American Water Works Association
California-Nevada Section

BACWA Recycled Water Committee

CA CCCPH … WUEP, DPR, AWTO™

Steven Garner
Director of Certification
CA-NV AWWA

Please Enter your Questions into Chat

American Water Works Association
California-Nevada Section

UPCOMING WEBINARS

1. CCCPH Review
   Thursday, **March 13**, 2025 from 8:00am – 12:00pm (4 hours)
2. CCCPH Policy And Plan Development
   Thursday, **April 3**, 2025 from 8:00am – 10:00am (2 hours)
3. CCCPH Policy And Plan Implementation
   Thursday, **May 8**, 2025 from 8:00am – 10:00am (2 hours)
4. CCCPH Sample Plan Review
   Thursday, **June 12**, 2025 from 8:00am – 10:00am (2 hours)
5. CCCPH more to come to meet your needs 😊

The State of California has a long history of providing regulations governing backflow prevention and cross-connection control.

- **1914** U.S. Public Health Service general procedures across the USA.
- **1942** Approved by CA State Department of Public Health. Defined cross-connections, required backflow protection, check valve, double check valve installation, protection against fire systems, and protection against process waters.
- **1987-88** Title 17 and the "Green Book" Guidance Manual for Cross-Connection Control Programs was published by the State of California Health and Welfare Agency Department of Health Services, Public Water Supply Branch.
- **2024 CA Cross-Connection Control Policy Handbook became effective July 1st** Cross-Connection Control Policy Handbook (CCCPH) | State Water Resources Control Board (ca.gov)

The State of California set forth the following due dates.

- **July 1, 2025**
  - PWS must submit a Cross-Connection Control Plan for review
  - CA DDW staff will review submissions with an undetermined turn-around cycle (due to the variability of plan submissions)
  - Certifying organizations for Backflow Prevention Assembly Testers (BPAT) and Cross-Connection Control Specialists (CCCS) must submit evidence that current programs meet the interim requirements in Article 4 of the CCCPH.
  - CA DDW staff will notify each certifying organization of being **recognized** based upon evidence submitted.
  - Municipalities, counties, and other certifying organizations may offer credentials. All PWS are required to follow the CA CCCPH for accepting certified individuals.

The State of California set forth the following due dates.

- **July 1, 2027**
  - Certifying organizations seeking to remain recognized by the State of CA, DDW must be accredited by the ANSI National Accreditation Board using the international standard defined by ISO/IEC 17024:2012 Conformity assessment — General requirements for bodies operating certification of persons.
  - CA-NV AWWA was granted accreditation September 17, 2023 for both the BPAT and the CCCS certification programs.
  - CA-NV AWWA is the **1st and ONLY** accredited certifying organization in the whole of the water industry (drinking, recycled, wastewater).
  - You may track progress of other organizations at the ANAB directory link. https://anab.ansi.org/resource/iso-iec-17024-personnel-certification-bodies-accreditation-directory/

CCCPH Chapter 1: Policy Overview

1. The Cross-Connection Control Policy Handbook (CCCPH) aims to protect public health by setting standards to ensure public water systems (PWS) are not subject to backflow of substances.
2. **The CCCPH and its standards apply to all California PWS, and compliance with the CCCPH is mandatory.**
3. Assembly Bill 1671 and 1180 established the State Water Board's mandate to adopt standards for backflow protection and cross-connection control and required that the **CCCPH include provisions for the use of a swivel or changeover device (swivel-ell).**
4. **Any person who owns/operates a PWS is required to ensure that the distribution system is not subject to backflow under normal operating conditions.**
5. **The adoption of the CCCPH is intended to build awareness within the regulated community regarding the importance of backflow protection and cross-connection control, leading to the implementation of a robust cross-connection control program by PWS.**

CCCPH Chapter 2: Background on Backflow Protection and Cross-Connection Control

1. Cross-connections are interconnections between a potable water supply and a non-potable source.
2. Backflow is the undesired reversal of water flow into a public water system.
3. Backflow can occur through backsiphonage or backpressure.
4. Cross-connections can exist in residential, commercial, and industrial plumbing fixtures and systems.
5. Cross-connections can cause contamination or pollution of potable water.
6. **The success of a cross-connection control program depends on knowledgeable individuals and ongoing surveillance of the distribution system.**

CCCPH Chapter 2: Background on Backflow Protection and Cross-Connection Control (cont)

