at least: • 3.5-log reduction in parasitic protozoa for indoor reuse OR • 2.5-log reduction in parasitic protozoa for outdoor reuse.	Continuously (via surrogate parameter(s))
Bacteria[1]	Treatment must achieve at least: • 3.0-log reduction in enteric bacteria for indoor reuse OR • 2.0-log reduction in enteric bacteria for outdoor reuse AND/OR meet the Total Coliform requirements listed below: No sample shall exceed an MPN of 2.2 /100 ml at any time or additional sampling will be required.	Continuously (via surrogate parameter(s)) Weekly, Other[1]
Turbidity	For media filter: • The median concentration shall not exceed 2 NTU within a 24-hour period; • The maximum shall not exceed 5 NTU more than 5 percent of the time within a 24-hour period; and • No sample shall exceed 10 NTU at any time. For membrane filter: • The maximum shall not exceed 0.2 NTU more than 5 percent of the time within a 24-hour period; and • No sample shall exceed 0.5 NTU at any time.	Continuously
Chlorine Residual	Over any 24-hour period, the average chlorine residual shall be within the range 0.5 – 2.5 mg/L.	Continuously
VOCs	See **Table 7**	Quarterly[2]
Odor	The system shall not emit offensive odors.	n/a
Flow	At least one flow meter must be installed.	Continuously

Notes:

1. Pathogenic microorganism control for bacteria is achieved by complying with water quality limits for total coliform. Total coliform sampling shall be conducted weekly during the Conditional Startup Mode. Based on the results, the Director may reduce the frequency of total coliform sampling during Final Use Mode or may allow surrogate parameter monitoring for systems that can meet the specified log reduction targets as described in Section 11 of these Rules and Regulations.
2. The Director may reduce the frequency of VOC monitoring for stormwater systems that show consistent evidence of minimal risk of contamination by VOCs through monitoring results and/or demonstration of low risk stormwater collection environment.

e. Rainwater Treatment Systems

Rainwater treatment systems shall meet the water quality requirements established in ***Table 6***.

- Disinfection with chlorine, ozone, ultraviolet radiation, or other approved agent is required for all uses with potential for human contact.
- Pathogenic microorganism control for bacteria is achieved by complying with water quality limits for total coliform. Total coliform sampling shall be conducted weekly during the Conditional Startup Mode. Based on the results, the Director may reduce the frequency of total coliform sampling during Final Use Mode or may allow surrogate parameter monitoring for systems that can meet log reduction targets as specified in ***Table 6***

Table 6: Water Quality Requirements for Rainwater Treatment Systems

Parameter	Water Quality Limit	Monitoring Frequency
Bacteria[1]	Treatment must achieve at least 3.5-log reduction in enteric bacteria AND/OR meet the Total Coliform requirements listed below: • No sample shall exceed an MPN of 2.2 /100 ml at any time or additional sampling shall be required.	Continuously (via surrogate parameter(s)) Weekly, Other[1]
Turbidity	For media filter: • The median concentration shall not exceed 2 NTU within a 24-hour period; • The maximum shall not exceed 5 NTU more than 5 percent of the time within a 24-hour period; and • No sample shall exceed 10 NTU at any time. For membrane filter: • The maximum shall not exceed 0.2 NTU more than 5 percent of the time within a 24-hour period; and • No sample shall exceed 0.5 NTU at any time.	Continuously
Odor	The system shall not emit offensive odors.	n/a
Flow	At least one flow meter must be installed.	Continuously

Notes:

1. Pathogenic microorganism control for bacteria is achieved by complying with water quality limits for total coliform. Total coliform sampling shall be conducted weekly during the Conditional Startup Mode. Based on the results, the Director may reduce the frequency of total coliform sampling during Final Use Mode or may allow surrogate parameter monitoring for systems that can meet the specified log reduction targets as described in Section 11 of these Rules and Regulations.

f. Volatile Organic Compounds

The volatile organic compounds (VOCs) identified in ***Table 7*** shall be monitored as described in ***Table 4*** and ***Table 5.***

.

Table 7: Volatile Organic Compound (VOC) Limits

VOC	Unacceptable Concentration (mg/L)[1]
Benzene	0.1
Carbon Tetrachloride	0.5
1,2-Dichlorobenzene	5.4
1,4-Dichlorobenzene	5.4
1,1-Dichloroethane	14.4
1,2-Dichloroethane	0.1
1,1-Dichloroethylene	0.1
cis-1,2-Dichloroethylene	28.4
trans-1,2-Dichloroethylene	28.4
Dichloromethane	3.1
1,2-Dichloropropane	12.6
1,3-Dichloropropene	0.2
Ethylbenzene	15.6
Methyl-tert-butyl ether	5.2
Monochlorobenzene	1.7
Styrene	7.7
1,1,2,2-Tetrachloroethane	0.3
Tetrachloroethylene	6.1
Toluene	6.8
1,2,4-Trichlorobenzene	1.4
1,1,1-Trichloroethane	68.2
1,1,2-Trichloroethane	1.6
Trichloroethylene	4.8
Trichlorofluoromethane	201.1
1,1,2-Trichloro-1,2,2-Trifluoroethane	272.9
Vinyl Chloride	0.1
Xylenes	15.6

Notes:

1. SFDPH-EH derived estimated unacceptable concentrations of VOC's from the U.S. Occupational Safety and Health Administration Permissible Exposure Limits for 8-hour inhalation exposures to selected VOCs.

g. Pathogenic Microorganism Control Log Reduction Credits

To meet the pathogenic microorganism control requirements for enteric virus and parasitic protozoa, Project Applicants must install treatment processes that achieve log reduction targets as shown in **Table 2** through **Table 6**.

Pathogenic microorganism control for bacteria is achieved by complying with water quality limits for total coliform.

- For blackwater, total coliform sampling shall be conducted at least once daily when the treatment plant is in operation as shown in **Table 2.**
- For all other alternate water sources, total coliform sampling shall be conducted at frequencies shown in **Table 3** through **Table 6** during the Conditional Startup Mode. The Director may reduce the frequency of total coliform sampling during Final Use Mode or may allow surrogate parameter monitoring for systems that can meet log reduction targets as shown in **Table 3** through **Table 6**.

Log Reduction Credits. SFDPH-EH grants log reduction credits based on each technology's ability to achieve a defined log reduction value. Evidence of the treatment technology's ability to reliably and consistently achieve the log reduction value, including information on the required operating conditions and surrogate parameters that require continuous monitoring, must be included in a Project Applicant's Engineering Report.

For treatment technologies that submit validation reports as evidence for log reduction credits, the submitted validation reports must include a letter demonstrating the report has been accepted previously by the California Division of Drinking Water.

Table 8 provides example log reduction credits for different treatment processes and examples of required supporting information. ***Table 8*** is not prescriptive or exhaustive as specific requirements will be approved by SFDPH-EH based on details provided by the Project Applicant in the Engineering Report.

Continuous Monitoring. A project applicant shall propose and include in its Engineering Report, continuous monitoring, as described in **Section 7**, using the pathogenic microorganisms of concern or a microbial, chemical, or physical surrogate parameter(s) that verifies the performance of each treatment process's ability to achieve its credited log reduction.

Table 8: Example Treatment Process Log Reduction Credits

Treatment Process	Available Log Reduction Credits Virus/Protozoa/Bacteria	Example Information to be Included in an Engineering Report[1]
Microfiltration or Ultrafiltration	0/4/0	Description and calculation of how the system defines an acceptable pressure decay test value per the EPA's Membrane Filtration Guidance Manual to detect 3.0 µm breach
Membrane Biological Reactor (MBR)	1.5/2/4	Operation with the Tier 1 operating envelope as defined in the AWRCE, *Membrane bio-reactor*, WaterVal validation protocol [2]
Reverse Osmosis	Up to 2/2/2 (Dependent on surrogate parameter)	Manufacturer's information indicating ability to reject sodium chloride and description of/rationale for surrogate parameter used to calculate log removal credits
Ultraviolet (UV) Light Disinfection	Up to 6/6/6 (Dose Dependent)	UV reactor's Validation Report following state-approved procedures[3] or NSF/ANSI 55 Class A validated.
Chlorine Disinfection	Up to 5/0/0 (CT dependent)	Calculations demonstrating CT disinfection, where CT = Concentration of Chlorine x Contact Time and specifics on how concentration and contact time will be determined
Ozone Disinfection	Up to 4/3/0 (CT dependent)	Calculations demonstrating CT disinfection, where CT = Concentration of Ozone x Contact Time and specifics on how concentration and contact time will be determined

Notes:

1. The information presented herein is for informational purposes. Specific requirements will be approved by SFDPH-EH based on details provided by the Project Applicant in the Engineering Report.
2. AWRCE, *Membrane bio-reactor*, WaterVal validation protocol, Australian Water Recycling Center of Excellence (AWRCE), Brisbane.
3. UV log reduction credits are reactor-specific and dose dependent. UV Validation Reports shall be prepared by a licensed engineer. Validation reports must provide evidence of reactor's ability to reliably and consistently achieve the log reduction value, including information on the required operating conditions and surrogate parameters that require continuous monitoring. The Validation Report shall document results based on validation testing completed utilizing one of the following:
   a. EPA UV Disinfection Guidance Manual (USEPA 2006),
   b. German UV Devices for the Disinfection for Drinking Water Supply Standard (DVGW 2006), or
   c. NWRI UV Disinfection: Guidelines for Drinking Water and Water Reuse, 3rd edition (NWRI 2012)

   Submitted validation reports must include a letter demonstrating the report has been accepted previously by the California Division of Drinking Water.

7. Monitoring, Sampling, Reporting and Notification Requirements

a. Continuous Monitoring:

Continuous monitoring is required as indicated in **Table 2** through **Table 6**. This includes flow meters, turbidimeters, and other instrumentation as needed to demonstrate compliance with pathogenic microorganism control.

For treatment processes that are used to meet a log reduction target, each treatment process shall have continuous monitoring using the pathogenic microorganisms of concern or a microbial, chemical, or physical surrogate parameter(s) that verifies the performance of each treatment process's ability to achieve its credited log reduction. The Project Applicant shall propose and include in its Engineering Report, for SFDPH-EH review and approval, the type of continuous monitoring to be utilized and credited log reduction will be determined based on the surrogate parameter utilized for continuous monitoring.

If a pathogen log reduction target, as shown in ***Table 2*** through ***Table 6***, is not being met based on the continuous monitoring required, the Treatment System Manager shall notify the San Francisco Department of Public Health, Environmental Health (phone: 415-252-3800, email: DPH.Nonpotable@sfdph.org) in accordance with the Malfunction Notification requirements as included in these Rules and Regulations.

Table 9 provides example continuous monitoring methods used for different treatment processes. is not prescriptive or exhaustive as specific requirements will be approved by SFDPH-EH based on details provided by the Project Applicant in the Engineering Report.

Table 9: Example Treatment Process Monitoring

Treatment Process	Example Continuous Monitoring Methods
Microfiltration or Ultrafiltration	• Daily pressure decay test • Effluent Turbidity
Membrane Biological Reactor (MBR)	• Effluent Turbidity
Reverse Osmosis	• Influent and Effluent Total Organic Carbon (TOC) • Influent and Effluent Electrical Conductivity
Ultraviolet Light Disinfection	• Influent UV transmittance • Influent turbidity • UV intensity • Flow rate
Chlorine Disinfection	• Free chlorine residual • Flow rate
Ozone Disinfection	• Ozone residual • Flow rate
Notes: 1. The information presented herein is for informational purposes. Specific requirements will be approved by SFDPH-EH based on details provided by the Project Applicant in the Engineering Report.	

b. Routine Sampling:

Table 2 through ***Table 6*** show water quality requirements and sampling frequencies; water sample locations will be based on the critical control point for each treatment process utilized. Permits issued under these Rules and Regulations will adhere to the water quality sampling and analysis requirements specified in ***Table 2*** through ***Table 6*** for the alternate source water and end use.

In general, monitoring is required quarterly, monthly, weekly, daily or continuously depending on the permit type, source and end use. The Director may modify Permit

requirements if evidence indicates that the modified requirements maintain public health protection. Subject to the treatment processes utilized in the Alternate Water Source System, it may be possible to minimize or eliminate water quality sampling requirements after the Conditional Startup Mode by continuously monitoring treatment system performance via surrogate parameters as detailed in **Sections 6 – 7**.

The Permittee shall ensure that all operational water quality sampling and reporting requirements are undertaken by a qualified entity as approved by the Director.

Where multiple water sources are combined, the monitoring requirements of the source with the most stringent monitoring requirements will apply.

Water samples must be analyzed by a Certified Laboratory using methods approved by the Environmental Protection Agency for water sampling and analysis, or through approved in-line monitoring devices as detailed in the Engineering Report. Laboratory reports must be signed by the laboratory director or a designee. Instrumentation with continuous monitoring capabilities must be installed when continuous monitoring is required.

SFDPH-EH may request to be present during required water quality sample collections.

c. Routine Reporting:

Testing results shall be reported via approved Discharge Monitoring Reports and be accompanied by data in an approved electronic format. A Discharge Monitoring Report form shall be provided by the Director. The information reported shall include:

- System treated water flow (gallons per day, gallons per week or gallons per month)
- Water quality characteristics in accordance with the Permit.
- Attachments describing any breakdowns, upsets, bypasses, odors, complaints, or other system operation anomalies.

Discharge Monitoring Reports shall be signed by the Permittee or Treatment System Manager and submitted by the 15th of the month following the last day of the period reported.

Table 10 specifies reporting frequency for each type of Alternate Water Source Systems. In general, results from monitoring must be reported to SFDPH-EH on a monthly or annual basis, depending on the type of permit issued.

Table 10: Routine Reporting Frequency

Alternate Water Source	Routine Reporting Frequency[1]
Blackwater	Monthly
Graywater	Monthly during Conditional Startup Mode, Annually thereafter[2]
Foundation Drainage	Monthly during Conditional Startup Mode, Annually thereafter[2]
Stormwater	Monthly during Conditional Startup Mode, Annually thereafter[2]
Rainwater[3]	Monthly during Conditional Startup Mode, Annually thereafter[2]

Notes:

1. Operational changes, system malfunctions, and/or monitoring results which are outside of the applicable water quality limits shall be reported within 24 hours.
2. Reduced reporting frequency after Conditional Startup Mode is contingent on the Director's approval.
3. Rainwater systems that are used for subsurface irrigation, drip irrigation, or non-spray surface irrigation and, at a minimum, include a first flush diverter, and a 100 µm filter, do not require water quality monitoring or reporting.

d. Annual Report:

The Permittee or Treatment System Manager shall submit an Annual Report to the Director by January 15, each year. The Annual Report shall include all items in the Instructions for Alternate Water System Annual Reports, and will describe compliance of the Alternate Water Source System with these Rules and Regulations and the limits and conditions established by the Permit.

The Annual Report shall be signed by the Treatment System Manager and the Permitee.

e. Malfunction Notification:

The Treatment System Manager shall notify the San Francisco Department of Public Health, Environmental Health (phone: 415-252-3800, email: DPH.Nonpotable@sfdph.org) of any malfunction that results in or is likely to result in environmental harm or increased public risk. Malfunctions may include, but are not limited to spills or overflows, unanticipated bypasses, or excursions outside of water quality limitations for any of the pollutants monitored.

Oral notification shall take place within 24 hours from the time the Treatment System Manager becomes aware of the circumstances and include, as applicable:

- A description of the malfunction, including location description
- If a spill or overflow occurred: estimated volume and description of receiving waters
- A description of any component involved in the malfunction
- A description of the suspected causes
- Planned diagnostic and/ or mitigation steps

- The estimated date and time when the malfunction or the effects of the malfunction began and stopped or will be stopped

Written notification shall occur within 5 days and include:

- The cause or suspected cause of the circumstance
- Steps taken or planned to reduce, eliminate, and prevent reoccurrence and a schedule of major milestones for those steps
- Steps taken or planned to mitigate the impacts(s) and schedule of the major milestones for those steps
- Public notification steps taken

f. Notification of Facility Changes and Other Circumstances:

The Permittee or Treatment System Manager shall notify the SFDPH-EH, SFDBI-PID, SFPW (if applicable), and SFPUC prior to any facility expansion, production increase, or process modification that is expected to result in a change in the character of the treated water.

The Permittee or Treatment System Manager shall notify all users immediately of any circumstance which indicates that treated water quality may not meet acceptable standards.

8. Recordkeeping

The Treatment System Manager shall maintain system records on premises and available for inspection by the Director, including but not limited to (1) Current Permit; (2) Current treatment system Operations and Maintenance Manual; (3) Signed results delivered by the Certified Laboratory and evidence of chain of custody; (4) Discharge Monitoring Reports; (5) Annual Reports; (6) Notifications as described in **Section 7**; (7) A log of all calibrations, maintenance, and major changes in operation; and (8) A log of all system auto-generated alarms, causes and corrective actions. Records shall be maintained for at least two years.

9. Treatment System Operation, Maintenance and Equipment

a. Treatment System Manager Capacity

The Permittee shall directly employ or maintain a service contract with a Treatment System Manager(s) to supervise the operation of the Alternate Water Source System. The Treatment System Manager must:

- Be duly qualified to carry out the operation, maintenance, and monitoring requirements to assure continuous compliance with the conditions set forth in these Rules and Regulations.
- Sign an affidavit attesting that they possess sufficient knowledge, skills, abilities and training to operate the Alternate Water Source System.
- Must be certified as a Grade II Wastewater Treatment Plant Operator by the State Water Resources Control Board’s Office of Operator Certification or by the California Water Environmental Association or have comparable education and/or experience to operate a blackwater or graywater source system.

The Permittee shall notify the Director in writing within thirty (30) days of replacement or re-designation of Treatment System Manager(s) responsible for supervising system

operation (including shifts). This requirement is in addition to other reporting requirements contained in these Rules and Regulations.

b. Operations and Maintenance Manual

A current Operations and Maintenance Manual must be kept on premises and in other locations specified in the manual. The manual shall be reviewed annually and updated as appropriate. The manual shall include all items in the Instructions for Alternate Water System Operations and Maintenance Manuals, including but not limited to descriptions of the treatment system operations, instrumentation, water quality and monitoring reporting plan, troubleshooting, and emergency procedures.

Systems with any cooling tower end use shall also include a Cooling Tower Water Management Plan as an appendix to the Operations and Maintenance Manual. The purpose of the Cooling Tower Water Management Plan is to describe strategies for preventing the growth of *legionella* and other bacteria in the cooling tower system. Required elements of the Cooling Tower Water Management Plan shall include the following specific to the cooling tower end use: recordkeeping; location of the cooling tower in relation to nearby HVAC intake fans or other equipment or receptors of concern; description and maintenance schedule for drift eliminators; start-up and shutdown procedures; disinfection and treatment; procedures for monitoring control measures; and procedures that will be followed if known or suspected legionellosis is associated with the building water system.

c. Equipment

Equipment and instruments used to comply with the treatment and monitoring requirements set forth in these Rules and Regulations shall be calibrated, maintained, and operated consistent with manufacturer's recommendations.

10. Special Requirements for District-Scale Alternate Water Source Systems

A District-scale Project entails the sharing of an Alternate Water Source System across two or more parcels or for use in multiple structures, whether under the jurisdiction of one entity or several. District-scale Projects are subject to additional permit requirements as outlined in this section.

a. Enforceable Legal Agreement

Project applicants for District-scale Projects shall provide to the Director an executed Enforceable Legal Agreement defining the roles and responsibilities of each property owner or entity in relation to the maintenance and use of the System. The Permittee and each of the Suppliers and Users shall be included in, and signatories of the agreement. The agreement shall be recorded.

b. Special Requirements for Operations and Maintenance for District-scale Projects

Suppliers, Permittees, and Users shall, at all times, properly operate and maintain all technologies and systems which are installed or used to achieve compliance with the Permit. All procedures shall be described in the Operations and Maintenance Manual.

The Permittee shall conduct periodic inspections of all facilities to monitor and assure compliance with conditions of the Permit. The Permittee shall take all necessary actions

to assure compliance as outlined in the Enforceable Legal Agreement, the Operations and Maintenance Manual, and these Rules and Regulations.

All properties where alternate water is collected, treated and/or used shall allow entry for inspection by the Permittee, Treatment System Manager, and SFDPH-EH and SFDBI-PID inspectors.

All Permittees, Treatment System Managers, Suppliers, and Users shall comply with these Rules and Regulations and other regulations regarding the use of alternate water sources and recycled water.

c. Special Requirements for Notifications and Reporting for District-scale Projects

The Permittee is responsible for all notifications including those which result from equipment failures or system malfunctions on properties which are owned and operated by other entities named in the Legally Enforceable Agreement.

The Permittee shall notify the SFDPH-EH, SFDBI-PID, SFPUC, and SFPW prior to termination of system operation by the Permittee, termination of the approved water source by the Supplier, and/or termination of the acceptance of treated water by a User.

d. Special Requirements for Records and Documentation for District-scale Projects

A copy of the Permit must be provided to all Suppliers and Users in a District-Scale system by the Permittee. The Permittee, Treatment System Manager, Suppliers, and Users must have the Permit available at all times for inspection by SFDPH-EH.

Copies of the current Operations and Maintenance Manual must be kept on premise where each component resides.

e. Site Supervisor

Each User and Supplier shall designate a Site Supervisor to oversee the operation and maintenance of the onsite distribution and or collection systems and act as a liaison to the Permittee or Treatment System Manager. The Site Supervisor must be an employee who is familiar with the plumbing system and available and be able to be reached by phone at all times. The User and or Supplier shall notify the Permittee immediately of replacement or re-designation of Site Supervisor(s). The Permittee shall notify the Director in writing within thirty (30) days of replacement or re-designation.

The Site Supervisor shall be adequately trained to operate and monitor all needed equipment to assure continuous compliance with the conditions set forth in these Rules and Regulations.

The Site supervisor is responsible for:

- Overseeing the maintenance of the collection and/or distribution system;
- Overseeing repairs and/or modifications to the plumbing/sprinkler system to ensure it remains in compliance with all regulatory requirements;
- Maintaining all signs, labels, and tags on system components;

- Acting as a liaison between the actual users of the treated alternate water source and the Treatment System Manager and SFDPH-EH;
- Understanding, and implementing emergency procedures and protocols; and
- Reporting system issues, non-functioning system components, and any other condition that jeopardizes public health and/or permit compliance as needed to the Treatment System Manager and SFDPH-EH.

f. Lockable Valves

All properties collecting, treating, receiving, or distributing water from an Alternate Water Source System shall include lockable valves which can be activated to control the flow of water from any source originating from another property and lockable valves which can be activated to control the flow of water to any user located at another property.

11. Variances and Permit Modifications

a. Water sources and/or end uses

The Director shall have the discretion to grant variances for additional water sources and end uses as set forth in **Sections 2** and **3**, provided that the project applicant provides the anticipated source water quality data and demonstrates that the treatment and end use are protective of public health. The Director shall determine the appropriate water quality criteria and ongoing monitoring and reporting. A request for variance shall be in writing and submitted to the Director.

b. Sampling requirements and reporting frequencies

The Director shall have the discretion to grant variances from the sampling requirements set forth in ***Table 2*** through ***Table 6*** and the reporting frequencies in ***Table 10*** provided that the project applicant demonstrates that strict interpretation of a standard would cause practical difficulties or unnecessary hardship due to special circumstances and/or that the requested variances do not pose a threat to the public health. A request for a variance shall be in writing and submitted to the Director. No variance shall be granted unless the Director finds that the requested variance is consistent with the purposes of these Rules and Regulations.

The Director shall have the discretion to amend the permit requirements for sampling requirements and reporting frequencies for blackwater systems on permits older than 1 year. Permit amendments require written application to the Director.

c. Legacy Systems

Applicability: This Section 11.c of these Rules and Regulations applies to Alternate Water Source Systems operated by Permittees or Project Applicants that, as of the date that these regulations governing Article 12C took effect, either:

(1) Had a valid Permit issued by SFDPH-EH; or

(2) Did not have a valid Permit but did have an approved Engineering Report

These projects will be considered “Legacy Systems”. Permittees or Project Applicants to which this Section 11.c. applies have two options if their system design does not meet specific requirements of these Rules and Regulations for treatment and log removal targets. Note that Legacy Systems MUST comply with all other aspects of these Rules

and Regulations, including but not limited to: Treatment System Manager qualifications requirements, instrumentation for continuous monitoring of appropriate surrogate parameters, Operations and Maintenance Manual content and revision, and malfunction reporting requirements.

Option 1: Ongoing monitoring option.

Under Option 1, a Legacy System shall be required to demonstrate compliance with Article 12C through ongoing monitoring, sampling, laboratory analyses and reporting as specified by the Director and may be required to monitor for additional parameters such as protozoa or viruses.

Option 1 will be available to approved Legacy Systems until such time as the Director determines that best available technology options are feasible to implement.

Option 2: Revision, reassessment and approval under the new rules

Under Option 2, a Legacy System may make changes to the existing treatment design or instrumentation to conform with new requirements under these Rules and Regulations. Under Option 2, the Director will evaluate submittals and approve design or instrumentation changes consistent with requirements set forth in these Rules and Regulations. After approval under Option 2, projects will demonstrate continuing compliance with the law in accordance with all procedures in these Rules and Regulations.

12. Enforcement

a. Inspection

SFDPH-EH retains the right to enter and inspect any Alternate Water Source System governed by these Rules and Regulations during normal business hours in the absence of advance notice. All properties included in a District-scale project are subject to inspection. All documentation required under these Rules and Regulations shall be made available for inspection on request.

b. Suspension and Revocation of Permits

Any permit issued for an Alternate Water Source System may be revoked, or suspended by the Director, if the Director determines:

- The Treatment System Manager, or any employee has violated any provision of Article 12C or any regulation issued pursuant to Article 12C;
- The Permittee has engaged in any conduct in connection with the operation of the Alternate Water Source System that violates any State or local laws, or any employee of the Permittee has engaged in any conduct that violates any State or local laws while operating Alternate Water Source System, and the Permittee had or should have had actual or constructive knowledge by due diligence that the illegal conduct was occurring;
- The Permittee has engaged in any material misrepresentation when applying for a permit;
- The Alternate Water Source System is being managed, conducted, or maintained without regard for the public health, or the health of patrons and/or employees;

- The Permittee or any employee of the Permittee or any entity entered into a Legally Enforceable Agreement with the Permittee in a District-scale system has refused to allow any duly authorized City official to inspect the premises or the operations of the Alternate Water Source System; or
- Based on a determination by another City department, including the Department of Building Inspection, the Fire Department, the Police Department, and/or the Planning Department, that the Alternate Water Source System is not in compliance with any State or local laws.

The Director may not suspend or revoke a permit issued pursuant to Article 12C or take other enforcement action against the Permittee of an Alternate Water Source System until the Director has issued a notice of violation and provided the Permittee an opportunity to be heard and respond as provided in Section 12c of these Rules and Regulations. Notwithstanding, the Director may immediately suspend any permit issued under Article 12C pending a noticed hearing on revocation or suspension when in the opinion of the Director, the public health or safety requires such immediate suspension. Any affected Permittee or Treatment System Manager shall be given notice of such immediate suspension in writing delivered to the Permittee in person or by registered letter.

c. Violations and Administrative Penalties

The provisions of Chapter 100 of the San Francisco Administrative Code, as amended, shall govern the amount of administrative fines to be charged and the procedures for imposition, enforcement, collection, and administrative review of administrative citations issued to enforce Health Code Article 12C.

For purposes of this Rule, “charging official” shall mean the Director, or his or her designee, “violation” shall mean a violation of Article 12C or these Rules and Regulations, and “violator” shall mean the cited Alternate Water Source System Permittee.

Any Alternate Water Source System Permittee who violates any provision of Article 12C or any Rule or Regulation adopted pursuant to Article 12C may be subject to an administrative penalty not to exceed $100 per day for the first violation of a provision or regulation in a 12-month period, $200 per day for the second violation of the same provision or regulation in a 12-month period; and $500 per day for the third and subsequent violations of the same provision or regulation in a 12-month period.

Citations will be served to both the Permittee and the Real Property owner in a manner consistent with Chapter 100 of the San Francisco Administrative Code. Payment of fines shall be directed to the San Francisco Department of Public Health Environmental Health Branch, 1390 Market Street, Suite 210, San Francisco, CA 94102.

d. Appeals

Permit Decisions: The final decision of the Director to grant, deny, suspend, or revoke a permit, as provided in Article 12C, may be appealed to the Board of Appeals in the manner prescribed in San Francisco Business and Tax Relations Code Article 1.

Administrative Penalties: The final decision of the Director to impose administrative penalties, as provided in Article 12C may be appealed in the manner described in Administrative Code Chapter 100.

Attachment D

City and County of San Francisco
Health Code Article 12A – Backflow Prevention

Print

San Francisco Health Code

ARTICLE 12A: BACKFLOW PREVENTION

SEC. 750. PURPOSE AND FINDINGS.

The purpose of this Article is to establish requirements for backflow prevention to supplement those imposed by the State pursuant to Title 17, Sections 7583 et seq. of the California Administrative Code. California Administrative Code Section 7583 expressly authorizes local governments to establish more stringent requirements where local conditions so warrant. The Board of Supervisors finds and declares that the dangers to public health and safety posed by the existing and potential contamination of the drinking water supply in San Francisco warrant the imposition of local standards in excess of those required under State law.

(Added by Ord. 356-84, App. 8/24/84)

SEC. 751. DEFINITIONS.

The following definitions shall apply to this Article.

1. "Backflow" shall mean the flow, from any source or sources, of water which is of unknown or questionable safety for human consumption or other liquids, gases, mixtures or other substances into the potable water distribution system.

2. "Backflow prevention device" shall mean any effective device, means, method, or construction used to prevent the backflow of substances into the potable water distribution system, which has been previously approved for use by the Cross-Connection Control Committee, as that body is defined in this Article, and shall pass all initial testing procedures at the time of installation.

3. "Certified tester" shall mean any person, whether privately employed or in the employ of the City and County, who holds a valid Department of Public Health certificate to test backflow prevention devices.

4. "Cross-connection" shall mean any actual or potential connection between any part of a water system used or intended to supply water for drinking purposes and any source or system containing water which is not or cannot be approved as safe, wholesome and potable for human consumption or any other substance. Temporary or permanent devices through which, or because of which, backflow could occur are also considered to be cross-connections.

5. "Cross-connection control device" shall mean an approved backflow prevention device.

6. "Department of Public Health" shall mean the San Francisco Department of Public Health.

7. "Department of Public Works" shall mean the San Francisco Department of Public Works.

8. "In-house hazard" shall mean a cross-connection within a water consumer's premises.

9. "Water Department" shall mean the San Francisco Water Department.

(Added by Ord. 356-84, App. 8/24/84)

SEC. 752. CROSS-CONNECTION CONTROL COMMITTEE – ESTABLISHMENT OF.

There is hereby created a Cross-Connection Control Committee of the City and County of San Francisco, which shall be comprised of the Manager of Water Quality of the Water Department, the Superintendent of Building Inspection of the Department of Public Works, and the Director of Environmental Health Services of the Department of Public Health, or their respective designees. The Committee's duties shall include, but are not limited to, the review of operations of the City's Cross-Connection Control Program, the establishment of a program within the Department of Public Health to provide for certification of qualified testers, and the development of a schedule to assure annual inspection of all backflow prevention devices within the City and County as well as those on property owned by the City and County but located outside the boundaries of the City and County.

(Added by Ord. 356- 84, App. 8/24/84)

SEC. 753. DEPARTMENTAL RESPONSIBILITIES.

The Water Department shall have primary responsibility for the prevention of any unauthorized substances or water from unapproved sources from entering the public water supply system. The Department of Public Health shall have the overall and ultimate responsibility under this Article for preventing water from unapproved sources or other unauthorized substances from entering the potable water system. The Department of Public Health shall promulgate any rules or regulations necessary to effectuate this Article. Said rules and regulations shall, at a minimum, be consistent with and meet all requirements imposed by State law.

(Added by Ord. 356-84, App. 8- 24-84)

SEC. 754. UNPROTECTED CROSS-CONNECTIONS PROHIBITED; IDENTIFICATION OF IN-HOUSE HAZARDS.

It shall be unlawful for any water consumer or property owner to have, keep, maintain, install or permit the existence of a cross-connection which is unprotected from actual or potential backflow due to the absence of approved and properly functioning backflow prevention devices.

The Department of Public Health, through its Bureau of Environmental Health Services, the Department of Public Works, through its Bureau of Plumbing Inspection, and the Water Department shall, in their normal course of enforcement activity, identify the locations of in-house hazards and shall jointly maintain a continuously updated list of such in-house hazards for enforcement action under this Article.

(Added by Ord. 356-84, App., 8/24/84)

SEC. 755. ENFORCEMENT POWERS.

Upon notification by the Department of Public Health, the Department of Public Works or the Water Department, it shall be the responsibility of each water consumer to eliminate any existing or potential unprotected cross-connections on the subject property within 30 to 90 calendar days of said notification. The specific deadline for achieving compliance shall be established by the appropriate department based upon the type and magnitude of the work required to eliminate the cross-connection. The appropriate department shall monitor the progress of the work required to achieve compliance.

If a water consumer refuses or fails to eliminate a cross-connection after the deadline has expired as set forth in the notification, or if the progress of the work being monitored by the appropriate department indicates that the work cannot be completed within the time limit established in the notification, the Water Department, acting alone or in coordination with the Departments of Public Health or Public Works, shall immediately issue a final notification to the owner of the subject property to eliminate the cross-connection. If the property owner refuses to or does not comply with the requirements set forth in the final notification within ten calendar days of its date of issuance, the Water Department shall thereafter disconnect the water services to the customer directly responsible for noncompliance until the cross-connection has been eliminated and necessary payments have been made for turn-on services in the same manner as specified under the San Francisco Public Utilities Commission Rules and Regulations Section C Rule 4 (or any successor regulations) governing water service to customers. If the property owner and the water consumer are one and the same person, only one notification shall be required prior to disconnecting the water services in the event of noncompliance. The Water Department shall not disconnect the water services until any appeal which may be taken under Section 756 of this Article has become final, except as specified in Section 760 of this Article.

(Added by Ord. 356-84, App. 8/24/84)

SEC. 756. REVIEW OF APPEALS BY DEPARTMENT OF PUBLIC HEALTH.

Appeals against the final notice for disconnection of water services may be made to the Department of Public Health by the subject property owner, within five calendar days of the date of said final notice, and shall include current data obtained from a certified tester employed by the property owner or his representative which disapproves the existence of a cross- connection or the adequacy of the time limit set for compliance. The Director of the Bureau of Environmental Health Services, or his designee, shall hold a hearing on the appeal within fifteen calendar days of receipt of said appeal, and shall thereafter issue a decision which shall state whether or not the alleged

defect or deficiency constitutes a cross-connection as defined in this Article. The Director shall affirm the Water Department's action if he or she finds that a cross-connection exists. The Director's decision shall issue within two calendar days of the completion of the hearing, and shall be final.

(Added by Ord. 356-84, App. 8/24/84)

SEC. 757. CROSS-CONNECTION CONTROL PROGRAM.

