

REUSE GUIDELINES

Volume 1: Recycled Water Facilities



Prepared by
Hawai'i State Department of Health
Wastewater Branch



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A. Introduction

The Department of Health (DOH) has long been an advocate for the use of recycled water provided that public health and water resources are not compromised. Use of recycled water has become more significant due to the state's growing population, limited potable water resources, and wastewater disposal issues.

Since increasing the safe use of recycled water will help meet the state's growing water needs, the *Guidelines for the Treatment and Use of Recycled Water* (now referred to as the *Reuse Guidelines*) have been revised to streamline the application process and update requirements.

The *Reuse Guidelines* consists of two volumes:

- ***Volume I: Recycled Water Facilities*** addresses technical requirements that must be met for the various qualities of recycled water as well as requirements to construct or modify a wastewater reclamation facility (WWRF).
- ***Volume II: Recycled Water Projects*** covers the application process to use recycled water for purposes such as irrigation, dust control, cleaning, and fire-fighting and establishes best management practices that apply to the end user.

There are different grades of recycled water depending on the level of treatment that the wastewater receives. For R-1, the highest grade of recycled water, wastewater undergoes oxidation, filtration, and disinfection. For R-2, the wastewater undergoes oxidation and disinfection. For R-3, the wastewater only undergoes oxidation. This volume focuses mainly on requirements for R-1 and R-2.

B. Summary of Approval Process

Following is a summary of the approval process for construction or major modification of a WWRF that intends to produce recycled water:

1. **Application Submittal:** The application submittal consists of an engineering report and construction plans. The engineering report includes the design basis, treatment processes, and other information to demonstrate compliance with applicable requirements.

2. **Approval to Construct:** Once the application submittal is reviewed and found to be acceptable, the DOH will issue an approval to construct. When construction of the facility is substantially complete, the applicant should provide at least two weeks' notice to the DOH so that the DOH can schedule and conduct a final inspection.
3. **Approval to Use:** DOH will inspect the project for consistency with the application submittal and compliance with requirements. Conditional approval may be given until pilot testing or test results demonstrate compliance with requirements. If the facility is found to be acceptable and all required documents have been received, the DOH will issue an approval to use.

C. Definitions

"Alarm" means an instrument or device which continuously monitors a specific function of a treatment process, equipment or pump station and automatically gives warning of an unsafe or undesirable condition by means of an electronic, visual and/or audible signal.

"Biological Treatment" means methods of wastewater treatment where bacterial or biochemical action is used as a means of producing oxidized wastewater.

"Chapter 62" means the *Hawaii Administrative Rules, Title 11, Chapter 62, Wastewater Systems*.

"Contact" means the mode of transmission by which a person or animal has the opportunity to acquire an infecting agent or pathogenic organism, by means of inhalation, skin or skin lesions, mucus membrane exposure, ingestion, or other physical contact such as placing objects in the mouth.

"CT" for chlorine disinfection means the product of total chlorine residual (free chlorine and combined chlorines) and modal contact time, measured at the same point.

"Director" means the director of the Hawaii State Department of Health or a duly authorized representative.

"Domestic wastewater" means that as defined in the Chapter 62, section 11-62-03.

"Disinfection" means a process which inactivates or removes pathogenic organisms in water by chemical or physical means.

"DOH" means the Hawaii State Department of Health.

"F-specific bacteriophage MS2" means a strain of a specific type of virus which infects coliform bacteria, is obtained from the American Type Culture Collection (ATCC 15597B1), is grown on lawns of E. coli (ATCC 15597) as described by Adams in 1959 (Adams, M. H. 1959. Bacteriophages. Interscience Publishers, Inc.), and is assayed by the plaque forming unit (PFU) method described by Adams in 1959 on Trypticase soy agar (Difco, Detroit, Michigan).

"Filter" means a unit for carrying out the filtration process, consisting of both the filter medium and its housing.

"HAR" means the Hawaii Administrative Rules.

"Major modification" means a physical change to a WWRF such that:

1. a treatment process unit is significantly changed;
2. effluent quality is expected to significantly change; or
3. an applicable facility parameter with a designated limit is expected to change.

