Emergency Response, Operation & Maintenance, and Distribution System Sampling Plan

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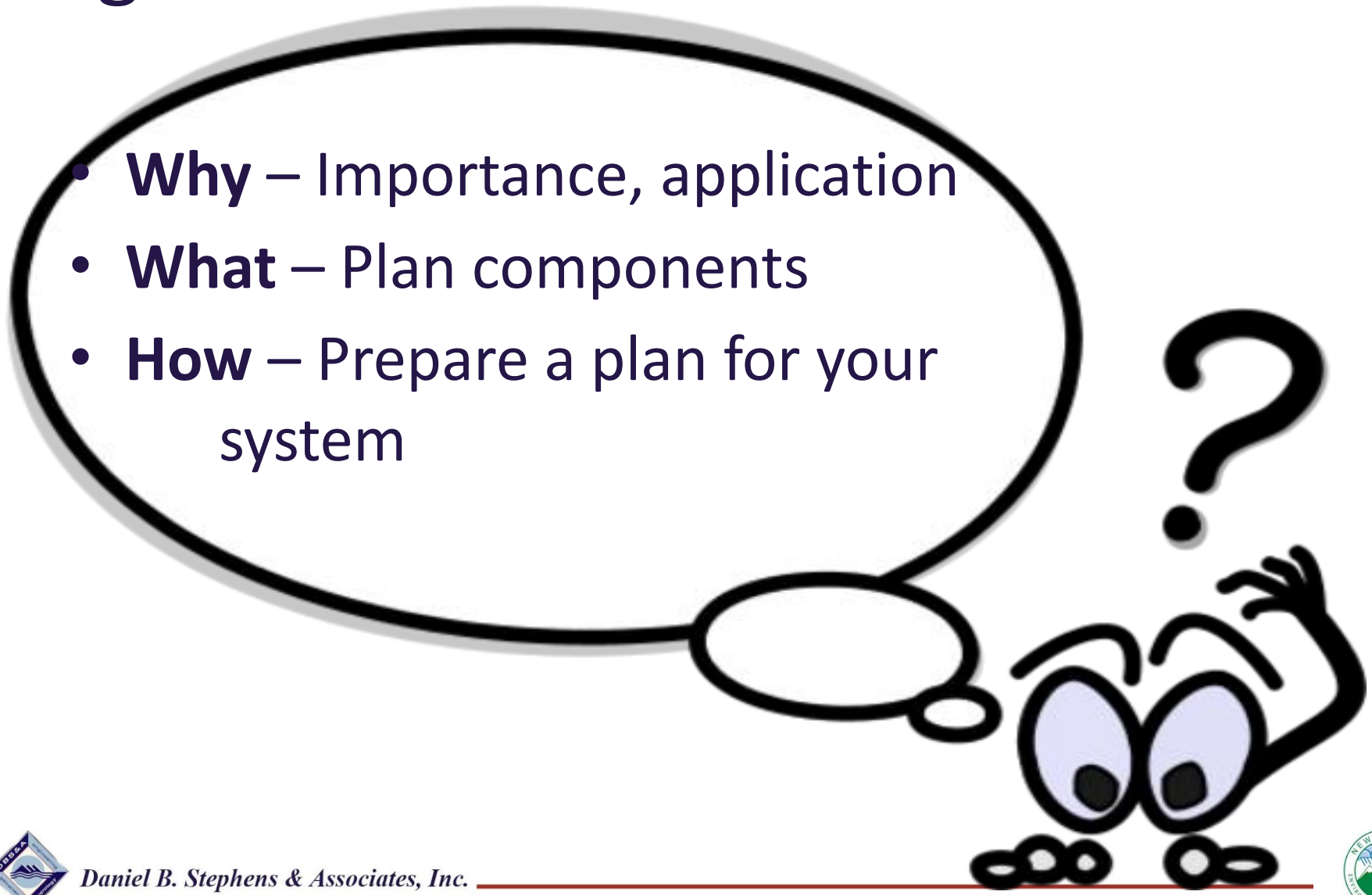
Agenda

- **Why** – Importance, application
- **What** – Plan components
- **How** – Prepare a plan for your system



Emergency Response Plan

Emergency Response Plan

- Required when applying for approval from NMED for a water system project
  - 20.7.10.200.A, 20.7.10.201.A NMAC
- Emergency notification requirements:
  - Groundwater:
    - 20.7.10.400.E NMAC, 40 CFR 141.403(a)(4)
  - Surface Water:
    - 20.7.10.400.E NMAC, 40 CFR 141.723(b), 403(a)(4)

Importance

- Protecting public health
- Convey to the State, funding agencies, and others that the system understands the importance of emergency response.