7. Cross-connection control programs aim to prevent backflow into public water systems.
8. Properly installed and maintained backflow prevention assemblies (BPAs) can prevent backflow.
9. **The success of a cross-connection control program depends on knowledgeable individuals and ongoing surveillance of the distribution system.**
10. Certified specialists are needed to evaluate the degree of hazard in the distribution system.
11. **The Cross-Connection Control Policy Handbook regulates the use and management of cross-connection control programs and BPAs in public water systems.**
12. **The Cross-Connection Control Policy Handbook regulates the use and management of cross-connection control programs and BPAs in public water systems.**

CCCPH Chapter 3: Standards for Backflow Protection and Cross-Connection Control

1. PWS must protect the public water supply through implementation and enforcement of a cross-connection control program.
2. **The cross-connection control program must include at a minimum 10 elements listed in section 3.1.3 of the CCCPH.**
    1. Operating rules or ordinances
    2. Cross-Connection Control Program Coordinator
    3. Hazard Assessments
    4. Backflow Prevention
    5. Certified Backflow Prevention Assembly Testers & Cross-Connection Control Specialists
    6. Backflow Prevention Assembly Testing
    7. Recordkeeping
    8. Public Outreach & Education
    9. Local Entity Outreach
    10. Backflow Incident Response, Reporting & Notification
3. **PWS with more than 3,000 service connections must have a Cross-Connection Control Program Coordinator who is a cross-connection control specialist.**

CCCPH Chapter 3: Standards for Backflow Protection and Cross-Connection Control (cont)

5. **PWS must conduct hazard assessments to identify actual or potential cross-connection hazards and determine the degree of hazard and any backflow protection needed.**
6. **PWS must ensure all backflow prevention assembly testers and cross-connection control specialists used are certified.**
7. **PWS must develop and implement procedures for investigating and responding to suspected or actual backflow incidents.**
8. **PWS must coordinate with applicable local entities that are involved in either cross-connection control or public health protection to ensure hazard assessments can be performed and appropriate backflow protection is provided.**

CCCPH Article 2: Hazard Assessments and Required Protection

1. **Community water systems and noncommunity water systems must conduct initial hazard assessments of user premises or water distribution systems, respectively.**
2. **Hazard assessments should consider factors such as cross-connections, materials handled on premises, piping system complexity, and accessibility.**
3. The hazard assessment should identify the degree of hazard as high, low, or no hazard.
4. Existing backflow prevention assemblies (BPAs) should be evaluated for their adequacy based on the hazard level.
5. **Hazard assessments completed prior to the adoption of the CCCPH may be considered as an initial hazard assessment provided that such hazard assessments and associated backflow protection provide protection consistent with the CCCPH and the PWS describes their review of these assessments in the Cross-Connection Control Plan**

CCCPH Article 2: Hazard Assessments and Required Protection (cont)

6. **Follow-up hazard assessments are required when there are changes in account holders, new connections, evidence of changes in activities or materials, backflow incidents, periodic assessments, requests from the State Water Board, or when existing assessments may no longer be accurate.**
7. **A cross-connection control specialist must review or conduct each initial and follow- up hazard assessment** … make a written finding that, …the PWS's hazard assessment properly identified all hazards …
8. Noncommunity water systems must conduct initial or follow-up hazard assessments within two years of the adoption of relevant regulations.
9. BPAs must be installed to protect the distribution system from backflow based on the identified hazards.
10. The level of backflow protection should be commensurate with the degree of hazard.

CCCPH Article 2: Hazard Assessments and Required Protection (cont)

11. **High hazard cross-connections must be protected through premises containment, the use of an air gap (AG), or one or more reduced pressure principle backflow preventers (RPs).**
12. **PWS must ensure its distribution system is protected with no less than a double check backflow preventer (DC) protection for a user premise with a fire protection system within ten years of adoption of the CCCPH.**
13. Alternative methods of premises containment or backflow protection may be considered with State Water Board approval under specific conditions, such as using a swivel-ell for temporary potable water use or proposing alternative dates or methods for fire protection systems.