Examples of a major modification include a change from granular media to perforated plate media, cloth media or membrane filtration, a change from chlorine to UV disinfection, and a change from a Title 22 certified UV disinfection system to one that is not certified.

Regular maintenance operations such as repairing an existing part or replacing an existing part with an in kind part is not considered a major modification.

"Modal Contact Time" means the amount of time elapsed between the time that a tracer, such as salt or dye, is injected into influent at the entrance to a chamber and the time that the highest concentration of the tracer is observed in the water where it is discharged from the chamber.

"Nephelometric Turbidity Unit or NTU" means a measurement of turbidity as determined by the ratio of the intensity of light scattered by the sample to the intensity of incident light as measured by the method 2130 B. in Standard methods for the examination of Water and Wastewater, 20th ed.; Eaton, A.D., Clesceri, L.S., and Greenberg, A.E., Eds; American Public Health Association: Washington, DC, 1995; p.2-8.

"Non-Domestic Wastewater" means that as defined in HAR Chapter 62, §11-62-03, §11-62-07.1.

"NWRI UV Guidelines" means the latest *Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse* (prepared by the National Water Research Institute and Water Research Foundation) that has been accepted for use by the DOH.

"Oxidized Wastewater" means wastewater that has undergone an aerobic treatment process where the organic matter has been stabilized, is nonputrescible, and contains dissolved oxygen.

"Pathogen" means any agent, especially a microorganism, capable of causing disease.

"Person" means any individual, partnership, firm, association, public or private corporation, the State or any of its political subdivisions, trust estate or any other legal entity (same meaning as defined in section 342D-1, HRS).

"Peak Dry Weather Design Flow" means the arithmetic mean of the maximum peak flow rates sustained over some period of time (for example three hours) during the maximum 24-hour dry weather period. Dry weather period is defined as periods of little or no rainfall.

"Pond system" means a stabilization pond, aerated lagoon, anaerobic lagoon, or facultative lagoon used to treat wastewater.

"Potable water" means water that is suitable for drinking by humans.

"Power Source" means a source supplying energy to operate unit processes.

"Recycled water" means treated wastewater that by design is intended or used for a beneficial purpose. The three classes of recycled water are provided in sections D, E, and F.

"Reclamation or Treatment Facility" means an arrangement of devices, structures, equipment, processes and controls which produce recycled water suitable for the intended reuse.

"Standby power source" means an automatically actuated self-starting alternate energy source maintained in immediately operable condition and of sufficient capacity to provide necessary service during failure of the normal power supply.

"Turbidity" means a measure of the ability of a solution to scatter light. Light scattering is usually caused by the presence of small particles.

"Unit Process" means an individual stage in the wastewater treatment sequence which performs a major single treatment operation.

"WWRF" means a wastewater reclamation facility.

D. R-1 Recycled Water

In order to be classified as R-1 recycled water, wastewater must be oxidized, filtered and disinfected as follows:

1. Oxidization

The recommended target for both BOD₅ and TSS is a maximum of 5 mg/L.

2. Filtration and Turbidity

The different limits set for media versus membrane filtration are based on criteria that demonstrate that the particular technology is operating properly and efficiently.

- a. Media Filtration: For filtration systems using sand, granular, cloth or other media, the turbidity shall not exceed any of the following:
 - 1) An average of 2 NTU within a 24-hour period;
 - 2) 5 NTU, more than 5 percent of the time within a 24-hour period (i.e. 72 minutes within a 24-hour period); and
 - 3) 10 NTU at any time. Diversion of wastewater is required if turbidity exceeds 10 NTU.

- b. Membrane Filtration: For filtration systems using membrane filtration (microfiltration, ultrafiltration, nanofiltration, or reverse osmosis), the turbidity shall not exceed any of the following:
 - 1) 0.2 NTU more than 5 percent of the time within a 24-hour period; and
 - 2) 0.5 NTU at any time. Diversion of wastewater is required if turbidity exceeds 0.5 NTU.