Value for your system?

- Identifies likely threats
- List of contacts
- Emergency event communication
- Emergency plans, actions, procedures
- Evaluates inventory
- Identification of critical/valuable customers
- Training

Template

- NMED Drinking Water Bureau
  - Applications and Forms
    - Emergency Response Plan

https://www.env.nm.gov/drinking_water/applications-and-forms/

Drinking Water Bureau

- Drinking Water Bureau Home
- About Us
- Announcements & Public notices
- Applications and Forms
- Assistance
- Frequently Asked Questions (FAQs)
- Operator Certification
- Private Well Owners
- Public Water System Information
- Regulations
- Sampling & Analysis
- Water System Modification, Design & Construction

Applications and Forms

Applications

Certification of Virus Inactivation by Chlorine

Hypochlorination Application Checklist

Application for Construction or Modification of Public Water Supply System

Application for Groundwater Rule 4 – Log Certification

Application for Potable Water Hauling Operation

Water Hauler Application Checklist

Forms

Consumer Confidence Report Certification

Disinfection By-Products Stage 2 Operational Evaluation (OEL)

Surface Water Treatment System Monthly Operating Report (MOR)

Plans

Public Water System Emergency Reponse Plan (instructions & plan template)

Public Water Systems Operation & Maintenance Plan (instructions & plan template)

Public Water Systems Distribution System Sampling Plan (instructions & plan template)

Source Water and Wellhead Protection Toolkit

Other Resources

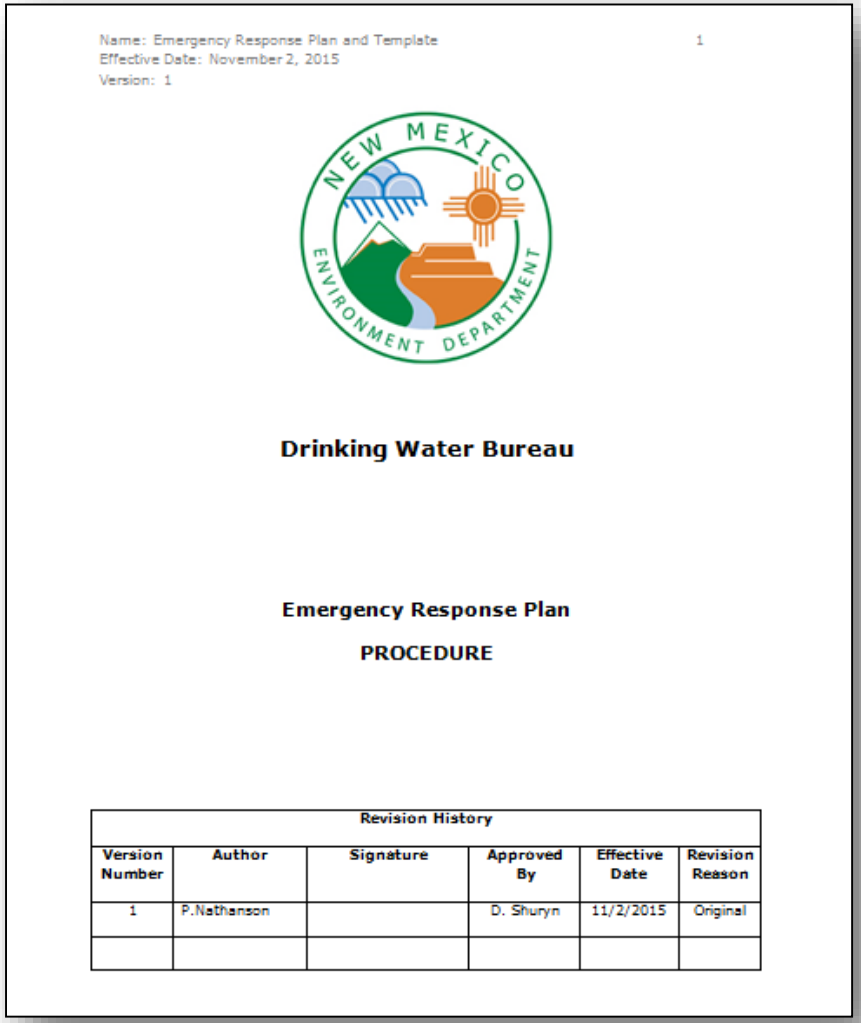
- Drinking Water Watch;
- https://dww.water.net.env.nm.gov/NMDWW/

