

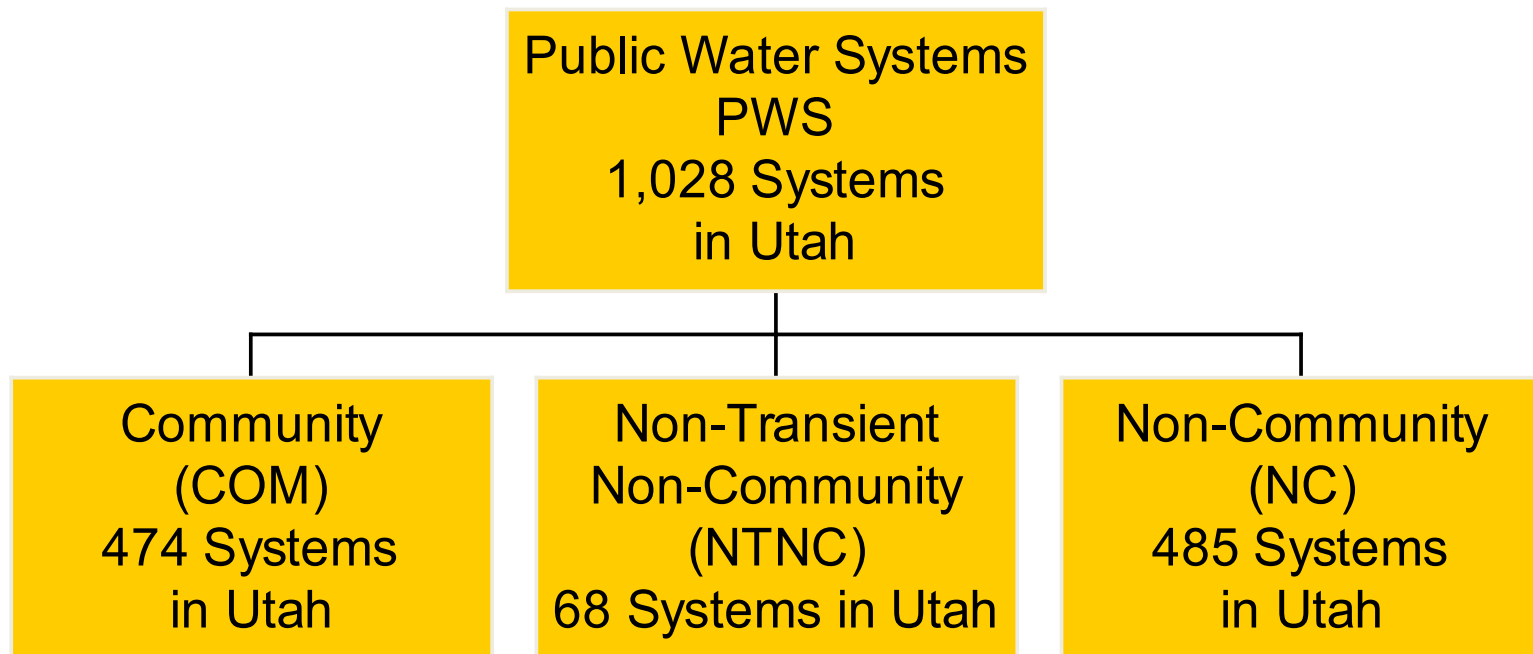
THE DIVISION OF DRINKING WATER (DDW)

- Governed by a nine-member board that establishes the rules
- Five Sections
 - Administrative Services
 - Rules
 - Engineering
 - Construction Assistance
 - Field Services
- **www.drinkingwater.utah.gov**



DDW REGULATES PUBLIC WATER SYSTEMS

- Public Water Systems (PWS):
 - Have 15 services connections AND/OR
 - Serve at least 25 people (or 8 service connections) for 60 days



COMMUNITY SYSTEMS (COM)

- Serve year-round residents
- Long-term exposure, most stringent sampling requirements
- Municipalities, districts
- Utah has 474 COM systems.



NONTRANSIENT NONCOMMUNITY SYSTEMS (NTNC)

- Serve the same people for at least 6 months out of the year
- Industry, rural schools
- Sampling is less stringent than COM systems.
- Utah has 68 NTNC systems



TRANSIENT NONCOMMUNITY SYSTEMS (TNC)

- Serve different people
- Are not active year round
- Short-term exposure
- Least stringent sampling requirements
- Campgrounds, rest stops, churches, restaurants
- Utah has 485 TNC systems.