- c. A turbidity meter that continuously monitors and logs data and reports, with a two year repository, shall be installed and operated:
 - 1) prior to filtration; and
 - 2) after the filtration process but before disinfection.

3. Disinfection

The disinfection process, when combined with filtration, must have demonstrated inactivation and/or removal of 99.999 percent of the plaque-forming units of F-specific bacteriophage MS2, or polio virus in the wastewater. A virus that is at least resistant to disinfection as the polio virus may be used for purposes of demonstration.

a. Chlorine Disinfection

A CT value of not less than 450 milligrams-minutes per liter shall be maintained at all times with a modal contact time of at least 90 minutes based on peak dry weather design flow.

Automatic control of chlorine dosage and continuous monitoring, data logging and recording of chlorine residual shall be provided. Chlorination facilities shall have adequate capacity to maintain a residual of 5 mg/L.

b. UV Disinfection

1) When using media filtration:

- a) The design UV dose shall be 100 mJ/cm² or greater under maximum daily flow; and
- b) The filtered UV transmittance shall be 55 percent or greater at 254 nanometers (nm).

2) When using membrane filtration:

- a) The design UV dose shall be 80 mJ/cm² or greater under maximum daily flow; and
- b) The filtered UV transmittance shall be 65 percent or greater at 254 nanometers (nm).

3) The minimum acceptable design requirements and commissioning of new UV disinfection systems shall comply with the *NWRI UV Guidelines*.

4) A UV system that is Title 22 certified by California is acceptable to the DOH.

4. Fecal Coliform

- a. The median density measured in the disinfected effluent shall not exceed 2.2/100 milliliters using the bacteriological results of the last seven days for which analyses have been completed;
- b. The density shall not exceed 23/100 milliliters in more than one sample in any 30-day period; and
- c. No sample shall exceed 200/100 milliliters.
- d. Frequency of sampling and analysis:
 - 1) Sampling and analysis shall be done daily for fecal coliform when R-1 is being used as allowed (i.e. not directly disposed).
 - 2) If approved by the Director, sampling frequency may be reduced to weekly sampling based on:
 - a) Use of R-1 when a lower class of recycled water is allowed;
 - b) Volume of R-1 used;
 - c) Disinfection or filtration method used;
 - d) Demonstrated disinfection quality and reliability;
 - e) Sampling location; and
 - f) Other factors as determined by the DOH.

E. R-2 Recycled Water

In order to be classified as R-2 water, wastewater must be oxidized and disinfected as follows:

1. Oxidization

The recommended target for both BOD₅ and TSS is a maximum of 10 mg/L.

2. Disinfection

- a. Chlorine disinfection shall be based on a theoretical chlorine contact time of 15 minutes or more and an actual modal contact time of 10 minutes or more throughout which the chlorine residual is 0.5 mg/L.

- b. Automatic control of chlorine dosage, continuous monitoring, data logging, and chlorine residual reporting are required. Chlorination facilities shall have adequate capacity to maintain a residual of 2 mg/L.
- c. When an alternate disinfection process is used, the applicant must show to the satisfaction of the DOH that the process results are comparable to those achieved by chlorination.

3. Fecal Coliform

- a. The median density as measured in the disinfected effluent shall not exceed 23/100 milliliters using the bacteriological results of the last seven days for which analyses have been completed;
- b. The density shall not exceed 200/100 milliliters in more than one sample in any 30-day period; and
- c. Frequency of sampling and analysis:
 - 1) Sampling and analysis shall be done daily for fecal coliform when R-2 is being used as allowed (i.e. not directly disposed).
 - 2) If approved by the Director, sampling frequency may be reduced to weekly or less frequent sampling based on:
 - a) Use of R-2 when a lower class of recycled water is allowed;
 - b) Volume of R-2 used;
 - c) Disinfection or filtration method used;
 - d) Demonstrated disinfection quality and reliability;
 - e) Sampling location; and
 - f) Other factors as determined by the DOH.

F. R-3 Recycled Water

In order to be classified as R-3 recycled water, wastewater must be oxidized and meet BOD₅ and TSS limits provided in Table 1 of Appendix A. Since R-3 is neither filtered nor disinfected, there are no requirements for filtration, turbidity, or disinfection.