Annual inspections of all existing backflow prevention devices shall be conducted under the direction of the Water Department. The Water Department shall make available for public inspection the current listing of all certified testers required under Section 758 of this Article. The Water Department shall annually notify all water consumers who have cross-connection control devices of the requirements of this Article for annual maintenance and testing and shall annually promulgate a schedule of charges for the cost to the water consumer of the inspections and testing to be done under this Article. Water consumers who fail to comply with the action required by the Water Department's annual notifications shall be subject to the same enforcement procedures as set forth in Sections 755 and 756 of this Article.

When a backflow prevention device is inspected and has passed the testing procedure, the certified tester shall immediately affix a seal or tag to the device. Such seals or tags shall be purchased by the certified tester from the Department of Public Health. Seals or tags may be issued free of charge to testers employed by the City and County for use when testing backflow prevention devices installed on City and County property. Each certified tester shall maintain a continuous record of the dates and locations of each inspection performed, any tests made, and the results thereof. A copy of such record shall be sent by each certified tester to the Water Department within five calendar days of each inspection or test. Appropriate testing and inspection records for potable water systems, including but not limited to the information to be supplied by all certified testers, shall be maintained by the Water Department and shall be made available upon request to the Department of Public Works and the Department of Public Health.

(Added by Ord. 356-84, App. 8/24/84)

SEC. 758. CERTIFICATION OF BACKFLOW PREVENTION SERVICE TESTERS.

Procedures for the establishment of a program for the certification of qualified backflow prevention device testers shall be developed and implemented by the Department of Public Health within thirty working days of the effective date of this Article. Independent testers and testers who are City employees shall receive training in backflow prevention device testing. All testers shall thereafter take and pass an examination administered by the Department of Public Health in order to qualify for a valid tester's certificate to be issued by that Department. Testers whose names appear on the Water Department's approved list of backflow prevention testers as of the effective date of this Article shall be exempt from the initial training and examination requirement.

Each tester's certificate issued by the Department of Public Health shall be valid for a period of one year from the date of issuance. Tester's certificates may be renewed upon additional training, re-examination, other demonstration of competency, or any combination thereof, as may be deemed necessary by the Department of Public Health. A tester's certificate may be suspended or revoked at any time for cause by the Department of Public Health. The Department of Public Health shall maintain a current list of the names and business addresses of all certified testers and of all tester's certificates which have been suspended or revoked. The list shall be forwarded to the Water Quality

Control Division of the Water Department and the Bureau of Plumbing Inspection of the Department of Public Works, and shall be made available for public inspection by all three departments.

(Added by Ord. 356-84, App. 8/24/84)

SEC. 759. INSURANCE REQUIREMENTS FOR TESTERS.

Each certified tester who is not a City employee shall maintain general liability insurance in full force and effect, at his or her expense, for all cross-connections control and backflow device testing activities. Such insurance shall include coverage for bodily injury, personal injury, including death resulting therefrom, and property damage insurance, with limits not less than $100,000 each occurrence combined single limit. The City and County of San Francisco, its officers and employees shall be named as additional insureds under the policy and a cross-liability clause shall be attached. Such insurance shall provide 10 days prior written notice of cancellation, nonrenewal or material change to the Department of Public Health. A certificate of insurance, in form and with insurers acceptable to City, shall be required prior to the issuance of any tester's certificate or any renewal thereof.

(Added by Ord. 356-84, App. 8/24/84)

SEC. 760. SPECIAL CASES EXEMPTED FROM APPEALS.

Whenever the Department of Public Health, the Department of Public Works or the Water Department identify any existing or potential unprotected cross-connection as posing a high risk of hazard to the public health and safety which requires immediate abatement, the Water Department shall, in coordination if necessary with the Department of Public Health or the Department of Public Works, immediately shut off the water services to the customer directly responsible for the hazard in order to prevent such cross-connection from causing any backflow into the potable water distribution system. Water services shall be restored upon elimination of the cross-connection and payment for turn-on services as specified under the San Francisco Public Utilities Commission Rules and Regulations Section C Rule 4 (or any successor regulations) governing water service to customers. All action taken under this section shall be exempt from the appeals procedures specified in Section 765 of this Article.

(Added by Ord. 356-84, App. 8/24/84)

SEC. 761. DOUBLE CHECK VALVES ON HIGHRISES WITH ROOF TANKS.

Any building with a roof tank shall have an approved double check valve assembly installed on the building water supply line. The check valve shall be located as near as possible to the water meter and in any case before the first fitting or branch line. For buildings with roof tanks existing prior to enactment of this section where an air gap has been previously accepted by the enforcing agency, a double check valve shall not be required provided the enforcing agency can easily determine that there are no lateral lines or outlets between the meter and the air gap. If at any time buildings with roof tanks which were previously accepted as having approved air gaps in lieu of double check valves have or are believed to have installed lateral lines or outlets between the meter and the air gap, then a double check valve shall be installed as near as possible to the water meter.

(Added by Ord. 85-86, App. 3/21/86)

Attachment E

San Francisco Public Utilities Commission
Water Quality Division Manual for Cross-Connection

CITY AND COUNTY OF SAN FRANCISCO

WATER QUALITY DIVISION MANUAL FOR CROSS-CONNECTION CONTROL

September 2014

Version 1.0

PREPARED FOR
SAN FRANCISCO WATER, POWER AND SEWER
WATER QUALITY DIVISION

BY

AECOM/WRE JOINT VENTURE

MANUAL FOR CROSS-CONNECTION CONTROL
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MANUAL FOR CROSS-CONNECTION CONTROL
REVISIONS LOG

Rev. No.	Description	Plan Sections Revised	Revisions Checked By	Revisions Approved By	Approval Date

Preface

This Manual for Cross-Connection Control is intended to provide guidance to City and County of San Francisco (CCSF) staff, contractors, backflow assembly testers, building owners, and other stakeholders regarding cross-connection control practices mandated by federal, state, and local regulations. Under the San Francisco Charter, the authority and responsibility for managing and operating the City's public water system is vested in the San Francisco Public Utilities Commission (SFPUC). The General Manager of the SFPUC has designated the Director of the Water Quality Division (WQD) of the SFPUC to act on his behalf to address cross-connection control issues. WQD is the agency responsible for administering the City's Cross-Connection Control Program.

This manual is a living document that will need to be updated regularly. Stakeholders are encouraged to submit comments and suggest revisions to make this document as useful and current as possible. Comments should be sent to WQD, attention Cross-Connection Control Program.

Contents

Figures

Glossary

The definitions below are from section 7583 of Title 17, California Code of Regulations, unless otherwise noted.

Air gap separation: A physical break between a supply line and a receiving vessel.

Approved backflow prevention assembly[1]**:** An assembly used to prevent the backflow of substances into the public water system. The assembly must be approved for such use by a recognized testing organization acceptable to the General Manager and be in proper working order.

Approved water supply: A water supply whose potability is regulated by a state or local health agency.

Authorized backflow prevention assembly tester[1]**:** Any person who possesses a valid certification to test, repair and maintain backflow prevention assemblies and is authorized by the General Manager to do such work in San Francisco in accordance with Article 12A.

Authorized cross-connection control specialist[1]**:** Any person who possesses a valid certification to administer a cross-connection control test and to conduct site surveys to assess cross-connection control requirements and is authorized by the General Manager to do such work in San Francisco in accordance with Article 12A.

Auxiliary water supply: Any water supply other than that received from a public water system. This category includes, but is not limited to, recycled water, graywater, groundwater and rainwater.

Backflow[2]**:** Flow into the potable water distribution system, from any source, of water that is of unknown or questionable safety for human consumption, or other liquids, gases, mixtures or other substances.

Backflow preventer[1]**:** Backflow prevention assembly or air gap separation.

Backflow prevention assembly[3]**:** Any effective assembly used to prevent backflow into a potable water system. The type of assembly used must be based on the exiting or potential degree of hazard and backflow condition.

Containment[4]**:** Protection from backflow at the service connection. Protection from backflow must be placed immediately downstream (within 25 feet) of the point of connection.

1 Draft SFPUC Rules and Regulations, Section G; Rule 2, Definitions
2 San Francisco Health Code, Article 12A, Backflow Prevention, section 751
3 University of California Foundation for Cross-Connection Control and Hydraulic Research's *Manual of Cross-Connection Control*

Contamination[4]**:** Impairment of the quality of the water in such a way as to create an actual hazard to the public health through poisoning, the spread of disease, etc.

Cross-Connection: 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. Bypass arrangements, jumper connections, removable sections, swivel or changeover devices, or other devices through which backflow could occur are considered to be cross-connections.

Double-check valve assembly (DC): 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 for testing the water tightness of each check valve.

General Manager[5]: The General Manager of the San Francisco Public Utilities Commission, or any individual designated by the General Manager to act on his or her behalf. The General Manager has designated the Director of the Water Quality Division of the San Francisco Public Utilities Commission to act on his behalf to address cross-connection control issues. The Director of the Water Quality Division may further designate individuals to address cross-connection control issues.

Graywater[6]: Untreated wastewater that has not been contaminated by any toilet discharge, that has not been affected by infectious, contaminated, or unhealthy bodily wastes and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. Graywater includes wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs but does not include wastewater from kitchen sinks or dishwashers.

Health Agency: California Department of Public Health.

Isolation[4]**:** The appropriate type or method of backflow prevention within a consumer's potable water system at the point of use, commensurate with the degree of hazard.

Local health agency: County or city health authority, which in San Francisco is the San Francisco Department of Public Health (SFDPH).

Point of connection (POC)[7]**:** The customer's water meter, except for dedicated fire services, for which the point of connection is the junction of the water supply lateral and the customer's fire protection system.

4 University of California Foundation for Cross-Connection Control and Hydraulic Research's *Manual of Cross-Connection Control*
5 Draft SFPUC Rules and Regulations, Section G; Rule 2, Definitions
6 California Health and Safety Code, section 17922.12(a)
7 Draft SFPUC Rules and Regulations, Section G; Rule 2, Definitions

Pollution[8]**:** An impairment of the quality of water to a degree that does not create a hazard to the public health but that does adversely and unreasonably affect the aesthetic qualities of such waters for domestic use.

Potable water[8]**:** Water from any source that has been investigated by the health agency having jurisdiction and that has been approved for human consumption.

Public water system[7]**:** The potable water system operated and maintained by the San Francisco Public Utilities Commission.

Reclaimed (recycled) water: Wastewater that, as a result of treatment, is suitable for uses other than potable use.

Reduced pressure principle backflow prevention assembly (RP): 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 test cocks for testing.

Service/user connection: A point of connection of a user's piping to the water supplier's facilities.

Water supplier: The owner or operator of the public water system.

Water user: Any person obtaining water from a public water supply.

Water user supervisor (site supervisor)[2]: A person designated to be responsible for the avoidance of cross-connections during the installation, operation and maintenance of a property's pipelines and equipment.

8 University of California Foundation for Cross-Connection Control and Hydraulic Research's *Manual of Cross-Connection Control*

Acronyms and Abbreviations

AWSS	Auxiliary water supply system
B-FAT	Backflow Prevention Assembly Installation Tracking database
CAL OSHA	California Occupational Safety and Health Administration
CCAMS	Cross-Connection Assembly Management System database
CCR	California Code of Regulations
CDD	City Distribution Division
CDPH	California Department of Public Health
CSB	San Francisco Customer Service Bureau
DBI	San Francisco Department of Building Inspection
DC	Double-check valve assembly
DCDA	Double-check detector assembly
ID	Inside diameter
POC	Point of connection
psi	Pounds per square inch
psid	Pounds per square inch differential
PVB	Pressure vacuum breaker
RP	Reduced pressure principle backflow prevention assembly
RPDA	Reduced pressure principle detector assembly
SAE	Society of Automotive Engineers (provides standards for electrical connectors)
SFDPH	San Francisco Department of Public Health
SFDPW	San Francisco Department of Public Works
SFFD	San Francisco Fire Department
SFPUC	San Francisco Public Utilities Commission
SPID	Service point identification number
STARLIMS	CCSF's Laboratory Information Management System
WQD	Water Quality Division of SFPUC

1 Introduction

1.1 Purpose of this Document

The State of California requires the City of County of San Francisco (CCSF), as the public water supplier, to implement a cross-connection control program. Under the San Francisco Charter, the authority and responsibility for managing and operating the City's public water system is vested in the San Francisco Public Utilities Commission (SFPUC). The Water Quality Division (WQD) of SFPUC is the agency responsible for administering the City's Cross-Connection Control Program. The purpose of this manual is to describe the requirements of this cross-connection control program and to provide procedures for complying with those requirements. This manual describes the responsibilities of the various parties involved in cross-connection control and provides SFPUC customers and contractors with an understanding of cross-connections, backflow prevention assemblies, and the reasons for installing backflow protection.

This manual incorporates federal, state, and WQD backflow prevention requirements and supplements the requirements set forth in the San Francisco Health Code, Article 12A, and SFPUC Rules and Regulations, Section G.

1.2 What Is a Cross-Connection?

A cross-connection is an actual or potential link connecting a source of pollution, or contamination, with the potable water supply. The potable water system can be polluted, or contaminated, when the pressure of an unapproved source exceeds the pressure of the potable source, thereby causing backflow. Backflow can occur because of either a backpressure or backsiphonage condition.

Backpressure conditions occur when the pressure in a user's system exceeds the pressure in the water supply system, and the pressure in both systems is greater than atmospheric pressure. Sources of backpressure are:

- Pressurized industrial fluid systems.
- Booster pumps that supply water to industrial fluid piping systems.
- Interconnections with other piping systems that operate at higher pressures than the municipal water supply system.

Backsiphonage is backflow caused by negative pressure (less than atmospheric pressure) in the municipal water supply piping. Backsiphonage can occur when the demand on the water supply system exceeds its normal delivery capacity. Situations where backflow can occur due to backsiphonage are:

- Reduced supply pressure caused by high water use, such as during firefighting or water main flushing.
- Undersized supply piping.

- Waterline repairs or pipe breaks at locations lower in elevation than the service connection.

Figure 1-1 illustrates some common examples of cross-connections.

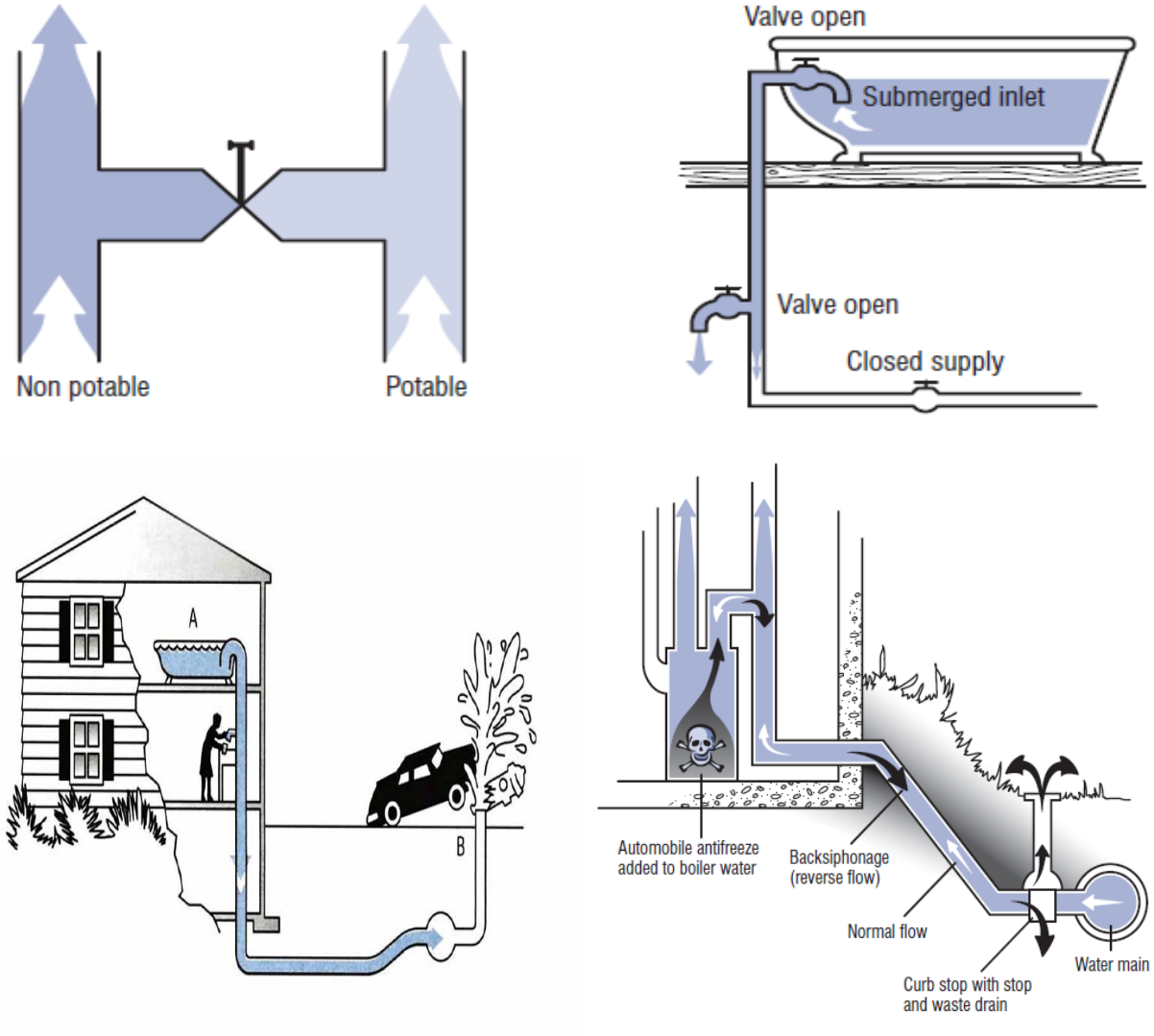

Figure 1-1. Examples of Cross-Connections

1.3 Why Do Cross-Connections Exist?

Cross-connections exist for a variety of reasons, including:

- Plumbing is frequently installed by individuals who are not familiar with the dangers of cross-connections.
- Connections are made as a matter of convenience without regard to the hazardous situation that might be created.

- Connections have inadequate protection (i.e., connections are protected by assemblies not approved for the corresponding level of hazard).

1.4 Public Health Significance of Cross-Connections

Backflow through cross-connections places the public water system at risk by allowing contaminants or pollutants to enter the water supply. Numerous cases have been documented[9] of cross-connections causing contamination or pollution of public water supplies, with results ranging from aesthetic problems (taste or odor) to illness and, in some cases, death. It is imperative that cross-connections be prevented to protect the public water system.

1.5 What Regulations Apply to Cross-Connections?

The regulations applicable to cross-connection control are listed below:

- Federal: Safe Drinking Water Act (1974, amended 1986 and 1996) and Safe Drinking Water Act Amendments of 1986.
- State: California Health and Safety Code, Chapter 5 and Titles 17 and 22 of the California Code of Regulations (CCR).
- Local: San Francisco Health Code, Article 12A; SFPUC Rules and Regulations Governing Water Service to Customers; San Francisco Plumbing Code, Chapter 6; and San Francisco Fire District General Order, File Code 02A.

These regulations are briefly described in Appendix A. That appendix also provides the full text of the San Francisco Health Code, Article 12A and regulations pertaining to cross-connection control in CCR Title 17 and the California Plumbing Code.

1.6 Who Administers the CCSF Cross-Connection Control Program?

1.6.1 Regulatory Authority

The State of California requires San Francisco, as the public water supplier, to implement a cross-connection control program and allows implementation of the program by the water supplier or by means of contract between the public water supplier and the local health agency. Under the San Francisco Charter, the authority and responsibility for managing and operating San Francisco's public water system is vested in the SFPUC. San Francisco's local health agency, the San Francisco Department of Public Health (SFDPH), coordinates and cooperates with the SFPUC in managing San Francisco's cross-connection control program.

The Environmental Services Section of WQD administers the Cross-Connection Control Program, which was established in 1984. The program's mission is to keep the potable water system safe from contamination and pollution through the prevention of backflow.

[9] US Environmental Protection Agency, *Cross-Connection Control Manual*, Chapter 2: Public Health Significance of Cross-Connections

As a part of program operations, WQD coordinates and communicates with outside agencies and other city departments, such as the SFDPH, Department of Building Inspection (DBI), City Distribution Division (CDD), Customer Service Bureau (CSB), and the San Francisco Fire Department (SFFD).

1.6.2 Responsibilities

Successful operation of the Cross-Connection Control Program requires the cooperation of and coordination among the parties involved: WQD, water users (customers), SFDPH, authorized backflow prevention assembly testers, DBI, and regulatory agencies. Each party is responsible for performing its part to safeguard the public water system. The responsibilities of these entities are described below.

Water Quality Division (WQD)

SFPUC, as a supplier of potable water, has the primary responsibility for preventing unauthorized substances or water from unapproved sources from entering the public water supply system. SFPUC delegates the following responsibilities to WQD:

- Coordinating monthly meetings with SFDPH, DBI, and other City agencies as appropriate.
- Developing, implementing, and maintaining a backflow prevention program, including monitoring, inspection, and testing of backflow prevention assemblies.
- Ensuring the potability of water in the distribution system up to the point of connection to the water user's service line. This responsibility includes protecting the distribution system from potential contamination or pollution by the water customer (containment).
- Ensuring that water customers maintain and annually test their backflow prevention assemblies to verify proper operation.
  - WQD notifies water customers of the due date for annual testing of their backflow prevention assemblies and follows up with customers that fail to comply in a timely manner.
  - WQD maintains records of assembly installation, maintenance, and testing for at least three years.
- Referring to SFDPH and DBI newly discovered hazards, e.g., existing buildings over 40 feet high that are being renovated or replumbed and do not have adequate backflow protection at the service connection.
- Immediately shutting off water service to any property that has been identified as posing a high risk of hazard to the public health and safety. WQD coordinates the shut-off with the SFDPH and/or DBI, as appropriate.
- Responding to two-alarm and greater fires to document site conditions, inspect hydrant hook-ups to make sure backflow prevention valves are used, make appropriate reports to regulatory agencies, and coordinate mitigation with CDD and SFFD.
- Participating in an annual meeting with backflow prevention assembly testers and SFDPH and DBI representatives.

- Preparing and submitting monthly and annual compliance reports to CDPH.
- Preparing and maintaining this Manual for Cross-Connection Control.

Customer or Water User (Property Owner or Consumer)

Customers are responsible for preventing contaminants and pollutants originating in their water systems from entering the public water supply as well as their own water system. The customer's responsibility begins at the consumer side of each water service connection and extends through the entire length of the water system within the customer's premises. The customer is specifically responsible for:

- Obtaining all necessary permits from DBI before starting work on any plumbing modification.
- Expenses incurred for the proper installation, operation, testing, maintenance, and relocation of approved backflow prevention assemblies.
- Installing, repairing/replacing, and testing backflow prevention assemblies upon notification of the need to do so, by the date specified in the notification.
- Maintaining accurate records of tests, inspections, and repairs made to backflow prevention assemblies, and providing WQD with copies of these records; the records must be on forms approved by WQD.
- Notifying WQD immediately of any possible hazards, pollutants, or contaminants that might have entered San Francisco's distribution system from the customer's internal system.
- Exercising caution not to create cross-connections when modifying plumbing systems.
- Using only authorized backflow prevention assembly testers for testing or repair and licensed plumbers for installation and replacement of backflow prevention assemblies.

Buildings using recycled water or treating on-site auxiliary water sources for reuse on site are required to have a supervisor on-site. Site supervisors are responsible for complying with San Francisco and state codes governing the use and application of nonpotable water. Other industrial water users may, at the discretion of WQD or SFDPH, also be required to designate a supervisor if their premises have multiple piping systems that convey different types of fluids, some of which may be hazardous, and where changes in the piping system are frequently made. The supervisor is responsible for preventing cross-connections during the installation, operation, and maintenance of the water user's pipelines and equipment.

San Francisco Department of Public Health (SFDPH), Environmental Health

SFPUC has delegated enforcement of Article 12A of the San Francisco Health Code to SFDPH. In this role, SFDPH promulgates and enforces laws, rules, regulations, and policies for controlling cross-connections. Specific responsibilities are listed below:

- Conducting an annual meeting with backflow prevention assembly testers; the meeting is also attended by WQD and DBI representatives. The purpose of the meeting is to introduce new forms and procedures, discuss new regulations, and address questions from testers.

- Authorizing qualified backflow prevention assembly testers.
- Maintaining a list of Authorized Backflow Prevention Assembly Testers and Authorized Cross-Connection Control Specialists.
- Providing for sale backflow tags to be attached to each backflow prevention assembly to indicate that it has passed inspection and testing.
- Collecting fines for non-compliance with backflow prevention requirements. Enforcement procedures are described in section 8.

Department of Building Inspection (DBI)

DBI is responsible for enforcing plumbing regulations, including those related to potential cross-connections in buildings (isolation). DBI is also responsible for the following:

- Issuing permits for new and modified plumbing installations.
- Issuing Permits to Operate for boilers.
- During final building inspection, verifying that the appropriate backflow prevention assembly has been correctly installed and passed testing, as indicated by an SFDPH backflow tag.

Authorized Backflow Prevention Assembly Testers

Testers are responsible for making competent inspections and for repairing backflow prevention assemblies that fail testing. Testers must:

- Obtain and maintain a valid Permit to Operate from SFDPH as an Authorized Backflow Prevention Assembly Tester.
- Report repairs/tests to the customer and WQD on forms approved by WQD.
- Use the original manufacturer's parts when repairing backflow prevention assemblies.
- Not alter the design, material, or operational characteristics of an assembly during repair or maintenance without prior approval from WQD.

Procedures for obtaining and maintaining a Permit to Operate as an authorized backflow prevention assembly tester are detailed in section 10 of this document.

Authorized Cross-Connection Control Specialists

Cross-connection control specialists conduct cross-connection control tests and site surveys to assess cross-connection control requirements in San Francisco. Specialists must:

- Obtain and maintain a valid Permit to Operate from SFDPH as an Authorized Cross-Connection Control Specialist.
- Report the results of cross-connection control tests and site surveys to the customer and WQD on forms approved by WQD.

Procedures for obtaining and maintaining a Permit to Operate as an authorized cross-connection control specialist are detailed in section 11.

Contractors

Contractors are responsible for complying with all regulations and requirements related to plumbing installation, fixtures, and backflow prevention assemblies, including obtaining appropriate permits.

2 How Does the CCSF Protect Drinking Water?

One of the ways that the CCSF protects drinking water is preventing the contamination or pollution of potable water supplies through contact with non-potable sources. This is accomplished by:

- Enforcing the use of appropriate backflow prevention assemblies, as specified by SFPUC (responsibility: DBI).
- Specifying the appropriate level of protection at each water user's site (responsibility: WQD).
- Making sure backflow prevention assemblies work (responsibility: WQD by tracking annual testing by authorized backflow prevention assembly testers; SFDPH by enforcing compliance with testing requirements).
- Ensuring that new and modified connections are safe (responsibility: WQD).
- Monitoring the connections to hydrants during second-alarm and greater fires (responsibility: WQD).
- Inspecting air gaps at wastewater treatment plants and on sewer-cleaning and street-cleaning vehicles (responsibility: WQD).
- Providing check valves for construction contractors to use when connecting to hydrants (responsibility: CDD).

2.1 Requiring Backflow Protection

The CCSF requires that backflow protection installed where there is a potential threat to the public water supply. Four types of backflow prevention assembly are approved for use for containment in San Francisco: reduced pressure principle assembly (RP), double-check valve assembly (DC), reduced pressure principle detector assembly (RPDA), and double-check detector assembly (DCDA). (Existing pressure vacuum breakers (PVBs) installed on irrigation systems may remain in place under conditions specified in section 3.1 of this document.) In addition, an air gap is an approved configuration and provides the highest level of backflow protection. Assemblies and air gaps are available commercially from various manufacturers; air gaps can also be fabricated.

Chapter 3 provides a general description of backflow prevention assemblies and gives the requirements for assemblies approved for use in San Francisco. Chapter 4 describes the protection required for different levels of hazard.

2.2 Making Sure Backflow Preventers Work

In compliance with CCR Title 17, WQD ensures that:

- Backflow prevention assemblies are tested at least once a year, and when found defective, they are repaired or replaced; this applies to the more than 20,000 assemblies in San Francisco, approximately 2,000 of which are owned and maintained by CCSF.[10]
- Air gaps are inspected and required to be repaired or replaced, if necessary.
- Backflow prevention assemblies are tested by authorized testers; CCSF, through SFDPH, has a list of over 80 testers with current permits to operate as of March 2014. The list can be accessed at *sfwater.org/backflow*.
- Backflow prevention assemblies are tested immediately after they are installed, relocated, or repaired and not placed in service unless they are functioning as required.
- Water users are notified when testing of backflow prevention assemblies is needed. The notices indicated the date by which a test must be completed.
- Reports of testing and maintenance are maintained for a minimum of three years.

2.3 Making Sure New and Modified Connections Are Safe

CCSF evaluates the safety of new and modified connections to the potable water system through reviews of applications and site inspections:

- When a customer/contractor files an application for a new service connection, he or she fills out a *Backflow Prevention Survey Form*, which is forwarded to WQD for review. WQD personnel assess the potential hazards listed and determine whether protection against backflow at the service connection (containment) is warranted to protect the public water system. If so:
  - WQD notifies the customer and CSB of backflow requirements.
  - Customer installs the required protection and contacts WQD for an inspection.
  - WQD inspects the assembly/ies, marks the sidewalk, and returns the approved survey form to CSB.
  - CSB generates a work order for the service line and meter. Service lines are installed by CDD; domestic meters are installed by CDD, fire service meters by WQD.
  - Immediately after the customer has connected to the new service line(s), backflow prevention assemblies must be tested and test results submitted to WQD within five days of testing. Assemblies must be tested annually thereafter.

  Figure 2-1 illustrates the procedure for new water service.

[10] According to the Cross-Connection Control Program database, in the year 2010.

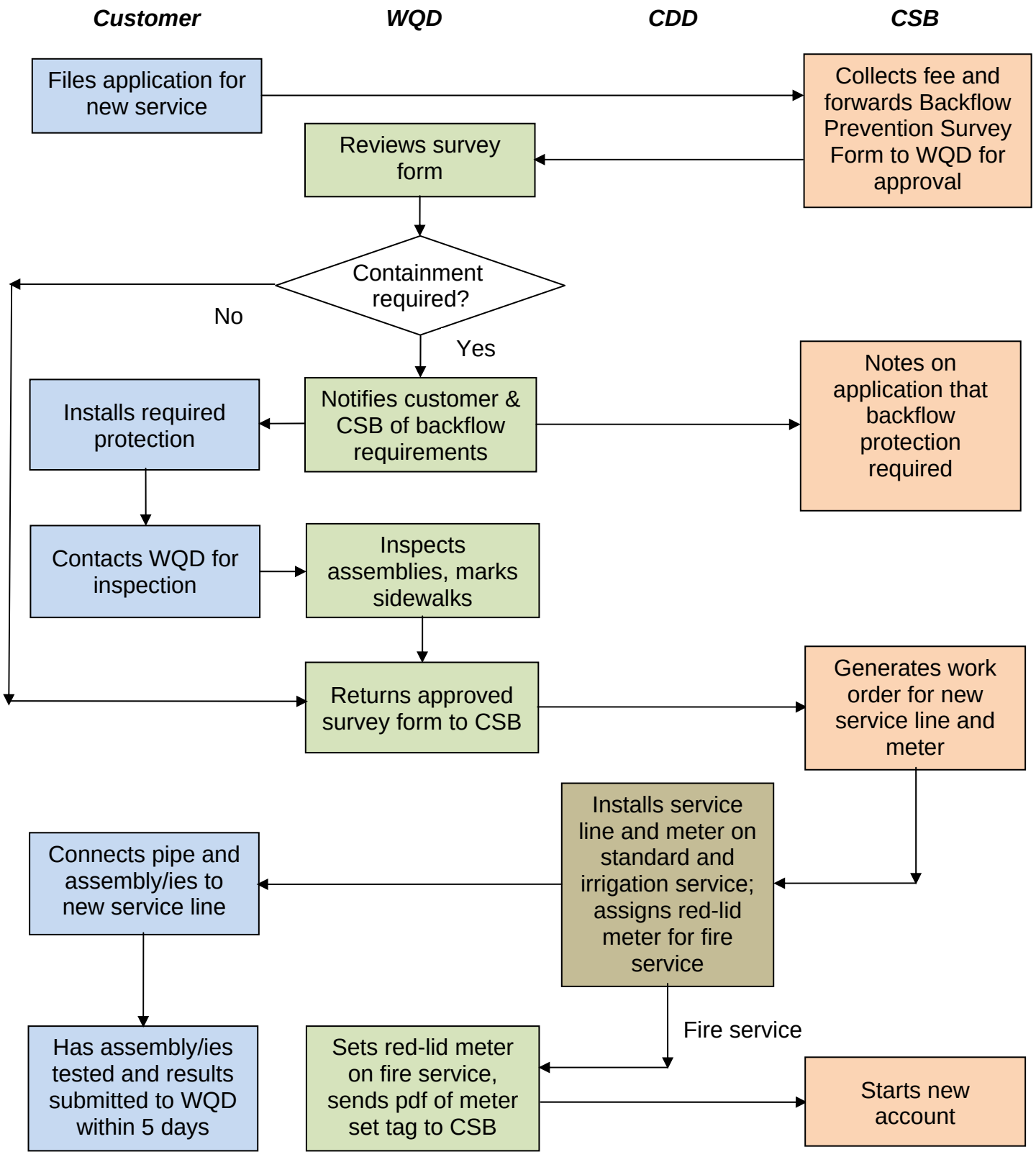

Figure 2-1. Procedure for New Water Service

- DBI confirms that internal backflow protection is adequate as part of the building inspection process. All new backflow prevention assemblies must be tested and test results submitted to WQD within five days of testing. Assemblies must be tested annually thereafter.
- If a modification to a building requires that existing backflow prevention assemblies be replaced, relocated or removed, the customer or property owner is required to obtain a permit from DBI before performing the work. As part of the permit review process, DBI must approve all modifications. As part of the building inspection process, DBI verifies that modifications are consistent with the terms of the permit and that lines are capped, assemblies installed, or relocations accomplished in compliance with applicable codes. Information about modifications, relocations, or removals is forwarded to WQD for entry into the Cross-Connection Control Program's database.
- If a modification to a building increases the building height to 40 feet or more above the point of connection, DBI, as part of the permit review process, specifies that the customer/contractor install a DC, in conformance with the San Francisco plumbing code.

2.4 Monitoring Firefighting Activities

San Francisco has a non-potable, high-pressure Auxiliary Water Supply System (AWSS) to supplement potable water supplies during firefighting emergencies. SFFD personnel normally connect their hoses to the potable (low-pressure) water hydrants. If the water volume or pressure supplied by the low-pressure hydrant is insufficient to fight a fire, firefighters can opt to connect to a high-pressure hydrant on the AWSS. Connecting to both the high- and low-pressure hydrants can result in a cross-connection (the introduction of non-potable water into the potable water supply).

