Very Small Water System Operators’ Guidebook to Preparing for Certification

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Association of Boards of Certification

Publication Submitted to:
U.S. Environmental Protection Agency

Agreement Number X-980563-01-0

June 15, 2000
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Introduction and Purpose of the Guidebook

The purpose of this guidebook is to help operators of very small water systems serving a maximum population of 100 understand the provisions and purpose of the Final Guidelines for the Certification and Recertification of the Operators of Community and Nontransient Noncommunity Public Water Systems. This guidebook describes the certification requirements of the EPA Guidelines, operator need-to-know job tasks and capabilities, exam specifications, sample test questions, and additional information relating to operator training opportunities.
Summary of the National Certification Guidelines

The Final Guidelines for the Certification and Recertification of the Operators of Community and Nontransient Noncommunity Public Water Systems require that all community and nontransient noncommunity public water systems have a certified operator in responsible charge. A community water system is defined by the EPA as a public water system that provides water “to at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.” A nontransient noncommunity water system is defined by the EPA as a “public water system that is not a community water system and that regularly serves at least 25 of the same persons over six months per year” (p. 5921, section IV).

The objectives of the Guidelines are to ensure that:

• “Customers of any public water system be provided with an adequate supply of safe, potable drinking water. Consumers are confident that their water is safe to drink.
• Public water system operators are trained and certified and that they have knowledge and understanding of the public health reasons for drinking water standards” (p. 5919, section II.A).

To achieve these objectives the EPA developed the following operator certification guidelines. Please note that the EPA guidelines are minimum requirements. States may impose more strict requirements so it is essential for operators to contact their State Certification Program listed in the last section of this guidebook for specific state requirements.

Regulations for Certification
Each community and nontransient noncommunity water system must be under the responsible charge of an operator certified at a level equal to or greater than the system classification. This person has the authority to make decisions that affect water quality or quantity. In addition, “all operating personnel that make process control/system integrity decisions about water quality or quantity that affect public health must be certified” (p. 5919, section II.C.2). A certified operator must be available during each operating shift.

Requirements for Certification
To become certified an operator must satisfy minimum education and experience requirements and pass the appropriate certification examination. The EPA minimum requirements for certification are:

• Education - The operator must possess a high school diploma or general equivalency diploma (GED). States may allow experience and/or training to be substituted for the education requirement.
• Experience - The operator must meet the State’s on-the-job experience requirement.
• Examination - The operator must pass a certification exam. The exam will cover the knowledge, skills, ability and judgment necessary to operate systems within the State.

Current operators that do not meet these newly imposed requirements may be eligible to be grandfathered through the State Certification Program. If grandfathering is allowed by the State Certification Program, operators may be permitted to become certified, with the system owner’s consent, without meeting all of the certification requirements. This is a restricted certificate and grandfathered operators must meet all certification renewal requirements.

Among other restrictions, the Guidelines specify that “grandparenting is permitted only to existing operator(s) in responsible charge of existing systems which, because of State law changes to meet these guidelines, must for the first time have a certified operator.” If allowed by the State, “certification for the grandfathered operator must be site specific and non-transferable to other operators.” “If the classification of the plant or distribution system changes to a higher level, then the grandfathered certification will no longer be valid”;

and “if the grandparented operator chooses to work for a different water system, he or she must meet the initial
certification requirements of that system” (p. 5920, section II.C.3).

**Renewal**

Operators that meet the certification requirements and pass the certification exam will be certified by the State
Certification Program for a specific period of time. The *Guidelines* require certificates to be renewed within a
period of three years. Operators must attend State approved training in order to renew their certificates.
ABC conducted a very small water system operator job analysis to identify the most critical job tasks performed by operators and the capabilities required to competently perform these job tasks. Over 450 operators were surveyed by ABC as part of this process. In the survey, operators provided data on how frequently job tasks are performed and the potential seriousness of performing these tasks incorrectly.

The results of this survey were used to develop the following Need-to-Know Criteria. The Need-to-Know Criteria is a list of the subjects that a small water system operator needs to know to properly operate a system. Tasks and their requisite capabilities performed by at least 50% of the survey respondents and with a high seriousness rating are included in this list. This list includes both community and nontransient noncommunity public water systems. Examples of nontransient noncommunity systems include schools, day-care centers, and factories.

This type of information is used as the basis for developing certification exams.

### Evaluate characteristics of source water

<table>
<thead>
<tr>
<th>Job tasks</th>
<th>Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluate characteristics of source water, such as:</td>
<td>Ability to communicate observations verbally and in writing</td>
</tr>
<tr>
<td>Bacteriological</td>
<td>Ability to discriminate between normal/abnormal conditions</td>
</tr>
<tr>
<td>Biological</td>
<td>Knowledge of normal characteristics of water</td>
</tr>
<tr>
<td>Chemical</td>
<td>Knowledge of wellhead protection</td>
</tr>
<tr>
<td>Physical</td>
<td></td>
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</tbody>
</table>

### Operate system

<table>
<thead>
<tr>
<th>Job tasks</th>
<th>Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add liquid disinfectants</td>
<td>Ability to adjust disinfectant feed rates</td>
</tr>
<tr>
<td>Monitor, evaluate, adjust chlorine disinfection</td>
<td>Ability to calculate dosage rates</td>
</tr>
<tr>
<td>Inspect, maintain, repair flow measurements</td>
<td>Ability to confirm disinfectant strength</td>
</tr>
<tr>
<td>Inspect, maintain, repair well operation</td>
<td>Ability to diagnose/troubleshoot process units</td>
</tr>
<tr>
<td>Perform leak detection</td>
<td>Ability to interpret Material Safety Data Sheets</td>
</tr>
<tr>
<td></td>
<td>Ability to maintain processes in normal operating condition</td>
</tr>
<tr>
<td></td>
<td>Ability to measure disinfectant weight and volume</td>
</tr>
<tr>
<td></td>
<td>Ability to perform basic math</td>
</tr>
<tr>
<td></td>
<td>Ability to prepare and apply disinfectants</td>
</tr>
<tr>
<td></td>
<td>Knowledge of general biology and chemistry</td>
</tr>
<tr>
<td></td>
<td>Knowledge of disinfectant concepts and properties</td>
</tr>
<tr>
<td></td>
<td>Knowledge of disinfectant processes and design parameters</td>
</tr>
<tr>
<td></td>
<td>Knowledge of general electrical and mechanical principles</td>
</tr>
<tr>
<td></td>
<td>Knowledge of normal chemical range</td>
</tr>
<tr>
<td></td>
<td>Knowledge of personal protective equipment</td>
</tr>
<tr>
<td></td>
<td>Knowledge of principles of measurement</td>
</tr>
<tr>
<td></td>
<td>Knowledge of proper handling and storage of disinfectants</td>
</tr>
<tr>
<td></td>
<td>Knowledge of proper lifting procedures</td>
</tr>
<tr>
<td></td>
<td>Knowledge of regulations</td>
</tr>
</tbody>
</table>