G. Construction of or Major Modification to a WWRF

An application submittal to construct or modify a WWRF shall be submitted to the DOH. The submittal shall consist of an engineering report and construction plans.

The report and plans (discussed in the following sections) shall be prepared and stamped by an engineer who is licensed and registered in Hawaii. The report shall clearly indicate the means for compliance with Chapter 62 and these guidelines.

In order to ensure that the WWRF will provide proper and continuous treatment, the following items should be considered:

1. Alarms and Automatic Controls

At a minimum, alarms shall be provided at critical treatment points or units to alert an operator of a malfunction. If a facility cannot be continuously manned, telemetered alarm systems should be in place to notify an operator on call.

Unless a WWRF is manned with an operator continuously (24 hours a day), automatic emergency control mechanisms shall be provided for the following:

- a. Power loss;
- b. High wastewater levels;
- c. Pump or blower failure;
- d. High head loss on filters;
- e. High turbidity exceedances;
- f. Loss of coagulant or polymer feed; and
- g. Absence of chlorine residual.

For monitoring and alarms specific to UV disinfection systems, refer to the *NWRI Guidelines*.

2. Stand-by Units and Adequate Redundancy

- a. A standby power source shall be available at all WWRFs and considered for distribution pump stations. The standby power source shall be a self-actuated alternate energy source of sufficient capacity to power the facility at peak design flow during a power outage.

- b. When treatment process units break down, are taken out of service for maintenance, repair, or replacement, adequate redundancy from multiple or standby units should be available for continuous treatment up to peak design capacity. This applies to equipment such as pumps, tanks, blowers, and chemical feeders.
- c. For power reliability design with respect to UV disinfection systems, refer to the *NWRI UV Guidelines*.

3. Backup Disposal System

The recycled water facility shall provide for a backup disposal system designed in accordance with Chapter 62 to prevent overflows or discharges from the system when the recycled water is not being used, when the volume of recycled water exceeds demand and requires disposal, or other such reasons.

H. Engineering Report

1. General Information

Provide the name, address, phone, and email address of the owner of the proposed treatment facility and the application preparer.

2. Conformance to *Section 11 Engineering Report in Chapter 10 of the Design Standards of the Division of Wastewater Management, Vol. 1.*

Provide information describing the design basis, including:

- a. Population and Flow Projections

Design average, maximum and peak wastewater flows shall be determined in accordance with *Section 22, Quantity of Wastewater*, in Chapter 20 of the *Design Standards of the Division of Wastewater Management, Vol. 1*.

b. Wastewater Characterization

- 1) Determination of wastewater strengths and characteristics shall be based on field sampling and monitoring data for existing service areas, allowances for anticipated changes in existing service areas, and allowances for contributions from new service areas. Allowance for newly-served domestic contributors should be not less than:
 - a) 0.20 pounds per capita per day for BOD₅; and
 - b) 0.20 pounds per capita per day for SS.
- 2) Determination of effluent characteristics may be based on chemical analyses of the recycled water for relevant pollutants listed in Appendix B on a case-by-case basis; and
- 3) Non-Domestic Wastewater: Projected non-domestic wastewater characterization shall be estimated based on the nature of the projected commercial/industrial developments and estimates of water usage and process requirements. For all non-domestic sources contributing waste to the existing or proposed reclamation facility, the following information shall be submitted as required by the DOH:
 - a) A base map showing the location of the WWRF and all sources and operations contributing wastes, including all hazardous waste treatment, storage, or disposal facilities;
 - b) A line drawing of the water flow through the facility showing a mass balance;
 - c) A narrative that describes or identifies:
 - i) each non-domestic user of the proposed facility;
 - ii) each process and operation which contributes wastewater and the average flow that each contributes;
 - iii) a list, for each source or process, of EPA priority pollutants and a list of all hazardous wastes in accordance with the Resources Conservation and Recovery Act (RCRA), including the hazardous waste identification number (eg: F006) discharged to the collection system;
 - iv) treatment the wastewater receives;

- v) ultimate disposal of any non-domestic solid or fluid waste other than by discharge; and
 - vi) any discharges from oil and water separators.
- d) Description of site selection, including:
- i) maps showing existing and proposed collection systems;
 - ii) available land area; and
 - iii) local soil characteristics, geology and topography.