CCCPH Article 3: Backflow Prevention Assemblies

1. Minimum air gap standards for plumbing fixtures must be met.
2. Backflow Prevention Assemblies (BPAs) must meet certification requirements or have equivalent testing.
3. **BPAs must not be modified after approval.**
4. Installation criteria must be followed, including AGs, RPs, DCs, PVBs, and SVBs.
5. **BPAs must be field tested after installation, repair, or relocation and at least annually.**

American Water Works Association
California-Nevada Section

Follow up contact:
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CA-NV AWWA creates certifications using industry best practices.

- Each certification program is created with the aid of subject matter experts (SME) and usually with a special consultant, psychometrician.
  - A job task analysis (JTA) is created identifying each type of task that needs to be performed. Documenting the knowledge, skills, and abilities (KSA) related to the profession.
  - A validation study is completed that gathers a broader sense of what really matters to those in the industry. The resulting domains and task statements deemed most relevant create a scheme.
  - Exam items (questions) are created to evaluate a candidate's KSA in line with the finalized JTA.
  - Forms are created using items aligned to the finalized scheme.
  - A passing score (aka. cut score) is determined (not always 70).

American Water Works Association
California-Nevada Section

CA-NV AWWA offers other certifications

- **Water Use Efficiency Practitioner (WUEP):** Designed for water conservation and water use efficiency professionals. Three grade levels are available.
- **Water Quality Laboratory Analyst (WQLA):** Designed for drinking water laboratory professionals. Four grade levels are available. The exams belong to Water Professionals International (WPI).
- **Advanced Water Treatment Operator (AWTO™):** Designed for treatment operators (drinking water or wastewater) using or aspiring to use advanced treatment processes. The program was jointly developed and is operated by CA-NV AWWA and CWEA (1st joint credential of AWWA & WEF associations). Three grade levels are available with a minimum requirement of a state-issued grade three treatment credential (certification or license).

CA Direct Potable Reuse Regulation Background

Legislation	AB 574, 2017
Framework	April 2018 through March 2021
Research	October 2019 through March 2021
Expert Panels	June 2021 through February 2022
Proposed Rulemaking	July 2023 through effective date October 2024

Regulating Direct Potable Reuse in California | California State Water Resources Control Board
https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/direct_potable_reuse.html

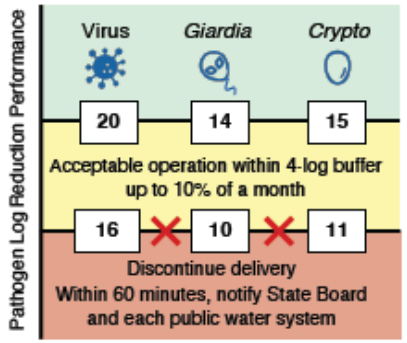
CA DPR Regs Background

CA DPR Regulations

Trussell

California Direct Potable Reuse Regulation Cheat Sheet

Pathogen Control



3 Removal Mechanisms

- UV inactivation (≥ 300 mJ/cm²)
- Physical separation
- Chemical inactivation

At least four processes providing no less than 1-log for each pathogen

Must provide at least 1-log per mechanism for each pathogen

Operator Certification / Staffing

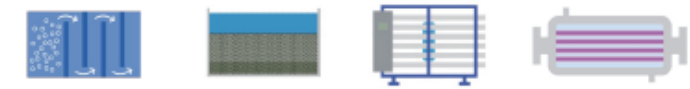
Chief T-5 Shift T-3

Entire Treatment Train

Wastewater Treatment → Advanced Treatment → Drinking Water Treatment

Operator Requirement	If pathogen control provided	If chemical control provided	If corrosion control provided
Drinking Water T-Certification	Chief T-5 Shift T-3	Chief T-5 Shift T-3	Chief T-5 Shift T-3
AWT-Certification	✗	Chief AWT-5 Shift AWT-3	✗
24/7 staffing	✓	✓	✗

Treatment Train Requirements



Ozone → BAC → RO → UV/AOP

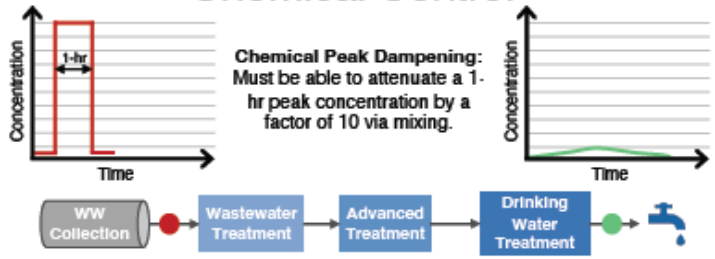
O_3
- O_3:TOC ratio > 1
- 1-log carbamazepine and sulfamethoxazole reduction