WQD is under a CDPH compliance order to have a cross-connection control specialist present at two-alarm or larger fires (excerpt of order 02-04-95CO-006 provided in Appendix A). The role of the cross-connection control specialist is to document site conditions, inspect hydrant hook-ups to make sure backflow prevention check valves are used, make appropriate reports to regulatory agencies, and coordinate mitigation with the CDD gateman (person in charge of opening and closing valves on water mains) in case of a cross-connection. The WQD inspector participates in testing, sampling, and flushing activities in case of a cross-connection and has the responsibility for coordinating with appropriate agencies and notifying CDPH and affected customers.

2.5 Responding to Complaints and Reports of Cross-Connections

WQD responds to complaints related to water quality received through SFPUC's 311 call center. Responses involve speaking with the person who filed the complaint and, if necessary, site investigations, including collecting samples for laboratory analysis. WQD also investigates potential cross-connections reported by other city departments.

2.6 Inspecting Air Gaps on City Vehicle-Mounted Water Tanks

SFPUC's Wastewater Enterprise, CDD, and the San Francisco Department of Public Works' (SFDPW's) Street Environmental Services and Street and Sewer Repair Bureaus fill sewer-cleaning and street-cleaning vehicles with water from hydrants connected to the city's potable water system. There are approximately 43 sewer flushing and street cleaning trucks with air gaps in their fill pipes. CDD also uses hydrant water to flush mains. WQD inspects the air gaps annually to evaluate whether they are appropriately sized, installed correctly and functioning properly.

2.7 Inspecting Air Gaps at Wastewater Treatment Plants

WQD inspects the air gaps at CCSF's three wastewater treatment plants (Southeast, North Point and Oceanside) annually to evaluate whether the gaps are appropriately sized, installed correctly and functioning properly.

2.8 Requiring Backflow Protection for Temporary Connections at Construction Sites

Contractors may request from CDD a temporary connection to potable water hydrants for various construction activities. Such activities include water used for dust control, site grading and compaction, on-site mixing of concrete and cement, pressure testing of pipes, and cleaning of tools and equipment.

Temporary connections require a hydrant meter to measure the water used. The contractor is billed for water used at the appropriate construction water rate. Pursuant to CCR Title 17, the hydrant meters require backflow prevention valves for the protection of the drinking water distribution system. As of April 2014, single-check valves are attached to hydrant meters by the CDD meter shop, which issues the meters to contractors. WQD is working with CDD to upgrade the valves to RPs. The proper functioning of hydrant meter valves is checked by the meter shop when meter-valve assemblies are issued to a contractor.

3 Backflow Prevention Assemblies: Description and Installation Requirements

Section 3.1 describes the backflow prevention assemblies approved for use in permanent installations in San Francisco and requirements for installing them. Section 3.2 discusses air gaps. General installation requirements are given in section 3.3.

3.1 Approved Backflow Prevention Assemblies

WQD has approved four basic types of assembly for preventing backflow in permanent installations: RPs, DCs, RPDAs and DCDAs. Existing PVBs installed on irrigation systems may remain in place under the following conditions: 1) The highest outlet of the system, e.g., a sprinkler head or hose bibb, is more than 12 inches below the elevation of the outlet of the PVB, and 2) The PV is in working condition. If it fails and cannot be repaired, it must be replaced with an RP.

The five assemblies mentioned above are described in the following subsections.

To be approved for use in San Francisco, an assembly must meet the following requirements:

1. On systems providing water for human consumption, be "lead-free" as defined in the California Health and Safety Code, section 116875. Associated pipe, fittings, solder and flux, must also be lead-free. This requirement does not apply to dedicated fire service, irrigation, or industrial systems.
2. Have passed laboratory and field evaluation tests performed by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (FCCCHR) and be on its "Approved Backflow Prevention Assemblies" list.
3. Be installed in the same orientation as tested and approved by FCCCHR. No modifications to the tested configuration may be made.

Assemblies, as installed, must be field tested to ensure they are functioning properly before being placed into service. The selection of the appropriate level of backflow protection is discussed in Chapter 4.

3.1.1 Reduced Pressure Principle Backflow Prevention Assembly

A reduced pressure principle backflow prevention assembly (RP) consists of two check valves and an automatically operating, differential relief valve located between the two check valves. The assembly is furnished with test cocks and a resilient seated shutoff valve on each end to enable testing for water tightness. Figure 3-1 shows some common RP configurations.

RPs are designed so that the zone between the check valves is always kept at a pressure at least two pounds less than the supply pressure. This design protects against both backpressure and backsiphonage conditions. RPs provide a high level of protection as long as all components are

operating as intended; when a backflow condition occurs, the relief valve discharges to the atmosphere and the valves do not allow flow in the reverse direction.

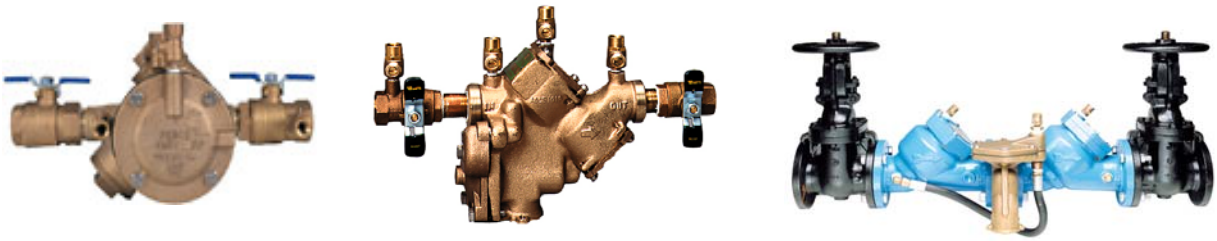

Figure 3-1. Typical Reduced Pressure Principle Assemblies

RPs must always be installed above grade. This assembly may never be installed in a meter box, pit, or vault. If installed within a customer's building, there must be an adequate floor drain (not a dry well) beneath the assembly. RPs must not be installed in vertical runs of pipe unless they have been approved for this type of use.

3.1.2 Double-Check Valve Assembly

A double-check valve assembly (DC) consists of two independently acting, internally loaded check valves with resilient seated shutoff valves at each end of the assembly. The assembly is equipped with test cocks for testing the water tightness of each check valve. Each check valve is spring-loaded in a closed position and requires approximately a pound of pressure to open. DCs provide a lower level of protection than RPs, because if the valves malfunction, there is no pressure relief valve discharging to the atmosphere, and therefore a backflow condition could go undetected. Figure 3-2 shows common DC configurations.

Figure 3-2. Typical Double-Check Valve Assemblies

3.1.3 Reduced Pressure Principle Detector Assembly

The reduced pressure principle detector assembly (RPDA) is similar to a DCDA, except that the RPDA is designed for situations requiring the protection of an RP as well as the detection of unauthorized water use or leaks. Like the meter on a DCDA, the RPDA's bypass meter must register accurately at low flows. An RPDA is normally used on fire lines that might contain contaminants, such as anti-freeze additives or Foamite. Figure 3-3 shows an example of an RPDA.

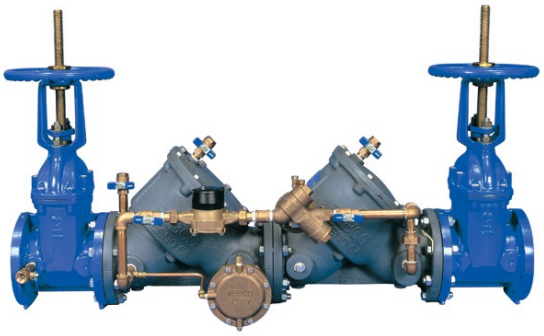

Figure 3-3. Example of Reduced Pressure Principle Detector Assembly

3.1.4 Double-Check Detector Assembly

The double-check detector assembly (DCDA) consists of two spring-loaded check valves, a bypass assembly with a water meter and meter-sized double-check valve assembly, and two tightly closing gate valves. The meter registers accurately at very low flow rates. Figure 3-4 shows some common DCDA configurations.

Figure 3-4. Typical Double-Check Detector Assemblies

DCDAs are used primarily in fire service installations to protect the potable water supply line from:

- Possible contamination or pollution from the fire service system.
- Backpressure from fire service booster pumps.
- Stagnant "black water" that sits in fire lines over extended periods of time.
- The addition of non-potable water through outside fire district connections.

The metered assembly allows the detection of water loss in the fire service line, such as from fire line leakage or deliberate water theft.

3.1.5 Pressure Vacuum Breaker

A PVB consists of an independently operating, loaded check valve and an independently operating, air inlet valve located on the discharge side of the check valve. The assembly is equipped with test cocks and tightly closing shutoff valves at each end. PVBs are designed to protect only against backsiphonage conditions, not against backpressure; the level of protection, therefore, is lower than that afforded by RPs or DCs. Figure 3-5 shows a typical PVB.

Figure 3-3. Typical Pressure Vacuum Breaker

3.2 Air Gap

An air gap is a physical break between a supply pipe and a receiving vessel. Air gaps can be fabricated from commercially available plumbing components or purchased as separate units and integrated into plumbing and piping systems. Requirements for air gaps are set forth in the 2010 California Plumbing Code, Chapter 6, Table 6-3 and include the following:

- The outlet of a pipe and the top of the reservoir (overflow rim) or drain must have a vertical separation of at least twice the inner diameter [ID] of the pipe upstream of the air gap or 1 inch, whichever is greater.
- If the air gap is near a wall, where “near” is defined as less than three times the ID of the pipe, the vertical separation must be at least three times the ID of the pipe or 1½ inches, whichever is greater.
- If the air gap is near a corner, where “near” is defined as less than four times the ID of the pipe away from intersecting walls, the vertical separation must be at least four times the ID of the pipe or 2 inches.

Typical air gaps are illustrated in Figure 3-7.

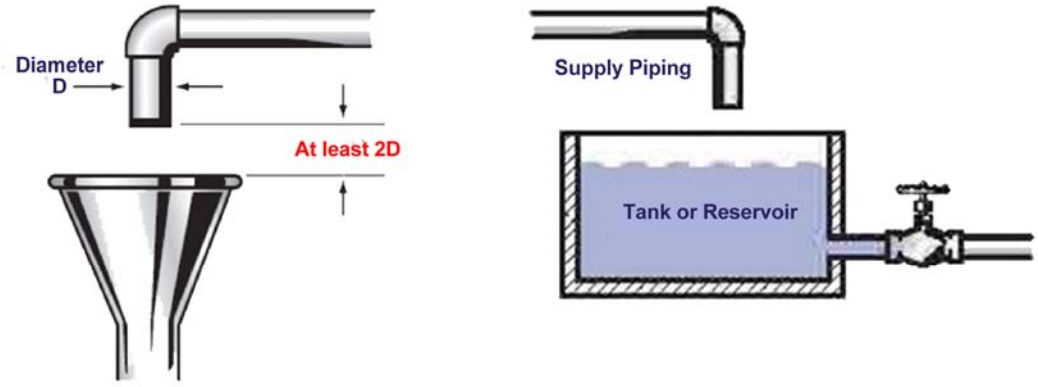

Figure 3-7. Typical Air Gaps

Air gaps need to be inspected by cross-connection control specialists as frequently as do mechanical backflow preventers, and their adequacy must be verified, for the following reasons:

- Air gaps can be purposefully or inadvertently compromised. When excessive splash occurs, users tend to raise the receiving vessel or lower the supply piping, thus defeating the purpose of the air gap.
- At an air gap, the water is exposed to the surrounding air, which can contain bacteria, dust particles, and other airborne contaminants or pollutants. In addition, the aspiration effect of the flowing water can drag down surrounding pollutants into the reservoir or holding tank.
- The disinfectant (chloramines) in treated water can volatilize as a result of the air gap and the resulting splash and churning effect as the water enters the receiving vessel. This reduces the ability of the water to withstand bacterial contamination during long-term storage.

When properly implemented, an air gap represents the highest level of protection available against backflow, as it is physically impossible for water to flow back through a gap that is open to the atmosphere.

3.3 General Installation Requirements

General installation requirements for backflow prevention assemblies are listed below.

- All backflow prevention assemblies must be located as close as possible/practical to the water meter or point of connection (POC) but in no case more than 25 feet from the POC. If any part of a service line extends over bay or ocean waters, assemblies must be installed upstream of the seawall (and within 25 feet of the POC).
- No water connections may be made between the POC and a backflow prevention assembly.
- Assemblies must be installed in the orientation intended by the manufacturer and approved by the USC FCCCHR. An assembly that was designed and approved for horizontal installation must not be installed vertically, and vice versa.
- RPs and DCs:

  - The lowest point of the assembly must be at least 12 inches above grade.
  - Side clearances must be at least 12 inches. On the side of the assembly that contains the test cocks, a side clearance of at least 24 inches is recommended.

- PVBs must be installed at least 12 inches above all downstream piping and flood-level rim of receptor.
- If an assembly is installed 5 feet or more above the finished floor/ground, a platform approved by CAL OSHA (California Occupational Safety and Health Administration) must be used for testing/servicing by testers or contractors. The platform may be permanent or portable.
- Assemblies must be installed so that the make and serial number are visible in a readily accessible location. These identifiers must not be painted over or otherwise made illegible.
- Assemblies may not be installed in pits or vaults in the ground.
- If an enclosure is used, the enclosure must be large enough or removable to allow for testing/servicing.
- When an RP is installed indoors, a drain funnel must also be installed to prevent flooding.

4 Backflow Prevention Assemblies: Testing Requirements

4.1 When Must Assemblies Be Tested?

Backflow prevention assemblies must be tested immediately after installation, relocation, or repair and annually thereafter. The tester must have a valid Permit to Operate as an Authorized Backflow Prevention Assembly Tester; these permits are issued by SFDPH. The list of Authorized Backflow Prevention Assembly Testers is available at *sfwater.org/backflow*.

4.2 How Does a Customer Know When an Assembly Must Be Tested?

WQD sends customers notices at the beginning of the month in which testing is due. The notices include "Backflow Assembly Test Report" form(s), which must be given to testers so they can report the test results to the Cross-Connection Control Program. If a customer cannot or chooses not to meet with the tester on site to provide the form(s), he or she can give the tester the PIC number listed on the notice, and the tester can obtain the forms directly from the Cross-Connection Control Program. Testers must submit test reports to the Cross-Connection Control Program within five calendar days of the test date. Testers must provide customers with proof that the forms have been submitted as required.

4.3 What Happens If a Customer Does Not Have an Assembly Tested?

Annual testing and repair, if required, are necessary to ensure that backflow prevention assemblies are working properly. If assemblies are not maintained, the public water system and hence consumers are at risk. If assembly test results are not received by the end of the month in which testing is required, WQD sends out a second notice requiring testing within 15 days. If the assembly is not tested by the deadline, WQD will proceed with enforcement, as described in section 8 of this document.

5 Required Level of Backflow Protection

5.1 Selecting the Appropriate Backflow Preventer

The type of backflow protection must be consistent with the degree of potential health hazard to the public water supply presented by water uses on a customer's premises: the higher the potential health hazard, the higher the required level of protection.

The types of backflow protection that may be used for containment at permanent connections to the public water system, listed according to increasing level of protection, are a DC, RP, and air gap separation. The minimum levels of backflow protection by hazard criterion are set forth in Table 5-1, with the following caveats:

- If more than one hazard applies to a property, the criterion requiring the greatest degree of protection applies.
- If an assessment of a property cannot be made to determine the type of hazard present, WQD will require an air gap separation to be installed.

For isolation of a hazard within a property, the minimum level of backflow protection must be as set forth in Chapter 6 of the California Plumbing Code, except that an RP is required for the following situations:

- Carbonators: RP must be of stainless steel. Piping downstream of the RP may not be of copper, copper alloy, or other material that is affected by carbon dioxide.
- Irrigation systems, if the highest outlet of the system, e.g., a sprinkler head or hose bibb, is less than 12 inches below the elevation of the outlet of the backflow preventer.
- Closed-loop boilers.
- Closed-loop radiant heating systems.
- Industrial water chillers.

Temporary connections to fire hydrants must be protected, at a minimum, by a single swing-check valve with a positive-sealing flapper that is closed by spring action and is operable in any orientation. In addition, all valves must be approved by WQD before being put into use.

Table 5-1: Hazard Criteria and Appropriate Types of Backflow Protection for Containment

Hazard Criteria	Required Level OF Protection
Sewage and Hazardous or Potentially Hazardous Substances	
Properties where there are wastewater treatment processes, handling and/or pumping equipment	AG
Properties where hazardous substances are handled in any manner in which the substance may enter the public water system (PWS)	AG
Properties with a recreational vehicle dump station that **is** interconnected with the PWS	AG
Properties with a recreational vehicle dump station that **is not** interconnected with the PWS	RP
Properties with a piping system conveying a fluid not from an approved water supply that **is** interconnected with the PWS	AG
Piping system conveying a fluid not from an approved water supply that **is not** interconnected with the PWS	RP
Auxiliary Water Supplies	
Properties where there is an auxiliary supply that **is** interconnected with the PWS	AG
Properties where there is an auxiliary supply that **is not** interconnected with the PWS	RP
Properties where the PWS is used to supplement the auxiliary water supply	AG
Fire Protection Systems	
Properties where the fire protection system is supplied from the PWS and interconnected with an onsite auxiliary water supply	AG
Properties where the fire protection system supplied from the PWS with no interconnections to auxiliary water supplies	DCDA
Properties where the fire system is supplied from the PWS and where auxiliary water is used in a separate piping system within the property	RPDA
Properties where the fire protection system is supplied from the PWS and where either elevated storage tanks or fire pumps that take suction from private reservoirs or tanks are used.	DCDA
Marina and Port Facilities	
All marina and port facilities	RP
Properties with Multiple Service Connections to the PWS	
Properties with multiple standard service connections, where at least one such connection requires backflow protection for containment	Varies[1]
Irrigation Systems	
Properties with dedicated irrigation meters	RP
Properties with irrigation systems into which fertilizers, herbicides, or pesticides are or can be injected	RP

Hazard Criteria	Required Level OF Protection
Water Storage Facility Not under Control of the PWS	
Water storage facility not under control of the PWS	AG
Repeated History of Cross-Connections	
Properties where there is a repeated history of cross-connections being established or re-established[2]	RP or AG[3]
Restricted Entry	
Properties where entry is restricted so that inspections for cross-connections cannot be made in accordance with these rules and regulations	RP
Unabated Internal Cross-Connections	
Properties where internal cross-connections are not abated in accordance with these rules and regulations	RP or AG[3]
Buildings Higher than 40 Feet	
Properties where there are buildings with a highest point equal to or greater than 40 feet in height above the point of connection	DC
Intricate Plumbing and Piping Arrangements	
Properties with intricate plumbing and piping arrangements	RP
Temporary Connections to Fire Hydrants	
Connections for temporary uses, such as construction projects	Single swing-check valve[4]

1 The same level of protection must be provided for all standard service connections; the level of protection must address the highest degree of hazard on the property that cannot be isolated.
2 A water user supervisor might also be required.
3 To be determined by WQD.
4 Valves must have a positive-sealing flapper that is closed by spring action and is operable in any position. All valves must be approved by WQD before being put into use.

5.2 Water User Supervisor

If a property has a multi-piping system that conveys various types of fluids, some of which may be hazardous, and changes in the piping system are frequently made, WQD may require the property owner to designate a water user supervisor.

The water user supervisor is responsible for the avoidance of cross-connections during the installation, operation and maintenance of the water user's pipelines and equipment. In the event that a cross-connection is discovered, the water user supervisor must follow the emergency response plan described in section 9.6.

6 Nonpotable Water Connections

CCSF is planning to use recycled and other auxiliary water in several areas of San Francisco for irrigation and other non-potable uses, such as toilet and urinal flushing, lake recharge, decorative fountains, and concrete mixing and processing. In addition, some developments are using on-site auxiliary water sources for nonpotable applications. CCSF is also allowing the use of rainwater and graywater by homeowners for irrigation and toilet flushing (rainwater only).

6.1 Nonpotable Water for Irrigation

Before being put into service, nonpotable water irrigations systems must pass a cross-connection test to ensure separation between the nonpotable and potable water systems. In addition, if an existing irrigation system is to be converted to the use of nonpotable water, the irrigation system must pass an initial cross-connection test (shut-down) before any retrofit work or construction begins. The purpose of the test is to determine whether there are cross-connections between the existing irrigation system and the potable water system.

6.2 Nonpotable Water Use Inside Commercial Buildings

When operational, nonpotable water systems must pass an initial shut-down test before being put into service to ensure separation between the nonpotable and potable water systems. Thereafter, the systems must be tested for possible cross-connections at least once every four years. Test results must be submitted to CDPH within five days of the completion of the testing. Test procedures are described in section 9 of this document.

6.3 On-site Auxiliary Water Sources

If a nonpotable water system using on-site auxiliary water sources is interconnected with the public water system, for example, water from the public system is used as makeup water in a storage tank, then an air gap is required. If a system involves plumbing to the interior of a building with no interconnections with the public water system, an RP is required (Table 4-1) within 25 feet of the point of connection.

Nonpotable systems supplied with on-site auxiliary water sources must comply with the provisions of section 9 of this document. However, residential rainwater and graywater systems that are used exclusively for outdoor irrigation and are not interconnected in any way with the potable water system do not require backflow protection or cross-connection tests.

7 Inspections and Notices

7.1 Elimination of Cross-Connections

When notified by WQD or SFDPH, a property owner must eliminate any unprotected cross-connections within seven calendar days, unless an alternate deadline for remediation is specified in the notification. If the property owner refuses or fails to eliminate a cross-connection within the allotted time, WQD and/or SFDPH may proceed with enforcement activities in accordance with Rule 11 of the SFPUC Rules and Regulations and section 8 of this document.

7.2 Right of Entry

As a condition of water service, the property owner must permit representatives of WQD and SFDPH to enter all parts of a property that is served by the public water system to conduct a cross-connection control survey.

7.3 High Risk of Hazard

Whenever an existing or potential unprotected cross-connection poses a high risk of hazard to the public water system and requires immediate abatement, as determined by WQD and/or SFDPH, WQD may immediately terminate water service without initial or final notification until the cross-connection has been eliminated and necessary payments have been made, including but not limited to fines in accordance with Rule 11 of the SFPUC Rules and Regulations and section 8 of this document, 48-hour notice, service shut-off and service turn-on fees.

8 Enforcement, Violations and Penalties

If a property owner violates a rule or regulation relating to cross-connection control, WQD or SFDPH may issue written notices establishing a deadline for compliance. If the property owner does not comply, service may be modified or terminated, with notification to the property owner. Options for modification or termination of water service are listed below.

- Installation of a flow restrictor, with applicable fees, on all non-fire service lines to the property to minimize the backflow hazards until they have been corrected.
- Disconnection of the noncompliant water service(s) until the cross-connection has been eliminated and necessary payments have been made, including but not limited to 48-hour notice, service shut-off and service turn-on fees.
- Any other action deemed necessary by WQD and/or SFDPH to protect the public water system.

In addition, property owners who violate any provisions of Article 12A or any rule or regulation pursuant to Article 12A are subject to enforcement in accordance with Chapter 100 of the San Francisco Administrative Code with respect to administrative penalties and any other available legal remedies. Each violation is subject to a fine of $100 per day.

9 Inspection and Testing Requirements for Properties with Auxiliary Water Systems

9.1 Introduction

The requirements outlined in this section apply to properties that have nonpotable auxiliary water systems. Auxiliary water includes, but is not limited to, recycled water, wastewater, graywater, groundwater and rainwater. These requirements do not apply to the City of San Francisco's Auxiliary Water Supply System used for firefighting.

Auxiliary water systems must be inspected and tested according to the following requirements[11]:

- Initial cross-connection test before the auxiliary water system is put into operation.
- Annual visual system inspection.
- Cross-connection test at least every four years.[12]
- Additional cross-connection test whenever the following conditions occur:
  - There is a material reason to believe that the separation between the potable water and auxiliary water systems has been compromised.
  - A cross-connection is discovered.
  - A discovered cross-connection has been remediated.

The following sections describe procedures for conducting visual inspections, performing a cross-connection test, reporting inspection and test results, and responding to a discovered cross-connection.

9.2 Initial Cross-Connection Test

All properties with auxiliary water systems must pass an initial cross-connection test. The purpose of the cross-connection test is to ensure that there are no physical connections between the potable and auxiliary water systems. In new dual-plumbed buildings, a customer's account will not be activated until the initial cross-connection test has been passed. A temporary connection to a potable water supply is needed to test the auxiliary water system plumbing. At the conclusion of the test, the temporary connection to the potable water supply must be disconnected.

The cross-connection test must be conducted according to the procedures described in section 9.3. If the auxiliary water system passes the test, then a WQD Specialist informs CSB that the account can be activated. If the system does not pass the test, then deficiencies must be identified

11 2010 California Plumbing Code, Chapter 16, section 1620A
12 California Code of Regulations, Title 22, Division 4, Chapter 3, Article 5, section 60316

and corrected, and a cross-connection test must be passed before the auxiliary water system is put in service.

9.3 Procedures for Conducting Cross-Connection Tests

Cross-connection tests must be conducted under the supervision of a WQD Water Quality Inspector. The building's water supervisor must be present. Testing must be performed by a cross-connection control specialist authorized to work in San Francisco; in some cases it might be advisable to consult with a registered civil engineer with expertise in hydraulics and water system operation. If used, test kits must be dedicated to testing auxiliary water; the kits may not be used on potable water systems.

A cross-connection test consists, at a minimum, of the plumbing test described in section 9.3.1. A static or dynamic pressure differential test might also be required, at the discretion of the WQD Water Quality Inspector.

9.3.1 Plumbing Test

1. Ensure that the potable water system is activated and pressurized.
2. Shut down and completely depressurize the auxiliary water system. The minimum period the auxiliary water system is to remain depressurized is to be determined on a case-by-case basis, taking into account the size and complexity of the potable and auxiliary water distribution systems, but the minimum time period is one hour.
3. Test and inspect all fixtures, both potable and auxiliary, for flow. Flow from any auxiliary water system outlet indicates a cross-connection. Lack of flow from a potable water outlet indicates that it could be connected to the auxiliary water system.
4. Check the drain on the auxiliary water system for flow during the test and the end of the test period.
5. Completely depressurize the potable water system.
6. Activate and pressurize the auxiliary water system.
   For the initial test, a temporary connection to a potable water supply is needed to test the auxiliary water system plumbing. At the conclusion of the test, disconnect the temporary connection to the potable water supply.
7. The auxiliary water system is to remain pressurized while the potable water system is depressurized. The minimum period the potable water system is to remain depressurized is to be determined on a case-by-case basis, but the minimum time period is one hour.
8. Test and inspect all fixtures, both potable and auxiliary, for flow. Flow from any potable water system outlet indicates a cross-connection. Lack of flow from an auxiliary water outlet indicates that it is connected to the potable water system.
9. Check the drain on the potable water system for flow during the test and at the end of the test period.

10. If no cross-connection is confirmed, re-pressurize the potable water system. If a cross-connection is discovered, immediately activate the procedures described in section 9.6, *Responding to a Discovered Cross-Connection*.

9.3.2 Static Pressure Differential Test

1. Ensure water systems are fully operable and pressurized by observing flow/pressure at fixtures on both the potable (both hot and cold) and auxiliary water systems.
2. Make appropriate test connections to the potable (both hot and cold) and auxiliary water systems at the highest point of the water systems. The location of the test connections must be accessible (e.g., at least 12 inches above the ground or floor with at least 12 inches of clearance on all sides) and be approved by the WQD specialist.
3. Fill a clear site tube on the auxiliary water system test connection and close the test connection valve. If the pressure is too high for a site tube, use a pressure gauge, preferably an electronic gauge with a digital readout.
4. Shut off and isolate the auxiliary water system. Open the auxiliary water vent valve to relieve pressure and note the static water level in the clear site tube (or gauge) by opening the test connection valve.
   - If the water level/pressure remains the same for at least ten minutes, note the auxiliary water system as tight/no cross-connection.
   - If the water level recedes in the clear site tube or gauge, inspect the auxiliary water system to ensure there are no leaks or usage, re-pressurize the auxiliary water system, and restart the test at Step 3.
   - If the water level overflows the clear site tube (or pressure rises in the gauge), inspect the auxiliary water isolation valves to ensure they are closed tight and not leaking, re-pressurize the auxiliary water system, and restart the test at Step 3. Continuous flow/pressure rise after verification that the auxiliary water isolation valves are closed tight and not leaking indicates a cross-connection.
5. If no cross-connection is confirmed, re-pressurize the auxiliary water system. If a cross-connection is discovered, immediately activate the procedures described in section 9.6, *Responding to a Discovered Cross-Connection*.
6. Fill clear site tubes on the potable water system hot and cold water test connections, and close the test connection valves. If the pressures are too high for site tubes, use pressure gauges, preferably with digital readouts.
7. Shut off and isolate the potable water system. Note that the hot and cold systems must be tested separately. Open the potable water vent valve to relieve pressure and note the static water level in the clear site tube (or gauge) by opening the test connection valve.
   - If the water level remains the same, note the potable water system as tight/no cross-connection
   - If the water level recedes in the clear site tube or gauge, inspect the potable water system to ensure there are no leaks or usage, re-pressurize the potable water system, and restart the test at Step 6.

- If the water level overflows the clear site tube (or pressure rises in the gauge), inspect the potable water isolation valves to ensure they are closed tight and not leaking, re-pressurize the potable water system, and restart the test at Step 6. Continuous flow/pressure rise after verifying that the potable water isolation valves are closed tight and not leaking indicates a cross-connection.

8. If no cross-connection is confirmed, re-pressurize the potable water system. If a cross-connection is discovered, immediately activate the procedures described in section 9.6, *Responding to a Discovered Cross-Connection*.
9. Shut off and drain the auxiliary water system.
10. Check all fixtures on both the potable and auxiliary water systems for flow/pressure. Flow/pressure from any fixture on the auxiliary water system indicates an unauthorized use. No flow/pressure from any fixture on the potable water system indicates an unauthorized use.
11. If no cross-connection is confirmed, re-pressurize the auxiliary water system. If a cross-connection is discovered, immediately activate the procedures described in section 9.6, *Responding to a Discovered Cross-Connection*.

9.3.3 Dynamic Pressure Differential Test

1. Ensure water systems are fully operable and pressurized by observing flow/pressure at fixtures on both the potable and auxiliary water systems.
2. Connect separate pressure gauges to the potable and auxiliary water systems. If a differential pressure gauge is available and the test connections are close enough to allow it, one differential pressure gauge may be connected to both systems. Make sure the differential pressure gauge does not create a cross-connection.
3. Shut off and isolate the auxiliary water system. Lower the auxiliary water system pressure to approximately 10 pounds per square inch (psi) less than the potable water system pressure; make sure the vent/valve used to lower the pressure is shut off once the pressure is lowered.
   - If the auxiliary water system maintains the differential pressure below the potable water system for at least ten minutes, note the auxiliary water system as tight/no cross-connection.
   - If the pressure on the auxiliary water system continues to decrease, inspect the auxiliary water system to ensure there are no leaks or usage, re-pressurize the auxiliary water system, and restart the test at Step 3.
   - If the pressure on the auxiliary water system will not decrease but maintains a pressure different from that of the potable water system, inspect the auxiliary water isolation valves to ensure they are closed tight and not leaking, re-pressurize the auxiliary water system, and restart the test at Step 3.
   - If the pressure readings of the potable and auxiliary water systems equalize, the inability to maintain a pressure differential indicates a cross-connection.
4. If no cross-connection is confirmed, note the corresponding pressure reading for each water system, note the actual pressure differential between the two systems, and re-pressurize the

auxiliary water system. If a cross-connection is discovered, immediately activate the procedures described in section 9.6, *Responding to a Discovered Cross-Connection*.

5. Shut off and isolate the potable water system. Lower the potable water system pressure to approximately 10 psi less than the auxiliary water system pressure.
   - If the potable water system maintains the differential pressure below the auxiliary water system, note the potable water system as tight/no cross-connection.
   - If the pressure on the potable system continues to decrease, inspect the potable water system to ensure there are no leaks or usage, re-pressurize the potable water system, and restart the test at Step 5.
   - If the pressure on the potable water system will not decrease but maintains a pressure different from that of the auxiliary water system, inspect the potable water isolation valves to ensure they are closed tight and not leaking, re-pressurize the potable water system, and restart the test at Step 5.
   - If the pressure readings of the potable and auxiliary water systems equalize, the inability to maintain a pressure differential indicates a cross-connection.
6. If no cross-connection is confirmed, note the corresponding pressure reading for each water system, note the actual pressure differential between the two systems, and re-pressurize the potable water system. If a cross-connection is discovered, immediately activate the procedures described in section 9.6, *Responding to a Discovered Cross-Connection*, below.
7. Shut off and drain the auxiliary water system.
8. Check all fixtures on both the potable and auxiliary water systems for flow/pressure. Flow/pressure from any fixture on the auxiliary water system indicates an unauthorized use. No flow/pressure from any fixture on the potable water system indicates an unauthorized use.
9. If no cross-connection is confirmed, re-pressurize the auxiliary water system. If a cross-connection is discovered, immediately activate the procedures described in section 9.6, *Responding to a Discovered Cross-Connection*.

9.4 Annual Visual Inspection

WQD or SFDPH conducts annual visual inspections of auxiliary water systems. At a minimum, the following system components must be checked:

- Meter locations of the auxiliary water and potable water lines, verifying that no modifications have been made and that there are no visible cross-connections.
- All pumps and equipment, equipment room signs, and exposed piping in equipment rooms.
- All valves: Ensure that valve lock seals are in place and intact.
- All valve control door signs, verifying that signs have not been removed.

If the visual inspection indicates that the auxiliary water plumbing has been modified, a cross-connection test is required.

9.5 Reporting

The cross-control specialist who performed the inspection or testing is responsible for submitting to WQD a written report documenting the results of the visual inspection or testing. This report must be submitted within five days of completion of the inspection or testing. WQD must forward the report to CDPH within 30 days of the inspection or testing.[13]

9.6 Responding to a Discovered Cross-Connection

If a cross-connection is discovered, immediately activate the following procedures.