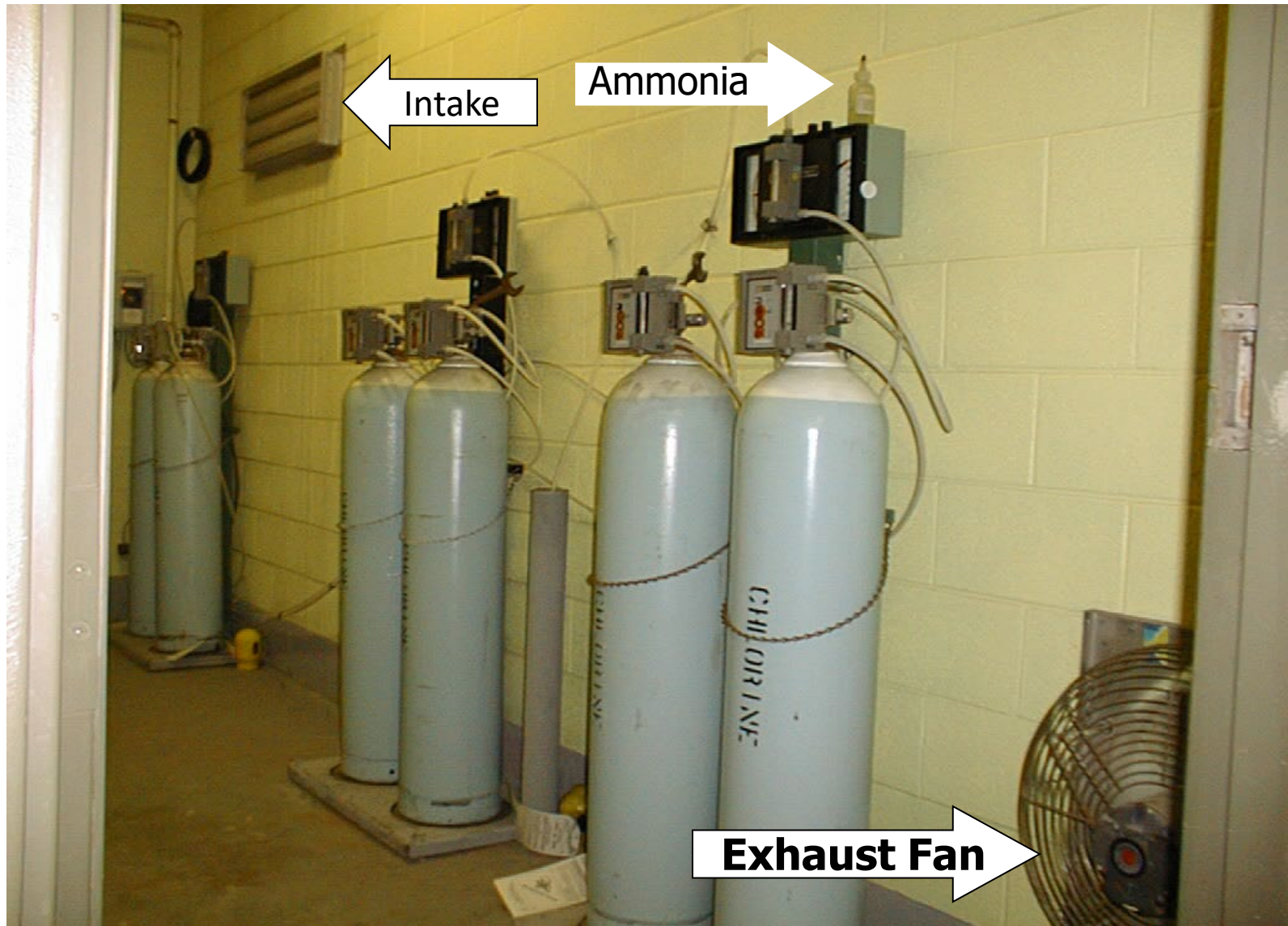
PWS REQUIREMENTS

- Construction Standards
- Operational Requirements
- Surface Water Treatment Rule
- Sanitary Surveys/Improvement Priority Rule
- Cross Connection Control
- Source Protection
- Monitoring & Reporting, Water Quality
- Public Notice
- Operator Certification (except TNC systems)
- Private systems are NOT regulated by DDW

CONSTRUCTION STANDARDS

- Purpose: to provide a safe and reliable supply of drinking water.
- Apply to: Source development, water treatment, water quantity, water storage, pump stations, and distribution systems.
- Plans for drinking water projects must be submitted to DDW for review.

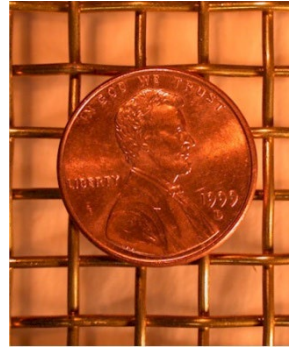




Chlorination building. The air intake is at the top, and the exhaust is near the floor. The ammonia bottle is required.

CONSTRUCTION STANDARDS - EXAMPLES

- Proper sizing of source, storage, transmission and distribution piping to meet demands.
- Flowing wells must be controlled by a valve.
- Storage tank access lids must be locked.
- Free flowing wells must be controlled valves.
- All vents, overflows and drains must be screened
 - Air vents must have a #14 mesh screen
 - Water outlets must have a #4 mesh screen



#4 mesh



#14 mesh

CONSTRUCTION STANDARDS - EXAMPLES

- Finished water storage must be covered.
- Sewer lines must be at least 50 feet from storage reservoirs.
- Sewer lines must be at least 10 feet from waterlines, and 18 inches below waterlines.
- Pumping stations must have 2 complete pumps, and each pump must provide the maximum flow of the station.



CONSTRUCTION STANDARDS - EXAMPLES

- Access Hatch Lids for Tanks and Springs
 - The access hatch lids must be a shoebox type lid.
 - The lid must overlap 2 inches.
 - There must be a gasket between the lid and the frame.



CONSTRUCTION STANDARDS - PRESSURE

- Pressure
 - For PWS approved before January 1, 2007:
 - Maintain 20 psi minimum dynamic pressure at all locations during normal operation.
 - Meet the new minimum pressures in new service areas.
 - For new construction after January 1, 2007 at the points of connection:
 - 20 psi with fire flow during peak day demand
 - 30 psi during peak instantaneous demand
 - 40 psi during peak day demand
 - Individual home booster pumps are **NOT ALLOWED** unless an exception granted by the Division Director.



CONSTRUCTION STANDARDS - EXCEPTIONS

- Requesting an Exception
 - If a facility meets the intent of the rule but cannot meet the construction standards, then they submit an exception request to the Division Director in writing.
 - It must include:
 - The rule citation
 - An explanation of why the rule cannot be met
 - What the system proposes in lieu of the rule
 - Justifications

CONSTRUCTION – PLAN REVIEW

- Required for “construction, addition, and modification” of drinking water facilities.
- Examples
 - Recoat a water tank interior
 - Change or add a chemical
 - Redevelop a source
 - Add a booster pump, PRV, or chlorinator
 - Construction of tanks, pump stations, pipelines, sources, treatment plants, etc.
- Plan review is required. There is no construction until Plan Approval is issued.



CONSTRUCTION – PLAN REVIEW

1. Submit a “project notification form.”
2. Submit plans and specifications to obtain Plan Approval. (Plan on 30 days for the review process.)
3. Complete construction.
4. Obtain an Operating Permit before placing the facility in service. Otherwise, 50 to 150 deficiency points could be assessed.
 - This includes submitting as-built drawings, satisfactory bacteria results, etc.

CONSTRUCTION – PLAN REVIEW

- Plan Review is NOT required for certain O&M procedures such as:
 - Repair leaky pipelines
 - Replace existing pipeline of the same size or upgrade to meet minimum size requirement
 - Add new pipeline <500 feet at a time or <1,000 feet per year
 - Inspect, clean, and maintain a tank
 - Tap existing water mains to connect new service laterals
 - Replace a pump of the same type, size, and rated capacity



OPERATIONAL REQUIREMENTS

- Contaminated facilities must be disinfected before being placed back into service.
- AWWA disinfection standards (50 ppm chlorine)
 - C651 Water mains
 - C652 Storage tanks
 - C653 Water treatment plants
 - C654 Wells
- Added chemicals must meet National Sanitation Foundation (NSF) Standard 60.
- Deep-rooted vegetation in a spring collection area must be mechanically cleaned.

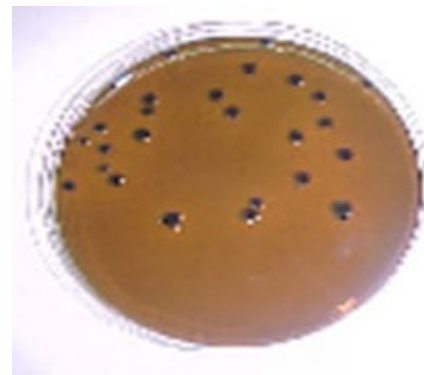
IMPROVEMENT PRIORITY SYSTEM (IPS)

- The way DDW measures the condition and performance of a PWS, based on quality, monitoring, public notification, physical deficiencies, operator certification, cross connection control, and source protection.
- The more demerit points a PWS has, the worse off it is!