**Need-to-Know Job Tasks and Capabilities**
### Collect, perform, and interpret laboratory analyses

<table>
<thead>
<tr>
<th>Job tasks</th>
<th>Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collect, perform, and interpret laboratory analyses, such as:</td>
<td></td>
</tr>
<tr>
<td>Chlorine demand</td>
<td>Ability to calibrate instruments</td>
</tr>
<tr>
<td>Chlorine residual</td>
<td>Ability to follow written procedures</td>
</tr>
<tr>
<td>Microbiological</td>
<td>Ability to interpret Material Safety Data Sheets</td>
</tr>
<tr>
<td></td>
<td>Ability to perform disinfection calculations</td>
</tr>
<tr>
<td></td>
<td>Ability to recognize abnormal analytical results</td>
</tr>
<tr>
<td></td>
<td>Knowledge of general chemistry</td>
</tr>
<tr>
<td></td>
<td>Knowledge of laboratory equipment</td>
</tr>
<tr>
<td></td>
<td>Knowledge of principles of measurement</td>
</tr>
<tr>
<td></td>
<td>Knowledge of proper disinfectant handling and storage</td>
</tr>
<tr>
<td></td>
<td>Knowledge of proper safety procedures</td>
</tr>
<tr>
<td></td>
<td>Knowledge of proper sampling techniques and procedures</td>
</tr>
<tr>
<td></td>
<td>Knowledge of quality control and assurance practices</td>
</tr>
<tr>
<td></td>
<td>Knowledge of regulations, such as the Safe Drinking Water Act</td>
</tr>
</tbody>
</table>

### Establish safety plans and apply safety procedures

<table>
<thead>
<tr>
<th>Job tasks</th>
<th>Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish safety plans and apply safety procedures, in areas such as:</td>
<td></td>
</tr>
<tr>
<td>Chemical hazard communication</td>
<td>Ability to communicate safety hazards verbally and in writing</td>
</tr>
<tr>
<td>Confined space entry</td>
<td>Ability to demonstrate safe work habits</td>
</tr>
<tr>
<td>Electrical grounding</td>
<td>Ability to follow written procedures</td>
</tr>
<tr>
<td>General safety and health</td>
<td>Ability to identify potential hazards and unsafe work conditions</td>
</tr>
<tr>
<td>Lifting</td>
<td>Ability to operate safety equipment</td>
</tr>
<tr>
<td>Lock-out/tag-out</td>
<td>Knowledge of potential impact of disasters on facility</td>
</tr>
<tr>
<td>Personal hygiene</td>
<td>Knowledge of regulations</td>
</tr>
<tr>
<td>Personal protective equipment</td>
<td>Knowledge of risk management</td>
</tr>
<tr>
<td>Slips, trips, and falls</td>
<td></td>
</tr>
</tbody>
</table>

### Operate equipment

<table>
<thead>
<tr>
<th>Job tasks</th>
<th>Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operate equipment, such as:</td>
<td></td>
</tr>
<tr>
<td>Chemical feeders</td>
<td>Ability to evaluate and adjust operation of equipment</td>
</tr>
<tr>
<td>Electronic testing equipment</td>
<td>Ability to monitor electrical and mechanical equipment</td>
</tr>
<tr>
<td>Instrumentation</td>
<td>Knowledge of disinfection concepts</td>
</tr>
<tr>
<td>Motors</td>
<td>Knowledge of function of tools</td>
</tr>
<tr>
<td>Power tools</td>
<td>Knowledge of general electrical and mechanical principles</td>
</tr>
<tr>
<td>Pumps</td>
<td>Knowledge of proper safety procedures</td>
</tr>
<tr>
<td></td>
<td>Knowledge of regulations</td>
</tr>
<tr>
<td></td>
<td>Knowledge of start-up/shut-down procedures</td>
</tr>
</tbody>
</table>
### Evaluate operation of equipment

<table>
<thead>
<tr>
<th>Job tasks</th>
<th>Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check speed of equipment</td>
<td>Ability to adjust equipment</td>
</tr>
<tr>
<td>Inspect equipment for abnormal conditions</td>
<td>Ability to calibrate equipment</td>
</tr>
<tr>
<td>Perform maintenance on chemical feeders</td>
<td>Ability to diagnose/troubleshoot process units</td>
</tr>
<tr>
<td>Perform maintenance on pumps</td>
<td>Ability to discriminate between normal/abnormal conditions</td>
</tr>
<tr>
<td>Read meters</td>
<td>Ability to follow written procedures</td>
</tr>
<tr>
<td>Read pressure gauges</td>
<td>Ability to monitor electrical and mechanical equipment</td>
</tr>
<tr>
<td></td>
<td>Ability to perform general maintenance and repairs</td>
</tr>
<tr>
<td></td>
<td>Ability to record information</td>
</tr>
<tr>
<td></td>
<td>Ability to report findings</td>
</tr>
<tr>
<td></td>
<td>Ability to use hand tools</td>
</tr>
<tr>
<td></td>
<td>Knowledge of facility operation and maintenance</td>
</tr>
<tr>
<td></td>
<td>Knowledge of general electrical and mechanical principles</td>
</tr>
<tr>
<td></td>
<td>Knowledge of proper safety procedures</td>
</tr>
<tr>
<td></td>
<td>Knowledge of safety regulations</td>
</tr>
<tr>
<td></td>
<td>Knowledge of start-up/shut-down procedures</td>
</tr>
</tbody>
</table>

### Perform administrative duties

<table>
<thead>
<tr>
<th>Job tasks</th>
<th>Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish recordkeeping system for facility operation</td>
<td>Ability to communicate verbally and in writing</td>
</tr>
<tr>
<td>Organize work activities</td>
<td>Ability to demonstrate safe work habits</td>
</tr>
<tr>
<td>Record information relating to facility performance</td>
<td>Ability to determine what information needs to be recorded</td>
</tr>
<tr>
<td>Write reports</td>
<td>Ability to evaluate facility performance</td>
</tr>
<tr>
<td></td>
<td>Ability to follow written procedures</td>
</tr>
<tr>
<td></td>
<td>Ability to identify potential hazards and unsafe work conditions</td>
</tr>
<tr>
<td></td>
<td>Ability to interpret and transcribe data</td>
</tr>
<tr>
<td></td>
<td>Ability to operate safety equipment</td>
</tr>
<tr>
<td></td>
<td>Ability to perform basic math</td>
</tr>
<tr>
<td></td>
<td>Knowledge of facility operation and maintenance</td>
</tr>
<tr>
<td></td>
<td>Knowledge of monitoring and reporting requirements</td>
</tr>
<tr>
<td></td>
<td>Knowledge of recordkeeping function and policies</td>
</tr>
<tr>
<td></td>
<td>Knowledge of regulations</td>
</tr>
</tbody>
</table>
The very small water system certification exam evaluates an operator’s knowledge, skills, ability and judgment related to the operation of very small water systems. The Need-to-Know Criteria presented in the previous section of this guidebook results in the recommended specifications shown below for an exam. Each state determines the content of its certification exams. Please contact your State Certification Program listed in the last section of the guidebook for any information they may provide to applicants.