1. Notify the WQD on-call inspector upon discovery of the incident.
2. Submit to WQD written notification within 24 hours of the incident and include an explanation of the nature of the cross-connection, date and time discovered, and the contact information of the person reporting the cross-connection.
3. Provide potable drinking water for building occupants, if applicable, until the potable water system is deemed safe to drink.
4. Shut down the auxiliary water piping to the building at the meter, and drain the auxiliary water riser.
5. Shut down the potable water piping to the building at the point of connection.
6. Uncover and disconnect the cross-connection.
7. After the cross-connection has been remediated, conduct a visual inspection and cross-connection test, as described in section 9.3 above.
8. Chlorinate the potable water system within the building with 50 parts per million chlorine for 24 hours.
9. After 24 hours, flush the building's potable water system and conduct a standard bacteriological test. If test results are acceptable to WQD, the potable water system may be recharged.
10. Concurrently with actions 1-6, test the RP at the potable water service connection.
    A. If the RP passes the test, collect a water sample at the #1 test cock and have it analyzed for *E. coli* fecal and total coliform.
    B. If the RP fails the test, contact CDD and arrange for a gateman to operate gates as needed and proceed as follows:
        i. Take a minimum of one sample from a low-pressure hydrant and multiple samples from service connections in the vicinity of the service connection. Take three to six samples on both sides of the service connection. Collect samples from faucets at available businesses, residences, or hose bibbs (as a last resort). Collect samples the following morning if no spigots are accessible at night. Make sure samples are

13 California Code of Regulations, Title 22, Division 4, Chapter 3, Article 5, section 60316(a)

collected from locations served by the same water main serving the building with the potential cross-connection.

ii. In the collected samples, measure electric conductivity (EC), pH and chlorine residual. Compare the measurements with values for the affected pressure zone on the current process sheet to aid in assessing the extent of contamination, if any. Record data.

iii. Collect samples for the following laboratory tests:

- Total and fecal coliform (Colisure vessel)
- Turbidity, pH, conductivity, alkalinity, chloride, and hardness (white-top sample bottle)

iv. If a cross-connection is suspected based on field measurements, initiate flushing of the water main with the assistance of the CDD Gateman. Let water flow out of the hydrant being used to flush the main and take samples every 15 minutes. The hydrant may be shut off when the following conditions are met:

- The water runs clear
- The chlorine residual, conductivity, and pH measurements are in normal range

v. If observations and measurements indicate that a cross-connection existed but no contamination or pollution of the potable water system resulted, notify the CDPH District Engineer or Associate Sanitary Engineer within 24 hours by telephone.

vi. Transport samples to the Millbrae Laboratory as soon as possible but no later than 24 hours after collection. Follow the chain-of -custody procedures outlined in the *WQD Sample Manual*. Log the samples into STARLIMS, identifying appropriate analyses. Call the WQD laboratory person on pager duty and ask him/her to report to the laboratory to process samples as soon as possible.

vii. If observations or chemical measurements indicate that contamination or pollution of the potable water system has occurred:

viii. Notify the on-call WQD Engineer, CDPH and SFDPH verbally, immediately upon confirmation of the contamination or pollution event. Consult with the CDPH District Engineer regarding possible public notification and/or the issuance of a local boil water order in response to a cross-connection event.

ix. Conduct additional investigations and sampling at and around the building as needed. Initiate additional flushing operations.

	Telephone
CDPH, San Francisco District Engineer	(510) 620-3454
CDPH, Associate Sanitary Engineer	(510) 620-3462
SFDPH, Environmental Health Section, Water Quality	(415) 252-3859
SFDPH, Water Epidemiology	(415) 252-3973
SFPUC, Communications Officer	(415) 554-3247

x. After consulting with the on-call WQD Engineer, notify the on-call SFPUC communications officer and customers in the affected area, providing the information developed with the WQD Engineer.

xi. Monitor, respond to, and record related consumer complaints.

11. Notify the CDPH within 24 hours of discovering the cross-connection.

10 Authorized Backflow Prevention Assembly Testers

10.1 How to Become an Authorized Backflow Prevention Assembly Tester

Only authorized backflow prevention assembly testers may test assemblies within San Francisco. A person may hold and maintain separate permits to operate as both an authorized backflow assembly tester and an authorized cross-connection specialist. To become an authorized backflow prevention assembly tester, a person must obtain a permit to operate from SFDPH (*http://www.sfdph.org/dph/EH/CrossFlow/default.asp*). To obtain and maintain a valid permit to operate, a person must:

- Hold a valid certification as a backflow prevention assembly tester from an organization recognized by SFDPH. These organizations are listed in Appendix B.
- Pass an exam administered by SFDPH.
- Pay an annual license fee.
- Be covered by general liability insurance in full force and effect, in accordance with the rules and regulations adopted by WQD.

Each permit to operate is valid for one year from the date of issuance. The permit to operate may be renewed if the holder maintains a current "Backflow Prevention Assembly Tester" certification from a recognized testing organization, pays applicable fees, and maintains insurance as described above. It is the tester's responsibility to keep the permit to operate current.

A permit to operate may be suspended or revoked by SFDPH at any time for violation of any provision of CCSF's rule or regulations related to cross-connection control.

10.2 Tester Responsibilities

- Testers must attend annual meetings held by WQD and SFDPH.
- Equipment for testing backflow prevention assemblies must be calibrated at least once a year. The tester must provide a copy of the certification to the SFDPH inspector when the permit to operate is obtained or renewed.
- Testers must obtain backflow tags from the SFDPH and attach them to assemblies that have passed testing. If an assembly is a year or more overdue for testing (for example, the assembly was due for testing in October 2013 and it is now January 2014), then attach a tag with the prior year's date (in the example case, 2013).
- If a tester finds an assembly that has been modified or incorrectly installed, he or she must immediately report the situation to the Cross-Connection Control Program and ***not test the assembly***. To report the situation, describe it in the "Comments" section of the Backflow Assembly Test Report Form and submit the form. All assemblies installed in San Francisco must be on the "Approved Backflow Prevention Assemblies" list developed by the

FCCCHR. Any modification of an assembly—such as relocation of valves, bypass arrangements, and jumper connections, whether temporary or permanent—invalidates the foundation's approval and is not permitted. Likewise, an assembly that has been installed in an orientation for which it was not designed or approved is also not permitted.

- Testers must submit test results electronically or on forms obtained from the Cross-Connection Control Program.

Additional information about operating as an authorized backflow prevention assembly tester in San Francisco is provided in the *Instructions for Authorized Backflow Prevention Assembly Testers,* provided in Appendix D.

11 Authorized Cross-Connection Control Specialists

11.1 How to Become an Authorized Cross-Connection Control Specialist

Only authorized cross-connection control specialists may conduct cross-connection tests or site surveys within San Francisco. A person may hold and maintain separate permits to operate as both an authorized backflow assembly tester and an authorized cross-connection specialist. To become an authorized cross-connection specialist, a person must obtain a permit to operate from SFDPH. To obtain a valid permit to operate, a person must:

- Hold valid certification as a cross-connection specialist from an organization recognized by SFDPH. These organizations are listed in Appendix B.
- Pass an exam administered by SFDPH.
- Pay an annual license fee.
- Be covered by general liability insurance in full force and effect, in accordance with the rules and regulations adopted by WQD.

Each permit to operate is valid for one year from the date of issuance. The permit to operate may be renewed if the holder maintains a current "Cross-Connection Control Specialist" certification from a recognized testing organization, pays applicable fees, and maintains insurance as described above. It is the specialist's responsibility to keep the permit to operate current.

A permit to operate may be suspended or revoked by SFDPH at any time for violation of any provision of San Francisco's rule or regulations related to cross-connection control.

11.2 Cross-Connection Control Specialist Responsibilities

- Attend annual meetings held by WQD and SFDPH.
- Submit written reports documenting the results of visual inspections or cross-connection tests to WQD within five days following the completion of inspections or testing.

12 Companies Employing Authorized Backflow Prevention Assembly Testers and Authorized Cross-Connection Control Specialists

Companies that employ authorized backflow prevention assembly testers and authorized cross-connection control specialists must:

- Register with SFDPH.
- Maintain general liability insurance in full force and effect, at company expense, for all activities performed by their testers and specialists. Such insurance must include coverage for bodily injury, personal injury, including death resulting therefrom, and property damage insurance, with limits not less than $1 million each occurrence combined single limit. CCSF, its officers, and employees must be named as additional insureds under the policy, and a cross-liability clause must be attached. The insurance must provide 10-day prior written notice of cancellation, non-renewal, or material change to SFDPH. Test companies that do not maintain this insurance will not have electronic access to WQD's database.
- Provide SFDPH with the names of testers and cross-connection control specialists working for them and notify SFDPH when a tester or specialist leaves the firm.
- Maintain a continuous record of the dates and locations of all activities performed in relation to backflow prevention (e.g., tests, repairs, inspections, surveys, cross-connection control tests) for three years. The records must be made available at the request of WQD. If a company ceases doing business in San Francisco, all records relating to backflow prevention in the preceding three years must be provided to WQD.

APPENDIX A

Regulatory Summary:

Description of Regulations Applicable to the
Cross-Connection Control Program

Title 17, Division 1, Chapter 5, Subchapter 1, Group 4 of the
California Code of Regulations

San Francisco Health Code, Article 12A

California Plumbing Code, Chapter 6, Sections 601–603

Excerpt from California Department of Public Health
Compliance Order 02-04-95CO-006

Regulations Applicable to the Cross-Connection Control Program

Federal Regulations

Under the provisions of the Safe Drinking Water Act (1974, 1986, 1996), the federal government has established, through the Environmental Protection Agency (USEPA), national standards for safe drinking water. Under the Safe Drinking Water Act Amendments of 1986 (Public Law 99-339), the water purveyor has the primary responsibility for preventing water from unapproved sources, or any other substances, from entering the public potable water system.

State Regulations

State requirements regarding backflow prevention and cross-connection control are primarily contained in the California Health and Safety Code (H&SC) and under Titles 17 and 22 of the California Code of Regulations (CCR). Section 7584 of Title 17 defines the responsibility of water suppliers and the scope of cross-connection control programs. Title 17 also provides guidelines for the evaluation of hazards, location of backflow preventers, and type of protection needed for a given hazard type. Title 22 requires recycled water systems to be tested for possible cross-connections at least once every four years.

H&SC Chapter 5, Article 2, sections 116800 to 116810 deal with the control of cross-connections, fees, and certification of backflow prevention assembly testers.

Local Regulations

The following local regulations apply to San Francisco's cross-connection control program.

- San Francisco Health Code, Article 12A defines the program and responsibility of each stakeholder. It establishes requirements for backflow prevention to supplement those set forth by the state in CCR Title 17. A copy of this ordinance is provided in this appendix.
- The San Francisco Public Utilities Commission's (SFPUC's) Rules and Regulations Governing Water Service to Customers, Section A, specifies that the services, meters and house piping must conform with the rules and requirements of the SFPUC and the California Department of Public Health (CDPH), as well as with building, plumbing, and fire ordinances. It also requires the use of backflow prevention assemblies for buildings or premises where an auxiliary water supply exists. In addition, Section A allows WQD, in conjunction with the San Francisco Department of Public Health (SFDPH), to deny service or terminate water service if a customer does not comply with the requirements of the cross-connection control program.
- The San Francisco Plumbing Code, Chapter 6, lists approved backflow prevention assemblies and their general and specific requirements.
- San Francisco Fire District, General Order, File Code 02 A, Item 6, requires that every time a connection is made to a low-pressure hydrant, firefighters must precede the connection with an Ames single-check valve. Item 7 of the order requires that the Ames check valves be tested annually by utility plumbers of the SFPUC staff.

California Code of Regulations, Title 17. Public Health
Division 1. State Department of Health Services
Chapter 5. Sanitation (Environmental)
Subchapter 1. Engineering (Sanitary)
Group 4. Drinking Water Supplies

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 of 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.

§ 7584. Responsibility and Scope of Program
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.

§ 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.

§ 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 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.

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.

§ 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 Pressure Principle Type Backflow Prevention Devices which is herein incorporated by reference.

§ 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.

§ 7604. Type of Protection Required
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	AG
(1) Premises where there are waste water 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.	
(2) 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
(3) Premises where there are irrigation systems into which fertilizers, herbicides, or pesticides are, or can be, injected.	RP
(b) Auxiliary Water Supplies	AG
(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	
(2) Premises where there is an unapproved auxiliary RP 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) Recycled water	
(1) Premises where the public water system is used to supplement the recycled water supply.	AG
(2) Premises where recycled water is used, other than as allowed in paragraph (3), and there is no interconnection with the potable water system.	RP
(3) Residences using recycled water for landscape irrigation as part of an approved dual plumbed use area established pursuant to sections 60313 through 60316 unless the recycled water supplier obtains approval of the local public water supplier, or the Department if the water supplier is also the supplier of the recycled water, to utilize an alternative backflow protection plan that includes an annual inspection and annual shutdown test of the recycled water and potable water systems pursuant to subsection 60316(a).	DC
(d) Fire Protection Systems	
(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	AG

of an AG if approved by the health agency and water supplier.

(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
(4) Premises where the fire system is supplied from the public water system and where recycled water is used in a separate piping system within the same building.	DC
(e) Dockside Watering Points and Marine Facilities	
(1) Pier hydrants for supplying water to vessels for any purpose.	RP
(2) Premises where there are marine facilities.	RP
(f) 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 do not exist.	RP
(g) Premises where there is a repeated history of cross-connections being established or re-established.	RP

§ 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.

San Francisco, California, Health Code >> ARTICLE 12A: - BACKFLOW PREVENTION >>

ARTICLE 12A: - BACKFLOW PREVENTION

SEC. 750. - PURPOSE AND FINDINGS.

The purpose of this Article is to establish requirements for backflow prevention to supplement those imposed by the State pursuant to Title 17, Sections 7583 et seq. of the California Administrative Code. California Administrative Code Section 7583 expressly authorizes local governments to establish more stringent requirements where local conditions so warrant. The Board of Supervisors finds and declares that the dangers to public health and safety posed by the existing and potential contamination of the drinking water supply in San Francisco warrant the imposition of local standards in excess of those required under State law.

(Added by Ord. 356-84, App. 8/24/84)

SEC. 751. - DEFINITIONS.

The following definitions shall apply to this Article.

1.
"Backflow" shall mean the flow, from any source or sources, of water which is of unknown or questionable safety for human consumption or other liquids, gases, mixtures or other substances into the potable water distribution system.

2.
"Backflow prevention device" shall mean any effective device, means, method, or construction used to prevent the backflow of substances into the potable water distribution system, which has been previously approved for use by the Cross-Connection Control Committee, as that body is defined in this Article, and shall pass all initial testing procedures at the time of installation.

3.
"Certified tester" shall mean any person, whether privately employed or in the employ of the City and County, who holds a valid Department of Public Health certificate to test backflow prevention devices.

4.
"Cross-connection" shall mean any actual or potential connection between any part of a water system used or intended to supply water for drinking purposes and any source or system containing water which is not or cannot be approved as safe, wholesome and potable for human consumption or any other substance. Temporary or permanent devices through which, or because of which, backflow could occur are also considered to be cross-connections.

5.
"Cross-connection control device" shall mean an approved backflow prevention device.

6.

ARTICLE 12A: - BACKFLOW PREVENTION

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5.
"Cross-connection control device" shall mean an approved backflow prevention device.

6.

"Department of Public Health" shall mean the San Francisco Department of Public Health.

7.
"Department of Public Works" shall mean the San Francisco Department of Public Works.

8.
"In-house hazard" shall mean a cross-connection within a water consumer's premises.

9.
"Water Department" shall mean the San Francisco Water Department.

(Added by Ord. 356-84, App. 8/24/84)

SEC. 752. - CROSS-CONNECTION CONTROL COMMITTEE—ESTABLISHMENT OF.

There is hereby created a Cross-Connection Control Committee of the City and County of San Francisco, which shall be comprised of the Manager of Water Quality of the Water Department, the Superintendent of Building Inspection of the Department of Public Works, and the Director of Environmental Health Services of the Department of Public Health, or their respective designees. The Committee's duties shall include, but are not limited to, the review of operations of the City's Cross-Connection Control Program, the establishment of a program within the Department of Public Health to provide for certification of qualified testers, and the development of a schedule to assure annual inspection of all backflow prevention devices within the City and County as well as those on property owned by the City and County but located outside the boundaries of the City and County.

(Added by Ord. 356- 84, App. 8/24/84)

SEC. 753. - DEPARTMENTAL RESPONSIBILITIES.

The Water Department shall have primary responsibility for the prevention of any unauthorized substances or water from unapproved sources from entering the public water supply system. The Department of Public Health shall have the overall and ultimate responsibility under this Article for preventing water from unapproved sources or other unauthorized substances from entering the potable water system. The Department of Public Health shall promulgate any rules or regulations necessary to effectuate this Article. Said rules and regulations shall, at a minimum, be consistent with and meet all requirements imposed by State law.

(Added by Ord. 356-84, App. 8- 24-84)

SEC. 754. - UNPROTECTED CROSS-CONNECTIONS PROHIBITED; IDENTIFICATION OF IN-HOUSE HAZARDS.

It shall be unlawful for any water consumer or property owner to have, keep, maintain, install or permit the existence of a cross-connection which is unprotected from actual or potential backflow due to the absence of approved and properly functioning backflow prevention devices.

The Department of Public Health, through its Bureau of Environmental Health Services, the Department of Public Works, through its Bureau of Plumbing Inspection, and the Water Department shall, in their normal course of enforcement activity, identify the locations of in-house hazards and shall jointly maintain a continuously updated list of such in-house hazards for enforcement action under this Article.

(Added by Ord. 356-84, App., 8/24/84)

SEC. 755. - ENFORCEMENT POWERS.

Upon notification by the Department of Public Health, the Department of Public Works or the Water Department, it shall be the responsibility of each water consumer to eliminate any existing or potential unprotected cross-connections on the subject property within 30 to 90 calendar days of said notification. The specific deadline for achieving compliance shall be established by the appropriate department based upon the type and magnitude of the work required to eliminate the cross-connection. The appropriate department shall monitor the progress of the work required to achieve compliance.

If a water consumer refuses or fails to eliminate a cross-connection after the deadline has expired as set forth in the notification, or if the progress of the work being monitored by the appropriate department indicates that the work cannot be completed within the time limit established in the notification, the Water Department, acting alone or in coordination with the Departments of Public Health or Public Works, shall immediately issue a final notification to the owner of the subject property to eliminate the cross-connection. If the property owner refuses to or does not comply with the requirements set forth in the final notification within ten calendar days of its date of issuance, the Water Department shall thereafter disconnect the water services to the customer directly responsible for noncompliance until the cross-connection has been eliminated and necessary payments have been made for turn-on services in the same manner as specified under the San Francisco Public Utilities Commission Rules and Regulations Section C Rule 4 (or any successor regulations) governing water service to customers. If the property owner and the water consumer are one and the same person, only one notification shall be required prior to disconnecting the water services in the event of noncompliance. The Water Department shall not disconnect the water services until any appeal which may be taken under Section 756 of this Article has become final, except as specified in Section 760 of this Article.

(Added by Ord. 356-84, App. 8/24/84)

SEC. 756. - REVIEW OF APPEALS BY DEPARTMENT OF PUBLIC HEALTH.

Appeals against the final notice for disconnection of water services may be made to the Department of Public Health by the subject property owner, within five calendar days of the date of said final notice, and shall include current data obtained from a certified tester employed by the property owner or his representative which disapproves the existence of a cross- connection or the adequacy of the time limit set for compliance. The Director of the Bureau of Environmental Health Services, or his designee, shall hold a hearing on the appeal within fifteen calendar days of receipt of said appeal, and shall thereafter issue a decision which shall state whether or not the alleged defect or deficiency constitutes a cross-connection as defined in this Article. The Director shall affirm the Water Department's action if he or she finds that a cross-connection exists. The Director's decision shall issue within two calendar days of the completion of the hearing, and shall be final.

(Added by Ord. 356-84, App. 8/24/84)

SEC. 757. - CROSS-CONNECTION CONTROL PROGRAM.

Annual inspections of all existing backflow prevention devices shall be conducted under the direction of the Water Department. The Water Department shall make available for public inspection the current listing of all certified testers required under Section 758 of this Article. The Water Department shall annually notify all water consumers who have cross-connection control devices of the requirements of this Article for annual maintenance and testing and shall annually promulgate a schedule of charges for the cost to the water consumer of the inspections and testing to be done under this Article. Water consumers who fail to comply with the action required by the Water Department's annual notifications shall be subject to the same enforcement procedures as set forth in Sections 755 and 756 of this Article.

When a backflow prevention device is inspected and has passed the testing procedure, the certified tester shall immediately affix a seal or tag to the device. Such seals or tags shall be purchased by the certified tester from the Department of Public Health. Seals or tags may be issued free of charge to testers employed by the City and County for use when testing backflow prevention devices installed on City and County property. Each certified tester shall maintain a continuous record of the dates and locations of each inspection performed, any tests made, and the results thereof. A copy of such record shall be sent by each certified tester to the Water Department within five calendar days of each inspection or test. Appropriate testing and inspection records for potable water systems, including but not limited to the information to be supplied by all certified testers, shall be maintained by the Water Department and shall be made available upon request to the Department of Public Works and the Department of Public Health.

(Added by Ord. 356-84, App. 8/24/84)

SEC. 758. - CERTIFICATION OF BACKFLOW PREVENTION SERVICE TESTERS.

Procedures for the establishment of a program for the certification of qualified backflow prevention device testers shall be developed and implemented by the Department of Public Health within thirty working days of the effective date of this Article. Independent testers and testers who are City employees shall receive training in backflow prevention device testing. All testers shall thereafter take and pass an examination administered by the Department of Public Health in order to qualify for a valid tester's certificate to be issued by that Department.

Testers whose names appear on the Water Department's approved list of backflow prevention testers as of the effective date of this Article shall be exempt from the initial training and examination requirement.

Each tester's certificate issued by the Department of Public Health shall be valid for a period of one year from the date of issuance. Tester's certificates may be renewed upon additional training, re-examination, other demonstration of competency, or any combination thereof, as may be deemed necessary by the Department of Public Health. A tester's certificate may be suspended or revoked at any time for cause by the Department of Public Health. The Department of Public Health shall maintain a current list of the names and business addresses of all certified testers and of all tester's certificates which have been suspended or revoked. The list shall be forwarded to the Water Quality Control Division of the Water Department and the Bureau of Plumbing Inspection of the Department of Public Works, and shall be made available for public inspection by all three departments.

(Added by Ord. 356-84, App. 8/24/84)

SEC. 759. - INSURANCE REQUIREMENTS FOR TESTERS.

Each certified tester who is not a City employee shall maintain general liability insurance in full force and effect, at his or her expense, for all cross-connections control and backflow device testing activities. Such insurance shall include coverage for bodily injury, personal injury, including death resulting therefrom, and property damage insurance, with limits not less than $100,000 each occurrence combined single limit. The City and County of San Francisco, its officers and employees shall be named as additional insureds under the policy and a cross-liability clause shall be attached. Such insurance shall provide 10 days prior written notice of cancellation, nonrenewal or material change to the Department of Public Health. A certificate of insurance, in form and with insurers acceptable to City, shall be required prior to the issuance of any tester's certificate or any renewal thereof.

(Added by Ord. 356-84, App. 8/24/84)

SEC. 760. - SPECIAL CASES EXEMPTED FROM APPEALS.

Whenever the Department of Public Health, the Department of Public Works or the Water Department identify any existing or potential unprotected cross-connection as posing a high risk of hazard to the public health and safety which requires immediate abatement, the Water Department shall, in coordination if necessary with the Department of Public Health or the Department of Public Works, immediately shut off the water services to the customer directly responsible for the hazard in order to prevent such cross-connection from causing any backflow into the potable water distribution system. Water services shall be restored upon elimination of the cross-connection and payment for turn-on services as specified under the San Francisco Public Utilities Commission Rules and Regulations Section C Rule 4 (or any successor regulations) governing water service to customers. All action taken under this section shall be exempt from the appeals procedures specified in Section 765 of this Article.

(Added by Ord. 356-84, App. 8/24/84)

SEC. 761. - DOUBLE CHECK VALVES ON HIGHRISES WITH ROOF TANKS.

Any building with a roof tank shall have an approved double check valve assembly installed on the building water supply line. The check valve shall be located as near as possible to the water meter and in any case before the first fitting or branch line. For buildings with roof tanks existing prior to enactment of this section where an air gap has been previously accepted by the enforcing agency, a double check valve shall not be required provided the enforcing agency can easily determine that there are no lateral lines or outlets between the meter and the air gap. If at any time buildings with roof tanks which were previously accepted as having approved air gaps in lieu of double check valves have or are believed to have installed lateral lines or outlets between the meter and the air gap, then a double check valve shall be installed as near as possible to the water meter.

(Added by Ord. 85-86, App. 3/21/86)

California Plumbing Code, Chapter 6, Sections 601–603

CHAPTER 6
WATER SUPPLY AND DISTRIBUTION

601.0 Hot and Cold Water Required.

601.1 Except where not deemed necessary for safety or sanitation by the Authority Having Jurisdiction, each plumbing fixture shall be provided with an adequate supply of potable running water piped thereto in an approved manner, so arranged as to flush and keep it in a clean and sanitary condition without danger of backflow or cross-connection. Water closets and urinals shall be flushed by means of an approved flush tank or flushometer valve.

Exceptions:

(1) *[HCD 1, HCD 2, and DWR]* Listed fixtures that do not require water for their operation and are not connected to the water supply.

(2) *[HCD 1 & HCD 2] For limited-density owner-built rural dwellings, potable water shall be available to the dwelling site, although such water need not be pressurized. Where water is not piped from a well, spring, cistern, or other source, there shall be a minimum reserve of 50 gallons (189 L) of potable water available. Where water delivery is pressurized, piping shall be installed in accordance with the provisions of this chapter.*

(3) *[HCD 1 & HCD 2] Where deemed not necessary for safety or sanitation by the Enforcing Agency.*

(4) *[HCD 1 & HCD 2] Recycled water or treated graywater may be allowed as specified in Chapter 16 Part II of this code.*

(5) *[DWR] Where a public agency requires a building to use recycled water to flush water closets and urinals in accordance with California Water Code 13554.*

In occupancies where plumbing fixtures are installed for private use, hot water shall be required for bathing, washing, laundry, cooking purposes, dishwashing or maintenance. In occupancies where plumbing fixtures are installed for public use, hot water shall be required for bathing and washing purposes. This requirement shall not supersede the requirements for individual temperature control limitations for public lavatories, bathtubs, whirlpool bathtubs and shower control valves.

601.2 Identification of a Potable and Non-potable Water System. In buildings where potable water and non-potable water systems are installed, each system shall be clearly identified in accordance with Sections 601.2.1 through 601.2.4.

601.2.1 Potable Water. Green background with white lettering.

601.2.2 Color and Information. Each system shall be identified with a colored pipe or band and coded with paints, wraps and materials compatible with the piping.

Except as required in Sections 1610.0 and 1617.0, non-potable water systems shall have a yellow background with black uppercase lettering, with the words "CAUTION: NON-POTABLE WATER, DO NOT DRINK." Each non-potable system shall be identified to designate the liquid being conveyed, and the direction of normal flow shall be clearly shown. The minimum size of the letters and length of the color field shall conform to Table 6-1. *[HCD 1 & HCD 2] An international symbol of a glass in a circle with a slash through it shall be provided similar to that shown in Figure 6-1 for all non-potable water systems.*

The background color and required information shall be indicated every twenty (20) feet (6,096 mm) but not less than once per room, and shall be visible from the floor level.

TABLE 6-1
MINIMUM LENGTH OF COLOR FIELD AND SIZE OF LETTERS

OUTSIDE DIAMETER OF PIPE OR COVERING		MINIMUM LENGTH OF COLOR FIELD		MINIMUM SIZE OF LETTERS	
inches	(mm)	inches	(mm)	inches	(mm)
½ to 1¼	(15 to 32)	8	(203)	½	(12.7)
1½ to 2	(40 to 50)	8	(203)	¾	(19.1)
2½ to 6	(65 to 150)	12	(305)	1¼	(32)
8 to 10	(200 to 250)	24	(610)	2½	(64)
Over 10	(Over 250)	32	(813)	3½	(89)

601.2.3 Fixtures. Where vacuum breakers or backflow preventers are installed with fixtures listed in Table 14–1, identification of the discharge side shall be permitted to be omitted.

601.2.4 Outlets. Each outlet on the non-potable water line that is used for special purposes shall be posted with black uppercase lettering as follows: "CAUTION: NON-POTABLE WATER, DO NOT DRINK."

FIGURE 6-1
INTERNATIONAL SYMBOL

601.3 Faucets and diverters shall be connected to the water distribution system so that hot water corresponds to the left side of the fittings.

601.4 [HCD 1 & HCD 2] All sources for drinking water shall be maintained in a clean and sanitary condition. Drinking fountains and portable water dispensers shall not be located in toilet rooms.

601.5 [CA] Schools of Cosmetology and Cosmetological Establishments.

TABLE 6-2
BACKFLOW PREVENTION DEVICES, ASSEMBLIES AND METHODS

DEGREE OF HAZARD						
DEVICE, ASSEMBLY, OR METHOD[1]	APPLICABLE STANDARDS	POLLUTION (LOW HAZARD)		CONTAMINATION (HIGH HAZARD)		INSTALLATION[2,3]
		BACK-SIPHONAGE	BACK-PRESSURE	BACK-SIPHONAGE	BACK-PRESSURE	
Airgap	ASME A112.1.2	X		X		See Table 6-3 in this chapter.
Air gap fittings for use with plumbing fixtures, appli-ances and appurtenances	ASME A112.1.3	X				Air gap fitting is a device with an internal air gap and typical installation includes plumbing fixtures, appli-ances and appurtenances. The critical level shall not be installed below the flood level rim.
Atmospheric-type vacuum breaker (consists of a body, checking member and at-mospheric port)	ASSE 1001 or CSA B 64.1.1	X		X		Upright position. No valve downstream. Mini-mum of six (6) inches (152 mm) or listed dis-tance above all downstream piping and flood-level rim of receptor.[4,5]
Antisiphon fill valve (ball-cocks) for gravity water closet flush tanks and urinal tanks	ASSE 1002 or CSA B 125.3	X		X		Installation on gravity water closet flush tank and urinal tanks with the fill valve installed with the critical level not less than 1 inch above the opening of the overflow pipe. [4,5]
Vacuum breaker wall hy-drants, hose bibbs, frost re-sistant, automatic draining type	ASSE 1019 or CSA B 64.2.1.1	X		X		Installation includes wall hydrants and hose bibbs. Such devices are not for use under con-tinuous pressure conditions (means of shut-off downstream of device is prohibited).[4,5]
Backflow preventer for Car-bonated Beverage Dis-pensers (two independent check valves with a vent to the atmosphere)	ASSE 1022	X				Installation includes carbonated beverage ma-chines or dispensers. These devices operate under intermittent or continuous pressure con-ditions.
Spill-Resistant Pressure-Type Backflow Prevention Assembly (single check valve with air inlet vent and means of field testing)	ASSE 1056	X		X		Upright position. Minimum of six (6) inches (152 mm) or listed distance above all down-stream piping and flood-level rim of receptor.[5]
Double Check Valve Back-flow Prevention Assem-bly (two independent check valves and means of field testing)	ASSE 1015; AWWA C510; CSA B 64.5 or CSA B 64.5.1	X	X			Horizontal unless otherwise listed. Requires one (1) foot (305 mm) clearance at bottom for maintenance. May need platform/ ladder for test and repair. Does not discharge water.
	ASSE 1048	X	X			Horizontal unless otherwise listed. Requires one (1) foot (305 mm) clearance at bottom for maintenance. May need platform/ ladder for test and repair. Does not discharge water. In-stallation includes a fire protection system and is designed to operate under continuous pres-sure conditions.
Pressure Vacuum Breaker Backflow Prevention Assem-bly (loaded air inlet valve, in-ternally loaded check valve and means of field testing)	ASSE 1020 or CSA B 64.1.2	X		X		Upright position. May have valves down-stream. Minimum of twelve (12) inches (305 mm) above all downstream piping and flood-level rim of receptor. May discharge water.
Reduced Pressure Principle Backflow Prevention As-sembly (two independently acting loaded check valves, a pressure relief valve and means of field testing)	ASSE 1047	X	X	X	X	Horizontal unless otherwise listed. Requires one (1) foot (305 mm) minimum clearance at bottom for maintenance. May need platform/ladder for test and repair. May discharge water. Installation includes a fire protection system and is designed to operate under continuous pressure conditions.
	ASSE 1013; AWWA C511; CSA B 64.4 or CSA B 64.4.1	X	X	X	X	Horizontal unless otherwise listed. Requires one (1) foot (305 mm) minimum clearance at bot-tom for maintenance. May need platform/ladder for test and repair. May discharge water.

[1] See description of devices and assemblies in this chapter.
[2] Installation in pit or vault requires previous approval by the Authority Having Jurisdiction.
[3] Refer to general and specific requirement for installation.
[4] Not to be subjected to operating pressure for more than twelve (12) hours in any twenty-four (24) hour period.
[5] For deck-mounted and equipment-mounted vacuum breaker, see Section 603.4.15.

*601.5.1 **Hot-and Cold running Water.** At least one sink with hot-and cold-running water shall be provided in each work area or workroom where hairdressing is performed in each school and establishment.*

*601.5.2 **Handwashing Facilities.** Each school and establishment shall provide adequate handwashing facilities, including hot-and cold-running water, located within or adjacent to the toilet room or rooms in accordance with Table 4-1.*

*601.5.3 **Drinking Water.** Each school and establishment shall supply potable drinking water convenient to students, patrons and employees. Approved sanitary drinking fountains shall be installed and so regulated that a jet of at least 2 inches (51 mm) shall be constantly available.*

***601.6 [AGR] Meat and Poultry Processing Plants.** Except as provided in Section 601.6.4, the water supply shall be ample and potable, with adequate pressure and facilities for its distribution in the plant, and its protection against contamination and pollution.*

***Note:** A water report, issued under the authority of the state health agency, certifying to the potability of the water supply, shall be obtained by the applicant and furnished to the administrator whenever such report is required by the administrator.*

601.6.1 A supply of hot water shall be available.

601.6.2 Hose connections with steam and water-mixing valves or hot-water hose connections shall be provided at locations throughout the plant.

601.6.3 The refuse rooms shall be provided with facilities for washing refuse cans and other equipment in the rooms.

601.6.4 Non-potable water is permitted only in those parts of official plants where no product is handled or prepared, and then only for limited purposes, such as on condensers not connected with the potable water supply, in vapor lines serving inedible product rendering tanks, and in sewer lines for moving heavy solids in the sewage. In all cases, non-potable water lines shall be clearly identified and shall not be cross connected with the potable water supply.

***Exception:** Cross connection is permitted if this is necessary for fire protection and such connection is of a type with a break to ensure against accidental contamination, and to be approved by local authorities and by the Department.*

601.6.5 Equipment using potable water shall be so installed as to prevent back-siphonage into the potable water system.

601.6.6 All pipelines, reservoirs, tanks, cooling towers, and like equipment employed in handling reused water shall be constructed and installed so as to facilitate their cleaning and inspection.

601.6.7 Hot water of such temperature as to accomplish a thorough cleanup shall be delivered under pressure to outlets.

601.6.7.1 An ample supply of water at not less than 180°F (82°C) shall be available when used for sanitizing purposes.

601.6.8 Pens, alleys, and runways shall have hose connections for cleanup purposes.

601.7 [AGR] Collection Centers and Facilities.

601.7.1 The water supply shall be ample with facilities for its distribution. An ample supply of water at not less than 180°F (82°C), or other suitable method.

601.7.2 The vehicle cleaning and sanitizing area shall be provided with adequate line steam, producing a temperature of at least 180°F (82°C), or other suitable method.

601.7.3 Hose connections with steam and water-mixing valves of hot-and cold-water hose connections shall be provided at locations throughout the building and at unloading and vehicle cleaning slabs.