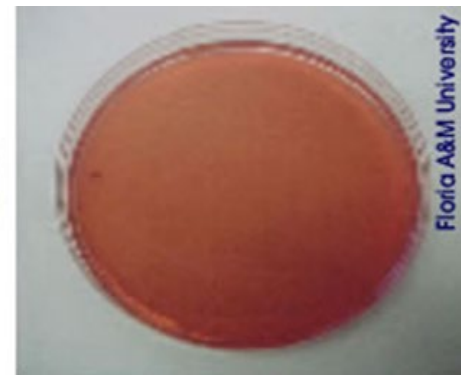


IMPROVEMENT PRIORITY SYSTEM (IPS)

- Points are assessed for deficiencies and violations.
- The amount of points assessed is based on the threat to the water quality and public health.
 - Confirmed E.coli contamination = 50 points
 - Missing a smooth-nosed sampling tap on well discharge piping = 1 point



BEFORE
UV Light Exposure



AFTER
UV Light Exposure

IMPROVEMENT PRIORITY SYSTEM (IPS)

- Thresholds:
 - COM 150 pts
 - NTNC 120 pts
 - TNC 100 pts
- For an approved rating, a PWS must have LESS than the thresholds above.

RATINGS

- **Approved:**
 - In good compliance
- **Corrective Action:**
 - Provisional rating for a PWS that is working on compliance
- **Not Approved:**
 - PWS does not fully comply with the rules

IMPROVEMENT PRIORITY SYSTEM (IPS)

- **Points are added:**

- At the time of the sanitary survey
- When the PWS fails to sample
- There is a quality problem



- **Points are deleted:**

- When the physical deficiencies are fixed
- When samples are taken
- For coliform, the IPS points stay on for 12 months or 4 consecutive quarters of operation.

IMPROVEMENT PRIORITY SYSTEM (IPS)

- **Sanitary Survey**

- During the survey points are given for physical facility deficiencies.
- A time period is given for the problem to be fixed before the points are activated.
- Points are only given once for a repeating deficiency.
- Some deficiencies may be grandfathered if they will not impact public health. (See Exceptions in Construction Standards.)

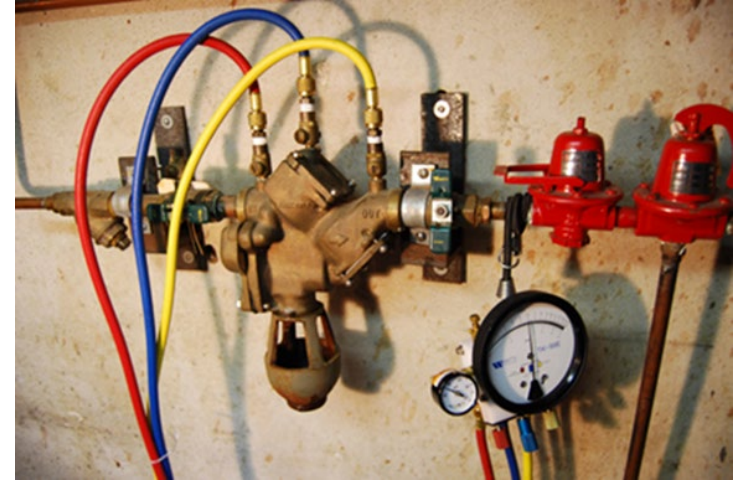


CROSS-CONNECTION CONTROL

There are 5 required components:

1. **Local Authority:**

Identifies a person to administer the program, must require protection for cross connections, must require periodic testing of all backflow prevention assemblies, must require hazard assessments, identifies and authorizes enforcement methods, requires inspection of new construction and existing privately-owned PWS.



CROSS-CONNECTION CONTROL

2. **Public Awareness/Education:**

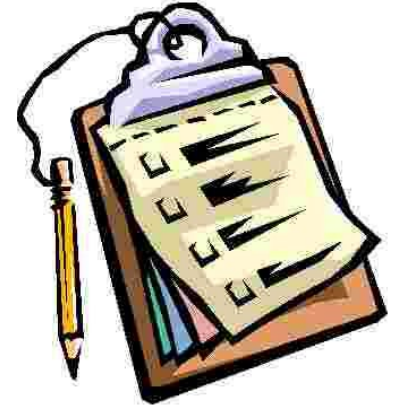
Stuffers, newspaper, town meetings, consumer confidence reports

3. **Trained or Certified Staff:**

ABPA evening seminars, backflow certification course, Rural Water seminars

4. **Records of Program Activities:**

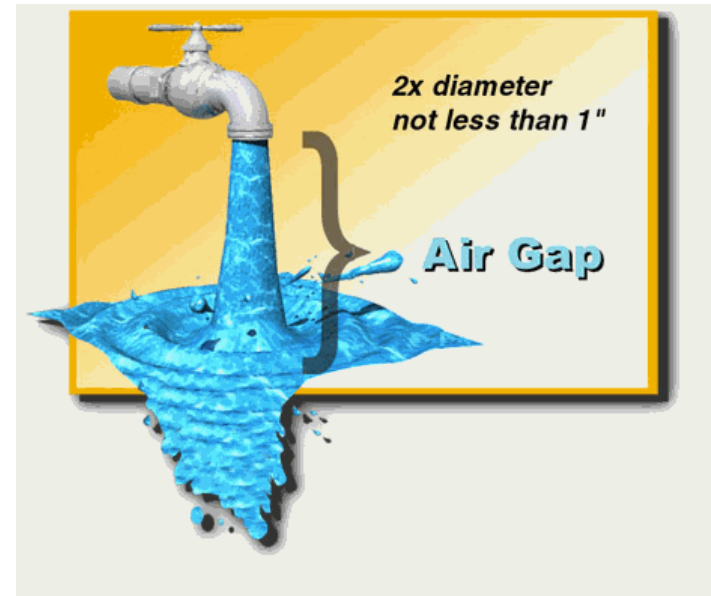
Inventory of testable assemblies, inventory of health (high) hazard air gaps, records of hazard assessment surveys, records of enforcement actions



CROSS-CONNECTION CONTROL

5. Ongoing Enforcement:

Hazard assessment surveys/appropriate protection provided, tracking annual testing of devices, continues public education, assemblies tested annually



CROSS-CONNECTION CONTROL

Degree of Hazard Protection

- Sewage: Air gap - minimum 1" or twice the diameter of the pipe & best form of CCC
- High Hazard: Backpressure or backsiphonage, requires Reduced Pressure (RP) backflow assembly
- High Hazard: Backsiphonage only, requires Pressure Vacuum Breaker (PVB) assembly, spill resistant vacuum (SVB) breaker assembly or atmosphere vacuum breaker device (AVB)
- Low Hazard: Backpressure or backsiphonage, requires double check valve
- Low Hazard: Backsiphonage only, requires PVB, SVB, or AVB