**Recommended Very Small Water System Exam Specifications**

<table>
<thead>
<tr>
<th>Job Duty</th>
<th>Percent of Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluate characteristics of source water</td>
<td>7%</td>
</tr>
<tr>
<td>Operate system</td>
<td>18%</td>
</tr>
<tr>
<td>Collect, perform, and interpret laboratory analyses</td>
<td>11%</td>
</tr>
<tr>
<td>Establish safety plans and apply safety procedures</td>
<td>25%</td>
</tr>
<tr>
<td>Operate equipment</td>
<td>10%</td>
</tr>
<tr>
<td>Evaluate operation of equipment</td>
<td>13%</td>
</tr>
<tr>
<td>Perform administrative duties</td>
<td>16%</td>
</tr>
</tbody>
</table>

Please refer to the Need-to-Know Criteria on the previous pages for a listing of the tasks and capabilities associated with each job duty.
Sample Test Questions

The following questions are provided as examples of the types of questions that might be covered on your certification exam. These questions may help prepare you for certification by identifying areas in which you need additional study. The correct answers and reference material for each question are found in the following section. If you cannot answer a question correctly, read the reference material listed for the question. The reference material will help you better understand the topic and may help you answer similar questions that may be on the certification exam.

It is unlikely that you will find any of these question duplicated on a certification exam, so don't try to memorize the questions and answers. Many operators find it is helpful to contact their State Certification Program listed in the last section of the guidebook to request information about the certification exam. Some, but not all, certification programs will provide a list of suggested study material, topics covered on the exam and sample exam questions.

These sample questions should not be used in place of other training materials and courses. The “Training Opportunities and Resources” section of this guidebook contains additional information.

1. If a customer complains about the drinking water characteristics, the operator should record the complaint and
   A. Investigate immediately
   B. Investigate only if more complaints are received
   C. Inform the customer that the water should be boiled
   D. Inform the customer that the water is safe

2. What term is used when a water utility divides its total operating expenses into the total revenue?
   A. Debt ratio
   B. Operating ratio
   C. Credit ratio
   D. Coverage ratio

3. How often should operation data, such as flow rate, amount of water treated, dosage of chemical, and reservoir levels be recorded?
   A. Twice a day
   B. Daily
   C. Weekly
   D. Monthly

4. Which of the following is the most important reason to keep daily records of operational data?
   A. Maintain records for customer billing
   B. Document the need for an increased budget
   C. Provide insurance data
   D. Document that safe drinking water has been delivered to customers

5. Under the requirements of the Safe Drinking Water Act, it is the duty of the water purveyor to deliver potable water of proper quantity only as far as the
   A. Entry point of the distribution system
   B. Customer's curb box and service connection
   C. Consumer's tap inside the home
   D. Furthest water main blow-off or sampling point
6. According to the Safe Drinking Water Act, the basic definition of a public water supply system is any water system that supplies water for human consumption that serves
   A. 25 homes or more for over 120 days a year
   B. The public in any capacity, no matter how small
   C. 25 or more persons for at least 30 days a year
   D. 15 service connections or over 25 persons for over 60 days a year

7. What agent is responsible for reporting lab results to the regulatory agency?
   A. Water system owner
   B. Board of Health chairperson
   C. Lab technician
   D. Sample collector

8. According to the USEPA drinking water regulations, the owner or operator of a public water system which fails to comply with applicable monitoring requirements must give notice to the public within
   A. 45 days of the violation by posting a notice at the town hall
   B. 1 year of the violation by including a letter with the water bill
   C. 3 months of the violation in a daily newspaper in the area served by the system
   D. 1 week of the violation in a letter hand delivered to customers

9. What federal law is designed to protect the safety and health of operators?
   A. OSHA
   B. FMLA
   C. FLSA
   D. ADEA

10. What federal law regulates public water supplies?
    A. Safe Drinking Water Act
    B. Clean Water Act
    C. Taft-Hartley Act
    D. Standard Methods

11. What causes water to move through pores in soil and rocks?
    A. Temperature
    B. Viscosity
    C. Barometric pressure
    D. Gravity

12. What is a commonly used indicator of possible health problems found in plants, soil, water and the intestines of humans and warm-blooded animals?
    A. Viruses
    B. Coliform bacteria
    C. Intestinal parasites
    D. Pathogenic organisms

13. What are disease producing bacteria called?
    A. Parasites
    B. New strain
    C. Sour type
    D. Pathogenic
14. What are the two main causes of hardness in water?
   A. Gold and silver
   B. Calcium and magnesium
   C. Phosphate and nitrate
   D. Oxygen and methane

15. Which source of water has the greatest natural protection from bacterial contamination?
   A. Shallow well
   B. Deep well in gravel
   C. Surface water
   D. Spring

16. What device measures the flow rate of gases?
   A. Parshall flume
   B. Rotameter
   C. Float
   D. Weir

17. How often should preventive maintenance for equipment be performed?
   A. Once every week
   B. After a breakdown
   C. According to manufacturer recommendations
   D. When time permits

18. Dynamic head is best described as the
   A. Velocity of water in a main at full pumping pressure
   B. Total energy that a pump must develop for pumping to take place
   C. Total pressure in feet of head, measured at the pump discharge during periods of rest in the system
   D. Pumping end of any device used to force water into a pressure system

19. Which of the following terms refers to excessive internal pressure, which may be several times the normal operating pressure and can seriously damage hydropneumatic tanks, valves, and the piping network?
   A. Air charge
   B. Flow rate pressure
   C. Water hammer
   D. Hydraulic charge

20. Which of the following should an operator investigate first when well pump and control problems occur?
   A. Depth of supply
   B. Piping
   C. Electricity
   D. Water leaks