RO
- Avg salt rejection ≥ 99.2%
- TOC triggers at > 0.1 mg/L and > 0.15 mg/L

BAC
- EBCT ≥ 15 minutes
- 1-log formaldehyde and acetone reduction

UV AOP
- ≥ 300 mJ/cm²
- 0.5-log 1,4 dioxane reduction

Chemical Control

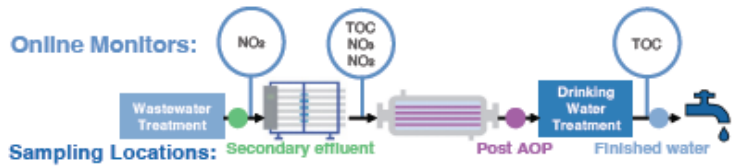


Chemical Peak Dampening: Must be able to attenuate a 1-hr peak concentration by a factor of 10 via mixing.

Wastewater Source Control Requirements

- Local limits utilized to identify and limit contaminants in wastewater
- Source control committee
- 5-year audit by independent party
- Early warning program
  - Online monitoring
  - Notification of failures
  - Community outbreak surveillance

Water Quality Monitoring



Weekly sampling
- Nitrate, nitrite, perchlorate, lead

Quarterly sampling
- Contaminants of emerging concern
- Other chemicals specified by regulators

Monthly sampling
- MCLs, lead, copper
- NLs, priority toxic pollutants
- Low molecular weight compounds: acetone, N,N-dimethylacetamide, methanol, methyl ethyl ketone
- Business/household sources of chemicals
- Byproducts and precursors

Technical / Managerial / Financial Capacity

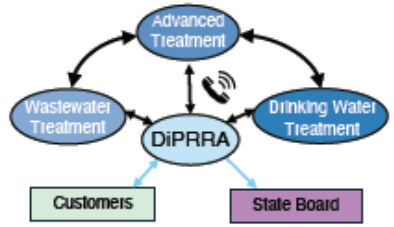
DiPRRA: **Direct Potable Reuse Responsible Agency.** Must be a public water system and is responsible for compliance.

Technical / Managerial: More than 10 plans and reports are required for the permit application, including the Engineering Report, Joint Plan, and Monitoring Plan.

Financial: Must identify reliable and continuing funding sources for O&M, capital replacement, energy, personnel, and equipment costs.

Joint Plan

Provides details on DIPRRA and partner agencies' roles, responsibilities, and legal authority. Describes corrective actions and all communication procedures.



Contact information

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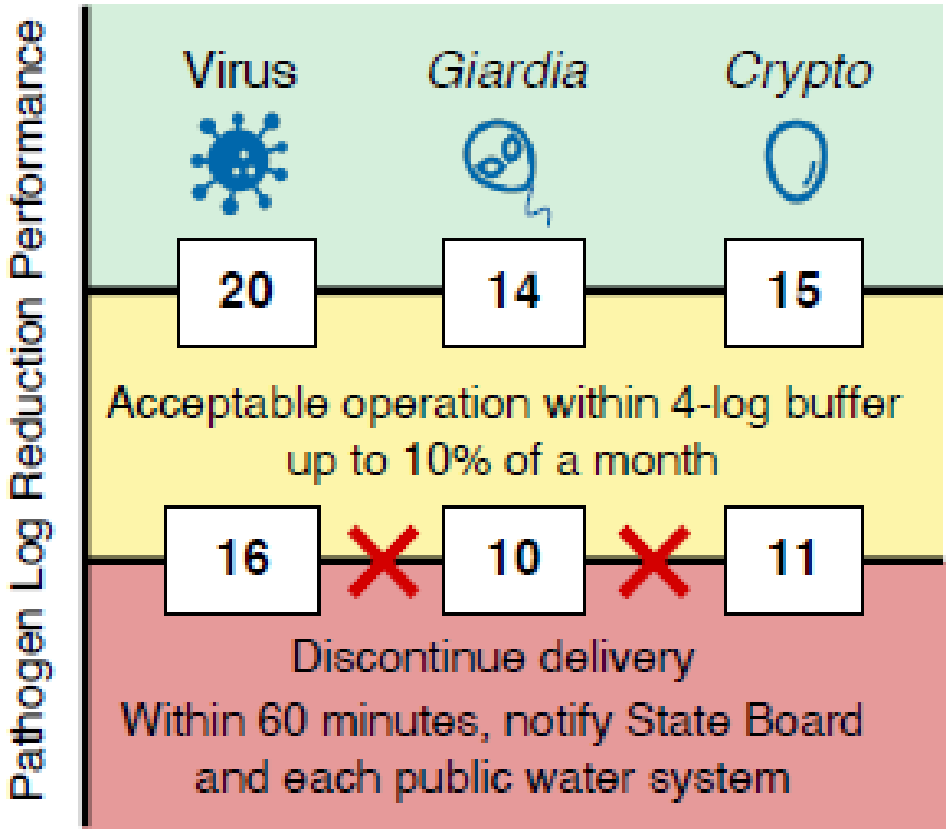
www.trusselltech.com