SOURCE PROTECTION PLANS

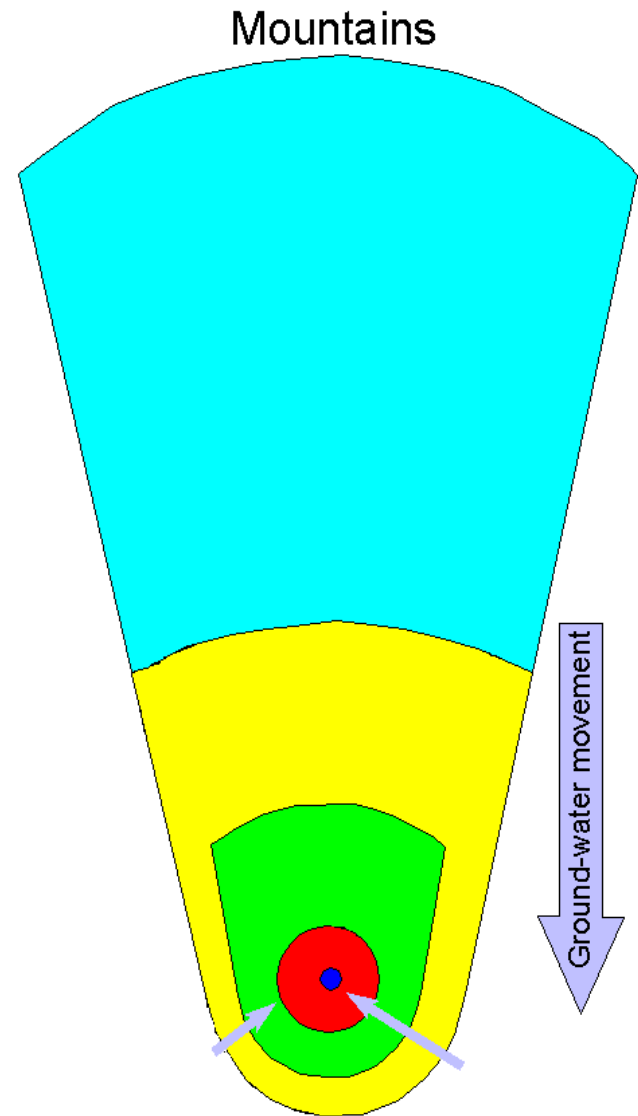
- Required for all new sources for all PWS, but TNC sources built before 1993 are exempt.
 - TNC systems have Source Water Assessments
- There are five required components:
 1. Identify a designated person
 2. Inventory all potential sources of contamination
 3. Management plan to manage and prevent contamination
 4. Contingency plan
 5. Source delineation



SOURCE PROTECTION PLANS

- Delineation
 - Zone 1 = 100-ft radius
 - Zone 2 = 250-day time of travel
 - Zone 3 = 3-year time of travel
 - Zone 4 = 15-year time of travel

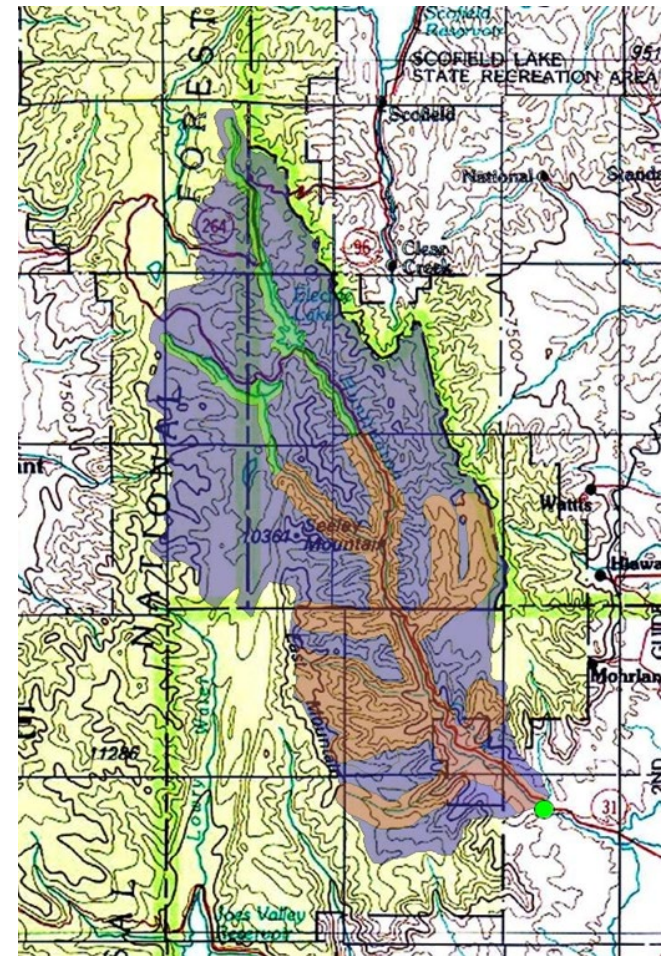
*Optional 2 mile radius



SOURCE PROTECTION PLANS

- **Surface Water Zones**

- Zone 1 = ½ mile from High Water Mark (HWM), 100 ft downstream to 15 miles upstream
- Zone 2 = 1,000 ft from HWM, additional 50 miles upstream
- Zone 3 = 500 ft from HWM
- Zone 4 = remainder of watershed or state line



SOURCE PROTECTION PLANS

- Monitoring reduction waivers for VOCs and pesticides
- There is an implementation schedule for the plan.
- There is a resource evaluation that lists resources to implement the plan.
- The contingency plan includes all drinking water sources.
- Must notify the public of your source protection plan, usually a part of the consumer confidence report (CCR).

WATER QUALITY

- Primary Drinking Water Standards
 - Health based, sampling is required
- Secondary Drinking Water Standards
 - Aesthetic based, sampling is not required
- Treatment Technique
 - Only for surface water treatment systems
- Action Levels
 - Only for lead/copper



WATER QUALITY – VARIANCES & EXEMPTIONS

- Variances & exemptions are not available for total coliform and surface water treatment.
- A variance or exemption must not result in an unreasonable risk to human health.
- Variances are based on raw water quality.
- Exemptions are based on availability of feasible treatment.
- Additional time is given to meet the MCL or BAT (best available technology).