21. Most pumps must be primed before startup in order to
   A. Calculate flow rate
   B. Prevent reverse flow
   C. Start the flow of water
   D. Prevent hammer
22. What is the purpose of a check valve?
   A. Regulate the rate of flow through the discharge pipe
   B. Act as automatic shutoff valve when the pump stops
   C. Permit air to escape from the pipe
   D. Prevent clogging of the suction line

23. What is the primary purpose of a preventive maintenance program?
   A. Increase the use of backup equipment
   B. Correct equipment breakdowns
   C. Eliminate inventory of spare parts
   D. Avoid future equipment problems

24. A mixture of air and gas is considered hazardous when the mixture exceeds what percentage of the lower explosive limit (LEL)?
   A. 0%
   B. 3%
   C. 7%
   D. 10%

25. Which of the following duties should not be performed by a small system operator?
   A. Disinfect water mains
   B. Observe pump motors to detect unusual noises, vibrations or excessive heat
   C. Repair and overhaul chlorinators
   D. Wire pump, compressors and electrical components of the water system

26. What are the most important methods of ensuring operator safety?
   A. Appointing a safety officer and administrator
   B. Alerting operators of unsafe acts and conducting mandatory safety training
   C. Providing handbooks and copies of regulations
   D. Working with proper light and ventilation

27. What safety procedure should an operator always follow when mixing a solution of sodium hypochlorite (liquid bleach) and fresh water?
   A. Attend a training course on liquid chlorine from an accredited school
   B. Wear gloves and a mask when opening the containers of bleach
   C. Ask a second individual to stand nearby with an emergency breathing apparatus
   D. Wear goggles and gloves when handling hypochlorite

28. Which form of hypochlorite is the most dangerous to handle?
   A. Sodium
   B. Fluoride
   C. Calcium
   D. Chlorine

29. What are the two most important safety concerns when entering a confined space?
   A. Corrosive chemicals and falls
   B. Bad odors and claustrophobia
   C. Extreme air temperatures and slippery surfaces
   D. Oxygen deficiency and hazardous gases
30. What piece of safety equipment must an operator wear when entering a confined space?
   A. Boots
   B. Harness
   C. Gloves
   D. Goggles

31. What type of fire extinguisher should be used for fires with live electricity present?
   A. Class A
   B. Class B
   C. Class C
   D. Class D

32. Which document provides a profile of hazardous substances?
   A. CERCLA
   B. SARA
   C. CFR
   D. MSDS

33. What safety measure must an operator follow prior to working on electrical equipment?
   A. Lock out and tag out all electrical switches
   B. Put on canvas gloves
   C. Remove fuses from switch box
   D. Tell one coworker not to turn on the switch

34. What is the correct procedure for mixing acid and water?
   A. Water is added slowly to the acid
   B. Acid is added slowly to the water
   C. Water is added quickly to the acid
   D. Acid is added quickly to the water

35. What is the purpose of a pump guard?
   A. Allows operators to turn off pump in emergency situations
   B. Notifies operators of excessive temperatures
   C. Allows operators to pump against a closed discharge valve
   D. Protects operators from rotating parts

36. The most important responsibility of an operator is to provide
   A. Adequate water pressure
   B. Palatable drinking water
   C. Adequate amounts of water
   D. Safe drinking water

37. To ensure that the water supplied by a public water system meets federal and state requirements, the water system operator must regularly collect samples and
   A. Test the water at the nearest water testing laboratory
   B. Determine a sampling schedule based on the lab’s recommendations
   C. Send all analysis results to the State periodically
   D. Count the number of active wells in the system

Sample Test Questions
38. The major source of error when obtaining water quality information is improper
   A. Sampling
   B. Preservation
   C. Tests of samples
   D. Reporting of data

39. A composite sample should never be used when sampling for which contaminant?
   A. Benzene
   B. Nitrate
   C. Barium
   D. Bacteria

40. When should water quality samples for chlorine residual be analyzed?
   A. Immediately
   B. Within 1 hour
   C. Within 8 hours
   D. Within 24 hours

41. How many coliform samples are required per month for a water system serving a population between 25
    and 100?
   A. 1
   B. 2
   C. 3
   D. 4

42. Water laboratory test calculations and results use which system?
   A. English
   B. Metric
   C. SWAG
   D. British

43. Factors of what number are used in the metric system?
   A. 5
   B. 10
   C. 12
   D. 64

44. What is the chemical formula for sulfuric acid?
   A. SA₂
   B. H₂SO₄
   C. NaOH
   D. H₂O

45. Which of the following should not be used to draw a sample into a pipet?
   A. Mouth
   B. Bulb
   C. Pump
   D. Straw
46. Which of the following are two types of samples?
   A. Dessicator and gooch
   B. Wet and dry
   C. Buret and flask
   D. Grab and composite

47. What two types of devices are used to collect samples?
   A. Left and right
   B. Upper and lower
   C. Automatic and manual
   D. Gas and diesel

48. How should samples that cannot be analyzed immediately be maintained until the analysis is conducted?
   A. Shaken every hour
   B. Preserved
   C. Held in an open container
   D. Stored bottom up

49. What is the most common method used in labs to test for total coliform and E. coli?
   A. DMA
   B. Green
   C. Colilert
   D. Lamp

50. What test method best determines chemical feed/dosage rates?
   A. Jar
   B. Turbidity
   C. Hammer
   D. Hardness

51. An empty atmospheric storage tank is 8 feet in diameter and 32 feet high. How long will it take to fill 90% of the tank volume if a pump is discharging a constant 24 gallons per minute into the tank?
   A. 7 hours 31 minutes
   B. 8 hours 21 minutes
   C. 8 hours 23 minutes
   D. 9 hours 17 minutes

52. Two columns of water are filled completely at sea level to a height of 88 feet. Column A is 0.5 inches in diameter. Column B is 5 inches in diameter. What will two pressure gauges, one attached to the bottom of each column, read?
<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. 3.8 psi</td>
<td>38.0 psi</td>
</tr>
<tr>
<td>B. 8.8 psi</td>
<td>8.0 psi</td>
</tr>
<tr>
<td>C. 20.3 psi</td>
<td>20.3 psi</td>
</tr>
<tr>
<td>D. 38.0 psi</td>
<td>38.0 psi</td>
</tr>
</tbody>
</table>
53. A ditch that is 4.5 feet wide, 6 feet deep, and 120 feet long has to be dug for a water line. How many cubic yards of material must be removed?
   A.  120 cubic yards
   B.  240 cubic yards
   C.  850 cubic yards
   D.  1,200 cubic yards

54. How many cubic feet of water will a rectangular tank that is 20 feet long by 15 feet wide and 10 feet high hold?
   A.  2,000 cubic feet
   B.  3,000 cubic feet
   C.  4,000 cubic feet
   D.  5,000 cubic feet