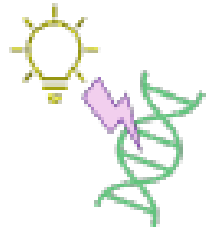
Brian Pecson
(510) 502-0448

AWT OPERATOR® CERTIFICATION
American Water Works Association California-Nevada Section
CWEA

Pathogen Control

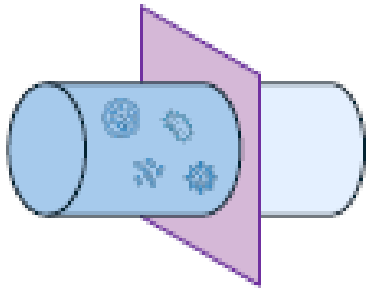


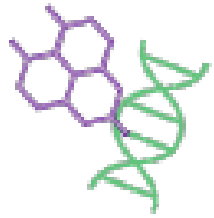
3 Removal Mechanisms



UV inactivation
(≥ 300 mJ/cm²)

Physical separation





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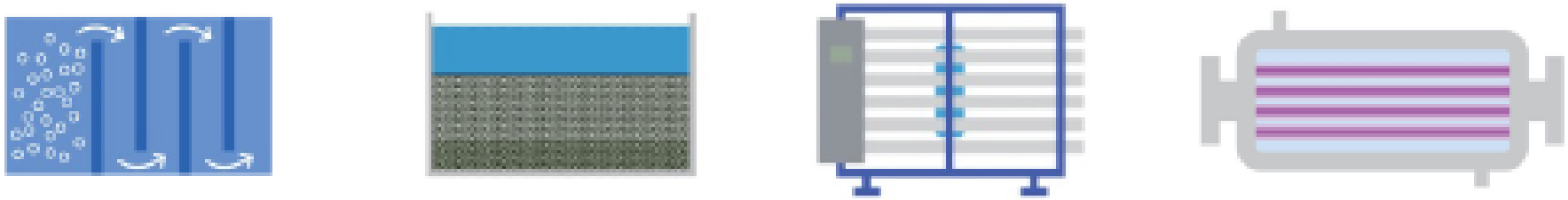

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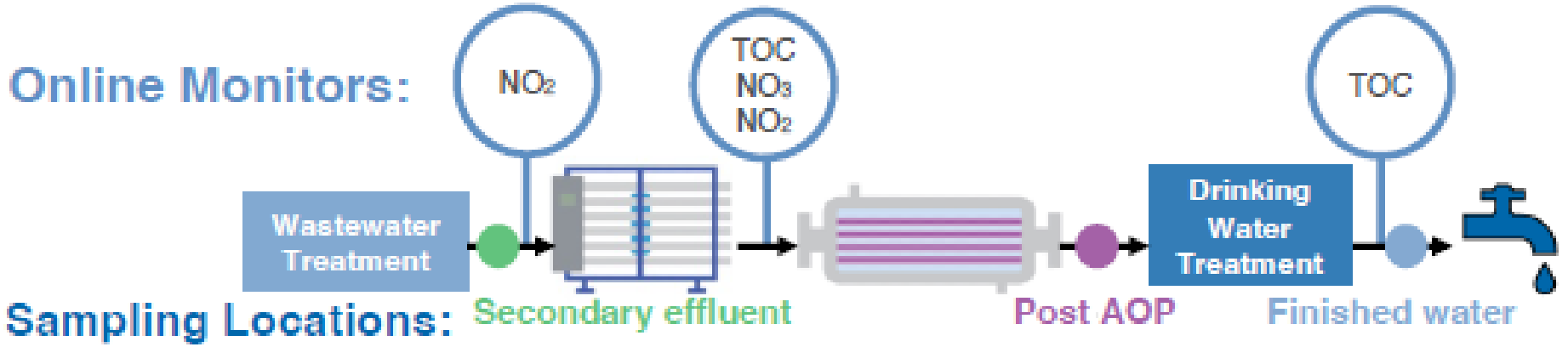