- Tools & Resources Emergency Response & Security category; https://www.env.nm.gov/drinking_water/resources/

- EPA Water Utilities Response On-the-Go; https://www.epa.gov/waterutilityresponse/water-utility-response-go-mobile-application-and-website

What's in the template?

- Introduction, general information
- Guidance with examples
- Planning Template



Name: Emergency Response Plan and Template 1
Effective Date: November 2, 2015
Version: 1

Drinking Water Bureau

Emergency Response Plan

PROCEDURE

Revision History					
Version Number	Author	Signature	Approved By	Effective Date	Revision Reason
1	P.Nathanson		D. Shuryn	11/2/2015	Original

ERP Components

1. Emergency response mission and goals
   - Helps the system focus on the important aspects
   - Should include the obligation to protect public health, safety of customer and staff, and assets.
   - Outlines what needs to be accomplished in an emergency

Example

Section 1: Emergency Response Mission and Goals

Use the mission statement and goals to help focus emergency planning and response.

Emergency response mission and goals

Mission statement for emergency response	In an emergency, the mission of the NMDOT's Rattlesnake Draw water system is to protect the health of our customers by being prepared to respond immediately to a variety of events that may result in contamination of the water or disruption of water supply.
Goal 1	Be able to quickly identify an emergency and initiate timely and effective response action.
Goal 2	Be able to quickly notify local, state, and federal agencies to assist in the response.
Goal 3	Protect public health by being able to quickly determine if the water is not safe to drink or use and being able to immediately notify customers effectively of the situation and advise them of appropriate protective action.
Goal 4	To be able to quickly respond and repair damages to minimize system down time.

ERP Components

2. System information

- Information available for system personnel and external parties
- Information needed:
  - System name and ID
  - Address/location (directions if necessary)
  - Population served
  - Number of service connections
  - Owner's contact
  - Who's in charge?

Example

Section 2: System Information

Keep this basic information readily available for when you need it for emergency responders, repair people, and the news media.

System information

Public Water System identification number (PWSID #)	NM3590530		
System name and address	Rattlesnake Drawn Rest Area Interstate 40, exit 207, 87016		
Directions to the system	The rest area is located east of Moriarty, New Mexico, at exit 207 from I-40. There are rest areas on both the north and south sides of the interstate.		
Basic description and location of system facilities	The source is a well located approximately 1.5 miles east and 1.5 miles north of the rest area. A tank and booster system is located on the north side of I-40 near exit 208.		
Location/Town	Moriarty, NM		
Population served and service connections	People 1,000	Connections 2	
System owner (the owner should be listed as a person's name)	Victorya Reagan, EIT New Mexico Department of Transportation, District 5		
Name, title, and phone number of person responsible for maintaining and implementing the emergency plan	Name Richard E. Fernandez	Title Rest Area Facility Manager	Phone Cell: 505-469-7490

ERP Components

3. Chain of Command
   - To avoid confusion
   - Clearly defines lines of authority and responsibilities
   - Speeds up response time
   - Answers questions: Who to report to? Who's in charge? Who makes decisions? What's my responsibility?

Example

Section 3: Chain of Command – Lines of Authority

The first response step in any emergency is to inform the person at the top of this list, who is responsible for managing the emergency and making key decisions.

