



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

November 16, 2022

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, Article 11 of the City's Health Code authorizes 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. 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. 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

The terms used in these Rules and Regulations have the following meaning. Where there is a conflict between a definition in these Rules and Regulations and the language in San Francisco Health Code Article 12C (Article 12C) which may be amended from time-to-time, the language in Article 12C shall prevail.

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: Sources of water that can be treated to produce a Non-Potable water. The alternate water source can be Graywater, Rainwater, Stormwater, Foundation Drainage, Blackwater and/or 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.

Alternate Water Source System 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 as provided in the San Francisco Business and Tax Regulations Code Section 249.24.

As-Builts: Construction plans that show how the system was actually built (which may differ from the way it was originally designed) and would include all of the drawing sheets including plumbing, architectural, and mechanical.

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.

Conditional Startup Mode: A period of 90 days after the permit for an Alternate Water Source System is issued during which system operation and performance is verified through more frequent monitoring, analysis and reporting, and during which diversion of treated water to the sewer may be required, as shown in Table 7. The Director may determine that a shorter or longer start-up period will best serve the public health. If Conditional Startup requirements are not met after 365 days have elapsed from permit issuance the permit will expire and a new application must be submitted and approved (except for rainwater or stormwater systems that are not able to meet the requirements in that time due to low rainfall).

Continuous Monitoring: Ongoing confirmation of system performance with the use of sensors, analyzers, meters, and other instrumentation, no less than once every 15 minutes for the continuous observation of selected parameters, including surrogate parameters that are correlated with pathogen Log Reduction Targets (LRTs).

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

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

Data and 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 irradiation, ozonation, and chlorination that is used for the inactivation of pathogenic microorganisms.

District-scale Project: A Development Project entailing the sharing of an Alternate Water Source System serving two or more parcels where waters cross a property boundary the parcels are owned by one entity or several.

Effluent: General term describing any effluent leaving a unit process that may or may not be “final effluent” and may or may not meet the requirements of Article 12C.

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.

Exceedance: A water quality measurement or observation that is outside of a stated limit in these Rules and Regulations” to include measurements that are both above and below an acceptable range of values (e.g. pH).

Excursion (or Abnormal Water Quality): Any water quality condition that is outside of what is usually observed, regardless of whether the observed or measured exceeds any stated water quality limit or criteria.

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 or combined 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 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 reduction in the concentration of infective pathogens or surrogates through a Treatment Process or Treatment Train expressed in log₁₀ 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 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 required degree of pathogen reduction needed to reduce an individual's risk to 1 in 10,000 infections per year through exposure to Non-Potable Water.

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: Water that has been treated to meet the requirements for non-potable applications under Article 12C and intended to be used on the Project Applicant's site or District 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 their agents, employees, and others acting at their direction

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 implement or develop an Alternate Water Source System.

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 production of Non-Potable Water. 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 parameter that is capable of assessing the performance of a Treatment Process in the control of a specific group or groups of pathogens or chemicals.

Treatment Process (or Unit Process): A physical, chemical or biological system that is intended to improve water quality. Examples include filtration, oxidation, adsorption, disinfection and membrane separation.

Treatment Train: A sequence of Unit Processes designed to change the quality of a water as it moves from the first Unit Process to the last one.

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 by challenging the treatment technology over a wide range of operational conditions to The validation report shall characterize and quantify system performance under a specified set of conditions and include evidence of the treatment technology's ability to reliably and consistently achieve the specified LRT, 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 permitted 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 washing¹
- 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 permitted if approved under the variance procedure described in **Section 11**.

4. Applicability and Permit Requirements

These Rules and Regulations do not apply to (1) Rainwater, Stormwater or Foundation Drainage sourced systems constructed in accordance with applicable plumbing codes and used solely for subsurface irrigation or for surface non-spray irrigation; (2) Graywater sourced systems constructed in accordance with applicable plumbing codes and used solely for subsurface irrigation; nor (3) systems constructed for industrial and closed loop process water reuse.

a. Water Budget Application

Project Applicants shall submit a Water Budget Application for review and approval by the General Manager of the SFPUC, or any individual designated by the General Manager to act on their behalf. 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.