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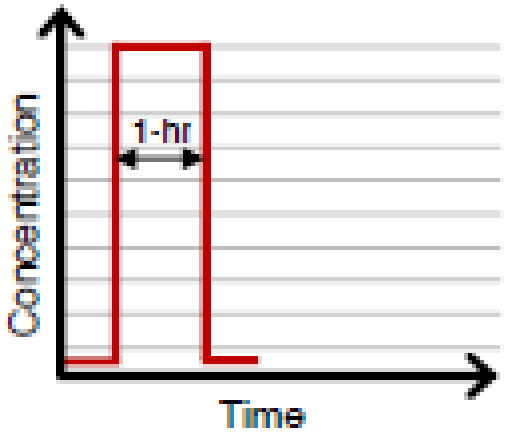

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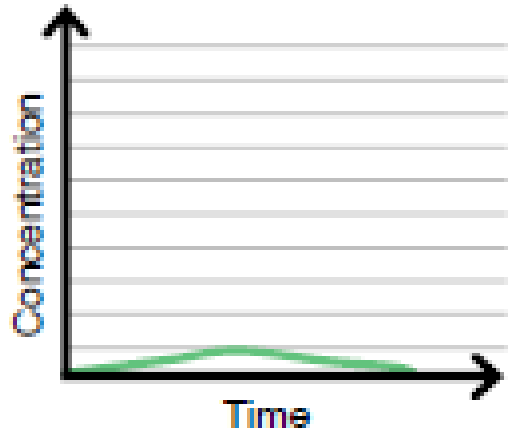

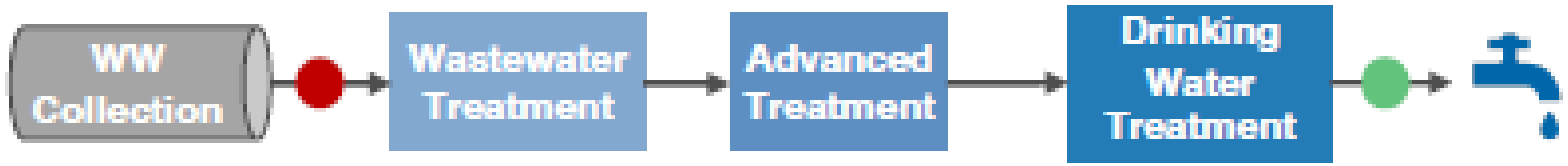

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More than 10 plans and reports are required for the permit application, including the Engineering Report, Joint Plan, and Monitoring Plan.

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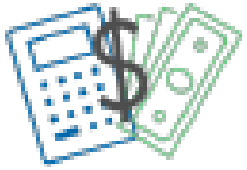