WATER QUALITY - MONITORING

- **Distribution**

- Coliform bacteria
- Lead & Copper
- Asbestos
- Disinfection Byproducts

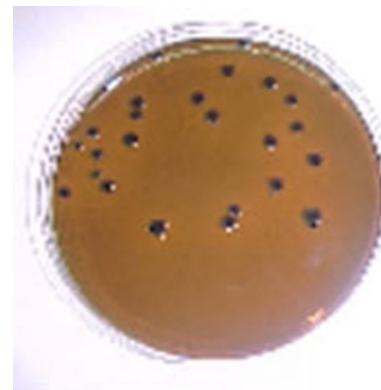
- **Source**

- Asbestos
- Inorganics & Metals
- Nitrate, Nitrite
- Sulfate
- VOCs
- Pesticides
- Radionuclides

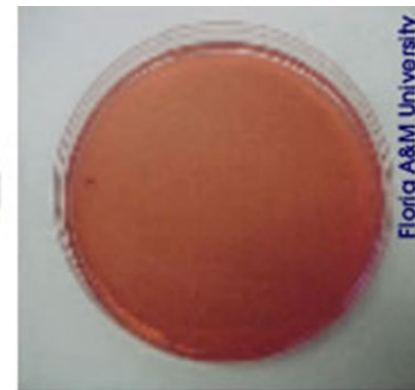


WATER QUALITY – COLIFORM BACTERIA

- Coliform bacteria is an indicator bacteria
- Coliform is a family of bacteria. Some cause illness; others do not.
- All samples are tested for *Escherichia coli* (*E. coli*)
- All PWS must sample monthly.
- The number of samples required depends on the system population.
- PWS keeps records of coliform results for 5 years.



BEFORE
UV Light Exposure



AFTER
UV Light Exposure

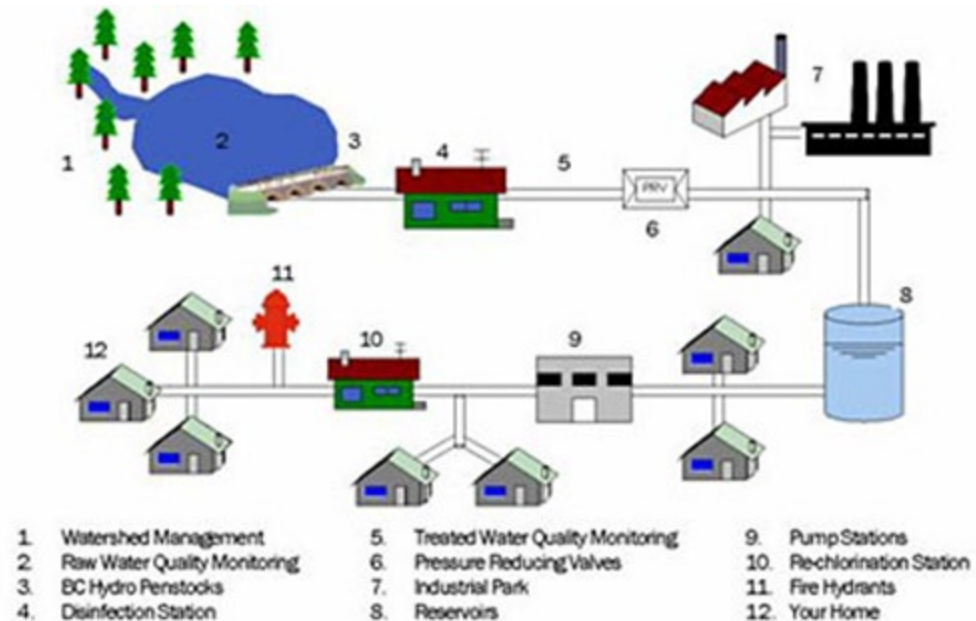
WATER QUALITY – COLIFORM BACTERIA

Community	<p style="text-align: center;">Sample every month The # of samples depends on population</p>
Nontransient Noncommunity (NTNC)	
Noncommunity (NC)	

WATER QUALITY – COLIFORM BACTERIA

- **Sampling Site Plan**

- A plan that shows the PWS is rotating its samples throughout representative sites in the system.
- Must be written, submitted to DDW and is reviewed during the sanitary survey.
- A PWS must have at least 5 sites in the plan or twice the # of samples required.
- PWS that collects >5 samples month should not collect them on the same day
- The PWS is responsible for for taking coliform samples.



WATER QUALITY – COLIFORM BACTERIA

1. You take the routine sample and send it to the lab.
2. The lab will mark the results:
 - Satisfactory (TC -)
 - Unsatisfactory (TC + EC -, or TC + EC +)
 - Indeterminate (interfering bacteria, PWS must take another routine sample within 24 hours.)
3. If the results are satisfactory, then no further action is required.
4. If the results are unsatisfactory, you must take repeat, triggered and possibly investigative samples.



WATER QUALITY – COLIFORM BACTERIA

Types of Samples

ROUTINE = The routine samples required monthly .

REPEAT = Samples taken in the distribution system after an unsatisfactory routine. They must be pulled from within 5 service connections upstream & downstream and one at the original site.

TRIGGERED = For groundwater PWS, these samples are taken at all groundwater sources in use. If a groundwater PWS purchases water, then the wholesale system must be notified so they can take these samples at their sources.

CONFIRMATION= Taken when Triggered GW source sample is E.coli positive.

INVESTIGATIVE= Samples taken to identify a potential problem, but do not count toward samples required by monitoring schedule

WATER QUALITY – COLIFORM BACTERIA

- If the result is unsatisfactory:
 - The lab analyzes for E.coli (EC).
 - PWS takes REPEAT, and groundwater systems take TRIGGERED samples within 24 hours of notification.
- How many repeats do I take?
 - All systems take 3 repeat samples
 - Original sample site
 - 5 Connections upstream
 - 5 Connections downstream

WATER QUALITY – COLIFORM BACTERIA

Violations for the Revised Total Coliform Rule

- Monitoring Violations:
 - Failure to take *routines* or *triggered* samples
 - Failure to take *repeat* samples results in assessment requirement
- Quality Violations:
 - Acute violations are confirmed E.coli contamination.
 - Mandatory health effects language with public notice

WATER QUALITY – COLIFORM BACTERIA

Violations for the Revised Total Coliform Rule

- Treatment Technique Violations:
 - Failure to *conduct* a Level 1 or 2 Assessment
 - Failure to correct significant deficiencies
 - Failure to *perform* seasonal start-up procedures
- Reporting Violation:
 - Failure to report results (whether they are taken or not)
 - Failure to *report* seasonal start-up procedures
 - Failure to *report* a Level 1 or 2 Assessment

WATER QUALITY – COLIFORM BACTERIA

Acute Violations: at two points in time (routine, repeat)
a PWS has at least one TC+ and one EC+.