Chain of command – lines of authority

Name and title	Responsibilities during an emergency	Phone Number(s)
Paul Brasher, Acting District Engineer	Primary point of contact with ultimate decision making authority in an emergency, lead for communicating with regulatory agencies, the public and news media. All communications with external parties are to be approved by the District Engineer	505-995-7710 or 505-995-7712
Javier Martinez, Assistant District 5 Engineer-Maintenance	Responsible for committing resources to protect or correct deficiencies in the water system during or after an emergency.	505-995-7714 505-231-4364
Victorya Reagan, Civil Engineer	Responsible for oversight of the operator and facilities manager and for communicating emergencies to the Assistant and District Engineer	505-730-9516 cell 505-995-7933 office
Liie Hill, Daniel B. Stephens & Associates, Inc.	System certified operator, in charge of sampling, inspections, and maintenance, assessing facilities and providing recommendations to the Civil Engineer	505-822-9400
Scott Kragt, Facility Manager	In charge of day to day maintenance at the rest area facilities. Responsible for reporting conditions that might compromise the safety of the water supply to the Civil Engineer.	505-269-5772

ERP Components

4. Events that cause emergencies
   - Natural disaster
   - Human error
   - Vandalism
   - System neglect
   - Identify these events, and associated damage

Example

Section 4: Events that Cause Emergencies

The events listed below may cause water system emergencies. They are arranged from highest to lowest probable risk.

Events that cause emergencies

Type of event	Probability or risk (High-Med-Low)	Comments
Contamination of water supply	High	The source water is contaminated with nitrate and when treatment is interrupted, drinking water service must be suspended.
Construction Accidents	Medium	Damage to waterlines can cause shutdowns to the water supply. This system has many miles of pipe located off of the facility site.
Vandalism	Medium	The wells, tank, and booster station are located remotely from the rest areas and although secured by fencing could be subject to vandalism.
System Neglect	Medium	Deferred maintenance may result in equipment failure, disrupting water service.
Natural Disasters (Floods, Winds, Ice Storms, etc)	Low	Severe cold could cause pipes to freeze; winds can cause power outage, which would result in system shutdown

ERP Components

5. Severity of Emergencies

- Lists and defined levels of emergency
- Utilized when choosing response activities
- Examples:
  - Level 1: line break, small power outage
  - Level 2: main break, initial positive E. coli, drought
  - Level 3: confirmed E. coli, water shortage, vandalism
  - Level 4: Natural disasters
  - Level 5: nuclear fuel spill, terrorism

Example

Section 5: Severity of Emergencies

Decisions on severity should be collaborative among system personnel, but are ultimately made by the person in charge of the emergency. The information for making such a decision will accumulate over time, and may result in changes in the assessment of severity.

Communicate each assessment of severity immediately to all those dealing with the emergency. Make sure staff has cell phones or radios when they are in the field.

Level I – Normal (Routine) Emergency: These incidents are minor disruptions to the water system that affect 10% or less of the system and can usually be resolved within 24 hours. They occur when the system experiences a routine emergency, such as a line break or power outage. System personnel are able to handle the problem with minimal outside assistance. In this situation, it is not likely that public health will be immediately jeopardized. Although it is important to begin responding, system personnel should have no difficulty remaining calm and thoroughly working through the situation.

Description: The Rattlesnake Draw water system considers the following as Level I emergencies:

- Distribution line breaks.
- Short power outages.
- Minor mechanical problems in the pump-house or treatment building.
- Other minor situations where it is not likely that public health will be jeopardized.

The system has specific response activities identified for these types of emergencies, including proper sampling, disinfection, and pressure testing activities. System personnel are advised and are directed to work on the problem and are usually capable of resolving the problem within 24 hours. If it is determined that the problem will take longer than 24 hours to resolve and storage is likely to be drawn down below a safe operating level, the situation will be elevated to Level II.

ERP Components

6. Emergency Notification
   - Need to quickly notify a variety of parties
   - To do this successfully, you need:
     - Certain people assigned to be responsible for communication
     - Comprehensive call list
     - Procedures to quickly gather necessary information and pass it on
   - Phone, e-mail, media, local groups for door to door notifications

Example

Section 6: Emergency Notifications

Use these lists to notify important parties during an emergency.