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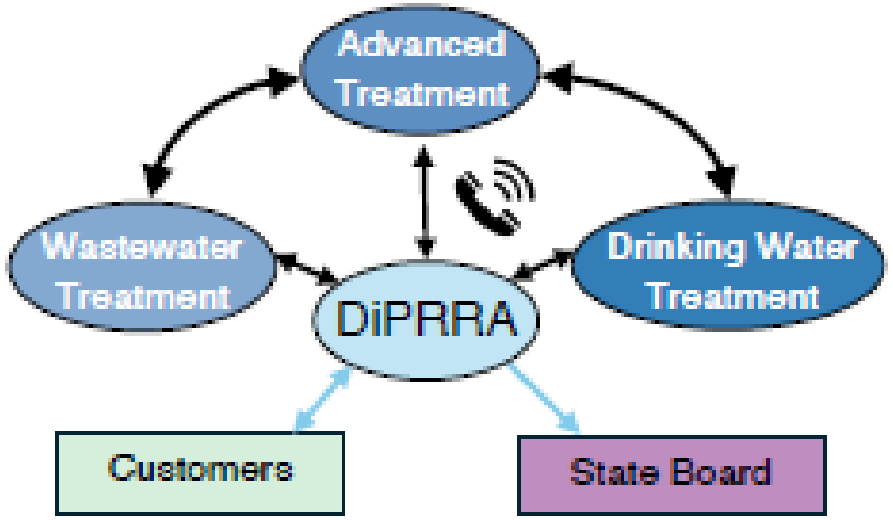
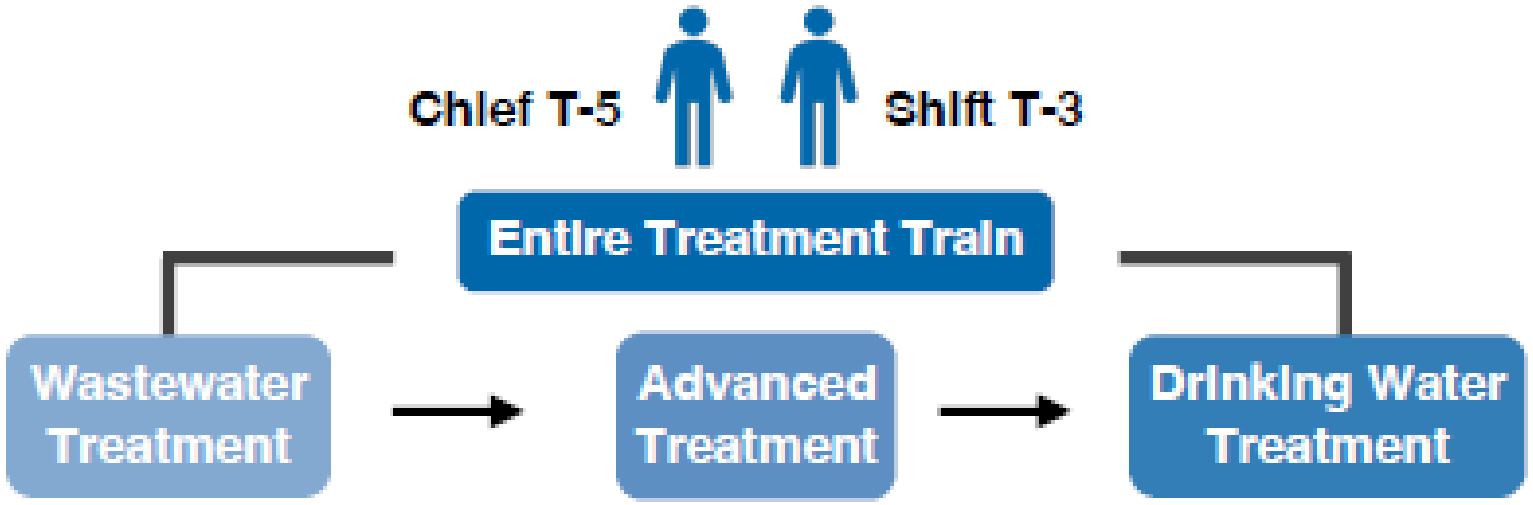