ROUTINE	REPEAT	Violation	Triggers
TC+ EC-	TC+EC-	No Violation	Level 1 or 2 Assessment
TC+ EC-	TC+ EC?	E.coli MCL Violation	Failure to test for E.coli results MCL and an assessment
TC+ EC-	TC+ EC+	E.coli MCL Violation	Level 1 or 2 Assessment
TC+ EC-	Missed Any Repeat Samples	No MCL Violation	Level 1 or 2 Assessment
TC+ EC+	TC+	E.coli MCL Violation	Level 2 Assessment
TC+ EC+	TC+ EC+	E. coli MCL Violation	Level 2 Assessment

Seasonal Systems

- Seasonal Systems: Systems that are only open part of the year. Meaning NO WATER IS SERVED DURING THEIR CLOSED PERIOD
- Required to perform and report start-up procedure before opening
 - Inspect
 - Flush
 - Disinfect
 - Clean INVESTIGATIVE bacteria sample
 - Report process to DDW

Level 1 Assessments

- Triggered By
 - TC+ Samples
 - PWS that take <40 routines = more than 1 TC+ sample in a month
 - PWS that take >40 routines = more than 5% TC+ samples in a month
 - Failure to take *repeat* samples after routine TC+EC-
- Conducted by System
- Results reported to DDW within 30 Days of Trigger

Level 2 Assessments

- Triggered By
 - An acute quality violation
 - Failure to take *repeat* samples after routine TC+EC+
 - A second Level 1 Assessment within a rolling 12 month period
- Conducted By DDW or Authorized DDW Personnel
- More In-depth Look At System

WATER QUALITY – GROUNDWATER RULE

- Applies to PWS using groundwater, consecutive PWS receiving groundwater, and wholesale PWS using groundwater
- Five Components
 1. Triggered samples at the source
 2. Assessment samples at the source
 3. Corrective actions
 4. Sanitary surveys
 5. Compliance monitoring



WATER QUALITY – GROUNDWATER RULE

1. Triggered Source Samples

- Required when a routine coliform sample is TC +
- How many?
 - Take one for each active groundwater source
- What if the triggered sample is EC +?
 - PWS takes 5 confirmation source samples.
- 4 log treated sources are exempt from triggered source samples.

WATER QUALITY – GROUNDWATER RULE

2. Assessment Samples

- Required at DDW discretion for sensitive sources, such as redeveloped springs, sources with TC + history, sources without plan approval/operating permit
- A minimum of 12 monthly samples is required per source.

3. Corrective Actions

- Required when confirmed EC+ at the source
- Uncorrected significant physical deficiencies
- Required within 120 days, or the DDW-approved Corrective Action plan deadline



WATER QUALITY – GROUNDWATER RULE

4. Sanitary Surveys

- Required 8 elements for surveys
 - Operation & maintenance, sources, treatment, finished water storage, pumps, operator certification, monitoring & reporting data verification, distribution system
- Water system should receive the sanitary survey report within 30 days.



WATER QUALITY – GROUNDWATER RULE

5. Compliance Monitoring

- Required only for sources with the 4-log exemption
- An engineering reviewed minimum dosage is required for 4-log exempt sources.
- Chlorine residual samples
 - Over 3,300 population continuous monitoring
 - Under 3,300 population daily grab samples
- Reporting is combined with quarterly DBP.

WATER QUALITY – GROUNDWATER RULE

Violations:

- Monitoring
 - Failure to collect triggered samples
 - Failure to collect assessment samples
 - Failure to collection additional source samples – default to required corrective action
 - Failure to complete compliance monitoring
- Quality
 - Failure to address confirmed E. coli at the source
 - Failure to correct a significant deficiency or file a corrective action plan

WATER QUALITY – GROUNDWATER RULE

Example Problem:



Distribution system has 1 TC+ sample. What is the operator required to do?

- a. Collect repeat samples.
- b. Collect a sample at all active groundwater sources.
- c. Both a & b
- d. Examine the meter reading at the original sample site.

SURFACE WATER TREATMENT RULE

- Surface Water must be treated. Chlorination alone is not sufficient for treating surface water.
- Package plants must meet the same construction standards as large plants.
- SW Treatment systems must submit a monthly report to DDW.



1. Filtration

2. Disinfection

3. Disinfectant
Residual in DS

SURFACE WATER TREATMENT RULE

1. Filtration

- Filtration provides a physical barrier to remove pathogens and particles
- Maximum filter loading rate is 6 gal/min/ft².
- Turbidity – a measure of the filtration effectiveness
 - Surface Water (SW) systems
 - » 0.34 NTU in 95% of samples, never to exceed 1.0 NTU spike
 - » Sample turbidity at each individual filter effluent
 - » Sample the combined filter turbidity at the clear well
 - Ground water turbidity = 5.0 NTU

SURFACE WATER TREATMENT RULE

2. Disinfection

- All surface water sources must be monitoring for either cryptosporidium or *E. coli* before all treatment to determine if additional treatment is needed.
- Disinfect to obtain treatment credits and additional Log inactivation
 - 99% or 2 log inactivation of crypto
 - 99.9% or 3 log inactivation of giardia, lamblia cysts
 - 99.99% or 4 log inactivation of enteric viruses

SURFACE WATER TREATMENT RULE

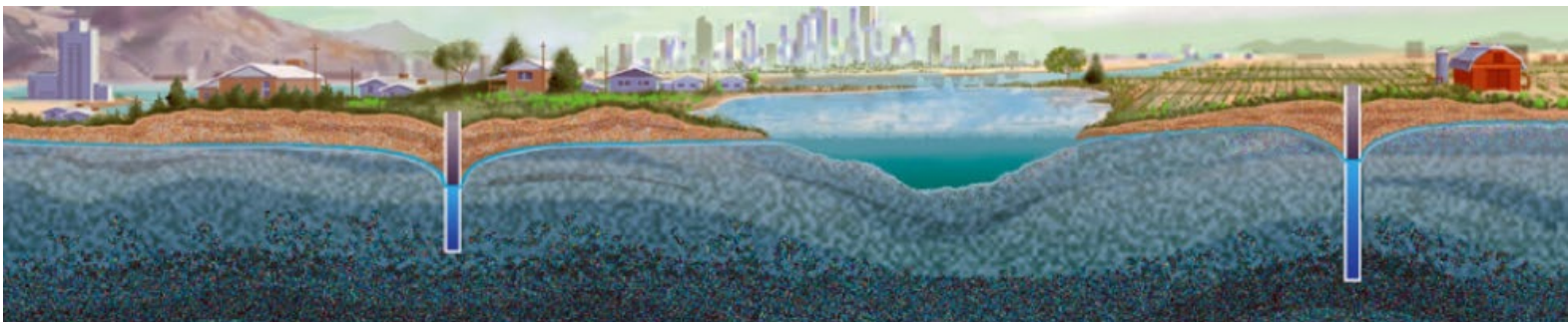
3. Disinfectant Residual in DS

- Disinfectant $CT = \text{Concentration (C)} \times \text{contact time (T)}$
- Contact time is required
- The chlorine residual leaving the plant must be $=$ or > 0.2 mg/L and measurable throughout the system.
- Adequate disinfection is mandatory before the first customer.
- CT with mixing basins and storage tanks is determined by tracer studies or the equivalent.