¹ Clothes washing shall use non-potable water if required by Article 12C of the San Francisco Health Code, except where the plumbing of the clothes washers could cause non-potable water to backflow into potable water systems.

b. Implementation Plan

Only for District-scale Projects, Project Applicants shall submit an Implementation Plan for review and approval by the General Manager of the SFPUC, or any individual designated by the General Manager to act on their behalf.

c. Permit Application

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

Application for a Permit and Fee and Declaration of Healthy and Safe Working

Conditions: 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. Project Applicants shall also submit the Declaration of Healthy and Safe Working Conditions form. 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 prior to construction plan review and construction. 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 Application 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 a complete application, fee and Engineering Report.

d. Plan Check, System Construction, and Post-Construction Inspection

The following are required after the Engineering Report is approved:

Construction and Inspection: Project Applicant shall apply for applicable building permits and is responsible for ensuring the construction plans are routed to the SFDPH-EH Non-Potable Program for review and approval. Project applicant shall contact the SFDPH-EH Non-Potable Program for a site inspection to verify construction upon completion.

System construction verification shall be 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 (as modified if applicable), professionally certified plans, specifications and applicable sections of state and local code. SFDPH-EH may request to be present during system construction verification.

If the Alternate Water Source System as constructed differs in any way from the approved Engineering Report, the Project Applicant must submit an addendum or updated Engineering Report to SFDPH-EH. Any modifications to the system design are subject to review and approval by the Director prior to permit approval.

e. Encroachment Permit

Only for District-scale Projects, Project Applicants shall obtain an Encroachment Permit from San Francisco Public Works for infrastructure located within the public right-of-way.

f. Cross-connection Test

Project Applicants shall submit evidence of satisfactory completion of a cross-connection test overseen by a Certified Cross-Connection Control Specialist.

g. Documentation to Obtain Permit-to-Operate

- 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; and
- Valid Business Registration.
- Proof of Payment of Annual License Fee.

h. Permit Issuance

When the Director determines the applicant has satisfied all the requirements of SFHC12C and these Rules and Regulations, the Director may issue a Permit to Operate the Alternate Water Source system. Permits must be renewed annually by the Permittee as specified in Section 4.c.

i. Permit Renewal

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

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 suspended and the Permittee shall cease operation until fees and any penalties are paid.

j. Change of Ownership

Within 30 days of a change of ownership of the Alternate Water Source System, it is the responsibility of a new owner to report the change to the Director by submitting a completed Alternate Water Source System Change of Ownership form. The Director may charge an hourly rate for review and approval of any Change of Ownership.

5. System Design Requirements

All systems must comply with System Design Requirements described in 5.a. – 5.j.

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.

Each municipal water connection (excluding fire services) serving properties with an Alternate Water Source System must be protected by a containment Reduced Pressure Principle

Backflow Prevention Assembly (RP) within 25 feet downstream of the point of connection or water meter.

As shown in Table 1, Alternate Water Source Systems must include municipally supplied make-up water **via an air gap** to a break tank served from the final treated water storage tank, or via an air gap to the final treated water storage tank, 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
¹ Irrigation-only systems are not required to include a municipally supplied make-up.		
² RP = Reduced Pressure Principle Backflow Prevention Assembly		

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 Meters

All properties collecting, treating, receiving, or distributing water from an Alternate Water Source System shall include at least two Flow Meters: (1) on the treated Alternate Water Source distribution system as close as possible to the exit to the end use and (2) 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 or combined 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 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 that serve a cooling tower or other process that could create a mist and may come into contact with employees, members of the public, or building occupants 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; and
- A management plan shall be included in the approved Operations and Maintenance Manual

h. Vector control

Alternate Water Source systems shall be constructed and maintained to prevent mosquito harborage. All drains, vents, and other conduits that lead to the system reservoir or collection tank shall be screened with a durable fine mesh sized not greater than one sixteenth of an inch. The mesh shall be firmly installed in an area that is easily accessible for cleaning, inspection and replacement. No gaps shall exist around the mesh.