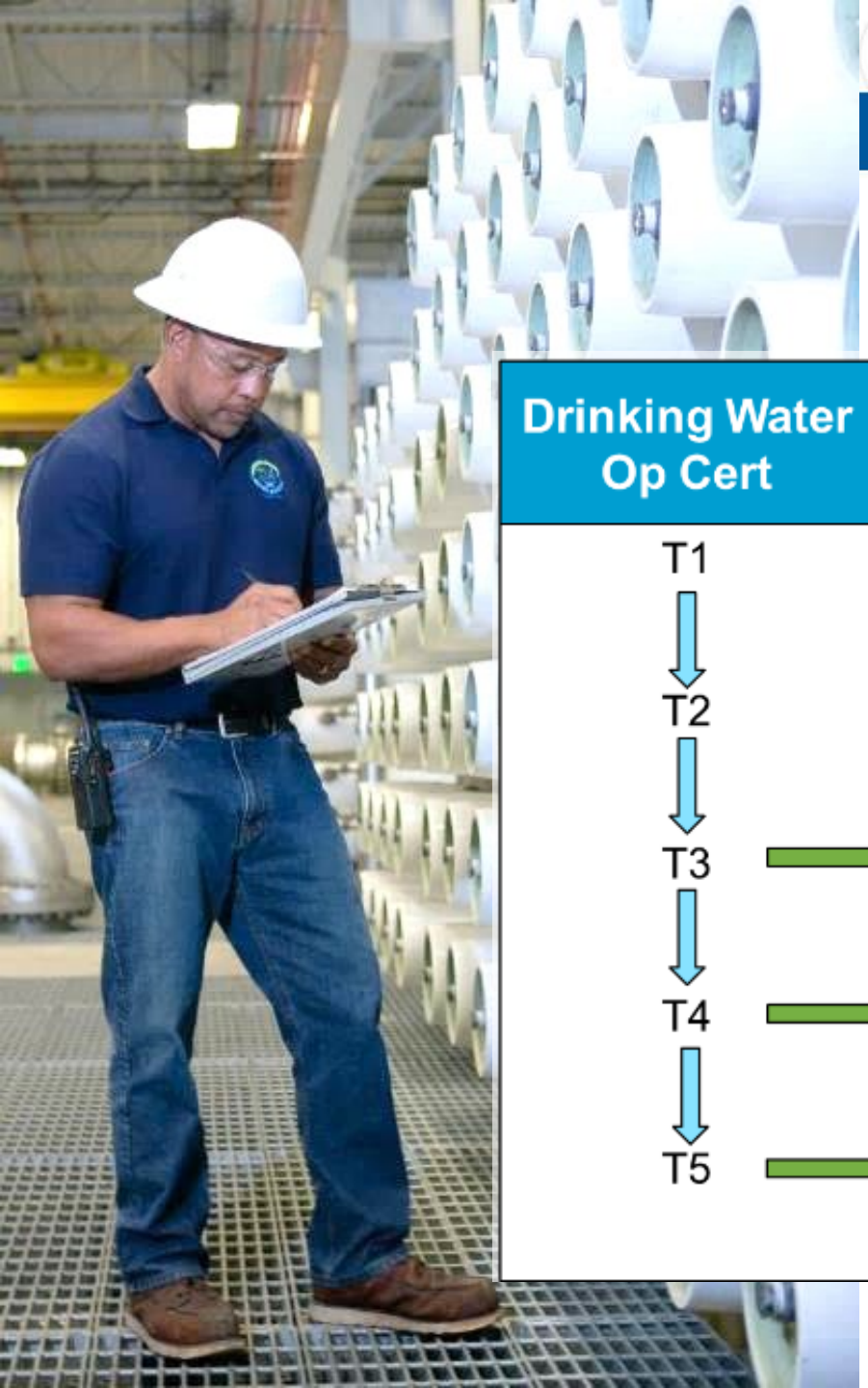
Operator Certification / Staffing



Operator Requirement	If pathogen control provided	If chemical control provided	If corrosion control provided
Drinking Water T-Certification	Chief T-5 Shift T-3	Chief T-5 Shift T-3	Chief T-5 Shift T-3
AWT-Certification	✗	Chief AWT-5 Shift AWT-3	✗
24/7 staffing	✓	✓	✗

AWTO Candidate Handbook
Minimum Requirements

Grade 3	
• Possess a current state issued Drinking Water Treatment Operator Certification ***or*** Wastewater Treatment Plant Operator Certification, Grade III or higher	• Successful completion of AWTO Grade 3 Exam (AWT3™)
Grade 4	
• Possess a current AWT3 certification • 2 years of experience with one or more AWT processes (see Table 1). Retroactive experience prior to AWT3 certification may be included	• Successful completion of AWTO Grade 4 Exam (AWT4™)
Grade 5	
• Possess a current AWT4 certification • 3 years of experience to include 2 years of experience in at least one AWT process and 1 additional year with at least 2 AWT processes in a single treatment train (see Table 1). Retroactive experience prior to AWT4 certification may be included.	• Successful completion of AWTO Grade 5 Exam (AWT5™)



Supplement to Existing Operator Certification

Drinking Water Op Cert

T1
T2
T3
T4
T5

AWT Op Cert

AWT 3
AWT 4
AWT 5

Wastewater Op Cert

Grade I
Grade II
Grade III
Grade IV
Grade V

AWT OPERATOR® CERTIFICATION

American Water Works Association California-Nevada Section

CWEA

Exam Grade Level	Count (as of 1/21/25)
AWTO_3	181
AWTO_4	53
AWTO_5	40