Local notification list

Entity	Phone Numbers (Both Day and Night)
Moriarty Police Department	(505) 832-6060
NM State Police, District 5, Albuquerque	(505) 841-9256
Moriarty Fire Department/Medical First Responder	(505) 832-4301
Moriarty Urgent Care	(505) 832-4434
Presbyterian Hospital (Albuquerque)	(505)-291-2000
Hall Environmental - Analytical Lab (Albuquerque)	(505) 345-3975
Water System Operator – Liie Hill	(505) 822-9400
News Media Contact - KOB News Albuquerque	(505) 243-4411
Local Radio Station - X 88.7FM KXNM	(505) 886-0605

State Notification List

Entity	Phone Numbers (Both Day and Night)
State Police (District 5 Albuquerque)	(505) 841-9256
Drinking Water Bureau - John Pijawka, Compliance Officer	(575) 258-3272 (505) 476-5469 cell
New Mexico Scientific Laboratory Division	(505) 383-9000
Other	

Example

Contacting service and repair contractors

Who is Responsible:	The Civil Engineer is responsible for coordinating needed service or repairs.
Procedures:	1. Identify problem, specific equipment, and appropriate contractor(s). 2. Contact contractors and arrange for service. 3. The Facility Manager provides access to facilities for service personnel.

Procedures for discontinuing potable water service

Who is Responsible:	The District Engineer is responsible for deciding when potable water service should be discontinued.
Procedures:	1. Verify that water is not suitable for public consumption based on sampling and analysis, or reported treatment system failure. 2. Post notices at rest areas that water is non-potable and unsuitable for drinking. 3. Bag and tape or otherwise secure drinking fountains to prevent use. 4. Close valves to drinking fountains.

Notifying water system customers

Who is Responsible:	The District Engineer is ultimately responsible for making the decision to notify customers regarding a potential water shortage and the need for water use restrictions.
Procedures:	1. Verify problems. 2. Project Engineer consults with state drinking water staff regarding the problem. 3. Project Engineer with assistance from staff prepares signs 4. Water system operator continues to investigate problem and make repairs as necessary. 5. The water shortage notification will be posted by the Facility Manager on all restroom doors at both rest areas. The Facility Manager will continuously update the Project Engineer on the status of the shortage.

Alerting state drinking water officials, and local health officials

Who is Responsible:	The District Engineer is responsible for making the decision to alert state drinking water officials and local health officials.
Procedures:	1. The Project Engineer, on direction from the District Engineer, contacts the NMED Compliance Officer and local health officials with the nature of the problem.

ERP Components

7. Water Quality Sampling

- Contact DWB/issue health advisory if there's a reason to believe that water is contaminated
  - Sampling and waiting for results takes time
- Identify emergency sampling locations and parameters to sample
  - Specific to the emergency or potential contamination
  - Consider special sampling protocol/location/container/ preservation/labs available/turn around time/ value of the results
- Include RTCR Sampling Plan

Example

Section 7: Water Quality Sampling

If contamination is suspected, notify and work with the local health jurisdiction and NMED Drinking Water Bureau to help identify what testing should be done. This may help prevent illness or even death.

Water quality sampling

Sampling parameter	Do we have procedures? Yes/No	Basic steps to conduct sampling (sites, frequency, procedures, lab requirements, lab locations, contacts, etc.)
Coliform Bacteria	Yes	See Sampling Plan
Heterotrophic Plate Count (H PC)	No	Develop Procedures
Chlorine Residual	No	Develop Procedures
Chlorine Demand	No	Develop Procedures
Nitrate/Nitrite	Yes	Evaluate Procedures
Total Organic Carbon (TOC)	No	Develop Procedures
Total Halogenated Organic Carbon (TOX)	No	Develop Procedures
Cyanide	No	Develop Procedures

ERP Components

8. Effective Communication
   - Key element!
   - Be prepared to answer a lot of questions (have procedures to gather basic information)
   - Identify people who can answer questions
   - Identify and train a spokesperson to communicate to the media
   - Develop key messages
   - Develop communication protocol for field and office staff
   - DWB can help!

Example

Section 8: Effective Communication

Communication with customers, the news media, and the general public is a critical part of emergency response.

Designated public spokesperson and alternates

Designate a spokesperson (and alternates) for delivering messages to the news media and the public (see Section 6 for news media contacts in local notification list).

Spokesperson	Alternate 1	Alternate 2
Paul Brasher, District Engineer	Javier Martinez, Assistant District Engineer	Victorya Reagan, Civil Engineer

Key messages

Develop possible messages in advance and update them as the emergency develops:

- We are taking this incident seriously and doing everything we can to resolve it.
- Our primary concern is protecting our customers' health.
- Another important concern is keeping the system operational and preventing damage.
- What we know right now is:
- The information we have is incomplete. We will keep you informed as soon as we know more.
- We have contacted state and local officials to help us respond effectively.
- If you think you may be ill or need medical advice, contact a physician.
- We are sampling the water and doing tests to determine whether there is contamination.