All annular gaps around pipes feeding the reservoir shall be sealed with a durable, waterproof, non-porous material. A durable gasket with no gaps shall be installed around the door openings

to the reservoir. Other gaps to the reservoir shall either be sealed or screened as specified above.

There shall be at least one employee or contractor that is knowledgeable in the recognition of all mosquito life stages, mosquito life cycle, and the proper treatment of all life stages. This person shall be available to check the system for signs of harborage, respond to complaint of adult mosquitoes, and arrange proper treatment to eliminate mosquitoes. The use of any pesticide shall comply with all local, state, and federal laws.

i. Odor control

All systems must control odors.

j. Unit Process requirements

Specific Unit Process requirements are shown in Table 2.

Table 2: Unit Process Requirements for Specific Source Types

Unit Process Type	Required for these Source Types
Biological Treatment ¹	Graywater, Blackwater
Filtration	Graywater, Blackwater
Minimum UV dose 80 mJ/cm ² and UVT >=65% if used for LRT	Blackwater
Chlorine Residual for secondary disinfection	Stormwater, Foundation Drainage, Graywater, Blackwater
¹ Biological treatment must result in stabilized, non-putrescible effluent that contains dissolved oxygen.	

6. Water Quality Requirements

An Alternate Water Source System shall be designed and operated to achieve the water quality requirements in this Section.

a. Pathogenic Microorganism Control Log Reduction Targets and Continuous Monitoring

To meet the pathogenic microorganism control requirements for enteric virus, parasitic protozoa and bacteria, Project Applicants must install treatment processes that achieve LRTs as shown in Table 3: Pathogen Log Reduction Targets.

Table 3: Pathogen Log Reduction Targets

Alternate Water Source	Enteric Virus	Parasitic Protozoa	Bacteria
Rain	---	--	3.5
Storm	3.5	3.5	3.0
Storm Outdoor Use Only	3.0	2.5	2.0
Foundation	3.5	3.5	3.0
Foundation Outdoor Use Only	3.0	2.5	2.0
Gray	6.0	4.5	3.5
Gray Outdoor Use Only	5.5	4.5	3.5
Black	8.5	7.0	6.0
Black Outdoor Use Only	8.0	7.0	6.0

Log Reduction Credits. Log Reduction Credits will be allowed based on the ability of each Unit Process to achieve a defined log reduction value. Table 4 summarizes the Log Reduction Credits that may be granted for different Unit Processes and includes examples of required supporting information and surrogate parameters. Other unit processes not included in Table 4 can receive pathogen reduction credit if appropriate evidence is provided. Evidence that the Unit Process can reliably and consistently achieve a specific log reduction value must be included in a Project Applicant's Engineering Report. For Unit Processes 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.

Continuous Monitoring. The Engineering Report must include information on the necessary operating conditions and surrogate parameters that require continuous monitoring consistent with Table 4.²

Diversion to Sewer. Applicant must ensure that effluent can be diverted to sewer during Conditional Startup Mode (if required) while still demonstrating the ability of the system to meet the LRTs as specified in the approved Engineering Report. The system must always be capable of diverting to sewer and still supplying makeup water to the end users in the event of a malfunction or water quality problem. Diversion to sewer is always required if a system fails to meet the required LRTs or applicable standards noted in Table 5.

b. Water Sampling and Laboratory Analysis Requirements

Alternate Water Source Systems shall meet the water quality requirements shown in Table 5. For systems required to meet limits for total coliform, BOD, TSS and/or VOC, samples shall be taken from the disinfected effluent and shall be analyzed by a Certified Laboratory. Chlorine residual measurements shall be taken at or after the entry to the plumbing to the distribution system.