TABLE 6-3
MINIMUM AIRGAPS FOR WATER DISTRIBUTION[4]

FIXTURES	WHEN NOT AFFECTED BY SIDEWALLS[1] Inches	(mm)	WHEN AFFECTED BY SIDEWALLS[2] Inches	(mm)
Effective openings[3] not greater than one-half (½) inch (12.7 mm) in diameter	1	(25.4)	1½	(38)
Effective openings[3] not greater than three-quarters (¾) inch (19.1 mm) in diameter	1½	(38)	2¼	(57)
Effective openings[3] not greater than one (1) inch (25.4 mm) in diameter	2	(51)	3	(76)
Effective openings[3] greater than one (1) inch (25.4 mm) in diameter	Two (2) times diameter of effective opening		Three (3) times diameter of effective opening	

[1] Sidewalls, ribs, or similar obstructions do not affect airgaps when spaced from the inside edge of the spout opening a distance exceeding three (3) times the diameter of the effective opening for a single wall, or a distance exceeding four (4) times the effective opening for two (2) intersecting walls.

[2] Vertical walls, ribs, or similar obstructions extending from the water surface to or above the horizontal plane of the spout opening other than specified in Note 1 above. The effect of three (3) or more such vertical walls or ribs has not been determined. In such cases, the airgap shall be measured from the top of the wall.

[3] The effective opening shall be the minimum cross-sectional area at the seat of the control valve or the supply pipe or tubing that feeds the device or outlet. If two (2) or more lines supply one outlet, the effective opening shall be the sum of the cross-sectional areas of the individual supply lines or the area of the single outlet, whichever is smaller.

[4] Airgaps less than one (1) inch (25.4 mm) shall be approved only as a permanent part of a listed assembly that has been tested under actual backflow conditions with vacuums of zero (0) to twenty-five (25) inches (635 mm) of mercury.

601.8 [AGR] Renderers. This area shall be provided with live steam or other method of sanitizing vehicles.

601.9 [AGR] Horse Meat and Pet Food Establishments.

601.9.1 The water supply shall be ample, clean, and potable, with facilities for its distribution in the plant, and its protection against contamination and pollution.

601.9.1.1 Equipment using potable water shall be so installed as to prevent back-siphonage into the potable water system.

601.9.1.2 Non-potable water is permitted only in those parts of official plants where no edible product is handled or prepared, and then only for limited purposes, such as on ammonia condensers not connected with the potable water supply, in vapor lines serving inedible product rendering tanks, in connection with equipment used for washing and washing inedible products preparatory to tanking, and in sewer lines for moving heavy solids in sewage. In all cases, non-potable water lines shall be clearly identified and shall not be cross connected with the potable water supply.

***Exception:** Cross connection is permitted if this is necessary for fire protection, and such connection is of a type with a break to ensure against accidental contamination, and is approved by local authorities or by the Department.*

601.9.2 All pipelines, reservoirs, tanks, cooling towers, and like equipment employed in handling reused water shall be constructed and installed so as to facilitate their cleaning and inspection.

601.9.3 Hot water for cleaning rooms and equipment shall be delivered under pressure to outlets and shall be of such temperature as to accomplish a thorough cleanup.

601.9.3.1 An ample supply of water at not less than 180°F (82°C) shall be available when used for sanitizing purposes.

601.9.4 Pens, alleys, and runways shall have hose connections for cleanup purposes.

602.0 Unlawful Connections.

602.1 No installation of potable water supply piping or part thereof shall be made in such a manner that it will be possible for used, unclean, polluted, or contaminated water, mixtures, or substances to enter any portion of such piping from any tank, receptor, equipment, or plumbing fixture by reason of back-siphonage, suction, or any other cause, either during normal use and operation thereof, or when any such tank, receptor, equipment, or plumbing fixture is flooded or subject to pressure exceeding the operating pressure in the hot or cold water piping.

602.2 No person shall make a connection or allow one (1) to exist between pipes or conduits carrying domestic water supplied by any public or private water service system, and any pipes, conduits, or fixtures containing or carrying water from any other source or containing or carrying water that has been used for any purpose whatsoever, or any piping carrying chemicals, liquids, gases, or any substances whatsoever, unless there is provided a backflow prevention device approved for the potential hazard and maintained in accordance with this code. Each point of use shall be separately protected when potential cross-contamination of individual units exists.

602.3 No plumbing fixture, device, or construction shall be installed or maintained or shall be connected to any domestic water supply when such installation or connection provides a possibility of polluting such water supply or cross-connection between a distributing system of water for drinking and domestic purposes and water that becomes contaminated by such plumbing fixture, device, or construction unless there is provided a backflow prevention device approved for the potential hazard.

602.4 No water piping supplied by any private water supply system shall be connected to any other source of supply without the approval of the Authority Having Jurisdiction, Health Department, or other department having jurisdiction.

603.0 Cross-Connection Control.

Cross-connection control shall be provided in accordance with the provisions of this chapter.

No person shall install any water-operated equipment or mechanism, or use any water-treating chemical or substance, if it is found that such equipment, mechanism, chemical, or substance causes pollution or contamination of the domestic water supply. Such equipment or mechanism shall be permitted only when equipped with an approved backflow prevention device or assembly.

603.1 Approval of Devices or Assemblies. Before any device or assembly is installed for the prevention of backflow, it shall have first been approved by the Authority Having Jurisdiction. Devices or assemblies shall be tested for conformity with recognized standards or other standards acceptable to the Authority Having Jurisdiction. Backflow prevention devices and assemblies shall comply with Table 6–2, except for specific applications and provisions as stated in Sections 603.4 through 603.4.22.

Devices or assemblies installed in a potable water supply system for protection against backflow shall be maintained in good working condition by the person or persons having control of such devices or assemblies. Such devices or assemblies shall be tested at the time of installation, repair, or relocation and not less than on an annual schedule thereafter, or more often when required by the Authority Having Jurisdiction. If found to be defective or inoperative, the device or assembly shall be repaired or replaced. No device or assembly shall be removed from use or relocated or other device or assembly substituted, without the approval of the Authority Having Jurisdiction.

Testing shall be performed by a certified backflow assembly tester.

603.2 Backflow Prevention Devices, Assemblies, and Methods.

603.2.1 Airgap. The minimum airgap to afford backflow protection shall be in accordance with Table 6-3.

603.2.2 Atmospheric Vacuum Breaker (AVB). An atmospheric vacuum breaker consists of a body, a checking member, and an atmospheric port.

603.2.3 Hose Connection Backflow Preventer. A hose connection backflow preventer consists of two (2) independent check valves with an independent atmospheric vent between and a means of field testing and draining.

603.2.4 Double Check Valve Backflow Prevention Assembly (DC). A double check valve backflow prevention assembly consists of two (2) independently acting internally loaded check valves, four (4) properly located test cocks, and two (2) isolation valves.

603.2.5 Pressure Vacuum Breaker Backflow Prevention Assembly (PVB). A pressure vacuum breaker backflow prevention assembly consists of a loaded air inlet valve, an internally loaded check valve, two (2) properly located test cocks, and two (2) isolation valves. This device shall be installed indoors only if provisions for spillage are provided.

603.2.6 Pressure Vacuum Breaker Spill-Resistant-Type Backflow Prevention Assembly (SVB). A pressure-type vacuum breaker backflow prevention assembly consists of one (1) check valve force-loaded closed and an air inlet vent valve force-loaded open to atmosphere, positioned downstream of the check valve, and located between and including two (2) tightly closing shutoff valves and test cocks.

603.2.7 Reduced-Pressure Principle Backflow Prevention Assembly (RP). A reduced-pressure principle backflow prevention assembly consists of two (2) independently acting internally loaded check valves, a differential pressure-relief valve, four (4) properly located test cocks, and two (2) isolation valves.

603.3 General Requirements.

603.3.1 Assemblies shall conform to listed standards and be acceptable to the Authority Having Jurisdiction, with jurisdiction over the selection and installation of backflow prevention assemblies.

603.3.2 Where more than one (1) backflow prevention valve is installed on a single premise, and the valves are installed in one (1) location, each separate valve shall be permanently identified by the permittee in a manner satisfactory to the Authority Having Jurisdiction.

603.3.3 The premise owner or responsible person shall have the backflow prevention assembly tested by a certified backflow assembly tester at the time of installation, repair, or relocation and not less than on an annual schedule thereafter, or more often when required by the Authority Having Jurisdiction. The periodic testing shall be performed in accordance with the procedures referenced in Table 14-1 by a tester qualified in accordance with those standards.

603.3.4 Access and clearance shall be provided for the required testing, maintenance, and repair. Access and clearance shall require a minimum of one (1) foot (305 mm) between the lowest portion of the assembly and grade, floor, or platform. Installations elevated exceeding five (5) feet (1,524 mm) above the floor or grade shall be provided with a permanent platform capable of supporting a tester or maintenance person.

603.3.5 Direct connections between potable water piping and sewer-connected wastes shall not be permitted to exist under any condition with or without backflow protection. Where potable water is discharged to the drainage system, it shall be by means of an approved airgap of two (2) pipe diameters of the supply inlet, but in no case shall the gap be less than one (1) inch (25.4 mm). Connection shall be permitted to be made to the inlet side of a trap provided that an approved vacuum breaker is installed not less than six (6) inches (152 mm), or the distance according to the device's listing, above the flood-level rim of such trapped fixture, so that at no time will any such device be subjected to any back-pressure.

603.3.6 Backflow preventers for hot water exceeding 110°F (43.3°C) shall be a type designed to operate at temperatures exceeding 110°F (43.3°C) without rendering any portion of the assembly inoperative.

603.3.7 Fixtures, appliances, or appurtenances with integral backflow preventers or integral airgaps manufactured as a unit shall be installed in accordance with their listing requirements and the manufacturer's instructions.

603.3.8 In cold climate areas, backflow assemblies and devices shall be protected from freezing with an outdoor enclosure or by a method acceptable to the Authority Having Jurisdiction.

603.3.9 Drain lines serving backflow devices or assemblies shall be sized in accordance with the discharge rates of the manufacturer's flow charts of such devices or assemblies.

603.3.10 Design and Installation of Plumbing Fixtures. Plumbing fixtures shall be installed such that fixture fittings, complying with the backflow prevention requirements of ASME A112.18.1/CSA B125.1, *Standard for Plumbing Supply Fittings*, do not have these requirements compromised by the designated fixture fitting mounting surface.

603.4 Specific Requirements.

603.4.1 Water closet and urinal flushometer valves shall be equipped with an atmospheric vacuum breaker. The vacuum breaker shall be installed on the discharge side of the flushometer valve with the critical level not less than six (6) inches (152 mm), or the distance according to its listing, above the overflow rim of a water closet bowl or the highest part of a urinal.

603.4.2 Water closet and urinal tanks shall be equipped with a ballcock. The ballcock shall be installed with the critical level not less than one (1) inch (25.4 mm) above the full opening of the overflow pipe. In cases where the ballcock has no hush tube, the bottom of the water supply inlet shall be installed one (1) inch (25.4 mm) above the full opening of the overflow pipe.

603.4.3 Water closet flushometer tanks shall be protected against backflow by an approved backflow prevention assembly, device, or method.

603.4.4 Heat Exchangers.

603.4.4.1 Heat exchangers used for heat transfer, heat recovery, or solar heating shall protect the potable water system from being contaminated by the heat-transfer medium. Single-wall heat exchangers used in indirect-fired water heaters shall meet the requirements of Section 506.4.2. Double-wall heat exchangers shall separate the potable water from the heat-transfer medium by providing a space between the two (2) walls that are vented to the atmosphere.

603.4.5 Water supply inlets to tanks, vats, sumps, swimming pools, and other receptors shall be protected by one of the following means:

(1) An approved airgap.

(2) A listed vacuum breaker installed on the discharge side of the last valve with the critical level not less than six (6) inches (152 mm) or in accordance with its listing.

(3) A backflow preventer suitable for the contamination or pollution, installed in accordance with the requirements for that type of device or assembly as set forth in this chapter.

603.4.6 Protection from Lawn Sprinklers and Irrigation Systems.

603.4.6.1 Potable water supplies to systems having no pumps or connections for pumping equipment, and no chemical injection or provisions for chemical injection, shall be protected from backflow by one of the following devices:

(1) Atmospheric vacuum breaker

(2) Pressure vacuum breaker

(3) Spill-resistant pressure vacuum breaker

(4) Reduced-pressure backflow preventer

603.4.6.2 Where sprinkler and irrigation systems have pumps, connections for pumping equipment, or auxiliary air tanks, or are otherwise capable of creating back-pressure, the potable water supply shall be protected by the following type of device if the backflow device is located upstream from the source of back-pressure:

(1) Reduced-pressure backflow preventer

603.4.6.3 Where systems have a backflow device installed downstream from a potable water supply pump or a potable water supply pump connection, the device shall be one of the following:

(1) Atmospheric vacuum breaker

(2) Pressure vacuum breaker

(3) Spill-resistant pressure vacuum breaker

(4) Reduced-pressure backflow preventer

603.4.6.4 Where systems include a chemical injector or any provisions for chemical injection, the potable water supply shall be protected by the following:

(1) Reduced-pressure backflow preventer

603.4.7 Potable water outlets with hose attachments, other than water heater drains, boiler drains, and clothes washer connections, shall be protected by a nonremovable hose-bibb-type backflow preventer, a nonremovable hose bibb-type vacuum breaker, or by an atmospheric vacuum breaker installed not less than six (6) inches (152 mm) above the highest point of usage located on the discharge side of the last valve. In climates where freezing temperatures occur, a listed self-draining frost-proof hose bibb with an integral backflow preventer or vacuum breaker shall be used.

603.4.8 Water-cooled compressors, degreasers, or any other water-cooled equipment shall be protected by a backflow preventer installed in accordance with the requirements of this chapter.

Note: Water-cooled equipment that produces back-pressure shall be equipped with the appropriate protection.

603.4.9 Water inlets to water-supplied aspirators shall be equipped with a vacuum breaker installed in accordance with its listing requirements and this chapter. The discharge shall drain through an airgap. When the tailpiece of a fixture to receive the discharge of an aspirator is used, the airgap shall be located above the flood-level rim of the fixture.

603.4.10 Potable water makeup connections to steam or hot water boilers shall be provided with a listed backflow protection assembly.

603.4.11 Non-potable Water Piping. In cases where it is impractical to correct individual cross-connections on the domestic waterline, the line supplying such outlets shall be considered a non-potable water line. No drinking or domestic water outlets shall be connected to the non-potable waterline. Whenever possible, portions of the non-potable waterline shall be exposed, and exposed portions shall be properly identified in a manner satisfactory to the Authority Having Jurisdiction. Each outlet on the non-potable waterline that is permitted to be used for drinking or domestic purposes shall be posted: "CAUTION: NON-POTABLE WATER, DO NOT DRINK." *[HCD 1 & HCD 2] An international symbol of a glass in a circle with a slash through it shall be provided similar to that shown in Figure 6-1.*

603.4.12 Potable water supply to carbonators shall be protected by either an airgap or a vented backflow preventer for carbonated beverage dispensers installed within the carbonated beverage dispenser. The carbonated beverage dispenser shall bear the label of an approved testing agency, certifying and attesting that such equipment has been tested and inspected and meets the requirements of the approved applicable standard. Carbonated beverage dispensers without an approved internal airgap or vented

backflow preventer for carbonated beverage dispensers and carbonated beverage dispensing systems shall have the water supply protected with a vented backflow preventer for carbonated beverage dispensers.

603.4.13 Water Treatment Units. Reverse osmosis drinking water treatment units shall meet the requirements of the applicable standards referenced in Table 14-1. Waste or discharge from reverse osmosis or other types of water treatment units shall enter the drainage system through an airgap.

603.4.14 Backflow preventers shall not be located in any area containing fumes that are toxic, poisonous, or corrosive.

603.4.15 Deck-mounted or equipment-mounted vacuum breakers shall be installed in accordance with their listing and the manufacturer's instructions, with the critical level not less than one (1) inch (25.4 mm) above the flood-level rim.

603.4.16 Protection from Fire Systems.

Note: Fire Protection Systems has not been adopted by the State Fire Marshal. This section cannot be adopted or enforced pursuant to California Health and Safety Code 13114.7(a), which is being cited for reference.

California Health and Safety Code 13114.7

(a) For the purposes of this section the following are definitions of class I and class II systems:

(1) American Water Works Association (A.W.W.A) Manual No. M-14 class 1 – Automatic fire sprinkler systems with direct connection from public water mains only; no pumps, tanks, or reservoirs; no physical connection from other water supplies; no antifreeze or additives of any kind; and all sprinkler drains discharging to the atmosphere or other safe outlets.

(2) American Water Works Association (A.W.W.A) Manual No. M-14 class 2 -- Automatic fire sprinkler systems which are the same as class 1, except that booster pumps may be installed in the connections from the street mains.

(b) Automatic fire sprinkler systems described in subdivision (a) shall not required any backflow protection equipment at the service connection other than required by standards for those systems contained in the publication of the National Fire Protection Association entitled "Installation of Sprinkler Systems" (NFPA Pamphlet No. 13, 1980 edition).

603.4.17 Special Equipment, Water Supply Protection. Vacuum breakers for washer-hose bedpans shall be located not less than five (5) feet (1,524 mm) above the floor. Hose connections in health care or laboratory areas shall be not less than six (6) feet (1,829 mm) above the floor.

603.4.18 Portable cleaning equipment, dental vacuum pumps, and chemical dispensers shall be protected from backflow by an airgap, an atmospheric vacuum breaker, a spill-resistant vacuum breaker, or a reduced pressure principle backflow preventer.

603.4.19 Combination stop-and-waste valves or cocks shall not be installed underground.

603.4.20 Pure Water Process Systems. The water supply to a pure water process system, such as dialysis water systems, semiconductor washing systems, and similar process piping systems, shall be protected from backpressure and back-siphonage by a reduced-pressure principle backflow preventer.

603.4.20.1 Dialysis Water Systems. The individual connections of the dialysis related equipment to the dialysis pure water system shall not require additional backflow protection.

603.4.21 Plumbing Fixture Fittings. Plumbing fixture fittings with integral backflow protection shall comply with ASME A112.18.1/CSA B 125.1, *Standard for Plumbing Supply Fittings.*

603.4.22 Potable water supply to swimming pools, spas, and hot tubs shall be protected by an airgap or a reduced pressure principle backflow preventer in accordance with the following:

(1) The unit is equipped with a submerged fill line; or

(2) The potable water supply is directly connected to the unit circulation system.

604.0 Materials.

604.1 Pipe, tube, and fittings carrying water used in potable water systems intended to supply drinking water shall meet the requirements of NSF 61, *Standard for Drinking Water System Components,* as found in Table 14-1. Materials used in the water supply system, except valves and similar devices, shall be of a like material, except where otherwise approved by the Authority Having Jurisdiction.

Materials for building water piping and building supply piping shall be in accordance with the applicable standards referenced in Table 6-4.

Exceptions:

(1) [OSHPD 1, 2, 3 & 4] Use of CPVC is not permitted for applications under authority of the Office of Statewide Health Planning and Development.

(2) [OSHPD 1, 2, 3 & 4] Installation and use of PEX tubing shall be in accordance with manufacturer's installation standards. PEX piping shall not be used for any application that would result in noncompliance with any provisions of the California Building Standards Code.

(3) [OSHPD 1, 2, 3 & 4] Use of PEX-AL-PEX piping is not permitted for applications under the authority of the Office of Statewide Health Planning and Development.

(4) [OSHPD 1, 2, 3 & 4] When PEX tubing is placed in soil and is used in potable water systems intended to supply drinking water to fixtures or appliances, the tubing or piping shall be sleeved with a material approved for potable water use in soil or other material that is impermeable to solvents or petroleum products.

(5) [OSHPD 1, 2, 3 & 4] PEX tubing shall meet the requirements of NSF P171 CL-R, ASTM F 876-08, Standard for Crosslinked Polyethylene (PEX) Tubing, or an equivalent or

TABLE 6-4
MATERIALS FOR BUILDING SUPPLY AND WATER DISTRIBUTION PIPING AND FITTINGS

MATERIAL	BUILDING SUPPLY PIPE AND FITTINGS	WATER DISTRIBUTION PIPE AND FITTINGS	REFERENCED STANDARD(S) PIPE	REFERENCED STANDARD(S) FITTINGS
Asbestos-Cement	X[1]		ASTM C 296, AWWA C400	
Brass	X	X	ASTM B 43, ASTM B 135	
Copper	X	X	ASTM B 42, ASTM B 75, ASTM B 88, ASTM B 251, ASTM B 302, ASTM B 447	ASME B16.15, ASME B16.18, ASME B16.22, ASME B16.26
CPVC	X	X	ASTM D 2846, ASTM F 441, ASTM F 442	ASTM D 2846, ASTM F 437, ASTM F 438, ASTM F 439, ASTM F 1970
Ductile-Iron	X	X	AWWA C151	ASME B16.4, AWWA C110, AWWA C153
Galvanized Steel	X	X	ASTM A 53	
Malleable Iron	X	X		ASME B16.3
PE	X[1]		ASTM D 2239, ASTM D 2737, ASTM D 3035, AWWA C 901, CSA B137.1	ASTM D 2609, ASTM D 2683, ASTM D 3261, ASTM F 1055, CSA B137.1
PE-AL-PE	X	X	ASTM F 1282, CSA B137.9	ASTM F 1282, ASTM F 1974, CSA B137.9
PEX[3,4]	X	X	ASTM F 876 , ASTM F 877, CSA B137.5	ASTM F 877, ASTM F 1807, ASTM F 1960, ASTM F 1961, ASTM F 2080, ASTM F 2159, CSA B137.5
PEX-AL-PEX[2]	X	X	ASTM F 1281, ASTM F 2262, CSA B137.10	ASTM F 1281, ASTM F 1974, ASTM F 2434, CSA B137.10
PVC	X[1]		ASTM D 1785, ASTM D 2241, AWWA C900	ASTM D 2464, ASTM D 2466, ASTM D 2467, ASTM F 1970
Stainless Steel	X	X	ASTM A 269, ASTM A 312	

[1] For Building Supply or cold-water applications.

[2] *[BSC, DSA-SS, DSA-SS/CC, and HCD] The use of PEX-AL-PEX in potable water supply systems is not adopted.*

[3] *[BSC, DSA-SS, DSA-SS/CC, HCD, AGR, and DPH] When PEX tubing is placed in soil and is used in potable water systems intended to supply drinking water to fixtures or appliances, the tubing or piping shall be sleeved with a material approved for potable water use in soil or other material that is impermeable to solvents or petroleum products.*

[4] *[BSC, DSA-SS, DSA-SS/CC, HCD, AGR, and DPH] PEX tubing shall meet the requirements of NSF P171 CL-R, ASTM F 876-08 or an equivalent or more stringent standard when used in continuously recirculating hot water systems where chlorinated water is supplied to the system and the PEX tubing is exposed to the hot water 100% of the time.*

more stringent standard when used in continuously recirculating hot water systems where chlorinated water is supplied to the system and the PEX tubing is exposed to the hot water 100% of the time.

604.1.1 Local Authority to Approve CPVC Pipe Within Residential Buildings Under Specified Conditions.

[HCD 1 & HCD 2] The local responsible building official of any city, county, or city and county, shall authorize by permit the use of CPVC for hot and cold water distribution systems within the interior of residential buildings provided all of the following conditions are satisfied:

(a) ***Permit Conditions.*** *Any building permit issued pursuant to Section 604.1.1 shall be conditioned on compliance with the mitigation measures set forth in this section.*

(b) ***Approved Materials.*** *Only CPVC plumbing material listed as an approved material and installed in accordance with this code may be used.*

(c) ***Installation and Use.*** *Any installation and use of CPVC plumbing material pursuant to this section shall comply with all applicable requirements of this code and Section 1.2 of Appendix I of this code, Installation Standard for CPVC Solvent Cemented Hot and Cold Water Distribution Systems, IAPMO IS 20-2006.*

(d) ***Certification of Compliance.*** *Prior to issuing a building permit pursuant to Section 604.1.1, the building official shall require as part of the permitting process that the contractor, or the appropriate plumbing subcontractors, provide written certification: (1) that is required in subdivision (e), and (2) that he or she will comply with the flushing procedures and worker safety measures set forth in Section 1.2 of Appendix I of this code, Installation Standard for CPVC Solvent Cemented Hot and Cold Water Distribution Systems, IAPMO IS 20-2006.*

(e) ***Worker Safety.*** *Any contractor applying for a building permit that includes the use of CPVC plumbing materials authorized pursuant to this section shall include in the permit application a signed written certification stating that:*

(1) They are aware of the health and safety hazards associated with CPVC plumbing installations;

Excerpt from California Department of Public Health Compliance Order 02-04-95CO-006

ORDER

Pursuant to Section 116655 of the California *Health and Safety Code*, the California Department of Health Services hereby amends Compliance Order 02-04-95CO-006 and orders the Respondents, the City and County of San Francisco and the San Francisco Public Utilities Commission, to perform the following to ensure that the water delivered to the public is at all times pure, wholesome, and potable.

1) The City and County of San Francisco shall not cause cross-connections between the AWSS or any other unapproved water supply with the potable water system of the City and County of San Francisco.

2) The City and County of San Francisco and San Francisco Public Utilities Commission shall maintain a fire response and cross connection control plan approved by the Department. The plan shall include:

    a) The dispatch of a water inspector trained in the identification and abatement of cross connections to all two alarm or higher fires in area served by the AWSS or where suction connections to San Francisco Bay or any other unapproved water supply exist or are likely to occur. The inspector shall be authorized to

review all fire fighting operations and abate cross connections. The inspector shall file a written report of his or her findings within 24 hours of each response.

b) The reporting of all cross connections discovered during fire fighting operations to the Department as soon as possible but no later than 24 hours after discovery.

c) Completion of a flushing and monitoring procedure approved by the Department at each cross connection. The SFPUC shall consult with the Department regarding public notification or issuance of a local boil water in response to such cross connection events.

d) A monthly report of responses to fire fighting operations to the Department by the tenth of each month.

e) An annual report to the Department summarizing all response to fire fighting operations, and describing the actions taken to prevent cross connections from occurring.

3) The City and County of San Francisco, the San Francisco Public Utilities Commission and City Distribution Division shall follow a Department approved procedure for oversight of all potable water service connection work in the areas of the City and County of San Francisco served by the AWSS.

4) Within 120 days of the receipt of this order, the City and County of San Francisco shall submit a report to the Department evaluating all services with fire hydrants or similar appurtenances on the premises where a cross connection between San Francisco Bay or any other service with a known unapproved water supply and the potable water supply system may occur in fire fighting operations. This report shall demonstrate that the backflow protection provided meets the regulatory requirements. This investigation may be limited to services in proximity to San Francisco Bay and other known unapproved water supplies where fire hydrants or similar suction connections exist.

5) The City and County of San Francisco and the San Francisco Public Utilities Commission shall test or cause to have tested all backflow prevention devices used by the San Francisco Fire Department at least annually and maintain records of that testing.

6) The City and County of San Francisco and the San Francisco Public Utilities Commission shall report all unprotected connections resulting from fire fighting operations to its consumers annually. The report shall contain a non-technical explanation of the incidents and the potential public health consequences of the cross connections.

The Department reserves the right to make such modifications to this Order as it may deem necessary to protect public health and safety. Such modifications may be issued as amendments to this Order and shall be effective upon issuance.

All submittals required by this Order shall be addressed to:

Mr. Clifford L. Bowen, P.E.
District Engineer
San Francisco District
Drinking Water Field Operations Branch
California Department of Health Services
2151 Berkeley Way, Room 458
Berkeley, CA 94704.

If the Respondent is unable to perform the tasks specified in this Order for any reason, whether within or beyond the Respondent's control, and if the Respondent notifies the Department in writing no less than ninety days in advance of the due date, the Department may extend the time for performance if the Respondent demonstrates that it has made its best effort to comply with the schedules and other requirements of this Order. If the Respondent fails to perform any of the tasks specified in this Order by the time described herein or by the time as subsequently extended pursuant to this paragraph, the Respondent shall be deemed to have failed to comply with the obligations of this Order and will be subject to additional judicial action, including civil penalties specified in Section 116725 of the California *Health and Safety Code*.

The State of California shall not be liable for any injuries or damages to persons or property resulting from acts or omissions by the Respondent, its employees, agents, or contractors, in performing activities pursuant to this Order, nor shall the State of California be held as party to any contract entered into by the Respondent or its agents in performing activities pursuant to this Order. By issuance of this Order, the Department does not waive any further enforcement actions.

PARTIES BOUND

This Order shall apply to and be binding upon the Respondent, its officers, directors, agents, employees, contractors, successors, and assignees.

CIVIL PENALTIES

Section 116650 (d) and 116650 (e) of the California *Health and Safety Code* allow for the assessment of a civil penalty for failure to comply with the requirements of Chapter 7 of the California *Health and Safety Code* or any citation or order issued thereunder. Failure to comply with any provision of this Order will result in the Department imposing an administrative penalty not to exceed two hundred dollars ($200) for each day of violation.

SEVERABILITY

The requirements of this Order are severable, and the Respondent shall comply with each and every provision thereof notwithstanding the effectiveness of any provision.

March 14, 2001
Date

Catherine S. Ma, P.E., Chief
North Coast Region
Drinking Water Field Operations Branch

cc: Department of Public Health
City and County of San Francisco
Attn: Mr. Ken Sato

Mr. Andrew F. DeGraca, P.E.
Water Quality Bureau Manager
San Francisco Public Utilities Commission
1657 Rollins Road
Burlingame, CA 94010

Mr. Tony Flores
City Distribution Division Manager
San Francisco Public Utilities Commission
1990 Newcomb Avenue
San Francisco, CA 94124 -1617

CERTIFIED MAIL NO. 7000 0600 0023 1371 9450

APPENDIX B

Certifying Associations Acceptable to the San Francisco Department of Public Health

- American Water Works Association
- American Backflow Prevention Association
- Northern California Backflow Prevention Association

APPENDIX C

Cross-Connection Control Program Forms

New Assembly Installation Report

SFPUC Water Quality Division

Return this form to:
SFPUC Water Quality Division
Cross Connection Program
P.O. Box 730 Millbrae, CA, 94030-0730

New Assembly Installation Report

THIS FORM IS FOR USE WHEN A BACKFLOW PREVENTION ASSEMBLY IS INSTALLED FOR THE FIRST TIME ONLY. DO NOT USE IF IT IS TO REPLACE ANOTHER EXISTING BACKFLOW PREVENTION ASSEMBLY FROM BEING REMOVED.

Backflow Assembly Information

Site Name/ Owners Name (To whom the SF water bill is mailed)

Meter #	Tap #	Type of Service: Standard ☐ Fire ☐ Irrigation ☐ Reclaimed ☐

Service Address of building or residence	Nearest Cross Street

Backflow Assembly Location; Using specific wording, Identify location.

Manufacturer	Backflow Type	Model Number	Size	Serial Number

Installation Date ___/____/_____	Hazard Type	Hazard Level High ☐ Low ☐	Protection Type Containment ☐ Isolation ☐

Comments:

Report of Test Results

Initial Test

Reduced Pressure Principle Assembly			PVB	Shut off Valves		
Double check & Reduced Pressure		Differential Relief Valve	Air Inlet Opened at _____ PSID ☐ Did not open		#1	#2
Check Valve #1	Check Valve #2			Closed Tight	☐	☐
Held at _____ PSID ☐ Closed Tight ☐ Leaked	Held at _____ PSID ☐ Closed Tight ☐ Leaked	Opened at _____ PSID ☐ Opened under 2.0 PSID or did not open	Check held at _____ PSID ☐ Leaked	Leaked	☐	☐

Final Test

Held at _____ PSID ☐ Closed Tight ☐ Leaked	Held at _____ PSID ☐ Closed Tight ☐ Leaked	Opened at _____ PSID ☐ Opened under 2.0 PSID or did not open	Air Inlet Opened at _____ PSID ☐ Did not open Check held at _____ PSID ☐ Leaked	Shut off	#1	#2
				Closed Tight	☐	☐
				Leaked	☐	☐

THE ABOVE REPORT IS CERTIFIED TO BE TRUE:	Pass ☐ Fail ☐	DPH Certified Tag #

Initial test by:	SF Certified Tester #	Test Date	Company Seal (must include your company name, business address, phone numbers)
		___/____/_____	

Final Test By:	SF Certified Tester #	Test Date	Company Seal (must include your company name, business address, phone numbers)
		___/____/_____	

The above report is certified to be true: _____
Signature of tester

Last Revised by MF: 01/07/10

APPENDIX D

Instructions for Authorized Backflow Prevention Assembly Testers

Instructions for Authorized Backflow Prevention Assembly Testers

1 Purpose

The purpose of these instructions is to set forth the responsibilities of and requirements for backflow prevention assembly testers in the City and County of San Francisco. The instructions describe the requirements for operating in San Francisco, what forms to use, and how to communicate with the various City departments involved in the Cross-Connection Control Program. Information provided by testers is used to maintain the Cross-Connection Control Program database and assists the City in creating new accounts and updating existing accounts. It is important that testers ensure the accuracy of reports and information submitted to the program.

These instructions are organized into the following sections:

2 Permit to Operate

- Testers who operate within the City and County of San Francisco must obtain a permit to operate from the San Francisco Department of Public Health (SFDPH).
- All applicants for a permit to operate must hold a valid "Backflow Prevention Assembly Tester" certification from the American Water Works Association, American Backflow Prevention Association, or Northern California Backflow Prevention Association. In addition, applicants must pass an exam administered by SFDPH, pay an annual license fee, and maintain general liability insurance. It is the tester's responsibility to keep the permit to operate current.
- Each holder of a permit to operate who is not a City employee must maintain general liability insurance in full force and effect, at his or her expense, for all activities performed under the permit to operate. Such insurance must include coverage for bodily injury, personal injury, including death resulting therefrom, and property damage insurance, with limits not less than $1 million each occurrence combined single limit. The City and County of San Francisco, its officers, and employees must be named as additional insureds under the policy, and a cross-liability clause must be attached. The insurance must provide 10-day prior written notice of cancellation, non-renewal, or material change to SFDPH. SFDPH will not issue a permit to operate before receiving a certificate of insurance meeting these requirements.

- Each permit to operate is valid for one year from the date of issuance. The permit to operate may be renewed if the holder maintains a current "Backflow Prevention Assembly Tester" certification from a recognized testing organization, maintains insurance as described above, and pays applicable fees.
- The General Manager may suspend or revoke a permit to operate at any time for cause.