55. Calculate the chlorine demand using the following data.
   -Raw water flow is 0.75 MGD.
   -Chlorinator feed rate is 4.0 mg/L.
   -Chlorine residual is 1.8 mg/L.
   A.  0.8 mg/L
   B.  2.2 mg/L
   C.  4.0 mg/L
   D.  5.8 mg/L

56. Convert 60.5 degrees Fahrenheit to degrees Celsius.
   A.  15.8 degrees Celsius
   B.  20.6 degrees Celsius
   C.  72.0 degrees Celsius
   D.  101.2 degrees Celsius

57. Calculate drawdown, in feet, using the following data.
   -The water level in a well is 20 feet below the ground surface when the pump is not in operation.
   -The water level is 35 feet below the ground surface when the pump is in operation.
   A.  15 feet
   B.  20 feet
   C.  35 feet
   D.  55 feet

58. Calculate the volume, in gallons, of a tank that is 75 feet long, 20 feet wide, and 10 feet deep.
   A.  15,000 gallons
   B.  112,200 gallons
   C.  150,000 gallons
   D.  224,400 gallons

59. How many pounds of a chemical applied at the rate of 3 mg/L are required to dose 200,000 gallons?
   A.  3 lbs
   B.  5 lbs
   C.  16 lbs
   D.  50 lbs
60. Calculate the average weekly flow for a system with the following data.
   Sunday - 3,000 gallons  Monday - 4,000 gallons  Tuesday - 3,500 gallons
   Wednesday - 2,000 gallons Thursday - 3,000 gallons Friday - 3,500 gallons
   Saturday - 2,000 gallons
   A.  2,000 gpd
   B.  3,000 gpd
   C.  4,000 gpd
   D.  5,000 gpd

61. After a new water main is installed and pressure tested it should be
   A.  Flushed with clean water for 24 hours and put into service
   B.  Filled with a solution of 25 ppm to 50 ppm free chlorine for at least 24 hours prior to flushing
   C.  Filled with clean water and allowed to sit for 5 days at full pressure before turning the water into the system
   D.  Photographed so that mapping can be avoided until the system is complete

62. Chlorine demand is satisfied at the point when
   A.  The reaction of chlorine with organic and inorganic materials stops
   B.  Free chlorine residuals reach 2.5 mg/L
   C.  An odor of chlorine is present
   D.  Chlorine reaches the last tap

63. What chlorine concentration should be produced when disinfecting a well or well pump?
   A.  25 mg/L
   B.  50 mg/L
   C.  75 mg/L
   D.  100 mg/L

64. When disinfecting a new or repaired main, what is the minimum chlorine residual at the extreme end of the main after standing for 24 hours?
   A.  15 mg/L
   B.  20 mg/L
   C.  25 mg/L
   D.  30 mg/L

65. Chlorine will destroy bacteria most rapidly at what pH?
   A.  7.5
   B.  8.5
   C.  9.5
   D.  10.5

66. What is the process of adding chlorine to water until the chlorine demand has been satisfied called?
   A.  Contact time
   B.  Reliquefaction
   C.  Hypochlorination
   D.  Breakpoint chlorination
67. Which of the following pH ranges would deposit a thin film of calcium carbonate on the inside surface of a pipe?
   A.  2.0 - 3.0
   B.  4.0 - 5.0
   C.  6.0 - 7.0
   D.  8.0 - 9.0

68. Where should sodium hypochlorite (liquid bleach) be stored?
   A.  Away from flammable objects, as it is a fire hazard
   B.  Away from equipment that is susceptible to corrosion
   C.  In closed containers at room temperature for no longer than 6 months
   D.  Near the chemical feed pump day tank, to lessen operator handling risks

69. What is the most important reason for maintaining a continuous positive pressure throughout the distribution system?
   A.  Prevent damage to water meters
   B.  Keep pipe joints sealed
   C.  Prevent contamination from backflow
   D.  Maintain chlorine residual

70. A weir should be used to measure water in which of the following locations?
   A.  Above ground storage tanks
   B.  Household service lines
   C.  Open channels
   D.  Water mains

71. The pumping water level is best defined as the distance from the top of the well to the
   A.  Intake screen of the pump
   B.  Location where the main flow of water enters a well
   C.  Water after the pump has been operating for a period of time
   D.  Water level from the start of a pump test to the end of the test

72. The space between the inner or protective casing and the outer casing or drill hole should be filled with cement grout to a minimum of how many feet?
   A.  10 feet
   B.  15 feet
   C.  20 feet
   D.  35 feet

73. When bringing community water service to a home with a private well, what is the most positive method of preventing a cross connection between the two systems?
   A.  Residential dual check valve
   B.  Reduced pressure zone backflow preventer
   C.  Complete isolation between the two systems using an air gap
   D.  Pressure vacuum breaker in addition to an RPZ
74. What is the physical connection, direct or indirect, which provides the opportunity for nonpotable water to enter a conduit, pipe or receptacle containing potable water?
   A. Well testing
   B. Pump injection
   C. Bell joint clamp
   D. Cross connection

75. Which of the following causes taste problems and has a rotten egg odor?
   A. Chlorine
   B. Benzene
   C. Nitrate
   D. Hydrogen sulfide
References and Correct Answers

Information on obtaining the references listed below may be found in the “Training Opportunities and Resources” section of this guidebook.

1. Reference: Small Water System Operation and Maintenance, California State University, Ch. 1
   Answer: A

2. Reference: Small Water System Operation and Maintenance, California State University, Ch. 8.
   Answer: B

3. Reference: Small Water System Operation and Maintenance, California State University, Ch. 4.
   Answer: B

   Answer: D

   Answer: C

   Answer: D

7. Reference: Small Water System Operation and Maintenance, California State University, Ch. 7.
   Answer: A

   Answer: C

9. Reference: Small Water System Operation and Maintenance, California State University, Ch. 6.
   Answer: A

10. Reference: Small Water System Operation and Maintenance, California State University, Ch. 2.
    Answer: A

11. Reference: Small Water System Operation and Maintenance, California State University, Ch. 3.
    Answer: D

12. Reference: Water Distribution System Operation and Maintenance, California State University, Ch. 6.
    Answer: B

13. Reference: Small Water System Operation and Maintenance, California State University, Ch. 7.
    Answer: D

14. Reference: Small Water System Operation and Maintenance, California State University, Ch. 7.
    Answer: B

15. Reference: Small Water System Operation and Maintenance, California State University, Ch. 3.
    Answer: B
16. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 5.  
Answer: B

17. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 4.  
Answer: C

Answer: B

19. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 3.  
Answer: C

20. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 3.  
Answer: C

21. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 3.  
Answer: C

22. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 3.  
Answer: B

23. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 4.  
Answer: D

Answer: D

Answer: D

Answer: B

Answer: D

Answer: C

29. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 6.  
Answer: D

30. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 6.  
Answer: B

31. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.  
Answer: C

32. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 6.  
Answer: D
33. Reference: Small Water System Operation and Maintenance, California State University, Ch. 6. 
   Answer: A

34. Reference: Small Water System Operation and Maintenance, California State University, Ch. 6. 
   Answer: B

35. Reference: Small Water System Operation and Maintenance, California State University, Ch. 6. 
   Answer: D

36. Reference: Small Water System Operation and Maintenance, California State University, Ch. 1. 
   Answer: D

   Answer: C

38. Reference: Small Water System Operation and Maintenance, California State University, Ch. 7. 
   Answer: A

39. Reference: Small Water System Operation and Maintenance, California State University, Ch. 7. 
   Answer: D

40. Reference: Small Water System Operation and Maintenance, California State University, Ch. 7. 
   Answer: A

41. Reference: Small Water System Operation and Maintenance, California State University, Ch. 5. 
   Answer: A

42. Reference: Small Water System Operation and Maintenance, California State University, Ch. 7. 
   Answer: B

43. Reference: Small Water System Operation and Maintenance, California State University, Ch. 7. 
   Answer: B

44. Reference: Small Water System Operation and Maintenance, California State University, Ch. 7. 
   Answer: B

45. Reference: Small Water System Operation and Maintenance, California State University, Ch. 7. 
   Answer: A

46. Reference: Small Water System Operation and Maintenance, California State University, Ch. 7. 
   Answer: D

47. Reference: Small Water System Operation and Maintenance, California State University, Ch. 7. 
   Answer: C

48. Reference: Small Water System Operation and Maintenance, California State University, Ch. 7. 
   Answer: B

49. Reference: Small Water System Operation and Maintenance, California State University, Ch. 7. 
   Answer: C
50. Reference: Small Water System Operation and Maintenance, California State University, Ch. 7. 
   Answer: A

51. Reference: Basic Science Concepts and Applications, American Water Works Association, Ch. 10 and 11. 
   Answer: A
   Solution: 8 feet x 8 feet x 32 feet x .785 = 1607.68 cu ft
   1607.68 cu ft x 7.48 gallons per cu ft = 12,025 gallons
   12,025 gallons x 0.90 = 10,823 gallons
   10,823 gallons / 24 gpm = 451 minutes
   451 minutes = 7 hours 31 minutes

   Answer: D
   Solution: 88 feet x 0.433 = approximately 38 psi.

53. Reference: Small Water System Operation and Maintenance, California State University, Appendix. 
   Answer: A
   Solution: 3 ft x 3 ft x 3 ft = 27 cubic yards
   4.5 ft x 6 ft x 120 ft / 27 cubic yards = 120 cubic yards

54. Reference: Small Water System Operation and Maintenance, California State University, Ch. 5. 
   Answer: B
   Solution: 20 ft x 15 ft x 10 ft = 3,000 cubic feet

55. Reference: Small Water System Operation and Maintenance, California State University, Ch. 7. 
   Answer: B
   Solution: 4.0 mg/L - 1.8 mg/L = 2.2 mg/L

56. Reference: Small Water System Operation and Maintenance, California State University, Ch. 7. 
   Answer: A
   Solution: 60.5 ° F- 32 / 1.8 = 15.8 ° C

57. Reference: Small Water System Operation and Maintenance, California State University, Appendix. 
   Answer: A
   Solution: 35 feet - 20 feet = 15 feet

58. Reference: Small Water System Operation and Maintenance, California State University, Appendix. 
   Answer: B
   Solution: 75 ft x 20 ft x 10 ft = 15,000 cu ft
   15,000 cu ft x 7.48 gal/cu ft = 112,200 gal

59. Reference: Small Water System Operation and Maintenance, California State University, Appendix. 
   Answer: B
   Solution: 3 mg/L x 0.2 MGD x 8.34 lbs/gal = 5 lbs

References and Correct Answers
60. Reference: *Small Water System Operation and Maintenance*, California State University, Appendix.
   Answer: B
   Solution: \[3,000 + 4,000 + 3,500 + 2,000 + 3,000 + 3,500 + 2,000 = 21,000 \text{ gal}\]
   \[21,000 \text{ gallons per week} / 7 \text{ days per week} = 3,000 \text{ gallons per day}\]

   Answer: B

62. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 5.
   Answer: A

63. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
   Answer: B

64. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 5.
   Answer: C

65. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 5.
   Answer: A

66. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 5.
   Answer: D

67. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 4.
   Answer: D

68. Reference: *Water Treatment*, American Water Works Association, Ch. 7.
   Answer: B

69. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 5.
   Answer: C

70. Reference: *Small Water System Operation and Maintenance*, California State University, Appendix - Water Words.
   Answer: C

   Answer: C

72. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 3.
   Answer: A

   Answer: C

74. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 3.
   Answer: D

75. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 5.
   Answer: D
Training Opportunities and Resources

There are many sources of training for very small water system operators. Operator training classes may be offered by the American Water Works Association (AWWA), local water utilities, community colleges, vocational-technical schools, and so on. Training must be approved by the State to satisfy the certification and training requirements. Therefore, it is important to contact your State Certification Program listed in the next section of the guidebook for a list of State-approved training.

In addition to training opportunities available in your state, there are general reference materials that may help prepare you for certification. The following is a partial list of reference material available in the United States.

California State University, Sacramento
• *Small Water System Operation and Maintenance*
• *Water Distribution System Operation and Maintenance*
• *Water Treatment Plant Operation, Vol. I & II*

Materials may be ordered from:
Office of Water Programs
California State University, Sacramento
6000 J Street
Sacramento, CA  95819
Phone:  (916) 278-6142
E-mail:  wateroffice@csus.edu
Web site:  http://www.owp.csus.edu

American Water Works Association
• *Water Distribution Operator Training Handbook*
• *Water Distribution System Operation and Maintenance, A Field Study Training Program*
• *Introduction to Water Treatment, Principles and Practices of Water Supply Operations*
• *Water Transmission and Distribution*
• *Water Treatment*
• *Basic Science Concepts and Applications*
• *Design and Construction of Small Water Systems*

Materials may be ordered from:
AWWA Customer Service
6666 W. Quincy Avenue
Denver, CO  80235
Phone:  (800) 926-7337
E-mail:  custsvc@awwa.org
Web site:  http://www.awwa.org
State Certification Programs