Table 4: Treatment Process Log Reduction Credits

Treatment Process	Maximum¹ Log Reduction Credits Virus/Protozoa/Bacteria	Information to be Included in an Engineering Report²	Examples of Continuous Monitoring Requirements
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	Daily pressure decay test Effluent Turbidity
Membrane Biological Reactor (MBR)	1.5/2/4	Operation within the Tier 1 operating envelope ³	Effluent Turbidity
Reverse Osmosis	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	Influent and Effluent Total Organic Carbon (TOC) or Influent and Effluent Electrical Conductivity
Ultraviolet (UV) Light Disinfection	6/6/6 (Dose Dependent)	UV reactor's Validation Report following state-approved procedures ⁴ or NSF/ANSI 55 Class A validated.	UV intensity UV transmittance Flow rate
Chlorine Disinfection	5/0/0 (CT dependent) Bacteria credit equivalent to virus credit can be granted if free chlorine is preceded by membrane filtration	Calculations demonstrating CT disinfection (CT = Chlorine Residual Concentration x Contact Time) Specifics on how concentration and contact time will be determined	Free chlorine residual Flow rate
Ozone Disinfection	4/3/4 ⁵ (CT dependent)	Calculations demonstrating CT disinfection (CT = Ozone Residual Concentration x Contact Time) Specifics on how concentration and contact time will be determined	Ozone residual Flow rate

¹ Projects may seek higher credit with site-specific validation, alternative surrogates, or other approved methods. Technologies listed are only several of many potential options for unit process selection that may be considered.

² DPH review does not include verification of engineering principles; the responsible party, including but not limited to the Engineering Report authors and the Professional Engineer(s) who signs and stamps the Engineering Report, are responsible for any design errors or miscalculations that result in failure of the system to operate properly and to comply with the provisions of Article 12C, its Rules and Regulations, and any other rule or law.

³ Tier 1 operating envelope is defined in the AWRCE Membrane bio-reactor WaterVal validation protocol, Australian Water Recycling Center of Excellence (AWRCE), Brisbane.

⁴ 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:

EPA UV Disinfection Guidance Manual (USEPA 2006), or

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.

⁵ Bacteria credit can be obtained for ozone according to the Tier 1 framework in the AWRCE Ozone WaterVal Validation protocol, which includes CT tables for waters with turbidity <0.15 NTU.

Table 5: Water Quality Limits and Testing Frequency

Parameter	Limits ¹	Required U.S. EPA Standard Method	Exceedance Requires Immediate Diversion? ¹
Total Coliform		SM9223B	
7-sample median	2.2 MPN/100 mL		No
30 day max / immediate retest value ³	23 MPN/100 mL		Yes
Absolute maximum	240 MPN/100 mL		Yes
Turbidity - Media Filter			
24 hour median	2 NTU		No
95% maximum	5 NTU		No
Absolute maximum	10 NTU		Yes
Turbidity - Membrane Filter			
95% maximum	0.2 NTU		No
Absolute maximum	0.5 NTU		Yes
Turbidity -- Approved System ⁶	10 NTU	SM2130B	Yes
Secondary Chlorine Residual absolute minimum	0.5 mg/L ⁷		Sometimes ⁷
Log Reduction Targets (LRT) ⁶	See Table 3		Yes
Volatile Organic Compounds (VOC)	See Table 6	SM8260B	No
Biological Oxygen Demand (BOD)	25 mg/L	SM5210B	No
Total Suspended Solids (TSS)	30 mg/L	SM2540D	No
pH	6 – 10		No

Rain		Storm		Foundation Drainage		Gray		Black	
Startup ²	Final	Startup ²	Final	Startup ²	Final	Startup ²	Final	Startup ²	Final
Weekly	Monthly ⁴	Weekly	Monthly ⁴	Weekly	Monthly ⁴	Weekly	Monthly ⁴	Daily	Daily ⁵
← Continuously in Filter Effluent →		← Continuously in Filter Effluent →		← Continuously at entry to end-use plumbing →		← Continuously using surrogate parameters (See Section 6.a.) →		← Continuously →	
Weekly	Monthly	Weekly	Monthly	Quarterly	Biennial ⁸	Quarterly	Biennial ⁸	Weekly	Monthly
						Weekly	Monthly	Weekly	Monthly

¹ Monitoring results which are outside of any water quality limits in this table do not always require immediate diversion, but shall always be reported as described in Section 7.

² Conditional Startup period is 90 days of operation for all systems as defined in Section 1.