3. Description of the selected treatment processes including:

- a. Schematic of the treatment train;
- b. Calculations for significant treatment processes including size, capacity loading rates and/or contact times;
- c. Applicable schedule if major components or equipment are to be phased in;
- d. Mass balance showing the inter-relationship of process units;
- e. Filtration design criteria including filtration and backwash rates, filter depth, filter media specifications, and expected turbidity of the filter influent and filter effluent;
- f. Description of components that will help ensure plant reliability and continued operation. Indicate under what condition the component will be actuated and the result of actuation. For example, when an alarm is used to indicate system failure, indicate what will trigger the alarm, how the alarm will signal a malfunction, where the signal will appear or sound, personnel who will be notified, and hours that the facility will be monitored by personnel;
- g. Residence time for each disinfection unit and description of residence time variation under various flow conditions;
- h. On-site validation in accordance with the *NWRI UV Guidelines*;
- i. Conditions such as upper turbidity limit and recorder malfunction that will trigger flow diversion;

- j. Components to provide continuous monitoring of disinfection dosage, turbidity, and other applicable parameters;
- k. Monitoring program that includes sampling location and frequency, equipment providing continuous monitoring and analyses, and equipment calibration method and frequency; and
- l. Operations and training plan to ensure reliable production and quality of recycled water quality.

I. Construction Plans

The applicant should ensure that submitted plans are legible. For plans that have been reduced in size, a graphic scale should be shown. Construction plans shall conform to requirements of *Section 12.1 Construction Plans - General* of Chapter 10, *Design Standards of the Division of Wastewater Management, Vol. 1*, and include the following:

1. General Layout and Information

Location and size of proposed and future facility structures shall include the following:

- a. Acreage and tax map key number(s) of the project site;
- b. Scaled plot plan showing location of existing and proposed wastewater systems, distances of and between existing and proposed buildings, structures, legal boundaries, property lines, adjacent surface water bodies, drinking water sources and existing public sewers within the property;
- c. Distance requirements as provided for in §11-62-23.1(c) of Chapter 62;
- d. Site improvements pursuant to Section 45.0 Chapter 40, *Design Standards of the Division of Wastewater Management, Vol. 2 [24]*;
- e. Schematic flow diagram showing the flow through various facility units and elements;
- f. Piping, material handled and flow direction through pipes;
- g. Hydraulic profiles showing wastewater and recycled water flows;

- h. Elevation of high and low water levels of any storage tank, basin or impoundment to which the facility can discharge effluent;
- i. Requirements of Section 12.3.1 of *Chapter 10, Plans of Wastewater Pump Stations-General Layout*; and
- j. Bench mark with description and latest elevations.

2. Detailed Construction Drawings

Include and incorporate:

- a. Requirements of Section 12.3.2 of *Chapter 10, Plans of Wastewater Pump Stations-Detail Plans*;
- b. Location, dimensions and elevations of all existing and proposed facility units;
- c. Type, size, pertinent features, and rated capacity of all pumps, blowers, motors and other mechanical devices; and
- d. Adequate description of any pertinent features not covered by specifications.

J. Approvals

1. Approval to Construct

Once the DOH has determined that the application submittal conforms to Chapter 62 and these guidelines, the DOH will issue an *Approval to Construct* to the owner, with copy to the engineer who prepared the application submittal.

2. Expiration of Approval to Construct

If construction of an approved project is not commenced within two years of the *Approval to Construct* issue date, is stopped for a period of two years or more, or is not completed within a reasonable time, the *Approval to Construct* will become invalid with respect to the authorized construction. An approved extension is necessary to extend the *Approval to Construct*; otherwise a new application is required.