Alabama Water & Wastewater Operator Certification Program
Water Division
AL Dept. of Environmental Mgmt.
P.O. Box 301463
Montgomery, AL 36130-1463
Phone: (334) 274-4221
Web site: http://www.adem.state.al.us/h2owebpg.html

Alaska Department of Environmental Conservation, Facility Construction & Operation
Operations Assistance Unit
410 Willoughby Ave., Ste. 105
Juneau, AK 99801-1795
Phone: (907) 465-5140
Web site: http://www.state.ak.us/local/akpages/ENV CONSERV/dfco/dec_dfco.htm

Arizona Operator Certification Program
Arizona DEQ
3033 N. Central Av., Rm 214, MO 248B
Phoenix, AZ 85012-2801
Phone: (602) 207-4643
Web site: http://www.adeq.state.az.us/environ/water/dw/opcert.html

Arkansas Drinking Water Advisory and Operators Licensing Committee
Dept. of Health
4815 W. Markham St. MS37
Little Rock, AR 72205-3867
Phone: (501) 661-2623
Web site: http://health.state.ar.us/eng/operfram.htm

California Water Treatment Operator Certification
DHS, Certification Unit, MS 92
601 North 7th Street
P.O. Box 942732
Sacramento, CA 94234-7320
Phone: (916) 323-1221
Web site: http://www.dhs.ca.gov/ps/ddwem/technical/dwp/dwpindex.htm

Colorado Plant Operators Certification Board
4300 Cherry Creek Drive South
Denver, CO 80246-1530
Phone: (303) 692-3558
Web site: http://www.cdphe.state.co.us

Connecticut Department of Public Health - Water Supplies Section
410 Capitol Ave., MS #51 WAT
Hartford, CT 06134-0308
Phone: (860) 509-7333
Web site: http://www.state.ct.us/dph/

Delaware Office of Drinking Water
Department of Public Health
Blue Hen Corp. Center, Suite 203
655 S. Bay Road
Dover, DE 19901-4615
Phone: (302) 739-5410

Florida DEP Water/Wastewater Operator Certification Program
Bureau of Water Facilities Funding
2600 Blair Stone Rd., MS 3506
Tallahassee, FL 32399-2400
Phone: (850) 921-4019
Web site: http://www.dep.state.fl.us/water/wff/ocp/default.htm

Georgia Board of Examiners for Certification of Water & Wastewater Treatment Plant Operators & Laboratory Analysts
State Examining Boards
237 Coliseum Drive
Macon, GA 31217-3858
Phone: (912) 207-1400
Web site: http://www.sos.state.ga.us/ebd-water/
Hawaii Board of Certification of Operating Personnel in Water Treatment Plants
Safe Drinking Water Branch
Env. Mgmt. Divn., State Dept./Health
919 Ala Moana Blvd., Room 308
Honolulu, HI 96814-4920
Phone: (808) 586-4258
(Regulations document)

Idaho Water & Wastewater Operators Certification Boards Inc.
IWWOCB Inc.
P.O. Box 551
Lewiston, ID 83501-0551
Phone: (208) 750-1195

Illinois Drinking Water Operator Certification Program
IL EPA, Compliance Assur. Sect. #19
1021 North Grand Ave. East
P.O. Box 19276
Springfield, IL 62794-9276
Phone: (217) 785-0561
Web site: http://www.epa.state.il.us/water/drinking-water-operator

Indiana Department of Environmental Management
100 N. Senate Avenue
P.O. Box 6015
Indianapolis, IN 46206-6015
Phone: (317) 308-3307
Web site: http://www.state.in.us/idem/owm/index.html

Iowa Operator Certification Program
Water Supply Section
IA Dept. of Natural Resources
502 East 9th St.
Des Moines, IA 50319
Phone: (515) 281-8998
Web site: http://www.state.ia.us/epd/wtrq/opercert.htm

Kansas Water and Wastewater Operator Certification
Kansas Dept. of Health & Env't.
Forbes Field, Bldg. #283
Topeka, KS 66620-0001
Phone: (785) 296-2976
Web site: http://www.kdhe.state.ks.us/water/tech.html

Kentucky Board of Certification of Water Treatment & Distribution System Operators
KY DEP, Division of Water
14 Reily Road
Frankfort, KY 40601-1189
Phone: (502) 564-3410
Web site: http://water.nr.state.ky.us/dow/trngcat.htm

Louisiana Committee of Certification for Water and Wastewater Operators
LA Dept. of Health
Operator Certification Program
6867 Bluebonnet Blvd., Box 6
Baton Rouge, LA 70810
Phone: (225) 765-5058

Maine Board of Licensure of Water Treatment Plant Operators
ME Drinking Water Program
157 Capitol Street
10 State House Station
Augusta, ME 04333-0010
Phone: (207) 287-5678
Web site: http://janus.state.me.us/dhs/eng/water/operator.htm