³ Immediate retest is required upon report of a result greater than 23 MPN /100 mL and sampling shall continue daily until a result less than 2.2 MPN/100 mL is reported.

⁴ Total Coliform monitoring frequency may be further reduced or eliminated for Rainwater, Stormwater, Foundation Drainage and Graywater source systems after 12 consecutive months of consistent compliance.

⁵ All blackwater treatment systems shall conduct Total Coliform sampling at least once daily when the treatment system is in operation during Conditional Startup Mode. After maintaining compliance with limits for 90 consecutive samples, blackwater treatment systems for indoor use only may reduce the frequency of sampling to three days per week for Final Use Mode. However, Blackwater treatment systems for irrigation shall continue to conduct sampling at least once daily, even in Final Use Mode.

⁶ Approved Rainwater and Stormwater systems that either (1) had a valid Permit issued by SFDPH-EH on or before August 17, 2017; or (2) did not have a valid Permit but did have an approved Engineering Report on or before August 17, 2017 shall measure turbidity in grab samples weekly during Conditional Startup Mode and monthly during Final Use Mode, and do not have to demonstrate compliance with LRTs using surrogate parameters unless and until the Director approves a system modification that facilitates demonstration of compliance with the LRTs.

⁷ A secondary chlorine residual measurement must be > 0.5 mg/L 95% of the time and never less than 0.3 mg/L. Measurements outside of these limits must be reported to DPH in accordance with Section 7.d. of these rules; diversion may not be required but should be considered while the problem is corrected. Sampling should occur at various locations throughout the building, periodically to monitor the continued presence of disinfectant residual throughout the system.

⁸ Monitoring frequency for Volatile Organic Compounds may be further reduced at the Director's discretion.

Table 6: 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
1,1,1,2-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

¹ SFDPH-EH derived estimated unacceptable concentrations of VOC's from the U.S. Occupational Safety and Health Administration Permissible Exposure Limits assuming exposure to selected VOCs is by inhalation from volatilization in a closed room.

7. Monitoring, Sampling, Reporting and Notification Requirements

a. Monitoring and Sampling

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

Water samples must be collected according to U.S. EPA Wastewater Standard Methods for the Examination of Water and Wastewater Method 9060B or equivalent approved sample collection method and analyzed in a Certified Laboratory using methods specified in Table 5, or through approved in-line monitoring devices as detailed in the Engineering Report. Sample collection, transportation and analysis must meet QA/QC standards of the laboratory, including maintenance of required hold times and temperatures. 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.

b. Monthly and Quarterly Reporting

Table 7 summarizes reporting requirements during Conditional Startup and Final Use Modes for different Alternate Water Source Systems.

Conditional Startup: On or before the 15th of each month during Conditional Startup, the Treatment System Manager shall report all required water quality laboratory results and surrogate parameter instrumentation summaries from the previous month. The data shall be accompanied by a signed DMR form provided by the Director and shall include attachments describing any breakdowns, upsets, bypasses, odors, complaints, or other system operation anomalies.

Final Use Mode: During Final Use Mode, Blackwater source systems must report quarterly all data accompanied by the approved DMR. All other Alternate Water Source Systems may report annually, notwithstanding notification requirements in Sections 7.d. and 7.e.

Table 7: Routine Reporting Frequency

Alternate Water Source	Conditional Startup Mode			Final Use Mode
	Duration	Diversion to Sewer ¹	Routine Reporting ²	Routine Reporting ²
Blackwater	90 days	Yes	DMR Monthly	DMR Quarterly + Annual
Graywater	90 days	Yes	DMR Monthly	Annual
Foundation Drainage	90 days	No	DMR Monthly	Annual
Stormwater	90 days	No	DMR Monthly	Annual
Rainwater	90 days	No	DMR Monthly	Annual

¹ During Conditional Startup Mode, blackwater and graywater source systems shall be treated and diverted to the sanitary or combined sewer and all fixtures in the building shall be operated using the municipally supplied make-up water source.