SURFACE WATER TREATMENT RULE

- Groundwater may be “under the direct influence” (UDI) of surface water.
- UDI is determined through a filter test called microscopic particulate analysis (MPA) that detects surface origin microorganisms such as algae or observations involving temperature, turbidity, alkalinity and volume, or geologic conditions.
- Surface water treatment is required for UDI sources.



WATER QUALITY – LEAD & COPPER

- Required for COM, NTNC
- Must have a sampling site plan
- Must give results of test to sample homes and certify to DDW that results have been given.
- The number of required samples is based on population.
- Samples taken from kitchen/bathroom cold water tap, first draw after sitting undisturbed for 6 hours.
 - Not outside spigots, vacant homes or rarely used sinks!

Initial	Reduced	Further Reduced
Every 6 months for 2 rounds	Annually for 3 rounds	Every 3 years forever

EXAMPLE:

1st half 2002
2nd half 2002
Annual 2003
Annual 2004
Annual 2005
3 year 2008
3 year 2011

WATER QUALITY – LEAD & COPPER

Sample Sites:

- Tier 1
 - Single family homes with copper pipes 1982-1986
- Tier 2
 - Multiple family homes with copper pipes 1982-1986
- Tier 3
 - Homes before 1982 with metal pipes

Compliance:

- Based on the 90th percentile result
- Compare the 90th percentiles to the Action Levels
 - Copper = 1300 ppb (1.3 ppm)
 - Lead = 15 ppb (0.015 ppm)
- The result can either meet or be less than the AL to be in compliance.

WATER QUALITY – LEAD & COPPER

90th Percentile

- Arrange the results from lowest to highest.
- Multiply the total number of samples by 0.9.
- Compare that result to the Action Level

A PWS takes 10 samples	A PWS takes 20 samples
$10 \times 0.9 = 9$	$20 \times 0.9 = 18$
Use the 9 th highest result to compare against the Action Level.	Use the 18 th highest result to compare against the Action Level.

WATER QUALITY – LEAD & COPPER

Practice

- Lead Results (ppb, ug/L):
 - <5, 7, 13, <5, 3, 8, <5, 17, 15, <5
- Copper Results (ppb, ug/L):
 - 129, 1402, 876, 564, 345, 1299, 1395, 290, <10, <10



- What is the 90th percentile result for lead and for copper?
- Does the PWS exceed the AL for lead, copper, both, or neither?

WATER QUALITY – LEAD & COPPER

- What happens if a PWS exceeds the AL for lead or copper?
 - Corrosion control treatment
 - Public education and notification
 - Water quality parameter testing
 - Possible lead line replacement



WATER QUALITY - ASBESTOS

- **Distribution System Sampling**

- Required for COM, NTNC that contain asbestos piping in their distribution systems
- Samples are due once every years.



- **Source Sampling**

- Required for COM, NTNC at the source for sources in naturally occurring asbestos formations
- Samples are due once every 9 years.

WATER QUALITY – DISINFECTION BYPRODUCTS (DBPS)

- Disinfectants (chlorine, chloramines, chlorine dioxide) react with naturally occurring material in the water to create byproducts harmful to human health.
- Disinfection Byproduct (DBP) monitoring
 - Required for COM, NTNC that disinfect
- Types of Byproducts
 - Chlorine forms total trihalomethanes and haloacetic acids.
 - Ozone forms bromate.
 - Chlorine dioxide forms chlorite.

WATER QUALITY –

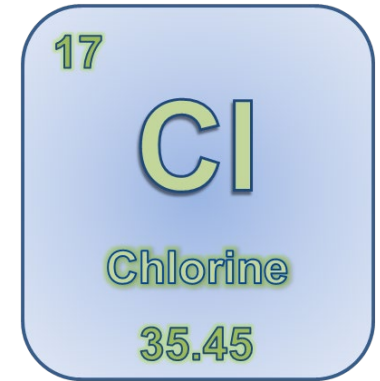
DISINFECTION BYPRODUCTS (DBPS)

- Compliance is based on the average of results at each sampling location.
- Maximum Contaminant Levels (MCLs)
 - Total Trihalomethanes (TTHMs) = 80 ppb (0.080 mg/L)
 - Haloacetic Acids (HAAs) = 60 ppb (0.060 mg/L)
- Sampling frequency:
 - Sampling varies from quarterly to annually based on the nature of the PWSs sources and population served.
 - Reduced monitoring is allowed based on sample results. However, only very small groundwater PWSs (less than 500 population) will be reduced to every 3 years.

WATER QUALITY – DISINFECTION BYPRODUCTS (DBPS)

- A sampling plan is required!
 - The number of samples is based on the population served.
 - Must submit a sampling site plan for PWS that did not do the IDSE (Very Small Systems, 40/30 waiver)
- Consecutive PWSs are on the same sampling frequency and start date as the largest PWS in the group.

WATER QUALITY – DISINFECTION BYPRODUCTS (DBPS)



- Maximum Residual Disinfection Level (MRDL) of 4.0 mg/L
- Groundwater PWS measure residual 3 times/week where coliform samples are taken
- Surface water plants must continuously monitor disinfectant residuals. Grab samples are allowed for PWS serving less than 3,300 people if approved by DDW.

WATER QUALITY – DISINFECTION BYPRODUCTS (DBPS)

- There is additional monitoring for Conventional Surface Water Treatment Plants:
 - Raw water alkalinity
 - Raw and finished water Total Organic Carbon (TOC)
- Submit quarterly reports to DDW by the 10th day following the the quarter.



WATER QUALITY – TREATMENT REPORTS

- Chlorination, Fluoridation Report Forms
 - Daily readings
 - Volume of water treated
 - Amount of chemical used, residual
- Surface Water Treatment Plant Report Forms
 - Continuous turbidity readings
 - Clearwell is an appropriate place to take turbidity samples.
 - Volume of treated water
 - Type and amounts of chemicals used
 - Continuous chlorine residuals

WATER QUALITY - FLUORIDE

- Maximum Contaminant Level (MCL) = 4.0mg/L
- Secondary MCL = 2.0mg/L (If a PWS is over this level, they must notify the public.)
- Plan review & operating permit
- Monthly reports
- Field test = SPADNS for daily fluoride residual concentrations
- Fluoride chemical addition is currently on a county basis
- Treatment Chemicals
 - Sodium Fluoride
 - Fluorosilicic acid
 - Sodium silicofluoride
 - Sodium fluorosilicate



WATER QUALITY - STANDARDS

- All chemical added to drinking water must be National Sanitation (NSF) Standard 60 approved.
- Turbidity for groundwater source not UDI is 5.0 NTU.
- Turbidity for surface water/UDI treated water is less than or equal to 0.34 NTU in 95% of the results, max 1.0 NTU.
- Chlorine MCL is 4.0mg/L (MRDL)
- Reservoir disinfected to AWWA C 652 Standard