3 Authorized Tester Responsibilities

- Testers must attend an annual meeting held by Water Quality Division and SFDPH.
- Equipment for testing backflow prevention assemblies must be calibrated at least once a year. ***The tester must provide a copy of the certification to the SFDPH inspector when the Permit to Operate is obtained or renewed.***
- Testers must obtain backflow tags from the SFDPH and attach them to assemblies that have passed testing. (See Section 4 for how to obtain tags.) Note that if an assembly is a year or more overdue for testing (for example, the assembly was due for testing in October 2013 and it is now January 2014), then attach a tag with the prior year's date (in the example case, 2013).
- If a tester finds an assembly that has been modified or incorrectly installed, he or she must immediately report the situation to the Cross-Connection Control Program and ***not test the assembly***. To report the situation, describe it in the "Comments" section of the Backflow Assembly Test Report Form and submit the form. (See Section 10 for how to submit test report forms.) All assemblies installed in San Francisco must be on the "Approved Backflow Prevention Assemblies" list developed by the University of Southern California (USC) Foundation for Cross-Connection Control and Hydraulic Research. Any modification of an assembly—such as relocation of valves, bypass arrangements, and jumper connections, whether temporary or permanent—invalidates the foundation's approval and is not permitted. Likewise, an assembly that has been installed in an orientation for which it was not designed or approved is also not permitted.
- Testers must submit test results electronically or on forms obtained from the Cross-Connection Control Program. (See Section 5 for how to set up an electronic account and Section 6 for how to obtain forms.)

4 Obtaining Backflow Tags

- Testers must obtain backflow tags from SFDPH, located at 1390 Market Street, Suite 210, San Francisco. Tags may be obtained in person or by mail.
- Tags must be paid for by check (company or personal) or money order made out to the San Francisco Department of Public Health. Cash and credit cards are not accepted. All sales of tags are final; there are no refunds or exchanges.
- Tags may be purchased in person between 8 am and12 noon and 1 pm and 5 pm, Monday through Friday. Representatives purchasing tags will need the following information:
  - Letter on company letterhead that provides the authorized tester information with his or her signature on the letter.
  - Copy of Annual License Certificate from the Tax Collector's Office.
  - Check or money order made payable to the San Francisco Department of Public Health.
- Tags may be purchased by mail with a request including the following information.
  - Name of the tester and company, if applicable.
  - Copy of Annual License Certificate from the Tax Collector's Office.
  - Number of tags being purchased.

- Check or money order made payable to the San Francisco Department of Public Health.

5 Establishing a CCAMS Account

Starting on January 1, 2014, testers who have established accounts with WQD's Cross-Connection Assembly Management System (CCAMS) can access test forms, submit test results, and access their test history on line at *CCAMS.sfwater.org*. ***Testers must have current permits to operate and maintain valid insurance on file with SFDPH to access CCAMS.***

- To establish an account with CCAMS, a tester must be affiliated with a test company that is registered with SFDPH.
- Each tester must contact WQD or SFDPH (by telephone or email) with a valid, current email address. The email address will serve as the tester's user name. The tester will be emailed a password to be used with the email address provided.
- If a tester works for more than one company, he or she needs a separate email address and password for each company.
- Once a tester has a username and password, he or she can access CCAMS at *CCAMS.sfwater.org*. A tester can only enter information into CCAMS for tests performed by him or herself.
- The email address and password take the place of the tester signature on test reports submitted in CCAMS.
- All information (test reports, etc.) entered into CCAMS is reviewed by WQD. Testers will be notified via CCAMS whether or not the information entered is approved or rejected. If rejected, the information will have to be re-entered following instructions provided by WQD on the rejection notification.
- It is recommended that testers add *noreply@sfwater.org* to their email contact lists so that emails from CCAMS are not treated as spam.

6 Obtaining Backflow Assembly Test Report Forms

- A "Backflow Assembly Test Report" must be used to report test results for existing backflow prevention assemblies. (For new installations, see Section 7.) This form must also be used if you remove or replace a backflow prevention assembly, rebuild or repair it, or do anything at a location where a backflow prevention assembly once existed.
- Backflow Assembly Test Report forms are sent to customers along with the 30-day notices indicating that testing is due. The notices also include the customer's personal identification code (PIC) and the service point identification (SPID) number associated with the assemblies at a given service address.
- Testers can either download test report forms from CCAMS or obtain them from the customer, for example, when meeting him or her at the location where the backflow assembly is to be tested. If a test form is downloaded from CCAMS, testers must obtain the PIC numbers from the customer.
- If the customer cannot locate the PIC number(s), then the customer may obtain the PIC number(s) or preprinted test forms by calling (650) 652-3199 and asking to speak to a member of the Cross-Connection Control Program. To access his or her account, the customer must have the SPID number or service address, for multiple taps. Only the

customer, not the tester, may obtain PIC numbers from the Cross-Connection Control Program if the 30-day notice is sent to a San Francisco address.

- If the 30-day notice is sent to an "accounts receivable" department outside of San Francisco, or a tester has a contract with an out-of-city customer to perform annual testing, the tester may call the Cross-Connection Control Program in the month that a site is due for testing to obtain either a set of pre-printed test forms (by mail or email) or PIC numbers to allow downloading the forms from CCAMS. This exception is made so that testers can proceed with testing for out-of-city customers in a timely manner. Note, however, that Cross-Connection Control Program staff will contact the customer before releasing the forms or PIC numbers, and therefore it is unlikely that the tester will receive them on the same day as they are requested.
- If a customer needs to obtain preprinted test forms or PIC numbers at a time not associated with annual testing, for example, because a leaking assembly needs repair, he or she may call the Cross-Connection Control Program at (650) 652-3199. To access his or her account, the customer must have the SPID number or service address, for multiple taps.

7 New Installations

- New installations must be reported on "New Assembly Installation Report" forms, which can be obtained from the Cross-Connection Control Program or by download at *http://sfwater.org/backflow*. Testers can also enter the information directly into CCAMS (on the "Assembly Management/Add Assembly" tab). Note that this form should only be used in two cases:
  - If a backflow prevention assembly has never existed at the service address.
  - If a backflow prevention assembly exists at a site but has not been entered into the Cross-Connection Control Program's database, for example, it does not have an SFDPH tag. (If an assembly does not have a tag, inform the customer and the Cross-Connection Control Program immediately.)
- Enter the meter number, if known, on the New Assembly Installation Report. This information is important for associating the correct customer with a particular backflow prevention assembly.
- Under "Exact Assembly Location," try to be as specific as possible. Example 1: Building B, 2nd Floor, north wall utility closet labeled J2. Example 2: Basement, 25 feet east of the northeast corner, below stairwell.

8 Removal, Replacement or Relocation of Backflow Prevention Assemblies

- Only a licensed plumber may remove, replace or relocate a backflow prevention assembly. A plumbing permit for the work must be obtained from the Department of Building Inspection (DBI). Permits can be obtained either from San Francisco's Central Permit Bureau, located at 1660 Mission Street, telephone number (415) 558-6070 or on line at *http://www.sfdbi.org/index.aspx?page=228*. Plumbing inspections can be scheduled by calling Plumbing Inspection Services at (415) 558-6070. A copy of the signed permit must be submitted to the Cross-Connection Control Program within 30 days of approval.

- Testers must report the removal or replacement of a backflow prevention assembly on a Backflow Prevention Assembly Test Report. (To obtain access to a test report on CCAMS, contact WQD.) If the assembly being removed or replaced was tested, be sure to record the results of the test in the "Initial Test" area of the form. If a new assembly is installed, record its information in the area highlighted with a gray bar, titled "Replacement Information Below." Then record the test results for the new assembly in the "Final Test" area of the form.

It is important that the information for both the old and new assemblies be reported on the same form. That way, the customer will have the correct serial number and associated backflow prevention assembly inactivated; the serial number and associated information for the new assembly will be entered into the Cross-Connection Control Program's database; and the old and new assemblies will be tied together in the database history.

9 Recording or Correcting Information on Backflow Assembly Test Report Forms

- On pre-printed test forms, cross out the incorrect information.
- If you wish to add a contact to the account, such as a chief engineer or person to call, add it to the "Contact Name" field on the left side of the upper section of the test report (on pre-printed forms only; this field cannot be edited by a tester in CCAMS) or to the "Comments" field below the second section of the test report. All comments are automatically forwarded to WQD for review. The information will be entered into the Cross-Connection Control Program's database.
- If you believe that information on a pre-printed test form is incorrect, such as the location or make of a backflow prevention assembly, contact the Cross-Connection Control Program to report the error, or enter the correct information into the "Comments" field below the second section of the test report. All comments are automatically forwarded to WQD for review. Staff will review the program's database and verify the information.
- If customer information (name or mailing address) needs to be updated, the customer must contact San Francisco Water, Power and Sewer (SFWPS) Customer Services at (415) 351-3399 to have the changes made. Information will then be updated in the Cross-Connection Control Program's database by the following Monday morning.
- If a customer wishes to change the testing date to another month or synchronize multiple accounts, he or she can arrange this by contacting the Cross-Connection Control Program.

10 Submitting Test Reports

- Test results must be submitted within five calendar days of the test date. Test results may be submitted electronically using CCAMS or in hard-copy format. Testers are responsible for submitting their own test reports.
- If results are entered in CCAMS, testers have a five-day window for modifying the test results. After five days, if modifications need to be made, then the tester must contact WQD to have the test canceled. The tester may then reenter the test information. Note that a "fail" result causes an assembly to be automatically routed to SFDPH for enforcement action. However, entering a subsequent "pass" result returns an assembly to normal status. Once a

"pass" result is entered for an assembly, the test's PIC number can no longer be used to access that assembly in CCAMS.

- If results are in hard-copy format, submit only original, signed test reports by mail or high-resolution scan of the signed test reports by email. Faxed copies, mailed-in faxed copies, and reports that have been faxed at any time (whether before or after information has been entered into the form) are not acceptable.
- Hard-copy reports that have been electronically altered in any way are not acceptable, except that information may be entered into the fields titled "Initial Test By," "Final Test By," "Comments," "Signature of Tester," "Date," "San Francisco Authorized Tester's Number," and "Company Seal."

11 Reporting Problems Observed in the Field

- If a backflow prevention assembly fails a test, the results of the test are to be recorded in the "Initial Test" results area of the test form. The tester should then contact the customer and request authorization to repair the assembly or recommend that it be replaced. If the repair or replacement is not, or is not expected to be, completed within five days of the initial test date, then the tester must submit the test report showing the failed initial test to WQD and SFDPH, Environmental Health. The submittal to WQD may be made using CCAMS, mail, or email of a scanned test report (faxes are not accepted.) If the submittal is made using CCAMS, no separate submittal to SFDPH is required. If the submittal to WQD is made by mail or email, then the test report must also be faxed to SFDPH at (415) 252-3894. The test results must be received within five days of the initial test date.
- If a tester finds a cross-connection hazard that is unprotected, that is, with no backflow prevention assembly or the wrong type of assembly, the tester must inform the customer of the hazard and potential health risk associated with it. The tester must also report the situation to the Cross-Connection Control Program immediately (by telephone if the hazard has no protection at all). An assembly that is the wrong type for the hazard should not be tested.
- If a tester finds a backflow assembly that has been modified or incorrectly installed (e.g., illegal by-pass, relocated shut-off valve, or wrong orientation), the assembly must be reported to the Cross-Connection Control Program immediately and ***must not be tested***.
- If a tester finds an existing backflow prevention assembly that is not tagged or is out of compliance with its test date, the tester must inform the customer of the need to test the assembly and must report the assembly to the Cross-Connection Control Program immediately.

12 Other Information

- Contacting Cross-Connection Control Program staff from the field can save you time and resources; often, questions can be answered or issues rectified on the spot. In addition, vital information that you might not otherwise know to record might be needed from the site.

- If test results for a given month are not received early enough to be entered into the Cross-Connection Control Program's database by the 6th of the following month, the database automatically generates a "Notice of Violation," and the customer might receive this notice after having paid for testing. If this happens, testers should explain the situation to the customer. Testers and customers can call Cross-Connection Control Program staff at (650) 652-3199 to check on the compliance status of their accounts.

Water Quality Division Contact Information

San Francisco Water, Power and Sewer
Water Quality Division
Attn: Cross-Connection Control Program
P.O. Box 730
Millbrae, CA 94030-0730
(650) 652-3199
Ron Gallega
Senior Water Services Clerk
(650) 652-3127
rgallega@sfwater.org

Online
https://CCAMS.sfwater.org
http://sfwater.org/backflow for information about the Cross-Connection Control Program and to download New Assembly Installation Report forms
www.sfwater.org for water consumer information and Water Quality Reports

Department of Public Health Contact Information

Environmental Health
1390 Market Street, Suite 210
San Francisco, CA 94102
(415) 252-3859
(415) 252-3894 fax

Department of Building Inspection Contact Information

Central Permit Bureau
1660 Mission Street
San Francisco, CA 94103
(415) 558-6070
Plumbing Inspection Services (415) 558-6070
http://www.sfdbi.org/index.aspx?page=228

Attachment F

City and County of San Francisco
Ordinances 195-12, 208-13, 109-15, 246-16, and Article 12C

City of San Francisco Ordinance 195-12
Non-Potable Water Ordinance

[Health, Business and Tax Regulations Codes - On-Site Water Reuse for Commercial, Multi-Family, and Mixed-Use Developments]

Ordinance amending the San Francisco Health Code by adding Article 12C and amending the Business and Tax Regulations Code by adding Section 249.24 to: 1) establish permitting requirements for the use of alternate water sources for nonpotable applications; 2) setting permit and annual fees; and 3) making environmental findings.

NOTE: Additions are *single-underline italics Times New Roman*; deletions are ~~*strike-through italics Times New Roman*~~. Board amendment additions are double-underlined; Board amendment deletions are ~~strikethrough normal~~.

Be it ordained by the People of the City and County of San Francisco:

Section 1. Environmental Findings. The Planning Department has determined that the actions contemplated in this ordinance comply with the California Environmental Quality Act (California Public Resources Code Section 21000 et seq.). Said determination is on file with the Clerk of the Board of Supervisors in File No. 120717 and is incorporated herein by reference.

Section 2. The San Francisco Health Code is hereby amended by adding Article 12C, Sections 850 - 861, to read as follows:

SEC 850. PURPOSE AND FINDINGS.

The Board of Supervisors finds that:

(a) All California water users are responsible for making effective use of the available water resources.

(b) The development of alternate water source systems will assist in meeting future water requirements of the City and lessen the impacts of new developments on the City's sewer system.

(c) Establishing a regulatory structure that provides adminstrative efficiency and a streamlined project approval process will assist developers who opt to ~~for~~ *design*~~ing~~, *install*~~ing~~, *operat*~~ing~~, *and maintain*~~ing~~ *alternate water source systems* ~~will provide administrative efficiency and streamline the project approval process~~.

(d) Adoption of this ordinance by the Board of Supervisors and adoption of rules and regulations by the Department of Public Health will help achieve the City's goals for water supply use and preservation by:

(1) Promoting the values and benefits of non-potable water use while recognizing the need to invest water and other resources as efficiently as possible;

(2) Encouraging the use of non-potable water for non-potable applications.

SEC. 851. DEFINITIONS.

The terms used in this Article have the meaning set forth below:

(a) Alternate Water Source: a source of nonpotable water that includes graywater, on-site treated nonpotable water, rainwater, and any other source approved by the Director.

(b) Black water: wastewater containing bodily or other biological wastes, as from toilets, dishwashers, kitchen sinks and utility sinks.

(c) City: the City and County of San Francisco.

(d) Director: the Director of Public Health or any individual designated by the Director to act on his or her behalf.

(e) First certificate of occupancy: either a temporary certificate of occupancy or a Certificate of Final Completion and Occupancy as defined in San Francisco Building Code Section 109A, whichever is issued first.

(f) Foundation Drainage: nuisance groundwater that is extracted to maintain a building's or facility's structural integrity and would otherwise be discharged to the City's sewer system. Foundation drainage does not include non-potable groundwater extracted for a beneficial use that is subject to City groundwater well regulations.

(g) General Manager: the General Manager of the San Francisco Public Utilities Commission, or any individual designated by the General Manager to act on his or her behalf.

(h) Graywater: untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes, but is not limited to, wastewater from bathtubs, showers, bathroom sinks, lavatories, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers.

(i) Multi-Family Residential Building: A building that contains three or more dwelling units.

(j) Non-potable Water Engineering Report: Report submitted by project applicant to the Director describing the alternate water source system in accordance with the rules and regulations adopted by the Department of Public Health.

(k) Non-residential: A building that contains occupancies other than dwelling units.

(l) On-Site Treated Non-Potable Water: Non-potable water collected from alternate water sources, treated, and intended to be used on the Project Applicant's site and is suitable for direct beneficial use.

(m) NSF 350 System: Any treatment system certified by NSF International to meet NSF/ANSI Standard 350 for Onsite Residential and Commercial Reuse Treatment Systems, as amended from time to time.

(n) Permittee: owner or operator of an on-site treated non-potable water system.

(o) Project Applicant: the person or entity applying for authorization to install and use an alternate water source project.

(p) Rainwater: precipitation collected from roof surfaces or other manmade, aboveground collection surfaces.

(q) Small Residential Building: A building that contains no more than two dwelling units.

(r) Stormwater: Precipitation collected from at-grade or below grade surfaces.

(s) Water Budget Documentation: An in-depth assessment of the permittee's nonpotable water use, including survey information, water meter readings, water service billing information, and any other information deemed necessary by the General Manager.

SEC. 852. APPLICABILITY.

This Article shall apply to the installation and operation of the alternate water source systems at sites containing multi-family and non-residential buildings. This Article does not apply to:

(a) Systems at small residential occupancies.

(b) Graywater systems where graywater is collected solely for subsurface irrigation and does not require disinfection, as determined by the Director.

(c) Rainwater systems where rainwater is collected solely for subsurface irrigation, drip irrigation, or non-sprinkled surface applications and does not require disinfection, as determined by the Director.

SEC. 853. REGULATION OF ALTERNATE WATER SOURCES.

(a) Any person or entity who installs and operates an alternate water source system shall comply with this Article, the rules and regulations adopted by the Department of Public Health, and all applicable local, state, and federal laws.

(b) Within 90 days after passage of this ordinance, the Director shall issue rules and regulations regarding the operation of alternate water source systems necessary to effectuate the

purposes of the Article and to protect public health and safety. These regulations shall address, at a minimum:

(1) Water quality criteria;

(2) Monitoring and reporting content and frequencies; and

(3) Operation and maintenance requirements.

(c) The Director shall review applications for alternative water sources systems and may issue or deny such applications, in accordance with applicable laws and regulations.

(d) The Department of Building Inspection shall review plans and issue or deny plumbing permits for the construction, installation, or modification of alternate water source systems, in accordance with applicable laws and regulations.

SEC 854. PROJECT APPLICANT AND/OR PERMITTEE DESIGN AND CONSTRUCTION REQUIREMENTS.

(a) Prior to initiating installation of any alternate water source project, project applicants shall submit to the Director an application for permits to operate alternate water source systems. Such applications shall comply with the requirements of this Article and any regulations the Director has issued. Project applicants shall pay a non-refundable permit application fee to cover the costs of investigation and processing the application and issuing the permit. Each project application submitted to the Director shall include a Non-Potable Engineering Report that provides project information the Director determines to be necessary for complete review of the proposed project. City departments may not approve or issue permits for any site installing an alternate water source system unless and until the Director has approved the Non-Potable Engineering Report.

*(b) **System Design**. All alternate water source systems shall include:*

(1) A flow meter on the alternate water source system to account for nonpotable water use;

(2) A reduced pressure backflow assembly (RP) within 25 feet of the downstream side of the point of connection or meter to protect the City's public water and/or recycled water system;

(3) Signage that state law and the Department of Public Health's rules and regulations require;

(4) Cross connection control in accordance with California Code of Regulations Titles 17 and 22 and the San Francisco Public Utilities Commission's Cross Connection Control Program; and

(5) Any other requirements the Director determines is necessary to protect public health.

*(c) **Water budget documentation**. Upon submitting a project application to the Director, a project applicant shall also submit Water Budget Documentation to the General Manager for review. Water Budget Documentation shall include a description of the proposed alternate water source system, the project's water budget, and other applicable information as determined by the General Manager. City departments may not issue a site permit or plumbing permit, or approve an alternate water source project application unless and until the General Manager has reviewed the Water Budget Documentation.*

*(d) **Plumbing Permit.** A project applicant shall obtain from the Department of Building Inspection an appropriate plumbing permit and any other building or installation permit required to construct, install, alter, an alternate water source system.*

*(e) **Construction Certification Letter.** Project applicants shall certify to the Director that alternate water source system construction is complete and consistent with the approved Non-Potable Engineering Report in accordance with the provisions of this Article 12C and any implementing rules and regulations. City departments may not approve or issue a first certificate of occupancy or approval for any alternate water source system until the Director has reviewed and verified the Construction Certification Letter.*

SEC. 855. FEES.

(a) The non-refundable application fees for alternative source water system permits are:

(1) Rainwater	*$1,544.00*
(2) NSF 350 systems	*$2,688.00*
(3) Foundation Drainage	*$5,032.00*
(4) Graywater	*$5,032.00*
(5) Black water	*$9,034.00*
(6) Transfer of any permit	*$ 229.00*

(b) The fees set forth in this Section may be adjusted each year, without further action by the Board of Supervisors.

Not later than April 1, the Director shall report to the Controller the revenues generated by the fees for the prior fiscal year and the prior fiscal year's costs of operation, as well as any other information that the Controller determines appropriate to the performance of the duties set forth in this Section.

Not later than May 15, the Controller shall determine whether the current fees produce, or are projected to produce, revenues sufficient to support the costs of providing the services for which the fees are assessed and that the fees will not produce revenue significantly exceed more than the costs of providing the services for which the fees are assessed.

The Controller shall if necessary, adjust the fees upward or downward for the upcoming fiscal year as appropriate to ensure that the program recovers the costs of operation without producing revenue which is significantly more than such costs. The adjusted rates shall become operative on July 1.

(c) Every permit holder shall also pay an annual license fee as provided in the Businsess and Taxation Code Section 249.24.

SEC. 856. OPERATING REQUIREMENTS.

When the Director determines the applicant has satisfied all the requirements of this Article, the Director may issue an operations permit for an alternative water source system. Permittees shall timely submit all water quality monitoring information required by the provisions of this Article 12C and the Department of Public Health's rules and regulations. Permittees shall conduct ongoing backflow prevention and cross connection testing in accordance with this Article, the rules and regulations of the Department of Public Health, and all applicable local, state, and federal laws.

SEC. 857. NON-POTABLE WATER USE AUDITS.

When required by General Manager, the permittee or property owner, shall conduct a non-potable water use audit describing the extent of non-potable water use in accordance with requirements provided by the General Manager.

SEC. 858. SALE OR TRANSFER OF PERMITS.

(a) Permittees shall notify the Director of any intent to sell or transfer the building or facility containing an alternate water source system 30 days prior to the sale or transfer of property, in accordance with regulations adopted by the Director.

(b) Any subsequent owner shall submit documentation to the Director establishing their ability to own, operate and maintain the alternate water source system in accordance with this Article, the rules and regulations adopted by the Department of Public Health, and all applicable local, state, and federal laws, within 90 days of transfer of the property and prior to commencement of operations of the alternate water supply system.

(c) The Director may approve or deny the transfer of the permit to operate to any subsequent owner, in accordance with the requirements of the Article and applicable regulations.

SEC. 859. INSPECTION AND NOTICES OF VIOLATION.

The Director may inspect any alternate water source system subject to the requirements of this Article to determine compliance with the provisions of this Article and applicable regulations.

SEC. 860. VIOLATION AND PENALTIES.

The Director may impose administrative penalties on any permittee, or person otherwise subject to the requirements of this Article, who violates any provision of this Article or any applicable rule or regulation shall be subject to enforcement in accordance with Chapter 100 of the San Francisco Administrative Code with respect to administrative penalties, and may pursue any other available legal remedies for such violations.

SEC. 861. REVOCATION AND SUSPENSION OF PERMIT.

The Director may order a permittee to cease operation of an alternate water source system, or may revoke or suspend the permit to operate if the Director determines that:

(a) The manager, operator or any employee has violated any provision of the Article or any regulation issued pursuant to this Article;

(b) The alternate water source system is being operated or maintained in a manner threatening the public health or health of patrons and/or residents; or

(c) The owner or operator has refused to allow any duly authorized City official to inspect the premises or the operations of the alternate water source system.

Section 3. The San Francisco Business and Taxation Code is hereby amended by adding Section 249.24, to read as follows:

SEC 249.24. NON-POTABLE WATER SYSTEMS.

Every person, firm or corporation engaged in operating an alternate water source system that requires a permit from the San Francisco Department of Public Health shall pay an annual license fee to the Tax Collector in the amount listed below. For the purpose of this Section, the term " alternate water source systems" shall have the same meaning as that in Article 12C of the San Francisco Health Code.

a) Rainwater	*$ 472.00*
b) NSF 350 systems	*$ 929.00*
c) Foundation Drainage	*$1,387.00*
d) Graywater	*$1,387.00*
e) Black water	*$1,844.00*

The license fee set forth above shall be paid annually on or before March 31, in accordance with the provisions of Section 76.1 of the Business and Tax Regulations Code.

Section 4. This ordinance shall become effective 30 days from the date of passage.

Section 5. This section is uncodified. In enacting this Ordinance, the Board intends to amend only those words, phrases, paragraphs, subsections, sections, articles, numbers, punctuation, charts, diagrams, or any other constituent part of the Health Code or Business and Taxation Code that are explicitly shown in this legislation as additions, deletions, Board amendment additions, and Board amendment deletions in accordance with the "Note" that appears under the official title of the legislation.

Section 6. By adopting this Article, the City and County of San Francisco is assuming an undertaking only to promote the general welfare. It is not assuming, nor is it imposing on

its officers and employees, an obligation or duty for breach of which it is liable in money damages or any other relief to any person who claims that such a breach proximately caused injury or damages.

APPROVED AS TO FORM:
DENNIS J. HERRERA, City Attorney

By: _____
VIRGINIA DARIO ELIZONDO
Deputy City Attorney

City and County of San Francisco
Tails
Ordinance

City Hall
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102-4689

File Number: 120717 **Date Passed:** September 11, 2012

Ordinance amending the San Francisco Health Code by adding Article 12C and amending the San Francisco Business and Tax Regulations Code by adding Section 249.24 to: 1) establish permitting requirements for the use of alternate water sources for nonpotable applications; 2) setting permit and annual fees; and 3) making environmental findings.

July 30, 2012 Land Use and Economic Development Committee - AMENDED

July 30, 2012 Land Use and Economic Development Committee - RECOMMENDED AS AMENDED

September 04, 2012 Board of Supervisors - PASSED, ON FIRST READING

Ayes: 11 - Avalos, Campos, Chiu, Chu, Cohen, Elsbernd, Farrell, Kim, Mar, Olague and Wiener

September 11, 2012 Board of Supervisors - FINALLY PASSED

Ayes: 11 - Avalos, Campos, Chiu, Chu, Cohen, Elsbernd, Farrell, Kim, Mar, Olague and Wiener

File No. 120717

I hereby certify that the foregoing Ordinance was FINALLY PASSED on 9/11/2012 by the Board of Supervisors of the City and County of San Francisco.

Angela Calvillo
Clerk of the Board

Mayor

9/17/12
Date Approved

City of San Francisco Ordinance 208-13

FILE NO. 130765 ORDINANCE NO. 208-13

[Health Code - Alternate Water Sources for Non-Potable Applications]

Ordinance amending the Health Code to establish permitting requirements for two or more parcels that share the use of alternate water sources for non-potable applications; setting permit fees; and making environmental findings.

NOTE: Additions are *single-underline italics Times New Roman*; deletions are ~~*strike-through italics Times New Roman*~~. Board amendment additions are double-underlined; Board amendment deletions are ~~strikethrough normal~~.

Be it ordained by the People of the City and County of San Francisco:

Section 1. Environmental Findings. The Planning Department has determined that the actions contemplated in this ordinance comply with the California Environmental Quality Act (California Public Resources Code Section 21000 et seq.). Said determination is on file with the Clerk of the Board of Supervisors in File No. 130765 and is incorporated herein by reference.

Section 2. The Health Code is hereby amended by amending Article 12C, Sections 851, 854, and 855 to read as follows:

ARTICLE 12C: ***ALTERNATE WATER SOURCES FOR NON-POTABLE APPLICATIONS***

SEC. 851. DEFINITIONS.

The terms used in this Article have the meaning set forth below:

~~*(a)*~~ **Alternate Water Source:** a source of non-potable water that includes graywater, on-site treated non-potable water, rainwater, and any other source approved by the Director.

~~*(b)*~~ **Black water:** wastewater containing bodily or other biological wastes, as from toilets, dishwashers, kitchen sinks and utility sinks.

~~(c)~~ **City:** the City and County of San Francisco.

~~(d)~~ **Director:** the Director of Public Health or any individual designated by the Director to act on his or her behalf.

District: *a group of two or more parcels that share alternate water sources.*

~~(e)~~ **First certificate of occupancy:** either a temporary certificate of occupancy or a Certificate of Final Completion and Occupancy as defined in San Francisco Building Code Section 109A, whichever is issued first.

~~(f)~~ **Foundation Drainage:** nuisance groundwater that is extracted to maintain a building's or facility's structural integrity and would otherwise be discharged to the City's sewer system. Foundation drainage does not include non-potable groundwater extracted for a beneficial use that is subject to City groundwater well regulations.

~~(g)~~ **General Manager:** the General Manager of the San Francisco Public Utilities Commission, or any individual designated by the General Manager to act on his or her behalf.

~~(h)~~ **Graywater:** untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes, but is not limited to, wastewater from bathtubs, showers, bathroom sinks, lavatories, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers.

~~(i)~~ **Multi-Family Residential Building:** A building that contains three or more dwelling units.

~~(j)~~ **Non-potable Water Engineering Report:** Report submitted by project applicant to the Director describing the alternate water source system in accordance with the rules and regulations adopted by the Department of Public Health.

~~(k)~~ **Non-residential:** A building that contains occupancies other than dwelling units.

~~(l) On-Site Treated~~ **Non-Potable Water:** Non-potable water collected from alternate water sources, treated, and intended to be used on the Project Applicant's site *or district parcels* and is suitable for direct beneficial use.

~~(m)~~ **NSF 350 System:** Any treatment system certified by NSF International to meet NSF/ANSI Standard 350 for Onsite Residential and Commercial Reuse Treatment Systems, as amended from time to time.

~~(n)~~ **Permittee:** owner or operator of an on-site treated non-potable water system.

~~(o)~~ **Project Applicant:** the person or entity applying for authorization to install and use an alternate water source project.

~~(p)~~ **Rainwater:** precipitation collected from roof surfaces or other manmade, aboveground collection surfaces.

~~(q)~~ **Small Residential Building:** A building that contains no more than two dwelling units.

~~(r)~~ **Stormwater:** Precipitation collected from at-grade or below grade surfaces.

~~(s)~~ **Water Budget Documentation:** An in-depth assessment of the ~~*permittee's*~~ *project applicant's* non-potable water use, including survey information, water meter readings, water service billing information, *alternate water source schematic drawings, or* ~~*and*~~ any other information deemed necessary by the General Manager.

SEC. 854. PROJECT APPLICANT AND/OR PERMITTEE DESIGN AND CONSTRUCTION REQUIREMENTS.

(a) Prior to initiating installation of any alternate water source project, project applicants shall submit to the Director an application for permits to operate alternate water source systems. Such applications shall comply with the requirements of this Article and any regulations the Director has issued. Project applicants shall pay a non-refundable permit application fee to cover the costs of investigation and processing the application and issuing

the permit. Each project application submitted to the Director shall include a Non-~~P~~*potable Water* Engineering Report that provides project information the Director determines to be necessary for complete review of the proposed project. City departments may not approve or issue permits for any site installing an alternate water source system unless and until the Director has approved the Non-~~P~~*p*otable *Water* Engineering Report.

The Non-potable Water Engineering Report for district systems must include information on the permanent legal agreements between property owners, and provide documentation that each party is a willing and responsible participant in the district non-potable water use.

(b) **System Design.** All *buildings using non-potable water from* alternate water source systems shall include:

(1) A flow meter on the ~~*alternate water source*~~ *non-potable distribution* system to account for non-potable water use;

(2) A reduced pressure backflow assembly (RP) within 25 feet of the downstream side of the point of connection or meter to protect the City's public water and/or recycled water system;

(3) Signage that state law and the Department of Public Health's rules and regulations require;

(4) Cross connection control in accordance with California Code of Regulations Titles 17 and 22 and the San Francisco Public Utilities Commission's Cross Connection Control Program;

(5) Any other requirements the Director determines ~~*is*~~ *are* necessary to protect public health.

(c) **Water Budget Documentation.** Upon submitting a project application to the Director, a project applicant shall also submit Water Budget Documentation to the General Manager for review. Water Budget Documentation shall include a description *and location* of

the proposed alternate water source system, the project's water budget, and other applicable information as determined by the General Manager. City departments may not issue *an encroachment permit,* site permit or plumbing permit, or approve a~~n alternate water source project application~~ *Non-potable Water Engineering Report* unless and until the General Manager has reviewed the Water Budget Documentation.

(d) **Plumbing Permit.** A project applicant shall obtain from the Department of Building Inspection an appropriate plumbing permit and any other building or installation permit required to construct, install, alter, an alternate water source system. *Each parcel within a district shall obtain appropriate plumbing and any other building or installation permits required.*

*(e) **Encroachment Permit.** A project applicant shall obtain from the Department of Public Works appropriate authorization for placement of any pipelines or other portions of an alternate water source system within the public right-of-way.*

(*ef*) **Construction Certification Letter.** Project applicants shall certify to the Director that alternate water source system construction is complete and consistent with the approved Non-~~P~~*potable Water* Engineering Report in accordance with the provisions of this Article 12C and any implementing rules and regulations. City departments may not approve or issue a first certificate of occupancy or approval for any alternate water source system until the Director has reviewed and verified the Construction Certification Letter.

SEC. 855. FEES.

(a) The non-refundable application fees for alternative source water system permits are:

(1)	Rainwater	$1,544.00
(2)	NSF 350 systems	$2,688.00
(3)	Foundation Drainage	$5,032.00
(4)	Graywater	$5,032.00

(5) Black water $9,034.00

(6) Transfer of any permit $ 229.00

(7) District Scale, the applicable amount above, plus $ 191.00 per hour for plan review and /or on site inspection.

(b) The fees set forth in this Section may be adjusted each year, without further action by the Board of Supervisors.

Not later than April 1, the Director shall report to the Controller the revenues generated by the fees for the prior fiscal year and the prior fiscal year's costs of operation, as well as any other information that the Controller determines appropriate to the performance of the duties set forth in this Section.

Not later than May 15, the Controller shall determine whether the current fees produce, or are projected to produce, revenues sufficient to support the costs of providing the services for which the fees are assessed and that the fees will not produce revenue *that* significantly exceed more than the costs of providing the services for which the fees are assessed.

The Controller shall if necessary, adjust the fees upward or downward for the upcoming fiscal year as appropriate to ensure that the program recovers the costs of operation without producing revenue which is significantly more than such costs. The adjusted rates shall become operative on July 1.

(c) Every permit holder shall also pay an annual license fee as provided in the Business and Taxation Code Section 249.24.

Section 3. This ordinance shall become effective 30 days from the date of passage.