² Surrogate parameters shall be monitored and water samples shall be analyzed by a Certified Laboratory at the frequencies required in Table 5. The Treatment System Manager shall submit results of laboratory analysis along with a completed and signed Data and Monitoring Report as shown in the table. Operational changes, spills, overflows, unanticipated bypasses, other system malfunctions, and/or monitoring results which are outside of the applicable water quality limits shall be reported as described in Section 7.

c. 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 should 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 for systems that either (1) had a valid Permit issued by SFDPH-EH on or before August 17, 2017; or (2) did not have a valid Permit but did have an approved Engineering Report on or before August 17, 2017 shall include an analysis of the feasibility of implementing changes to the existing treatment design or instrumentation to conform to the LRTs in Table 3 and Continuous Monitoring Requirements in Tables 4 and 5 of these Rules and Regulations.

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

d. Malfunction Notification:

The Treatment System Manager shall notify the San Francisco Department of Public Health, Environmental Health by email at DPH.Nonpotable@sfdph.org of any malfunction that results in or is likely to result in environmental harm or increased public risk.

Initial notification by email shall take place as soon as practicable after the Treatment System Manager becomes aware of the circumstances and include, as applicable:

- A description of the malfunction, including location description
- 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

Follow up notification of a malfunction that results in or is likely to result in environmental harm or increased public risk shall occur by email within 5 days and include the information in the initial notification and any updates, such as:

- Updated information on the cause or suspected cause
- 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
- Steps taken to notify users

Malfunctions that do not result in any increased risk to public health such as minor excursions from the water quality limits in Table 5 for parameters that do not require diversion to sewer or

anomalous water quality measurements outside of usual levels (even if they do not represent an exceedance) should be noted in the DMR or Annual Report submittals.³

e. Notification of Facility Changes and Other Circumstances:

All changes to the Facility including expansion, production increase, change of end use or source water, or process modification must be approved by the Director. The Permittee or Treatment System Manager shall submit a request in writing to SFDPH-EH, SFDBI-PID, SFPW, and/or SFPUC as applicable prior to any such modification. Changes to the Treatment System process train that affect the calculation of Log Reduction Credits must be submitted by a qualified engineer licensed in California.

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 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) Data and 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.
- For graywater systems: Must be certified at or above a Grade 2 Water Treatment Plant Operator or at or above a Grade 2 Distribution System Operator or at or above a Grade II Wastewater Treatment Plant Operator by the State Water Resources Control Board's Office of Operator Certification or have comparable education and/or experience to operate a graywater source system.
- For blackwater systems: Must be certified as a Grade II Wastewater Treatment Plant Operator by the State Water Resources Control Board's Office of Operator

³ For example, if a graywater system has been operating for two years and is on annual reporting cycle and normally has Biological Oxygen Demand less than 10 mg/L receives a result of 24 mg/L from a monthly sample, this should be reported on the next annual report to DPH as an anomaly along with a discussion of any possible explanation for the unusual result.

Certification or have comparable education and/or experience to operate a blackwater 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.

For District Scale Systems, the Operations and Maintenance Manual shall include as any special requirements for Users, Suppliers and Permittee as agreed to in the Enforceable Legal Agreement described in Section 10a of these Rules. A copy of the Enforceable Legal Agreement shall be appended to the Operations and Maintenance Manual.

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 pathogens in the cooling tower system. The Cooling Tower Water Management Plan shall include the following information 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

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 appended to the approved Operations and Maintenance manual.

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

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, including through the provision of analogous system performance. The determination is at the sole discretion of the Director, and shall include 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 and the reporting frequencies specified in these Rules and Regulations provided that the project applicant demonstrates that strict interpretation of a standard would cause practical difficulties or unnecessary hardship due to special circumstances and 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. Determination is at the sole discretion of the Director, and no variance shall be granted unless the Director finds that the requested variance is consistent with the purposes of these Rules and Regulations.

Amendments: The Director shall have the discretion to amend the permit requirements for sampling requirements and reporting frequencies on permits older than one year.