ERP Components

9. The Vulnerability Assessment

- Required by EPA if population served >3,300 (terrorism)
- List of system components with vulnerability
- Vulnerability = weakness or deficiency that makes the system susceptible to damage or failure
- Four parts:
  - Identify and map system components
  - Evaluate the potential and effects of potential emergency
  - Define expectations and set goals
  - Identify improvements

Example

Section 9: The Vulnerability Assessment

This is an evaluation of each water system component to identify weaknesses or deficiencies that may make them susceptible to damage or failure during an emergency. It also assesses facilities for security enhancements that may guard against unauthorized entry, vandalism, or terrorism.

Facility vulnerability assessment and improvements identification

System component	Description and condition	Vulnerability	Improvements or mitigating actions	Security improvements
Source	One deep groundwater well (assumed to be 1,500 ft deep) supplies the system. A new concrete pad at the wellhead was recently installed. The condition of the pump and well are unknown. The wellhead is fenced for security.	There is only one supply well so there is no redundancy in supply.	Implement Source Water Protection program. Identify backup source of supply.	None.
Storage	One 8,000-gallon horizontal storage tank is located at a fenced site.	The site is highly visible from the Interstate, and is fenced so is not vulnerable.	None	None
Treatment	Water softener, reverse osmosis and disinfection are housed in a block building which is locked.	Treatment equipment is complicated, and requires special knowledge to operate.	Provide training to operator and facility manager.	None.
Pump house and pumping facilities	A booster pump pumps water from the tank to the rest areas. The pump is located inside a locked shed adjacent to the tank.	No redundancy in pumping capacity is provided. Purchase spare pump, or install backup in line pump.	Provide redundant pump.	None.
Computer and telemetry system	Radio telemetry provide control of well based on tank level.	None	None	None
Other considerations	Pipeline sizes and exact locations are unknown. Valve locations are unknown.	The piping, especially off site piping, may break and the utility will not have spare parts on hand or ability to shut down shorter segments of pipe.	Locate piping. Provide isolation valves	None

ERP Components

10. Response actions for specific events
    - Plan for each type of emergency event:
    - Identify type and severity of the event
    - Save lives!
    - Take action to reduce injuries and system damage
    - Make repairs
    - Return to system normal operations

Example

B. Transmission or distribution main break

Assessment	Approximately 3 miles of pipe are located off site. Piping is of unknown size and condition. Pipe is reportedly plastic.
Immediate actions	Conduct potholing to determine location and condition of pipe.
Notifications	In the event of a main break that will result in a water service interruption of more than two hours, notices will be posted at rest areas and rest areas will be closed.
Follow-up actions	Conduct field investigation of piping.

D. Disinfection equipment failure

Assessment	Liquid sodium hypochlorite solution is provided for disinfection. There is no regulatory requirement to disinfect groundwater; however, disinfection is a best practice for public water systems.
Immediate actions	The only mechanical equipment associated with disinfection is a dosing pump, which must be replaced on failure.
Notifications	None required.
Follow-up actions	Routine coliform sampling is conducted monthly.

E. Treatment equipment

Assessment	Treatment is required at Rattlesnake Draw for nitrates exceeding the MCL. At the time of this initial plan, the treatment was not functional and water fountains have been shut off at the rest area.
Immediate actions	Repair or replace treatment equipment.
Notifications	Public notice is posted at the rest area that the MCL for nitrates has been exceeded.
Follow-up actions	Repair or replace treatment equipment and conduct water quality sampling and analysis for nitrates.

ERP Components

11. Alternative water sources

- What's your plan in case of contamination or disruption of supply?
- Define emergency sources:
  - Nearby system?
  - Bottled water
  - Tanker trucks

Example

Section 11: Alternative Water Sources

Interconnect to adjacent water supply system

Water systems within one-quarter mile of our system	Feasibility of connecting
None	NA

Alternate source(s) of water

Alternative sources	Name	Phone	Availability	Is the water safe for drinking?
None known				

ERP Components

12. Curtailing water use

- Water use reduction may be necessary. How to achieve that?
  - Develop methods:
    - Watering restrictions
    - Car washing
    - Swimming pools/hot tubs
  - Develop curtailment message
- Formally adopt, if possible

Example

Section 12: Curtailing Water Usage

Curtailing water use

Water curtailment measures	Actions
Reduce or cease irrigation	Stop irrigating.