Section 4. This section is uncodified. In enacting this Ordinance, the Board intends to amend only those words, phrases, paragraphs, subsections, sections, articles, numbers, punctuation, charts, diagrams, or any other constituent part of the Health Code or Business

and Taxation Code that are explicitly shown in this legislation as additions, deletions, Board amendment additions, and Board amendment deletions in accordance with the "Note" that appears under the official title of the legislation.

Section 5. By adopting this Article, the City and County of San Francisco is assuming an undertaking only to promote the general welfare. It is not assuming, nor is it imposing on its officers and employees, an obligation or duty for breach of which it is liable in money damages or any other relief to any person who claims that such a breach proximately caused injury or damages.

APPROVED AS TO FORM:
DENNIS J. HERRERA, City Attorney

By: _____
VIRGINIA DARIO ELIZONDO
Deputy City Attorney

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City and County of San Francisco
Tails
Ordinance

City Hall
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102-4689

File Number: 130765 **Date Passed:** October 08, 2013

Ordinance amending the Health Code to establish permitting requirements for two or more parcels that share the use of alternate water sources for non-potable applications; setting permit fees; and making environmental findings.

September 23, 2013 Land Use and Economic Development Committee - RECOMMENDED

October 01, 2013 Board of Supervisors - PASSED, ON FIRST READING

Ayes: 11 - Avalos, Breed, Campos, Chiu, Cohen, Farrell, Kim, Mar, Tang, Wiener and Yee

October 08, 2013 Board of Supervisors - FINALLY PASSED

Ayes: 11 - Avalos, Breed, Campos, Chiu, Cohen, Farrell, Kim, Mar, Tang, Wiener and Yee

File No. 130765

I hereby certify that the foregoing Ordinance was FINALLY PASSED on 10/8/2013 by the Board of Supervisors of the City and County of San Francisco.

Angela Calvillo
Clerk of the Board

Mayor

10/11/13
Date Approved

City of San Francisco Ordinance 109-15

AMENDED IN BOARD
6/16/15

FILE NO. 150350 ORDINANCE NO. 109-15

[Health, Public Works Codes - Mandatory Use of Alternate Water Supplies In New Construction]

Ordinance amending Health Code, Article 12C, to require that new buildings of 250,000 square feet or more of gross floor area be constructed, operated, and maintained using available alternate water sources for toilet and urinal flushing and irrigation; that new buildings of 40,000 square feet or more of gross floor area prepare water budget calculations; and that subdivision approval requirements include compliance with Article 12C; amending the Public Works Code to provide that pipelines and other facilities constructed in accordance with Article 12C and located in public rights-of-way are subject to approval as minor encroachments and exempt from payment of public right-of-way occupancy assessment fees; and affirming the Planning Department's determination under the California Environmental Quality Act.

NOTE: **Unchanged Code text and uncodified text** are in plain Arial font.
Additions to Codes are in *single-underline italics Times New Roman font*.
Deletions to Codes are in ~~*strikethrough italics Times New Roman font*~~.
Board amendment additions are in double-underlined Arial font.
Board amendment deletions are in ~~strikethrough Arial font~~.
Asterisks (* * * *) indicate the omission of unchanged Code subsections or parts of tables.

Be it ordained by the People of the City and County of San Francisco:

Section 1. The Planning Department has determined that the actions contemplated in this ordinance comply with the California Environmental Quality Act (California Public Resources Code Sections 21000 et seq.). Said determination is on file with the Clerk of the Board of Supervisors in File No. 150350 and is incorporated herein by reference. The Board affirms this determination.

Section 2. Article 12C of the Health Code is hereby amended by revising and renumbering Sections 850-861 as follows (with new section numbers in parentheses): 850 (12C.1), 851 (12C.2), 852 (12C.3), 853 (12C.5), 854 (12C.6), 855 (12C.7), 856 (12C.8), 857 (12C.9), 858 (12C.10), 859 (12C.11), 860 (12C.12), and 861 (12C.13), and adding new Section 12C.4, to read as follows:

SEC. ~~*850*~~*12C.1*. PURPOSE AND FINDINGS.

The Board of Supervisors finds that:

(a) All California water users are responsible for making effective use of the available water resources.

(b) The development of alternate water source systems will assist in meeting future water requirements of the City and lessen the impacts of new developments on the City's sewer system.

(c) Establishing a regulatory structure that provides administrative efficiency and a streamlined project approval process will assist developers who opt to design, install, operate, and maintain alternate water source systems.

(d) Adoption of ~~*this ordinance*~~*Article 12C* by the Board of Supervisors and adoption of rules and regulations by the Department of Public Health will help achieve the City's goals for water supply use and preservation by:

(1) Promoting the values and benefits of non-potable water use while recognizing the need to invest water and other resources as efficiently as possible;

(2) Encouraging the use of non-potable water for non-potable applications~~.~~*; and*

(3) Replacing potable water use for toilet and urinal flushing and irrigation to the maximum extent possible with alternative water sources.

(e) It shall be City policy that within five years of the effective date of Ordinance No. _____, adding this subsection (e) to Article 12C, the City shall use only non-potable water for the purpose of

irrigating and cleaning parks, streets and other public spaces. Within two years of the effective date of that ordinance, the City Administrator, in consultation as appropriate with other City departments, boards, and commissions, including, among others, the Recreation and Park Department, Department of Public Works, Port of San Francisco, San Francisco International Airport, Department of Real Estate, and Capital Planning Committee, shall study what will be required to accomplish this policy, including associated costs, and report the results of the study to the Mayor and Board of Supervisors. Upon receiving this study, the Board of Supervisors intends to evaluate any changes to the law and Capital Plan needed to implement this policy.

SEC. ~~851~~12C.2. DEFINITIONS.

The terms used in this Article *12C* have the meaning set forth below:

Alternate Water Source: a source of non-potable water that includes *Gg*raywater, on-site treated non-potable water, *Rr*ainwater, Blackwater, and any other source approved by the Director.

Blackwater ~~Black Wwater~~: wastewater containing bodily or other biological wastes, as from toilets, dishwashers, kitchen sinks, and utility sinks.

City: the City and County of San Francisco.

Development Project: *Construction of new buildings. Development Projects are Large Development Projects and Small Development Projects.*

Director: the Director of ~~*Public*~~ Health or any individual designated by the Director to act on his or her behalf.

District: a group of two or more parcels that share *Aa*lternate *Ww*ater *Ss*ources.

First *Cc*ertificate of *Oo*ccupancy: either a temporary certificate of occupancy or a Certificate of Final Completion and Occupancy as defined in San Francisco Building Code Section 109A, whichever is issued first.

Foundation Drainage: nuisance groundwater that is extracted to maintain a building's or facility's structural integrity and would otherwise be discharged to the City's sewer system. Foundation *Dd*rainage does not include non-potable groundwater extracted for a beneficial use that is subject to City groundwater well regulations.

General Manager: the General Manager of the San Francisco Public Utilities Commission, or any individual designated by the General Manager to act on his or her behalf.

Graywater: untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes, but is not limited to, wastewater from bathtubs, showers, bathroom sinks, lavatories, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers.

Large Development Project: *Construction of a new building with total gross floor area of 250,000 square feet or more:*

a) located within the boundaries of the Reclaimed Water Use Map designated in accordance with Sections 1203 and 1209 of the Public Works Code and subject to a site permit or building permit that is final and effective after November 1, 2015; or

b) located outside the boundaries of the Reclaimed Water Use Map designated in accordance with Sections 1203 and 1209 of the Public Works Code and subject to a site permit or building permit that is final and effective after November 1, 2016.

Large Development Projects are not limited to buildings constructed by individuals or non-governmental entities but, to the extent allowed by law, also include buildings constructed and operated by any local, state, or federal government entity, including the City and County of San Francisco.

Large Development Project Applicant: *The person or entity applying for authorization to construct and operate a Large Development Project.*

Multi-Family Residential Building: A building that contains three or more dwelling units.

Non-potable Water: Non-potable water collected from alternate water sources, treated, and intended to be used on the Project Applicant's site or *D*~~*d*~~istrict parcels and is suitable for direct beneficial use.

Non-potable Water Engineering Report: Report submitted by *P*~~*p*~~roject *A*~~*a*~~pplicant to the Director describing the alternate water source system in accordance with the rules and regulations adopted by the Department of ~~*Public*~~ Health.

Non-residential: A building that contains occupancies other than dwelling units.

NSF 350 System: Any treatment system certified by NSF International to meet NSF/ANSI Standard 350 for Onsite Residential and Commercial Reuse Treatment Systems, as amended from time to time.

Permittee: owner or operator of an on-site treated *N*~~*n*~~on-potable *W*~~*w*~~ater system.

Project Applicant: the person or entity applying for authorization to install and use an *A*~~*a*~~lternate *W*~~*w*~~ater *S*~~*s*~~ource project.

Rainwater: precipitation collected from roof surfaces or other manmade, aboveground collection surfaces.

Small Development Project: *Construction of a new building with a total gross floor area of 40,000 square feet or more, but less than 250,000 square feet. Small Development Projects are not limited to buildings constructed by individuals or non-governmental entities but, to the extent allowed by law, also include buildings constructed and operated by any local, state, or federal government entity, including the City and County of San Francisco.*

Small Development Project Applicant: *The person or entity applying for authorization to construct and operate a Small Development Project.*

Small Residential Building: A building that contains no more than two dwelling units.

Stormwater: Precipitation collected from at-grade or below grade surfaces.

Water Budget: *The calculation of the potential volume of onsite alternate water supplies and demands of a Development Project and any other building subject to this Article 12C.*

Water Budget Calculator: *The water use calculation application approved by the General Manager that provides for the assessment of a proposed onsite water system, alternate water sources, and the end uses of the alternate water source.*

Water Budget Documentation: An in-depth assessment of the *Pp*project *Aa*pplicant's non-potable water use, including survey information, water meter readings, water service billing information, *Aa*lternate *Ww*ater *Ss*ource schematic drawings, or any other information deemed necessary by the General Manager.

SEC. ~~852~~*12C.3*. APPLICABILITY.

This Article *12C* shall apply to the installation and operation of the *Aa*lternate *Ww*ater *Ss*ource systems at *Large Development Projects, and to the voluntary installation and operation of the alternate water source systems at* sites containing multi-family and non-residential buildings *that are not Large Development Projects*. This Article does not apply to:

(a) Systems at small residential occupancies.

(b) Graywater systems where *Gg*raywater is collected solely for subsurface irrigation and does not require disinfection, as determined by the Director.

(c) Rainwater systems where *Rr*ainwater is collected solely for subsurface irrigation, drip irrigation, or non-sprinkled surface applications and does not require disinfection, as determined by the Director.

SEC. 12C.4. DEVELOPMENT PROJECT REQUIREMENTS.

(a) Large Development Projects shall be constructed, operated, and maintained in compliance with the following:

(1) All toilet and urinal flushing and irrigation demands shall be met through the collection and reuse of available onsite Rainwater, Graywater, and Foundation Drainage, to the extent required by application of the Water Budget Documentation developed for each Development Project.

(2) A Large Development Project Applicant shall use the Water Budget Calculator, as provided by the General Manager's rules, to prepare a Water Budget assessing the amount of Rainwater, Graywater, and Foundation Drainage produced on site, and the planned toilet and urinal flushing and irrigation demands.

(3) If, based on the Water Budget Documentation, the available supply from onsite sources exceeds the demands for toilet and urinal flushing and irrigation, 100% of those demands shall be met by using the available onsite sources. If, based on the Water Budget Documentation, the available supply from onsite sources is less than the demands for toilet and urinal flushing and irrigation, 100% of the available onsite supply shall be used to meet the demands for toilet and urinal flushing and irrigation. Available Blackwater ~~Black Water~~ *or Stormwater supplies may be used instead of, or in addition to Rainwater, Graywater, and Foundation Drainage to meet* ~~the requirements of this subsection.~~ the available onsite supply requirements calculated in accordance with the Water Budget Documentation requirements of this section 12C.4(a).

(4) Small Development Project Applicants shall use the Water Budget Calculator, as provided by the General Manager's rules, to prepare a Water Budget assessing the amount of Rainwater, Graywater and Foundation Drainage produced on site, and the planned toilet and urinal flushing and irrigation demands.

(5) City departments shall not issue an encroachment permit, a site permit, or plumbing permit for a Large Development Project or a Small Development Project, or approve a Non-potable Water Engineering Report, prior to the General Manager's determination that the Water Budget Documentation has been prepared in accordance with the General Manager's rules for Water Budget calculations.

(b) Subdivision Approvals.

(1) Parcel Map or Tentative Subdivision Map Conditions. The Director of Public Works shall not approve a tentative subdivision map or a parcel map for any property unless a condition is imposed requiring compliance with this Article 12C to serve the potential uses of the property covered by the parcel map or tentative subdivision map, as specified in the provisions of this Article.

(2) Subdivision Regulations. The Director of Public Works shall adopt regulations consistent with, and in furtherance of this Article 12C.

(3) Final Maps. The Director of Public Works shall not endorse and file a final map for property within the boundaries of the City without first determining that:

(A) The subdivider has complied with the conditions imposed on the tentative subdivision map or parcel map, pursuant to this Article 12C; and

(B) For any such conditions not fully satisfied prior to the recordation of the final map, the subdivider has signed a certificate of agreement and/or improvement agreement, to ensure compliance with such conditions.

(4) This Subsection (b) shall not apply to tentative subdivision maps or parcel maps submitted solely for the purposes of condominium conversion, as defined in Subdivision Code Section 1308(d).

SEC. ~~853~~12C.5. REGULATION OF ALTERNATE WATER SOURCES.

(a) Any person or entity who installs and operates an Aalternate Wwater Ssource system shall comply with this Article 12C, the rules and regulations adopted by the Department of Public Health, and all applicable local, state, and federal laws.

(b) Within 90 days after passage of this ordinance, the Director shall issue rules and regulations regarding the operation of Aalternate Wwater Ssource systems necessary to effectuate the purposes of the Article and to protect public health and safety. These regulations shall address, at a minimum:

(1) Water quality criteria;

(2) Monitoring and reporting content and frequencies; and

(3) Operation and maintenance requirements.

(c) The Director shall review applications for Aalternative Wwater Ssources systems and may issue or deny such applications, in accordance with applicable laws and regulations.

(d) The Department of Building Inspection shall review plans and issue or deny plumbing permits for the construction, installation, or modification of alternate water source systems, in accordance with applicable laws and regulations.

SEC. ~~854~~12C.6. PROJECT APPLICANT AND/OR PERMITTEE DESIGN AND CONSTRUCTION REQUIREMENTS.

(a) Prior to initiating installation of any Aalternate Wwater Ssource project, Pproject Aapplicants shall submit to the Director an application for permits to operate Aalternate Wwater Ssource systems. Such applications shall comply with the requirements of this Article 12C and any regulations the Director has issued. Project Aapplicants shall pay a non-refundable permit application fee to cover the costs of investigation and processing the application and issuing

the permit. Each project application submitted to the Director shall include a Non-potable Water Engineering Report that provides project information the Director determines to be necessary for complete review of the proposed project. City departments may not approve or issue permits for any site installing an *Aa*lternate *Ww*ater *Ss*ource system unless and until the Director has approved the Non-potable Water Engineering Report.

The Non-potable Water Engineering Report for *Dd*istrict systems must include information on the permanent legal agreements between property owners, and provide documentation that each party is a willing and responsible participant in the *Dd*istrict *Nn*on-potable *Ww*ater use.

(b) **System Design.** All buildings using *Nn*on-potable *Ww*ater from *Aa*lternate *Ww*ater *Ss*ource systems shall include:

(1) A flow meter on the non-potable distribution system to account for *Nn*on-potable *Ww*ater use;

(2) A reduced pressure backflow assembly (RP) within 25 feet of the downstream side of the point of connection or meter to protect the City's public water and/or recycled water system;

(3) Signage that state law and the Department of Public Health's rules and regulations require;

(4) Cross connection control in accordance with California Code of Regulations Titles 17 and 22 and the San Francisco Public Utilities Commission's Cross Connection Control Program;

(5) Any other requirements the Director determines are necessary to protect public health.

~~*(c) Water Budget Documentation. Upon submitting a project application to the Director, a project applicant shall also submit Water Budget Documentation to the General Manager for review.*~~

~~*Water Budget Documentation shall include a description and location of the proposed alternate water source system, the project's water budget, and other applicable information as determined by the General Manager. City departments may not issue an encroachment permit, a site permit or plumbing permit, or approve a Non-potable Water Engineering Report unless and until the General Manager has reviewed the Water Budget Documentation.*~~

~~*(d)*~~*(c)* **Plumbing Permit.** A *P~~p~~*roject *A~~a~~*pplicant shall obtain from the Department of Building Inspection an appropriate plumbing permit and any other building or installation permit required to construct, install, alter, an alternate water source system. Each parcel within a *D~~d~~*istrict shall obtain appropriate plumbing and any other building or installation permits required.

~~*(e)*~~*(d)* **Encroachment Permit.** A *P~~p~~*roject *A~~a~~*pplicant shall obtain from the Department of Public Works appropriate authorization for placement of any pipelines or other portions of an alternate water source system within the public right-of-way.

~~*(f)*~~*(e)* **Construction Certification Letter.** *P~~p~~*roject *A~~a~~*pplicants shall certify to the Director that alternate water source system construction is complete and consistent with the approved Non-potable Water Engineering Report in accordance with the provisions of this Article 12C and any implementing rules and regulations. City departments may not approve or issue a *F~~f~~*irst *C~~e~~*ertificate of *O~~o~~*ccupancy or approval for any *A~~a~~*lternate *W~~w~~*ater *S~~s~~*ource system until the Director has reviewed and verified the Construction Certification Letter.

SEC. ~~*855*~~*12C.7*. FEES.

(a) The non-refundable application fees for alternative source water system permits are:

(1) Rainwater	$1,544.00
(2) NSF 350 systems	$2,688.00
(3) Foundation Drainage	$5,032.00

(4) Graywater		$5,032.00
(5) ~~Black Wwater~~ Blackwater		$9,034.00
(6) Transfer of any permit		$229.00
(7) District Scale, the applicable amount above, plus		$191.00 per hour for plan review and/or on site inspection.

(b) The fees set forth in this Section *12C.7* may be adjusted each year, without further action by the Board of Supervisors.

Not later than April 1, the Director shall report to the Controller the revenues generated by the fees for the prior fiscal year and the prior fiscal year's costs of operation, as well as any other information that the Controller determines appropriate to the performance of the duties set forth in this Section.

Not later than May 15, the Controller shall determine whether the current fees produce, or are projected to produce, revenues sufficient to support the costs of providing the services for which the fees are assessed and that the fees will not produce revenue that significantly exceed more than the costs of providing the services for which the fees are assessed.

The Controller shall if necessary, adjust the fees upward or downward for the upcoming fiscal year as appropriate to ensure that the program recovers the costs of operation without producing revenue which is significantly more than such costs. The adjusted rates shall become operative on July 1.

(c) Every permit holder shall also pay an annual license fee as provided in the Business and Tax~~ation~~ *Regulations* Code Section 249.24.

SEC. ~~856~~12C.8. OPERATING REQUIREMENTS.

When the Director determines the applicant has satisfied all the requirements of this Article 12C, the Director may issue an operations permit for an Aalternative Wwater Ssource system. Permittees shall timely submit all water quality monitoring information required by the provisions of this Article ~~12C~~ and the Department of Public Health's rules and regulations. Permittees shall conduct ongoing backflow prevention and cross connection testing in accordance with this Article, the rules and regulations of the Department of Public Health, and all applicable local, state, and federal laws.

SEC. ~~857~~12C.9. NON-POTABLE WATER USE AUDITS.

When required by the General Manager, the Ppermittee or property owner, shall conduct a Nnon-potable Wwater use audit describing the extent of Nnon-potable Wwater use in accordance with requirements provided by the General Manager.

SEC. ~~858~~12C.10. SALE OR TRANSFER OF PERMITS.

(a) Permittees shall notify the Director of any intent to sell or transfer the building or facility containing an Aalternate Wwater Ssource system 30 days prior to the sale or transfer of property, in accordance with regulations adopted by the Director.

(b) Any subsequent owner shall submit documentation to the Director establishing their ability to own, operate and maintain the Aalternate Wwater Ssource system in accordance with this Article 12C, the rules and regulations adopted by the Department of Public Health, and all applicable local, state, and federal laws, within 90 days of transfer of the property and prior to commencement of operations of the Aalternate Wwater ~~supply~~ Source system.

(c) The Director may approve or deny the transfer of the permit to operate to any subsequent owner, in accordance with the requirements of the~~is~~ Article 12C and applicable regulations.

SEC. ~~859~~12C.11. INSPECTION AND NOTICES OF VIOLATION.

The Director may inspect any Aa~~A~~lternate Ww~~W~~ater Ss~~S~~ource system subject to the requirements of this Article 12C to determine compliance with the provisions of this Article and applicable regulations.

SEC. ~~860~~12C.12. VIOLATION AND PENALTIES.

The Director may impose administrative penalties on any Pp~~P~~ermittee, or person otherwise subject to the requirements of this Article 12C, who violates any provision of this Article or any applicable rule or regulation shall be subject to enforcement in accordance with Chapter 100 of the San Francisco Administrative Code with respect to administrative penalties, and may pursue any other available legal remedies for such violations.

SEC. ~~861~~12C.13. REVOCATION AND SUSPENSION OF PERMIT.

The Director may order a Pp~~P~~ermittee to cease operation of an Aa~~A~~lternate Ww~~W~~ater Ss~~S~~ource system, or may revoke or suspend the permit to operate if the Director determines that:

(a) The manager, operator or any employee has violated any provision of th~~e~~is Article 12C or any regulation issued pursuant to this Article;

(b) The Aa~~A~~lternate Ww~~W~~ater Ss~~S~~ource system is being operated or maintained in a manner threatening the public health or health of patrons and/or residents; or

(c) The owner or operator has refused to allow any duly authorized City official to inspect the premises or the operations of the Aa~~A~~lternate Ww~~W~~ater Ss~~S~~ource system.

Section 3. The Public Works Code is hereby amended by revising Section 723.2 to read as follows:

SEC. 723.2. MINOR SIDEWALK ENCROACHMENTS.

(a) The Director of Public Works may grant permission, revocable at his or her will, to an owner of property abutting any court, alley or street to install and maintain minor encroachments such as fences, retaining walls, steps or stairways and other minor structures in the sidewalk fronting such property where such encroachments are desirable or convenient in conjunction with the owner's use and enjoyment of the property, or required for the safety, convenience and comfort of the public using the sidewalk. *Pipelines or other portions of an alternate water source system constructed within the public right-of-way for the purposes set forth in Article 12C of the Health Code and in accordance with Health Code Section 12C.6 are minor encroachments subject to the requirements of this Section 723.2.*

(b) Such encroachments shall not occupy more than 10 percent of the area of the sidewalk fronting the property nor more than 25 percent of the width of the sidewalk, unless the Director of Public Works determines that such restrictions are not applicable due to the nature of the encroachment. The Director may require further restrictions or modifications and impose such conditions as he or she deems necessary. No advertisement shall be permitted on the encroachments.

(c) In considering the issuance of permits under the provisions of this Section *723.2*, the Director of Public Works shall give due regard to the location, neighborhood pattern, anticipated pedestrian traffic, access requirements of the Fire Department, and to the convenience and necessities of the owners, occupants or tenants of offices, stores or shops in the vicinity.

(d) The owner of the real property or the owner's authorized agent applying for a permit under the provisions of this Section *723.2* shall agree to hold harmless the City and County of San Francisco, its officers, agents, and employees, from any damage or injury caused by reason of the installation or maintenance of the encroachment in the sidewalk, and

the owner or owners or subsequent owner or owners of the respective real property shall be solely liable for any damage or loss occasioned by any act or neglect in respect to the installation or maintenance of the encroachments in the sidewalk.

(e) Each permit issued under the provisions of this Section *723.2* shall not become effective until the permit has been signed by the owner or the owner's authorized agent and a copy thereof has been recorded in the office of the Recorder of the City and County of San Francisco. Within 15 days following the approval, denial or revocation of a permit by the Director, any person may file a notice of appeal as follows:

(1) Appeals of the revocation or denial of a permit issued by the Director for the following encroachments that impede or otherwise impact the Central Subway Corridor, as defined in Section 723.3(3) of this Code; subsidewalk encroachments below the public right-of-way or other encroachments in, on, and/or below the public right-of-way may be appealed to the Board of Supervisors by filing a notice of appeal with the Clerk of the Board of Supervisors.

(2) Appeals of the approval, denial or revocation of all other permits may be appealed by filing a notice of appeal with the Board of Appeal.

(3) In the alternative, when the encroachment is related to building construction, rehabilitation or maintenance, any person may appeal the encroachment permit decision to the Building Inspection Commission. A person waives his or her right to appeal to the Building Inspection Commission encroachment permit decisions relating to building construction, rehabilitation or maintenance by instead filing the appeal with the Board of Supervisors or the Board of Appeals. No encroachment permit decision may be appealed to both bodies.

(f) For purposes of this Section *723.2*, an encroachment permit is related to building construction, rehabilitation or maintenance when the object of the encroachment permit affects the applicant's ability to construct, repair or maintain the building.

(g) Pending decision by the Board of Supervisors, the Board of Appeals or the Building Inspection Commission, the permit decision by the Director shall be suspended.

(h) Before issuance of the permit, the applicant shall be required to pay to the Department of Public Works a fee as set forth in Section 2.1.1et seq. and a public right-of-way occupancy assessment fee as set forth in subsection (k).

(i) Nothing in this Section *723.2* shall be construed as authorizing the Director of Public Works to grant *a* permit for any encroachment which he or she determines to be inimical to the health, welfare, safety and best interest of the general public, or in violation of the Charter or laws of the City and County of San Francisco or laws of the State of California.

(j) The Board of Supervisors, the Board of Appeals or the Building Inspection Commission may affirm, reverse or modify any permit decision made by the Director of Public Works under the provisions of this Section *723.2*. The decision by the Board of Supervisors, the Board of Appeals or the Building Inspection Commission is final.

(k) The Board of Supervisors reserves the right to exact a public right-of-way occupancy assessment fee for the use of the sidewalk or other public right-of-way space permitted under the provisions of this Section *723.2*.

(1) In accordance with *this s*~~S~~ubsection (k) the public right-of-way occupancy assessment fee for minor sidewalk encroachments, whether permitted or unpermitted and as specified in *s*~~S~~ubsection (k)(2), shall be an annual fee of $3.00 per square foot of occupancy of the sidewalk or other public right-of-way space. For purposes of calculating the assessment fee, the Department shall charge no less than $100.00 per year even though the calculated square footage charge for the encroachment may result in a smaller assessment fee.

(2) The following categories of minor sidewalk encroachments are subject to the public right-of-way occupancy assessment fee:

(A~~a~~) Encroachments in, on, above, or below the public right-of-way that are affixed or appurtenant to any building whose owner obtained a site permit for new construction on or after August 29, 2005. This sSubsection (k)(2)(~~a~~A) also shall apply to any commercial, industrial, or mixed-use building whose owner obtained a site permit for new construction prior to August 29, 2005; provided, however, that such building is not located in any Neighborhood Commercial District as designated in Planning Code Article 7 and that the encroachment associated with such building was installed or encroachment permit obtained prior to August 29, 2005. This sSubsection (k)(2)(A) shall specifically include, but not be limited to, doors that open over the public right-of-way and subsidewalk basements; provided, however, that this sSubsection shall exclude encroachments for shoring and tiebacks. This sSubsection (k)(2)(A) shall not apply to a building that has been converted from a commercial, industrial, or mixed-use building into building containing only residential use.

(B~~b~~) Encroachments associated with a commercial, industrial, or mixed-use building that change the vertical or horizontal plane of an existing sidewalk and modify the existing sidewalk slope pattern in order to provide access necessary to comply with the Americans with Disabilities Act; provided, however, that the building obtained a site permit for new construction on or after August 29, 2005.

(C~~c~~) Any enclosure of the public right-of-way that is used exclusively for private benefit and was installed on or after August 29, 2005. This sSubsection (k)(2)(~~e~~C) also shall apply to any enclosure installed prior to August 29, 2005 that is associated with a commercial, industrial, or mixed-use building; provided, however, that the building is not located in any Neighborhood Commercial District as designated in Planning Code Article 7.

(D~~d~~) Underground storage tanks.

(3) For purposes of ~~s~~Subsection (k)(2), the term "site permit" also shall mean "building permit."

(4) Notwithstanding ~~s~~Subsection (k)(2), no public right-of-way occupancy assessment fee shall be charged against the owner of an historic or architecturally significant building who has installed or seeks a permit to install a minor sidewalk encroachment in order to conform with an applicable Municipal Code; provided, however that this exception shall not apply if the encroachment is a sub-sidewalk basement. For purposes of this ~~s~~Subsection, an historic or architecturally significant building shall be a building so designated pursuant to Planning Code Article 10 or specifically identified as an architecturally significant building on the Planning Department's database or on a list maintained by the Planning Department.

(5) Notwithstanding ~~s~~Subsection (k)(2), no public right-of-way occupancy assessment fee shall be charged against the owner of a property for elements installed as a requirement under Planning Code Section 138.1.

(~~5~~A) Notwithstanding ~~s~~Subsection (k)(2), if a minor sidewalk encroachment permit is necessary for the development of a project including residential units, all of which are affordable to low or moderate income households as defined by the United States Housing and Urban Development Department, then such project shall be exempt from payment of the public right-of-way occupancy assessment fee.

(~~6~~) The public right-of-way occupancy assessment fee shall be subject to the review and adjustment procedures as forth in Sections 2.1.1 et seq.

(~~7~~) The public right-of-way occupancy assessment fee shall not be charged to any federal, state, or local governmental agencies, commissions, or departments.

(~~8~~) Notwithstanding this ~~s~~Subsection (~~km~~), the public right-of-way assessment fee for underground vaults shall be as specified in Section 2.1.1 et seq.

(10) Notwithstanding this subsection (k)(2), no public right-of-way occupancy assessment fee shall be charged for pipelines or other portions of an alternate water source system constructed within the public right-of-way for the purposes set forth in Article 12C of the Health Code and in accordance with Health Code Section 12C.6.

(l) Notwithstanding the fees specified herein, if a project involves voluntary seismic retrofit upgrades to soft-story, wood-frame buildings, as defined by the Director of the Department of Building Inspection, such project applicant shall be exempt from the proportionate share of fees specified under this Section *723.2* and Sections 2.1.1et seq. that is related to such retrofit work.

Section 4. Utility Fee Adjustments. By enacting this ordinance, the Board of Supervisors urges the Public Utilities Commission to review water and wastewater utility fees and to consider adjustments to those fees that acknowledge the reduced impact of buildings with Alternate Water Source systems.

Section 45. Effective Date. This ordinance shall become effective 30 days after enactment. Enactment occurs when the Mayor signs the ordinance, the Mayor returns the ordinance unsigned or does not sign the ordinance within ten days of receiving it, or the Board of Supervisors overrides the Mayor's veto of the ordinance.

Section 56. Scope of Ordinance. In enacting this ordinance, the Board of Supervisors intends to amend only those words, phrases, paragraphs, subsections, sections, articles, numbers, punctuation marks, charts, diagrams, or any other constituent parts of the Municipal Code that are explicitly shown in this ordinance as additions, deletions, Board amendment

additions, and Board amendment deletions in accordance with the "Note" that appears under the official title of the ordinance.

APPROVED AS TO FORM:
DENNIS J. HERRERA, City Attorney

By: _____
John Roddy
Deputy City Attorney

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City Hall
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102-4689

File Number: 150350 **Date Passed:** June 23, 2015

Ordinance amending Health Code, Article 12C, to require that new buildings of 250,000 square feet or more of gross floor area be constructed, operated, and maintained using available alternate water sources for toilet and urinal flushing and irrigation; that new buildings of 40,000 square feet or more of gross floor area prepare water budget calculations; and that subdivision approval requirements include compliance with Article 12C; amending the Public Works Code to provide that pipelines and other facilities constructed in accordance with Article 12C and located in public rights-of-way are subject to approval as minor encroachments and exempt from payment of public right-of-way occupancy assessment fees; and affirming the Planning Department's determination under the California Environmental Quality Act.

June 08, 2015 Land Use and Transportation Committee - AMENDED, AN AMENDMENT OF THE WHOLE BEARING SAME TITLE

June 08, 2015 Land Use and Transportation Committee - RECOMMENDED AS AMENDED

June 16, 2015 Board of Supervisors - AMENDED

Ayes: 11 - Avalos, Breed, Campos, Christensen, Cohen, Farrell, Kim, Mar, Tang, Wiener and Yee

June 16, 2015 Board of Supervisors - PASSED ON FIRST READING AS AMENDED

Ayes: 11 - Avalos, Breed, Campos, Christensen, Cohen, Farrell, Kim, Mar, Tang, Wiener and Yee

June 23, 2015 Board of Supervisors - FINALLY PASSED

Ayes: 11 - Avalos, Breed, Campos, Christensen, Cohen, Farrell, Kim, Mar, Tang, Wiener and Yee

File No. 150350

I hereby certify that the foregoing Ordinance was FINALLY PASSED on 6/23/2015 by the Board of Supervisors of the City and County of San Francisco.

Angela Calvillo
Clerk of the Board

Mayor

7/2/2015

Date Approved

City of San Francisco Ordinance 246-16

FILE NO. 161069 AMENDED IN BOARD 11/29/2016 ORDINANCE NO. 246-16

[Health Code - Definition of Projects and Responsibilities for Alternate Water Sources]

Ordinance amending the Health Code to revise the definition of development projects subject to the requirements for an Alternate Water Source system and the definitions of large and small residential projects subject to specific requirements for such a system, and providing authorization for the review and approval of alternative means of compliance; and affirming the Planning Department's determination under the California Environmental Quality Act.

NOTE: **Unchanged Code text and uncodified text** are in plain Arial font.
Additions to Codes are in *single-underline italics Times New Roman font*.
Deletions to Codes are in ~~*strikethrough italics Times New Roman font*~~.
Board amendment additions are in double-underlined Arial font.
Board amendment deletions are in ~~strikethrough Arial font~~.
Asterisks (* * * *) indicate the omission of unchanged Code subsections or parts of tables.

Be it ordained by the People of the City and County of San Francisco:

Section 1. The Planning Department has determined that the actions contemplated in this ordinance comply with the California Environmental Quality Act (California Public Resources Code Sections 21000, et seq.). Said determination is on file with the Clerk of the Board of Supervisors in File No. 161069 and is incorporated herein by reference. The Board affirms this determination.

Section 2. The Health Code is hereby amended by revising Sections 12C.2, 12C.4, and 12C.10, to read as follows:

SEC. 12C.2. DEFINITIONS.