12. Enforcement

a. Inspection

SFDPH-EH has the right to enter and inspect any Alternate Water Source System governed by these Rules and Regulations during normal business hours or during construction in the absence of advance notice. All properties included in a District-scale project are subject to inspection, and Permittees, Suppliers and Users shall allow entry. 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 that continued operation of the system poses unacceptable risk to public or environmental health for any reason, including but not limited to:

- The Alternate Water Source System was built without applicable building and plumbing permits issued by the SFDBI, and, where applicable, encroachment permits issued by Department of Public Works.
- The Permittee has not paid their annual license fee;
- 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;
- 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; or
- The Permittee is the Permittee or Party responsible for any other permit issued under Article 12C that is currently in violation of these Rules and Regulations.

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 this Section 12 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 Article 12C.

For purposes of this Rule, “charging official” shall mean the Director, or their 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 for the first violation of a provision or regulation in a 12-month period, \$200 for the second violation of the same provision or regulation in a 12-month period; and \$500 for the third and subsequent violations of the same provision or regulation in a 12-month period.

The Penalty Schedule in Appendix A specifies how violation counts and penalties shall be determined.

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 Non-Potable Water Program, 49 South Van Ness Avenue, Suite 600, San Francisco, CA 94103.

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.

Appendix A: Penalty Schedule

No.	Violation	Penalties for 1 st , 2 nd & 3 rd Violation ¹	Code + Rules Reference
1	Operating without a permit	\$100	12C.5.(a), Rules and Regs Section 4
2	Failure to maintain instruments	\$50, \$200, \$500	12C.5.(b), 12C.8 and Rules and Regs Section 7.a. and 9.c.
3	Failure to conduct required testing	\$100, \$200, \$500	12C.5.(b), 12C.8 and Rules and Regs Section 7.a.
4	Failure to send monthly or quarterly report	\$50, \$200, \$500	12C.5.(b), 12C.8 and Rules and Regs Section 7.b.
5	Failure to send annual report	\$100	12C.5.(b), 12C.8 and Rules and Regs Section 7.c.
6	Failure to report operational problem	\$30, \$60, \$125	12C.5.(b), 12C.8 and Rules and Regs Section 7.d.
7	Failure to report Water Quality excursion	\$50, \$200, \$500	12C.5.(b), 12C.8 and Rules and Regs Section 7.d.
8	Failure to inform DPH of change in facility, production or process	\$100, \$200, \$500	12C.5.(b), 12C.8 and Rules and Regs Section 7.e.
9	Failure to inform users of water quality problem	\$100, \$200, \$500	12C.5.(b), 12C.8 and Rules and Regs Section 7.d.
10	Failure to maintain records	Suspension or revocation of permit ²	12C.5.(b), 12C.8 and Rules and Regs Section 8
11	Failure to inform DPH of change of personnel	\$50, \$200, \$500	12C.5.(b), 12C.8 and Rules and Regs Section 9.a.
12	System operating with unqualified personnel or person who hasn't signed Affidavit	\$100, \$200, \$500	12C.5.(b), 12C.8 and Rules and Regs Section 9.a.
13	Failure to follow O&M plan	\$100, \$200, \$500	12C.5.(b), 12C.8 and Rules and Regs Section 9.b. and 9.c.
14	Initiating installation prior to submittal of application	\$100	12C.6.(a)
15	Failure to provide a Construction Certification Letter	Withhold First Certificate of Occupancy	12C.6.(e)
16	Failure to inform DPH of sale or transfer of building	\$100	12C.10, Rules and Regs Section 4.f.
17	Refusal to allow inspection	Permit suspension or revocation ²	12C.13, Rules and Regs Section 12.a.
18	Failure to conduct 4 year cross-connection test	\$100	Rules and Regs Section 5.a. and SFHC 12A, Title 17 and Title 22
19	Failure to provide water to end-use	\$100	Rules and Regs Section 6.a.

¹ Any permit can be suspended or revoked if multiple violations occur or for other reasons as described in Rules and Regs Section 12.b. First, second and third violations are defined by whether the same violation has occurred in the previous 12 month period.

² Revocation or suspension is governed by Administrative Code 100 and 12C Rules and Regs Section 12.b.