3. Approved Extension

If an *Approval to Construct* has expired, the owner may request an extension by submitting a *Construction Extension* form (provided in Appendix C) to the DOH. The request should include the following information:

- a. Project name and file number;
- b. Reason for the extension;
- c. Estimated date of construction commencement; and
- d. Updates or changes to the original application submittal.

4. Construction Inspections

After construction is substantially complete, the owner or owner's representative shall provide the DOH with at least two weeks' notice to schedule a final inspection of the facility.

5. Approval to Use

Once the DOH determines that the project is consistent with the application submittal, Chapter 62 and these guidelines, the DOH will issue an *Approval to Use* to the owner, with copy to the engineer who prepared the application submittal, provided that the following documents have been received:

- a. A written declaration concerning the operation and maintenance manual, as provided for in §11-62-23.1 (d) of Chapter 62;
- b. An operation and maintenance manual as provided for in §11-62-23.1 (d) of Chapter 62; and
- c. As-Built Plans.

K. Performance and Compliance Inspections

1. One-Year Certification

After the first year of operation, a one year certification shall be submitted to the DOH in accordance with §11-62-23.1 (f) of Chapter 62.

2. Operation and Maintenance Inspections

The DOH may conduct operation and maintenance inspections of the facility on a regular or as needed basis.

L. Reporting Requirements

1. Volume of Recycled Water Supplied for Use

Recycled water purveyors shall report on the volume of recycled water supplied for use during each calendar year. The form titled *Annual Report on Recycled Water Supplied for Use*, provided in Appendix C, should be submitted to the DOH Wastewater Branch by February 19 following the end of each calendar year. Information should include:

- a. Report year, facility information, recycled water quality, and unit used in reporting;
- b. Information on and signature of person preparing the report;
- c. Volume of recycled water supplied each month; and
- d. Total volume of recycled water supplied during the year.

2. Reporting Spills and Other Incidents

Any spill, unauthorized discharge or cessation of untreated, partially treated or treated wastewater effluent shall be reported pursuant to the HAR Title 11, Chapter 62, Appendix C, *Responses for Wastewater Spills, Overflows, and Discharges ("Spills")*.

Any discharge, runoff or overspray of recycled water beyond the approved use area shall also be reported.

3. Report Submittal

Reports can either be mailed to the Wastewater Branch or emailed to the Recycled Water Coordinator. Submittal instructions are provided on forms.

Appendix A: Summary of R-1 and R-2 Limits

Table 1: BOD ₅ & TSS for R-1, R-2 & R-3					
Average Daily Flow (mgd)	Sample Type	Sample Frequency	BOD ₅ (mg/L)	TSS (mg/L)	Based on:
>= 100,000	composite	weekly	<= 30	<= 30	monthly average of composite samples
>= 100,000 (pond systems)	grab	weekly	<= 60	<= 60	weekly samples
< 100,000	grab	monthly	<= 60	<= 60	monthly samples
Ref: HAR §11-62-26					

Table 2: Chlorine Disinfection for R-1 & R-2						
Recycled Water	Contact Time (CT) (mg-min/L)	Modal Contact Time (minutes)	Theoretical Contact Time (minutes)	Actual Modal Time (minutes)	Cl Residual (mg/L)	Facility Capacity for Residual
R-1	>= 450 at all times	>= 90 per PDWDF	n/a	n/a	n/a	n/a
R-2	n/a	n/a	>= 15	>=10	>= 0.5	2 mg/L
R-3	n/a	n/a	n/a	n/a	n/a	n/a
Notes: 1. Ref: HAR §11-62-26 2. CT = (total chlorine residual) * (contact time measured at same point) 3. PDWDF = peak dry weather design flow						

Table 3: Turbidity & UV Disinfection for R-1 only			
Parameter	Media Filtration	Membrane Filtration	Reverse Osmosis
Turbidity	<p>Average NTU \leq 2 within 24-hr period</p> <p>NTU \leq 5 95% of time within 24-hr period</p> <p>\leq 10 NTU at all times</p>	<p>NTU \leq 0.2 95% of the time within 24-hr period</p> <p>NTU \leq 0.5 at all times</p>	<p>NTU \leq 0.2 95% of the time within 24-hr period</p> <p>NTU \leq 0.5 at all times</p>
Design UV Dose	\geq 100 mJ/cm ² under max daily flow	\geq 80 mJ/cm ² under max daily flow	\geq 50 mJ/cm ² under max day flow
UV Transmittance (filtered)	\geq 55% at 254 nm	\geq 65% at 254 nm	\geq 90% at 254 nm
Ref: HAR §11-62-26, Reuse Guidelines 5/15/02, App J & K			