The terms used in this Article 12C have the meaning set forth below:

* * * *

Alternate Water Source System: *The system of facilities necessary for providing Non-potable Water for use in a Development Project, including but not limited to all collection, treatment, storage, and distribution facilities. Non-potable Water System shall have the same meaning.*

* * * *

Development Project: Construction of new buildings. Development Projects are Large Development Projects and Small Development Projects. Development Project does not include rehabilitation of buildings constructed prior to the effective date of this Article 12C. *Development Project does not include (1) any housing project funded or constructed pursuant to the HOPE SF Program sponsored and developed by the San Francisco Housing Authority and either the Mayor's Office of Housing and Community Development or the Office of Community Investment and Infrastructure; (2) construction of a new building that will receive water service from the San Francisco Public Utilities Commission through no larger than a 5/8" domestic water meter or a 5/8" recycled water domestic meter, as determined in accordance with the San Francisco Public Utilities Commission's rules for water service; 3) for District projects located within the boundaries of the Reclaimed Water Use Map, construction of new buildings subject to a disposition and development agreement or similar contractual agreement approved before November 1, 2015, that includes in its applicable infrastructure plan the construction and operations of water treatment facilities within the project boundaries that would provide recycled water to the project; 4) for District projects located within the boundaries of the Reclaimed Water Use Map, construction of new buildings subject to a development agreement or similar contractual agreement, within a development phase or subphase, a street improvement plan, or a tentative map or vesting tentative map approved before November 1, 2015; or 5) for District projects located outside the boundaries of the Reclaimed Water Use Map,*

construction of new buildings subject to a development agreement or similar contractual agreement, within a development phase or subphase, a street improvement plan, or a tentative map or vesting tentative map approved before November 1, 2017.

***District System**: An Alternative Water Source System serving a District Development Project.*

* * * *

***Gross Floor Area:** The floor area of a Development Project as defined in Planning Code Section 102.*

Large Development Project: Construction of a ~~new~~ *single* building, *or construction of multiple buildings on one or more parcels in accordance with a phased plan or approval,* with *a* total gross floor area *for the single building or the multiple buildings* of 250,000 square feet or more:

(a) located within the boundaries of the Reclaimed Water Use Map designated in accordance with Sections 1203 and 1209 of the Public Works Code and subject to a site permit or building permit that is final and effective after November 1, 2015; or

(b) located outside the boundaries of the Reclaimed Water Use Map designated in accordance with Sections 1203 and 1209 of the Public Works Code and subject to a site permit or building permit that is final and effective after November 1, 2016.

Large Development Projects are not limited to buildings constructed by individuals or non-governmental entities but, to the extent allowed by law, also include buildings constructed and operated by any local, state, or federal government entity, including the City and County of San Francisco.

* * * *

***Nonpotable Water System:** The same meaning as Alternate Water Source System.*

* * * *

Permittee: ~~*owner or operator of an on site treated Nonpotable Water system. The*~~ ~~owner~~ operator *of an Alternate Water Source System under this Article 12C*, including, but not limited to, a

third – party contractor obtained for the purpose of operating and maintaining all or any portion of the Alternate Water Source System.

* * * *

Responsible Party: The Project Applicant, or any subsequent owners, assignees, successors in interest or any other transferees responsible for compliance with this Article 12C. Responsible Party includes, but is not limited to, the owner of the common areas within a District Development Project and any homeowners association or similar entity that maintains the common areas within a District Development Project. Responsible Party does not include the Project Applicant, subsequent owners, assignees, successors in interests, transferees, owners of common area, homeowners associations, or any other person or entity associated with a Development Project serviced by an Alternative District System as described in Section 12C.4(d).

* * * *

Small Development Project: Construction of a ~~new~~ *single* building, *or construction of multiple buildings on one or more parcels in accordance with a phased plan or approval,* with a total gross floor area *for the single building or the multiple buildings* of 40,000 square feet or more, but less than 250,000 square feet. Small Development Projects are not limited to buildings constructed by individuals or non-governmental entities but, to the extent allowed by law, also include buildings constructed and operated by any local, state, or federal government entity, including the City and County of San Francisco.

* * * *

Water Budget Documentation: An in-depth assessment of the Project Applicant's non-potable water use, including survey information, water meter readings, water service billing information, Alternate Water Source schematic drawings, or any other information deemed necessary by the General Manager. *For proposed District Systems, Water Budget*

Documentation shall include implementation information that, at a minimum, shall address potential infrastructure and public right of way conflicts, demonstrate compliance with all applicable requirements, and establish the capabilities of the Development Project Applicant to effectively operate the District System.

SEC. 12C.4. DEVELOPMENT PROJECT REQUIREMENTS.

(a) Large Development Projects shall be constructed, operated, and maintained in compliance with the following:

(1) All toilet and urinal flushing and irrigation demands shall be met through the collection and reuse of available onsite Rainwater, Graywater, and Foundation Drainage, to the extent required by application of the Water Budget Documentation developed for each Development Project.

(2) A Large Development Project Applicant shall use the Water Budget Calculator, as provided by the General Manager's rules, to prepare a Water Budget assessing the amount of Rainwater, Graywater, and Foundation Drainage produced on site, and the planned toilet and urinal flushing and irrigation demands.

(3) If, based on the Water Budget Documentation, the available supply from onsite sources exceeds the demands for toilet and urinal flushing and irrigation, 100% of those demands shall be met by using the available onsite sources. If, based on the Water Budget Documentation, the available supply from onsite sources is less than the demands for toilet and urinal flushing and irrigation, 100% of the available onsite supply shall be used to meet the demands for toilet and urinal flushing and irrigation. Available Blackwater or Stormwater supplies may be used instead of, or in addition to Rainwater, Graywater, and Foundation Drainage to meet the available onsite supply requirements calculated in accordance with the Water Budget Documentation requirements of this section 12C.4(a).

(b) ~~*(4)*~~ Small Development Project Applicants shall use the Water Budget Calculator, as provided by the General Manager's rules, to prepare a Water Budget assessing the amount of Rainwater, Graywater and Foundation Drainage produced on site, and the planned toilet and urinal flushing and irrigation demands.

(c) Additional Requirements for District Systems. All District Systems shall conform to the following requirements, subject to the General Manager's determination, in his or her sole discretion, that an exception to any of such requirements will fulfill the purposes and objectives of this Article 12C.

(1) In addition to preparation of the Water Budget, Development Project Applicants for District Systems shall submit implementation plans to the General Manager for review and approval, in accordance with guidelines and rules established by the General Manager.

(2) District Systems shall be operated by a single Permittee having sole ~~ownership~~ ~~and~~ *control of operations of all of its facilities, including but not limited to treatment and distribution facilities. District Systems shall be constructed in accordance with all applicable City utility standards and specifications.*

(3) District Systems and Development Projects *shall not provide Non-potable Water to water users or for purposes located outside the boundaries of the District or approved Development Project,* except when the water users or other purposes are located on property contiguous to, or across a public right of way from the boundaries of the District or approved Development Project, and the total amount of Nonpotable Water produced by the Alternate Water Source System will not exceed 125% of the District System's or approved Development Project's Non-potable Water demands for toilet and urinal flushing and irrigation, as determined by the approved Water Budget Documentation.

(4) For District Systems, t*he ongoing operation and maintenance responsibilities of* ~~a completed District System~~ the Responsible Party *shall be held by the owner of the common areas*

within the District Development Project, and may be transferred to a homeowners association or similar entity that maintains the common areas within the District Development Project.

Where a District System complies with the requirements in subsections 1 through 4 of this subsection 12C.4(c), including any exceptions approved by the General Manager, individual Development Projects with the District shall not be required to demonstrate compliance as long as the individual Development Projects are provided service by the approved District System.

(d) The General Manager may approve alternative District Systems that will achieve compliance with the purposes and objectives of this Article 12C, in accordance with guidelines and rules established by the General Manager. Alternative District Systems may include, but are not limited to, water purchase agreements.

(e) ~~(5)~~ City departments shall not issue an encroachment permit, a site permit, or plumbing permit for a Large Development Project or a Small Development Project, or approve a Non-potable Water Engineering Report, prior to the General Manager's determination that the Water Budget Documentation has been prepared in accordance with the General Manager's rules for Water Budget calculations.

(f) ~~(b)~~ Subdivision Approvals.

(1) Parcel Map or Tentative Subdivision Map Conditions. The Director of Public Works shall not approve a tentative subdivision map or a parcel map for any property unless a condition is imposed requiring compliance with this Article 12C to serve the potential uses of the property covered by the parcel map or tentative subdivision map, as specified in the provisions of this Article.

(2) Subdivision Regulations. The Director of Public Works shall adopt regulations consistent with, and in furtherance of this Article 12C.

(3) Final Maps. The Director of Public Works shall not endorse and file a final map for property within the boundaries of the City without first determining that:

(A) The subdivider has complied with the conditions imposed on the tentative subdivision map or parcel map, pursuant to this Article 12C; and

(B) For any such conditions not fully satisfied prior to the recordation of the final map, the subdivider has signed a certificate of agreement and/or improvement agreement, to ensure compliance with such conditions.

(4) This Subsection *(f)* ~~*(b)*~~ shall not apply to tentative subdivision maps or parcel maps submitted solely for the purposes of condominium conversion, as defined in Subdivision Code Section 1308(d).

(g) In the event that a privately owned Alternate Water Supply System approved by the General Manager is subsequently determined by the California Public Utilities Commission to be subject to that agency's jurisdiction and regulation, the San Francisco Public Utilities Commission may, with the consent of the affected owner, acquire and operate the facilities.

SEC. 12C.10. SALE OR TRANSFER ~~***OF PERMITS***~~**.**

~~*(a)*~~ Permittees shall notify the Director of any intent to sell or transfer the building or facility containing an Alternate Water Source system *within* 30 days ~~*prior to*~~ *following* the sale or transfer of property, in accordance with regulations adopted by the Director.

~~*(b) Any subsequent owner shall submit documentation to the Director establishing their ability to own, operate and maintain the Alternate Water Source system in accordance with this Article 12C, the rules and regulations adopted by the Department of Public Health, and all applicable local, state, and federal laws, within 90 days of transfer of the property and prior to commencement of operations of the Alternate Water Source system.*~~

~~*(c) The Director may approve or deny the transfer of the permit to operate to any subsequent owner, in accordance with the requirements of this Article 12C and applicable regulations.*~~

Section 3. Effective Date. This ordinance shall become effective 30 days after enactment. Enactment occurs when the Mayor signs the ordinance, the Mayor returns the ordinance unsigned or does not sign the ordinance within ten days of receiving it, or the Board of Supervisors overrides the Mayor's veto of the ordinance.

Section 4. Scope of Ordinance. In enacting this ordinance, the Board of Supervisors intends to amend only those words, phrases, paragraphs, subsections, sections, articles, numbers, punctuation marks, charts, diagrams, or any other constituent parts of the Municipal Code that are explicitly shown in this ordinance as additions, deletions, Board amendment additions, and Board amendment deletions in accordance with the "Note" that appears under the official title of the ordinance.

APPROVED AS TO FORM:
DENNIS J. HERRERA, City Attorney

By: _____
JOHN RODDY
Deputy City Attorney

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City and County of San Francisco
Tails
Ordinance

City Hall
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102-4689

File Number: 161069 **Date Passed:** December 06, 2016

Ordinance amending the Health Code to revise the definition of development projects subject to the requirements for an Alternate Water Source system and the definitions of large and small residential projects subject to specific requirements for such a system, and providing authorization for the review and approval of alternative means of compliance; and affirming the Planning Department's determination under the California Environmental Quality Act.

November 14, 2016 Land Use and Transportation Committee - RECOMMENDED

November 29, 2016 Board of Supervisors - AMENDED, AN AMENDMENT OF THE WHOLE BEARING SAME TITLE

Ayes: 11 - Avalos, Breed, Campos, Cohen, Farrell, Kim, Mar, Peskin, Tang, Wiener and Yee

November 29, 2016 Board of Supervisors - PASSED ON FIRST READING AS AMENDED

Ayes: 11 - Avalos, Breed, Campos, Cohen, Farrell, Kim, Mar, Peskin, Tang, Wiener and Yee

December 06, 2016 Board of Supervisors - FINALLY PASSED

Ayes: 10 - Avalos, Breed, Campos, Cohen, Farrell, Kim, Mar, Peskin, Tang and Yee

File No. 161069

I hereby certify that the foregoing Ordinance was FINALLY PASSED on 12/6/2016 by the Board of Supervisors of the City and County of San Francisco.

Reggy Nevin

Angela Calvillo
Clerk of the Board

Mayor

12/16/16

Date Approved

San Francisco Health Code Article 12C

ARTICLE 12C:
ALTERNATE WATER SOURCES FOR NON-POTABLE APPLICATIONS

Editor's Note:
The sections of this Article are numbered out of sequence with the other articles of this Code.

SEC. 12C.1. PURPOSE AND FINDINGS.

The Board of Supervisors finds that:

(a) All California water users are responsible for making effective use of the available water resources.

(b) The development of alternate water source systems will assist in meeting future water requirements of the City and lessen the impacts of new developments on the City's sewer system.

(c) Establishing a regulatory structure that provides administrative efficiency and a streamlined project approval process will assist developers who opt to design, install, operate, and maintain alternate water source systems.

(d) Adoption of Article 12C by the Board of Supervisors and adoption of rules and regulations by the Department of Public Health will help achieve the City's goals for water supply use and preservation by:

(1) Promoting the values and benefits of non-potable water use while recognizing the need to invest water and other resources as efficiently as possible;

(2) Encouraging the use of non-potable water for non-potable applications; and

(3) Replacing potable water use for toilet and urinal flushing and irrigation to the maximum extent possible with alternative water sources.

(e) It shall be City policy that within five years of the effective date of Ordinance No. 109-15,[1] adding this subsection (e) to Article 12C, the City shall use only non-potable water for the purpose of irrigating and cleaning parks, streets and other public spaces. Within two years of the effective date of that ordinance, the City Administrator, in consultation as appropriate with other City departments, boards, and commissions, including, among others, the Recreation and Park Department, Department of Public Works, Port of San Francisco, San Francisco International Airport, Department of Real Estate, and Capital Planning Committee, shall study what will be

required to accomplish this policy, including associated costs, and report the results of the study to the Mayor and Board of Supervisors. Upon receiving this study, the Board of Supervisors intends to evaluate any changes to the law and Capital Plan needed to implement this policy.

(Added as Sec. 850 by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

CODIFICATION NOTE

1. Blank in Ord. 109-15 . Ordinance number inserted by the codifier.

SEC. 12C.2. DEFINITIONS.

The terms used in this Article 12C have the meaning set forth below:

Alternate Water Source: a source of non-potable water that includes Graywater, on-site treated non-potable water, Rainwater, Blackwater, and any other source approved by the Director.

Alternate Water Source System: The system of facilities necessary for providing Non-potable Water for use in a Development Project, including but not limited to all collection, treatment, storage, and distribution facilities. Non-potable Water System shall have the same meaning.

Blackwater: wastewater containing bodily or other biological wastes, as from toilets, dishwashers, kitchen sinks, and utility sinks.

City: the City and County of San Francisco.

Development Project: Construction of new buildings. Development Projects are Large Development Projects and Small Development Projects. Development Project does not include rehabilitation of buildings constructed prior to the effective date of this Article 12C. Development Project does not include (1) any housing project funded or constructed pursuant to the HOPE SF Program sponsored and developed by the San Francisco Housing Authority and either the Mayor's Office of Housing and Community Development or the Office of Community Investment and Infrastructure; (2) construction of a new building that will receive water service from the San Francisco Public Utilities Commission through no larger than a 5/8" domestic water meter or a 5/8" recycled water domestic meter, as determined in accordance with the San Francisco Public Utilities Commission's rules for water service; 3) for District projects located within the boundaries of the Reclaimed Water Use Map, construction of new buildings subject to a disposition and development agreement or similar contractual agreement approved before November 1, 2015, that includes in its applicable infrastructure plan the construction and operations of water treatment facilities within the project boundaries that would provide recycled water to the project; 4) for District projects located within the boundaries of the Reclaimed Water Use Map, construction of new buildings subject to a development agreement or similar contractual agreement, within a development phase or subphase, a street improvement plan, or a tentative map or vesting tentative map approved before November 1, 2015; or 5) for District projects located outside the boundaries of the Reclaimed Water Use Map, construction of new buildings subject to a development agreement or similar contractual agreement, within a development phase or subphase, a street improvement plan, or a tentative map or vesting tentative map approved before November 1, 2017.

Director: the Director of Health or any individual designated by the Director to act on his or her behalf.

District: a group of two or more parcels that share Alternate Water Sources.

District System: An Alternate Water Source System serving a District Development Project.

First Certificate of Occupancy: either a temporary certificate of occupancy or a Certificate of Final Completion and Occupancy as defined in San Francisco Building Code Section 109A, whichever is issued first.

Foundation Drainage: nuisance groundwater that is extracted to maintain a building's or facility's structural integrity and would otherwise be discharged to the City's sewer system. Foundation Drainage does not include non-potable groundwater extracted for a beneficial use that is subject to City groundwater well regulations.

General Manager: the General Manager of the San Francisco Public Utilities Commission, or any individual designated by the General Manager to act on his or her behalf.

Graywater: untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes, but is not limited to, wastewater from bathtubs, showers, bathroom sinks, lavatories, clothes

washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers.

Gross Floor Area: The floor area of a Development Project as defined in Planning Code Section 102.

Large Development Project: Construction of a single building, or construction of multiple buildings on one or more parcels in accordance with a phased plan or approval, with a total gross floor area for the single building or the multiple buildings of 250,000 square feet or more:

(a) located within the boundaries of the Reclaimed Water Use Map designated in accordance with Sections 1203 and 1209 of the Public Works Code and subject to a site permit or building permit that is final and effective after November l, 2015; or

(b) located outside the boundaries of the Reclaimed Water Use Map designated in accordance with Sections 1203 and 1209 of the Public Works Code and subject to a site permit or building permit that is final and effective after November l, 2016.

Large Development Projects are not limited to buildings constructed by individuals or non-governmental entities but, to the extent allowed by law, also include buildings constructed and operated by any local, state, or federal government entity, including the City and County of San Francisco.

Large Development Project Applicant: The person or entity applying for authorization to construct and operate a Large Development Project.

Multi-Family Residential Building: A building that contains three or more dwelling units.

Non-potable Water: Non-potable water collected from alternate water sources, treated, and intended to be used on the Project Applicant's site or District parcels and is suitable for direct beneficial use.

Non-potable Water Engineering Report: Report submitted by Project Applicant to the Director describing the Alternate Water Source system in accordance with the rules and regulations adopted by the Department of Health.

Nonpotable Water System: The same meaning as Alternate Water Source System.

Non-residential: A building that contains occupancies other than dwelling units.

NSF 350 System: Any treatment system certified by NSF International to meet NSF/ANSI Standard 350 for Onsite Residential and Commercial Reuse Treatment Systems, as amended from time to time.

Permittee: The operator of an Alternate Water Source System under this Article 12C, including, but not limited to, a third - party contractor obtained for the purpose of operating and maintaining all or any portion of the Alternate Water Source System.

Project Applicant: the person or entity applying for authorization to install and use an Alternate Water Source project.

Rainwater: precipitation collected from roof surfaces or other manmade, aboveground collection surfaces.

Responsible Party: The Project Applicant, or any subsequent owners, assignees, successors in interest or any other transferees responsible for compliance with this Article 12C. Responsible Party includes, but is not limited to, the owner of the common areas within a District Development Project and any homeowners association or similar entity that maintains the common areas within a District Development Project. Responsible Party does not include the Project Applicant, subsequent owners, assignees, successors in interests, transferees, owners of common area, homeowners associations, or any other person or entity associated with a Development Project serviced by an Alternative District System as described in Section 12C.4(d).

Small Development Project: Construction of a single building, or construction of multiple buildings on one or more parcels in accordance with a phased plan or approval, with a total gross floor area for the single building or the multiple buildings of 40,000 square feet or more, but less than 250,000 square feet. Small Development Projects are not limited to buildings constructed by individuals or non-governmental entities but, to the extent allowed by law, also include buildings constructed and operated by any local, state, or federal government entity, including the City and County of San Francisco.

Small Development Project Applicant: The person or entity applying for authorization to construct and operate a Small Development Project.

Small Residential Building: A building that contains no more than two dwelling units.

Stormwater: Precipitation collected from at-grade or below grade surfaces.

Water Budget: The calculation of the potential volume of onsite alternate water supplies and demands of a Development Project

and any other building subject to this Article 12C.

Water Budget Calculator: The water use calculation application approved by the General Manager that provides for the assessment of a proposed onsite water system, alternate water sources, and the end uses of the Alternate Water Source.

Water Budget Documentation: An in-depth assessment of the Project Applicant's non-potable water use, including survey information, water meter readings, water service billing information, Alternate Water Source schematic drawings, or any other information deemed necessary by the General Manager. For proposed District Systems, Water Budget Documentation shall include implementation information that, at a minimum, shall address potential infrastructure and public right of way conflicts, demonstrate compliance with all applicable requirements, and establish the capabilities of the Development Project Applicant to effectively operate the District System.

(Added as Sec. 851 by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; amended by Ord. 208-13 , File No. 130765, App. 10/11/2013, Eff. 11/10/2013; redesignated and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015; amended by Ord. 246-16, File No. 161069, App. 12/16/2016, Eff. 1/15/2017)

SEC. 12C.3. APPLICABILITY

This Article 12C shall apply to the installation and operation of the Alternate Water Source systems at Large Development Projects, and to the voluntary installation and operation of the Alternate Water Source systems at sites containing multi-family and non-residential buildings. This Article does not apply to:

(a) Systems at small residential occupancies.

(b) Graywater systems where Graywater is collected solely for subsurface irrigation and does not require disinfection, as determined by the Director.

(c) Rainwater systems where Rainwater is collected solely for subsurface irrigation, drip irrigation, or non-sprinkled surface applications and does not require disinfection, as determined by the Director.

(Added as Sec. 852 by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 12C.4. DEVELOPMENT PROJECT REQUIREMENTS.

(a) Large Development Projects shall be constructed, operated, and maintained in compliance with the following:

(1) All toilet and urinal flushing and irrigation demands shall be met through the collection and reuse of available onsite Rainwater, Graywater, and Foundation Drainage, to the extent required by application of the Water Budget Documentation developed for each Development Project.

(2) A Large Development Project Applicant shall use the Water Budget Calculator, as provided by the General Manager's rules, to prepare a Water Budget assessing the amount of Rainwater, Graywater, and Foundation Drainage produced on site, and the planned toilet and urinal flushing and irrigation demands.

(3) If, based on the Water Budget Documentation, the available supply from onsite sources exceeds the demands for toilet and urinal flushing and irrigation, 100% of those demands shall be met by using the available onsite sources. If, based on the Water Budget Documentation, the available supply from onsite sources is less than the demands for toilet and urinal flushing and irrigation, 100% of the available onsite supply shall be used to meet the demands for toilet and urinal flushing and irrigation. Available Blackwater or Stormwater supplies may be used instead of, or in addition to Rainwater, Graywater, and Foundation Drainage to meet the available onsite supply requirements calculated in accordance with the Water Budget Documentation requirements of this section 12C.4(a).

(b) Small Development Project Applicants shall use the Water Budget Calculator, as provided by the General Manager's rules, to prepare a Water Budget assessing the amount of Rainwater, Graywater and Foundation Drainage produced on site, and the planned toilet and urinal flushing and irrigation demands.

(c) **Additional Requirements for District Systems.** All District Systems shall conform to the following requirements, subject to the General Manager's determination, in his or her sole discretion, that an exception to any of such requirements will fulfill the purposes and objectives of this Article 12C.

(1) In addition to preparation of the Water Budget, Development Project Applicants for District Systems shall submit implementation plans to the General Manager for review and approval, in accordance with guidelines and rules established by the

General Manager.

(2) District Systems shall be operated by a single Permittee having sole control of operations of all of its facilities, including but not limited to treatment and distribution facilities. District Systems shall be constructed in accordance with all applicable City utility standards and specifications.

(3) District Systems and Development Projects shall not provide Non-potable Water to water users or for purposes located outside the boundaries of the District or approved Development Project, except when the water users or other purposes are located on property contiguous to, or across a public right of way from the boundaries of the District or approved Development Project, and the total amount of Nonpotable Water produced by the Alternate Water Source System will not exceed 125% of the District System's or approved Development Project's Non-potable Water demands for toilet and urinal flushing and irrigation, as determined by the approved Water Budget Documentation.

(4) For District Systems, the ongoing operation and maintenance responsibilities of the Responsible Party shall be held by the owner of the common areas within the District Development Project, and may be transferred to a homeowners association or similar entity that maintains the common areas within the District Development Project.

Where a District System complies with the requirements in subsections 1 through 4 of this subsection 12C.4(c), including any exceptions approved by the General Manager, individual Development Projects with the District shall not be required to demonstrate compliance as long as the individual Development Projects are provided service by the approved District System.

(d) The General Manager may approve alternative District Systems that will achieve compliance with the purposes and objectives of this Article 12C, in accordance with guidelines and rules established by the General Manager. Alternative District Systems may include, but are not limited to, water purchase agreements.

(e) City departments shall not issue an encroachment permit, a site permit, or plumbing permit for a Large Development Project or a Small Development Project, or approve a Non-potable Water Engineering Report, prior to the General Manager's determination that the Water Budget Documentation has been prepared in accordance with the General Manager's rules for Water Budget calculations.

(f) **Subdivision Approvals.**

(1) **Parcel Map or Tentative Subdivision Map Conditions.** The Director of Public Works shall not approve a tentative subdivision map or a parcel map for any property unless a condition is imposed requiring compliance with this Article 12C to serve the potential uses of the property covered by the parcel map or tentative subdivision map, as specified in the provisions of this Article.

(2) **Subdivision Regulations.** The Director of Public Works shall adopt regulations consistent with, and in furtherance of this Article 12C.

(3) **Final Maps.** The Director of Public Works shall not endorse and file a final map for property within the boundaries of the City without first determining that:

(A) The subdivider has complied with the conditions imposed on the tentative subdivision map or parcel map, pursuant to this Article 12C; and

(B) For any such conditions not fully satisfied prior to the recordation of the final map, the subdivider has signed a certificate of agreement and/or improvement agreement, to ensure compliance with such conditions.

(4) This Subsection (f) shall not apply to tentative subdivision maps or parcel maps submitted solely for the purposes of condominium conversion, as defined in Subdivision Code Section 1308(d).

(g) In the event that a privately owned Alternate Water Supply System approved by the General Manager is subsequently determined by the California Public Utilities Commission to be subject to that agency's jurisdiction and regulation, the San Francisco Public Utilities Commission may, with the consent of the affected owner, acquire and operate the facilities.

(Added by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015; amended by Ord. 246-16, File No. 161069, App. 12/16/2016, Eff. 1/15/2017)

SEC. 12C.5. REGULATION OF ALTERNATE WATER SOURCES.

(a) Any person or entity who installs and operates an Alternate Water Source system shall comply with this Article 12C, the rules and regulations adopted by the Department of Public Health, and all applicable local, state, and federal laws.

(b) Within 90 days after passage of this ordinance, the Director shall issue rules and regulations regarding the operation of

Alternate Water Source systems necessary to effectuate the purposes of the Article and to protect public health and safety. These regulations shall address, at a minimum:

(1) Water quality criteria;

(2) Monitoring and reporting content and frequencies; and

(3) Operation and maintenance requirements.

(c) The Director shall review applications for Alternative Water Sources systems and may issue or deny such applications, in accordance with applicable laws and regulations.

(d) The Department of Building Inspection shall review plans and issue or deny plumbing permits for the construction, installation, or modification of Alternate Water Source systems, in accordance with applicable laws and regulations.

(Added as Sec. 853 by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 12C.6. PROJECT APPLICANT AND/OR PERMITTEE DESIGN AND CONSTRUCTION REQUIREMENTS.

(a) Prior to initiating installation of any Alternate Water Source project, Project Applicants shall submit to the Director an application for permits to operate Alternate Water Source systems. Such applications shall comply with the requirements of this Article 12C and any regulations the Director has issued. Project Applicants shall pay a non-refundable permit application fee to cover the costs of investigation and processing the application and issuing the permit. Each project application submitted to the Director shall include a Non-potable Water Engineering Report that provides project information the Director determines to be necessary for complete review of the proposed project. City departments may not approve or issue permits for any site installing an Alternate Water Source system unless and until the Director has approved the Non-potable Water Engineering Report.

The Non-potable Water Engineering Report for District systems must include information on the permanent legal agreements between property owners, and provide documentation that each party is a willing and responsible participant in the District Non-potable Water use.

(b) **System Design.** All buildings using Non-potable Water from Alternate Water Source systems shall include:

(1) A flow meter on the non-potable distribution system to account for Non-potable Water use;

(2) A reduced pressure backflow assembly (RP) within 25 feet of the downstream side of the point of connection or meter to protect the City's public water and/or recycled water system;

(3) Signage that state law and the Department of Public Health's rules and regulations require;

(4) Cross connection control in accordance with California Code of Regulations Titles 17 and 22 and the San Francisco Public Utilities Commission's Cross Connection Control Program;

(5) Any other requirements the Director determines are necessary to protect public health.

(c) **Plumbing Permit.** A Project Applicant shall obtain from the Department of Building Inspection an appropriate plumbing permit and any other building or installation permit required to construct, install, alter, an Alternate Water Source system. Each parcel within a District shall obtain appropriate plumbing and any other building or installation permits required.

(d) **Encroachment Permit.** A Project Applicant shall obtain from the Department of Public Works appropriate authorization for placement of any pipelines or other portions of an Alternate Water Source system within the public right-of-way.

(e) **Construction Certification Letter.** Project Applicants shall certify to the Director that Alternate Water Source system construction is complete and consistent with the approved Non-potable Water Engineering Report in accordance with the provisions of this Article 12C and any implementing rules and regulations. City departments may not approve or issue a First Certificate of Occupancy or approval for any Alternate Water Source system until the Director has reviewed and verified the Construction Certification Letter.

(Added as Sec. 854 by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; amended by Ord. 208-13 , File No. 130765, App. 10/11/2013, Eff. 11/10/2013; redesignated and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 12C.7. FEES.

(a) The non-refundable application fees for alternative source water system permits are:

	(1)	Rainwater	$1,544.00
	(2)	NSF 350 systems	$2,688.00
	(3)	Foundation Drainage	$5,032.00
	(4)	Graywater	$5,032.00
	(5)	Blackwater	$9,034.00
	(6)	Transfer of any permit	$229.00
	(7)	District Scale, the applicable amount above, plus	$191.00 per hour for plan review and/or on site inspection.

(b) The fees set forth in this Section 12C.7 may be adjusted each year, without further action by the Board of Supervisors.

Not later than April 1, the Director shall report to the Controller the revenues generated by the fees for the prior fiscal year and the prior fiscal year's costs of operation, as well as any other information that the Controller determines appropriate to the performance of the duties set forth in this Section.

Not later than May 15, the Controller shall determine whether the current fees produce, or are projected to produce, revenues sufficient to support the costs of providing the services for which the fees are assessed and that the fees will not produce revenue that significantly exceed more than the costs of providing the services for which the fees are assessed.

The Controller shall if necessary, adjust the fees upward or downward for the upcoming fiscal year as appropriate to ensure that the program recovers the costs of operation without producing revenue which is significantly more than such costs. The adjusted rates shall become operative on July 1.

(c) Every permit holder shall also pay an annual license fee as provided in the Business and Tax Regulations Code Section 249.24.

(Added as Sec. 855 by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; amended by Ord. 208-13 , File No. 130765, App. 10/11/2013, Eff. 11/10/2013; redesignated and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 12C.8. OPERATING REQUIREMENTS.

When the Director determines the applicant has satisfied all the requirements of this Article 12C, the Director may issue an operations permit for an Alternative Water Source system. Permittees shall timely submit all water quality monitoring information required by the provisions of this Article and the Department of Public Health's rules and regulations. Permittees shall conduct ongoing backflow prevention and cross connection testing in accordance with this Article, the rules and regulations of the Department of Public Health, and all applicable local, state, and federal laws.

(Added as Sec. 856 by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 12C.9. NON-POTABLE WATER USE AUDITS.

When required by the General Manager, the Permittee or property owner, shall conduct a Non-potable Water use audit describing the extent of Non-potable Water use in accordance with requirements provided by the General Manager.

(Added as Sec. 857 by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 12C.10. SALE OR TRANSFER.

Permittees shall notify the Director of any intent to sell or transfer the building or facility containing an Alternate Water Source system within 30 days following the sale or transfer of property, in accordance with regulations adopted by the Director.

(Added as Sec. 858 by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015; amended by Ord. 246-16, File No. 161069, App. 12/16/2016, Eff. 1/15/2017)

SEC. 12C.11. INSPECTION AND NOTICES OF VIOLATION.

The Director may inspect any Alternate Water Source system subject to the requirements of this Article 12C to determine compliance with the provisions of this Article and applicable regulations.

(Added as Sec. 859 by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 12C.12. VIOLATION AND PENALTIES.

The Director may impose administrative penalties on any Permittee, or person otherwise subject to the requirements of this Article 12C, who violates any provision of this Article or any applicable rule or regulation shall be subject to enforcement in accordance with Chapter 100 of the San Francisco Administrative Code with respect to administrative penalties, and may pursue any other available legal remedies for such violations.

(Added as Sec. 860 by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 12C.13. REVOCATION AND SUSPENSION OF PERMIT.

The Director may order a Permittee to cease operation of an Alternate Water Source system, or may revoke or suspend the permit to operate if the Director determines that:

(a) The manager, operator or any employee has violated any provision of this Article 12C or any regulation issued pursuant to this Article;

(b) The Alternate Water Source system is being operated or maintained in a manner threatening the public health or health of patrons and/or residents; or

(c) The owner or operator has refused to allow any duly authorized City official to inspect the premises or the operations of the Alternate Water Source system.

(Added as Sec. 861 by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 850. [REDESIGNATED.]

(Added by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated as Sec. 12C.1 and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 851. [REDESIGNATED.]

(Added by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; amended by Ord. 208-13 , File No. 130765, App. 10/11/2013, Eff. 11/10/2013; redesignated as Sec. 12C.2 and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 852. [REDESIGNATED.]

(Added by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated as Sec. 12C.3 and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 853. [REDESIGNATED.]

(Added by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated as Sec. 12C.5 and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 854. [REDESIGNATED.]

(Added by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; amended by Ord. 208-13 , File No. 130765, App. 10/11/2013, Eff. 11/10/2013; redesignated as Sec. 12C.6 and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 855. [REDESIGNATED.]

(Added by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; amended by Ord. 208-13 , File No. 130765, App. 10/11/2013, Eff. 11/10/2013; redesignated as Sec. 12C.7 and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 856. [REDESIGNATED.]

(Added by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated as Sec. 12C.8 and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 857. [REDESIGNATED.]

(Added by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated as Sec. 12C.9 and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 858. [REDESIGNATED.]

(Added by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated as Sec. 12C.10 and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 859. [REDESIGNATED.]

(Added by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated as Sec. 12C.11 and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 860. [REDESIGNATED.]

(Added by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated as Sec. 12C.12 and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

SEC. 861. [REDESIGNATED.]

(Added by Ord. 195-12, File No. 120717, App. 9/17/2012, Eff. 10/17/2012; redesignated as Sec. 12C.13 and amended by Ord. 109-15 , File No. 150350, App. 7/2/2015, Eff. 8/1/2015)

ARTICLE 13:
[RESERVED]