WATER QUALITY – SOURCE SAMPLES

- May group sources if:
 - They mix before entering the distribution system.
 - 2 or more wells in the same aquifer
- PWS required to keep chemical results for 10 years
- Report results to DDW within 40 days of receipt
- Asbestos
- Inorganics & Metals
- Nitrate
- Nitrite
- Sulfate
- VOCs
- Pesticides
- Radionuclides

WATER QUALITY – SOURCE SAMPLES

Inorganics & Metals

Systems that must sample	Initial sampling frequency	Reduced sampling frequency
COM, NTNC	SW = Annual GW = Every 3 yrs	Once every 9 yrs based on all previous rounds <75% of MCL

Sulfate

Systems that must sample	Initial sampling frequency	Reduced sampling frequency
TNC	Every 3 yrs	Once every 9 yrs based on all previous results <75% of MCL

WATER QUALITY – SOURCE SAMPLES

Nitrate

Systems that must sample	Initial sampling frequency	Reduced sampling frequency
COM, NTNC, TNC	SW = Quarterly GW = Annual	SW = Annual NO OTHER REDUCTIONS ALLOWED

Nitrite

Systems that must sample	Initial sampling frequency	Reduced sampling frequency
COM, NTNC, TNC	Just one sample. . . If <0.5mg/L = waiver If >0.5mg/L = quarterly	Waiver = No sampling required

WATER QUALITY – SOURCE SAMPLES

Asbestos

Systems that must sample	Initial sampling frequency	Reduced sampling frequency
COM, NTNC (if the source is vulnerable)	Once every 9 yrs	No sampling required

Radionuclides

*Measured in picocuries per liter (pCi/L)

Systems that must sample	Initial sampling frequency	Reduced sampling frequency
COM	Quarterly for 1 year	Every 3, 6, or 9 yrs, depending on initial results

WATER QUALITY – SOURCE SAMPLES

VOCs (Volatile Organics)

Systems that must sample	Initial sampling frequency	Reduced sampling frequency
COM, NTNC	Quarterly	Annual, Once every 3 yrs (susceptibility waiver), Once every 6 yrs (use waiver)

Pesticides

Systems that must sample	Initial sampling frequency	Reduced sampling frequency
COM, NTNC	Quarterly	Once or twice every 3 yrs (susceptibility waiver), Not required (use waiver)

WATER QUALITY – SOURCE SAMPLES



- **Waivers**

- Reliably & Consistently

- Based on past data

- **Susceptibility**

- Based on if the source is vulnerable and past data

- **Use**

- Based on if the contaminants are used, transported, manufactured or stored in the source area

WATER QUALITY – REPORTING TO DDW

- It is the PWS's responsibility to report data to DDW.
- Monthly operational report forms go to DDW.
- Bacterial water quality data must be received by DDW by the 10th day of the month following receipt of analysis.
- Chemical water quality data must be received by DDW within 40 days of receipt of analysis.
- Unsatisfactory analytical results must be reported to DDW by phone as soon as possible.

CONSUMER CONFIDENCE REPORTS (CCR)

- Annual water quality report due by July 1 to DDW, wholesalers due by April 1.
- Required for all COM systems
- DDW must receive:
 - A copy of the CCR by July 1
 - A certification letter describing how the CCR was delivered to customers by October 1

CONSUMER CONFIDENCE REPORTS (CCR)

- The CCR must contain:
 - Date prepared, PWS identification number
 - System information (phone, meetings)
 - Source information (names)
 - Definitions (MCL = maximum contaminant level)
 - Table of detected contaminants
 - Violations (if any)
 - Additional health information
 - Variances & exemptions (if any)
 - Uncorrected Significant Deficiencies



PUBLIC NOTIFICATION

- Violation Types
 - Tier 1
 - Acute contaminants = confirmed E.coli coliform bacteria acute violation, nitrate, nitrite
 - Mandatory health effects language
 - Notify DDW & customers within 24 hours
 - Tier 2
 - Non-Acute Contaminants = chemical MCLs,
 - Treatment technique=Failure to perform assessment
 - Mandatory health effects language
 - Notify DDW & customers within 30 days
 - Tier 3
 - Monitoring & reporting violations
 - Notify customers within 1 year
 - Failure to correct significant deficiency\sanitary defect
 - Continue notification every 3 months for as long as the violation exists

OPERATOR CERTIFICATION

- Required for all COM and NTNC systems AND any PWS that treats surface water or UDI water.
- How do I become certified?
 - Tested Certificates
 - Pass the op cert exam, specific to operator
 - Grandfather Certificates
 - PWS is in compliance, specific to the operator and PWS, non-transferable, operator must have worked for the PWS for a minimum # of years



OPERATOR CERTIFICATION

- Certificates
 - Operator
 - Working for a PWS
 - Specialist
 - Not working for a PWS
- Certification Levels
 - Treatment – 4 levels
 - T1, T2, T3, T4
 - Distribution – 5 levels
 - SS, D1, D2, D3, D4



OPERATOR CERTIFICATION

- Required Experience
 - Unrestricted
 - Experience: from 0 to 10 years
 - The exam cannot measure experience (what you can do)
 - Restricted
 - Certified at or above grade level but lacks the required experience



OPERATOR CERTIFICATION

- **Direct Responsible Charge (DRC)**

- All DRC operators must be certified at the level of the PWS.
- They make independent decisions which may affect the quantity or quality of the water.
- The supervisor's signature is required.
- If all DRC operators leave a PWS
 - DDW must be notified within 10 days
 - Obtain a new certified operator within 1 year



OPERATOR CERTIFICATION – REQUIREMENTS FOR UNRESTRICTED LICENSE

Grade Level	BS degree	AS degree	High School	Non-High School
DRC + Years	DRC/Total (Years)	DRC/Total (Years)	DRC/Total (Years)	DRC/Total (Years)
SS & 1	0/1	0/1	0/1	0/1
2	0/2	0/2	0/2	0/3
3	1/2	1/2	2/4	3/6
4	2/4	2/6	4/8	5/10

OPERATOR CERTIFICATION

- Operator Responsibilities
 - Ensure safe and adequate supply of water
 - Be current with monitoring & reporting requirements
 - Report to DDW unsatisfactory water quality and breakdowns in treatment
 - On call operators must be within 1 hour travel time
 - 24-hour PWS – Each shift must have an operator certified at the level of the PWS

- A certificate may be revoked:
 - For data falsification
 - For disregard of public health and safety
 - Cheating on an exam



OPERATOR CERTIFICATION

- Renewal
 - All certificates are renewable every 3 years (grandfather, operator, specialist)
 - Continuing Education Units (CEUs) are required for renewal. 1 CEU = 10 hours

2 CEUs = 20 hours

Small System

T1 & D1

T2 & D2

3 CEUs = 30 hours

T3 & D3

T4 & D4