Table 4: Fecal Coliform for R-1 & R-2 (# / 100mL)			
Recycled Water	Median Density	Density: Only one exceedance in a 30-day period allowed.	Density of Every Sample
R-1	\leq 2.2	\leq 23	\leq 200
R-2	\leq 23	\leq 200	n/a
R-3	n/a	n/a	n/a
Ref: HAR §11-62-26			

Appendix B: Chemical Analyses

The DOH may select and request quantified determinations of any of the contaminants listed below, or other sampling deemed necessary, based on review of the project and considerations such as location relative to the Underground Injection Control (UIC) line, land use, management practices, discharge method, or other specifics.

<u>Parameter</u>	<u>EPA Method</u>
specific conductivity	120
pH	150
temperature	170
total dissolved solids	160
total suspended solids	160
chlorides	325
nitrate-nitrite	353
total Kjeldahl nitrogen	351
total phosphorus	365
arsenic	200
selenium	200
mercury	245
cadmium	200
lead	200
chromium	200
barium	200
copper	220
antimony	200
beryllium	200
thallium	200
total or fecal coliform	MPN/CFU
fecal streptococcus	MPN
turbidity	180
biochemical oxygen demand (5 days)	405
chemical oxygen demand	410
alkalinity (as CaCO ₃)	310
total organic carbon	
volatile organic chemicals	624
total organic halogens	
total trihalomethanes	

Appendix C: Application and Report Forms

1. Recycled Water Application Form: Construction Extension
2. Report Form: Annual Report on Recycled Water Supplied for Use

STATE OF HAWAII DEPARTMENT OF HEALTH WASTERWATER BRANCH
RECYCLED WATER APPLICATION FORM: CONSTRUCTION EXTENSION

A. APPLICANT INFORMATION

Name:	Street, City & Zip Code:
Title:	Phone Number:
Company:	Email Address:

B. PROJECT INFORMATION

Project:	File number :
Site Description or Address:	

C. CONSTRUCTION EXTENSION

Revised estimated start date:

Reason for Extension:

D. DESCRIBE CHANGES TO ORIGINAL APPLICATION. Attach relevant documents.

E. APPLICATION PREPARER:

Name:	Street, City & Zip Code:
Title:	Phone Number:
Company:	Email Address:
Signature & Date:	

F. APPLICATION SUBMITTAL

1. Submit application form via mail, email or both.
2. Submit electronic file of construction plans, as well as a hard copy. Include information per section M of *Vol II: Recycled Water Projects*.
3. Mail to: Wastewater Branch, 919 Ala Moana Blvd. #309, Honolulu, HI 96814
Email: april.matsumura@doh.hawaii.gov

STATE OF HAWAII DEPARTMENT OF HEALTH WASTEWATER BRANCH
REPORT FORM: ANNUAL REPORT ON RECYCLED WATER SUPPLIED FOR USE

A. GENERAL INFORMATION

Report Year:	Wastewater Reclamation Facility:	
Facility File Number:	Recycled Water Quality (eg: R-1):	Units (gal or mgal?)

B. REPORT PREPARER

Name:	Street, City & Zip Code:
Title:	Phone No.
Company:	Email Address:
Signature:	Date Prepared:

C. RECYCLED WATER SUPPLIED FOR USE

Month	Volume Used
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	
Total	

D. REPORT SUBMITTAL

1. Due February 19 of the year following the Report Year.
2. Submit via mail, email or both.
3. Mail to: Wastewater Branch, 919 Ala Moana Blvd.#309, Honolulu, HI 96814
4. Email to: april.matsumura@doh.hawaii.gov