Maryland State Board of Waterworks and Waste Systems Operators
2500 Broening Highway
Baltimore, MD 21224-6617
Phone: (410) 631-3167
Web site: http://www.mde.state.md.us/permit/permit_guide98/index.html
(Permit Guide document)
<table>
<thead>
<tr>
<th>State Certification Programs</th>
<th>State Certification Programs</th>
</tr>
</thead>
</table>
| **Massachusetts Board of Certification of Operators of Drinking Water Supply Facilities**  
Massachusetts DEP  
Division of Water Supply  
One Winter Street, 6th Floor  
Boston, MA  02108  
Phone:  (617) 556-1191  
Web site:  http://www.state.ma.us/reg/boards/dw/default.htm | **Montana Water and Wastewater Operators' Advisory Council**  
Department of Envir. Quality  
Community Services Bureau  
P.O. Box 200901  
Helena, MT  59620-0901  
Phone:  (406) 444-2691  
Web site:  http://www.deq.state.mt.us/pcd/csb/certify.htm |
| **Michigan Advisory Board of Examiners**  
Environmental Assistance Division  
Town Center Building  
333 S. Capitol Ave., 2nd Floor  
Lansing, MI  48933-2022  
Phone:  (517) 373-4752  
Web site:  http://www.deq.state.mi.us/ead/tasect/otu/ | **Nebraska Department of Health & Human Services**  
Dept./Reg. & Licensure  
301 Centennial Mall South  
P.O. Box 95007  
Lincoln, NE  68509-5007  
Phone:  (402) 471-2541  
Web site:  http://www.hhs.state.ne.us |
| **Minnesota Advisory Council on Water Supply Systems & Wastewater Treatment Facilities**  
MN Dept./Health, Drinking Water Prot.  
121 East 7th Place, Suite 220  
P.O. Box 64975  
St. Paul, MN  55164-0975  
Phone:  (651) 215-0751  
Web site:  http://www.health.state.mn.us/divs/eh/dwp/pws/dwopcert/dwopmain.html | **Nevada State Health Division**  
NV Bureau of Health Prot. Services  
1179 Fairview Dr. Ste. 101  
Carson City, NV  89701-5405  
Phone:  (775) 687-6615 ext. 235  
Web site:  http://www.state.nv.us/health/bhps/PHE/sdwp.htm |
| **Mississippi State Department of Health**  
Division of Water Supply  
2423 North State Street, Ste. 241  
P.O. Box 1700  
Jackson, MS  39215-1700  
Phone:  (601) 576-7518  
Web site:  http://www.msdh.state.ms.us/watersupply/index.htm | **New Hampshire Department of Environmental Services**  
Engineering Bureau, Water Supply  
6 Hazen Drive  
P.O. Box 95  
Concord, NH  03302-0095  
Phone:  (603) 271-2410  
Web site:  http://www.des.state.nh.us/wseb |
| **Missouri Department of Natural Resources**  
Technical Assistance Program  
P.O. Box 176  
Jefferson City, MO  65102-0176  
Phone:  (800) 361-4827  
or (573) 751-1600  
Web site:  http://www.dnr.state.mo.us/deq/tap/optrtrain.htm | **New Jersey Water & Wastewater Board of Examiners**  
NJ DEP Administrator's Office  
P.O. Box 420  
Trenton, NJ  08625-0420  
Phone:  (609) 984-7743  
Web site:  http://www.state.nj.us/dep |
| **New Mexico Utility Operators Certification Program**  
New Mexico Environment Dept.  
Facility Oper. Section / SWQB  
P.O. Box 26110  
Santa Fe, NM  87502-0110  
Phone:  (505) 827-2799  
Web site:  http://www.nmenv.state.nm.us/ |
New York Community Water System Operator Certification Program
NY State Dept. of Health
Bureau/Public Water Supply Prot.
Flanigan Square, 547 River St.
Troy, NY  12180-2216
Phone:  (518) 402-7712

North Carolina Water Treatment Facility Operators Certification Board
NC DENR, Divn. of Environ. Health
1635 Mail Service Center
Raleigh, NC  27699-1635
Phone:  (919) 715-9572
Web site: http://www.deh.enr.state.nc.us/

North Dakota Department of Health
1200 Missouri Avenue
P.O. Box 5520
Bismarck, ND  58502-5520
Phone:  (701) 328-6626
Web site: http://www.health.state.nd.us/ndhd/environ/mf/index.htm

Ohio EPA - Certification Unit
DDAGW
122 South Front Street
P.O. Box 1049
Columbus, OH  43216-1049
Phone:  (614) 644-2888
Web site: http://www.epa.ohio.gov/ddagw/ddagwmain.html

Oklahoma Waterworks & Wastewater Works Advisory Council
Oklahoma DEQ
Certification and Compliance Section
P.O. Box 1677
Oklahoma City, OK  73101-1677
Phone:  (405) 702-8100
Web site: http://www.deq.state.ok.us/Water1/operatorcertification/

Oregon Water Operator Certification Program
OR Health Division
Drinking Water Section
P.O. Box 14450
Portland, OR  97293-0450
Phone:  (503) 731-4899
Web site: http://www.ohd.hr.state.or.us/dwp/certif.htm

Pennsylvania State Board for Certification of Sewage Treatment Plant and Waterworks Operators
DEP - Certif., Licensing & Bonding
400 Market Street, Room 102
P.O. Box 8454
Harrisburg, PA  17105-8454
Phone:  (717) 787-5236
Web site: http://www.dep.state.pa.us/dep/deputate/waterops/

Rhode Island Drinking Water Certification Board
Department of Health
Office of Drinking Water Quality
3 Capitol Hill, Room 209
Providence, RI  02908-5097
Phone:  (401) 222-6867
Web site: http://www.health.state.ri.us

South Carolina Environmental Certification Board
110 Centerview Drive
P.O. Box 11409
Columbia, SC  29211-1409
Phone:  (803) 896-4430
Web site: http://www.llr.state.sc.us/ecb.htm

South Dakota Operator Certification Program
DWP/DENR
Foss Building-Lower Level
523 E. Capitol Ave.
Pierre, SD  57501-3181
Phone:  (605) 773-4208
Web site: http://www.state.sd.us/opercert

Tennessee Water & Wastewater Operator Certification Board
J R Fleming Training Center
2022 Blanton Drive
Murfreesboro, TN  37129-2912
Phone:  (615) 898-8090
Web site: http://www.state.tn.us/environment/dca/fleming.htm
Texas Operator Certification Program
TNRCC, MC 178
P.O. Box 13087
Austin, TX 78711-3087
Phone: (512) 239-6139
Web site: http://www.tnrcc.state.tx.us/enforcement/csd/ocs/

Utah Water Operator Certification Commission
Utah Divn. of Drinking Water
150 North 1950 West
P.O. Box 144830
Salt Lake City, UT 84114-4830
Phone: (801) 536-4200
Web site: http://www.deq.state.ut.us/eqdw/

Vermont Department of Environmental Conservation
Water Supply Division
Old Pantry Building
103 South Main Street
Waterbury, VT 05671-0403
Phone: (802) 241-3400
Web site: http://www.anr.state.vt.us/dec/watersup/wsd.htm

Virginia Board for Waterworks and Wastewater Works Operators
Dept. of Profess. and Occup. Reg.
3600 West Broad Street, 5th Floor
Richmond, VA 23230-4917
Phone: (804) 367-8595
Web site: http://www.state.va.us/dpor/indexne.html

West Virginia Office of Environmental Health Services
Bureau for Public Health
815 Quarrier Street, Suite 418
Charleston, WV 25301-2616
Phone: (304) 558-2981
Web site: http://www.wvdhhr.org/oehs/eed/organization.html

Wisconsin Water and Wastewater Operator Certification Program
Wisconsin DNR
101 S. Webster Street
P.O. Box 7921
Madison, WI 53707-7921
Phone: (608) 266-0498
Web site: http://www.dnr.state.wi.us/org/es/science/opcert

Wyoming Operator Certification Program
WY DEQ/Water Quality Division
4th Floor Herschler Building, 4W
122 West 25th Street
Cheyenne, WY 82002-5011
Phone: (307) 777-7781
Web site: http://deq.state.wy.us/wqd/certop.htm

Washington Water Works Operator Certification Program
Department of Health
Division of Drinking Water
P.O. Box 47822
Olympia, WA 98504-7822
Phone: (360) 236-3137
Web site: http://www.doh.wa.gov/ehp/dw/