ERP Components

13. Returning to normal operation
    - Answer the following questions:
    - Is the system repaired?
    - Is the system inspected for safety?
    - Is the system flushed, disinfected, pressure tested?
    - Can the system meet demand?
    - Is the water being tested? Are the tests good?
    - What do the regulations say? (DWB, EPA)
    - Has the public been properly notified?

Example

Section 13: Returning to Normal Operations

Returning to Normal Operation

Action	Description
Inspect, flush, and disinfect the system	Water system operator and support staff inspect all system facilities, ensure all water quality tests have been done and the system has been flushed and disinfected if necessary. Water system operator makes a report to the water system manager. Civil Engineer makes decision on current condition of system.
Verification of water quality	Civil Engineer verifies water quality sampling results.
Coordinate with NMED Drinking Water Bureau	Civil Engineer coordinates with NMED Drinking Water Bureau on system condition and water quality results.
Notify customers	Civil Engineer meets with water system operator and communications lead to write notice to customers. Water system manager directs communications lead to distribute public notice.
Write emergency report	Civil Engineer writes report and sends a copy to NMED.

ERP Components

14. Training and rehearsals
    - Plan has no use sitting in someone's drawer
    - Training is essential
    - Identify personnel training needs
    - What needs to be practiced beforehand?
        - First aid
        - Communication
        - Isolating parts of the system
        - Inspections
        - What to look for in a vandalism/terrorism case

ERP Components

15. Plan Approval

- Responsible parties should review, approve, and sign the plan
  - Manager
  - Owner
  - Board
  - Commissioners
  - Council members

- This makes the plan official and in effect

Common Development Issues

Common Development Issues & Solutions

General Information
Section 1: Emergency Response Mission & Goals
Section 2: System Information
Section 3: Chain of Command – Lines of Authority
Section 4: Events that Cause Emergencies
Section 5: Severity of Emergencies
Section 6: Emergency Notification
Section 8: Effective Communication
Section 11: Alternative Water Sources
Section 12: Curtailing Water Use

Technical Sections
Section 7: Water Quality Sampling
Section 9: The Vulnerability Assessment
Section 10: Response Actions for Specific Events
Section 13: Returning to Normal Operations
Section 14: Training and Rehearsals

Common Development Issues & Solutions

- The Developer sometimes attempts to populate everything with content without logically processing how template items relate to their Utility, or just leaves the template sections blank.

Section 9: The Vulnerability Assessment

System Component	Description and Condition	Vulnerability	Improvements or mitigations	Security improvements
Source	Well	Declining Water Table	Emergency Well	Physical Barrier, Inspect Daily
Storage	Storage Tank	Thermal Stratification, Short Circuiting	Mixer	Physical Barrier, Inspect Daily
Treatment	Peristaltic Pump	Line and Injector Clogs, Power Outage	Regular PM	Physical Barrier, Inspect Daily
Pump House	Building	Pest infestation	Housekeeping	Physical Barrier, Inspect Daily
Computer and Telemetry system	RTU	Wet Connections	Regular PM	Physical Barrier, Inspect Daily

Common Development Issues & Solutions

Alternative sources	Names	Phone	Availability	Is the water Safe for drinking?
Walmart 7555 N Mesa St, El Paso, TX 79912	Bottled Water (various brands)	(915) 833-1335	• Up to 1,000-gal (1-gal jugs) • Available within 24-hrs, every 2-4 days	Yes
Tanker trucks in the area available to deliver bulk water	City of Sunland Park Fire Department 1030 McNutt Rd Sunland Park, NM 88063	(575) 589-2302	• 5,000 gal • Available in > 6-hrs, indefinitely	No, Fire Trucks are not approved water haulers

Section 12: Curtailing Water Usage

- Consider advising residents to ensure all spigots and faucets are closed.
- If the interim water supply is small, consider advising residents not to fill their bathtubs.
- Consider advising residents water is only for hygienic needs.
- Consider advising residents to only flush for bowel movements.
- Consider advising residents to wet themselves during showering, shut off the water while lathering, and utilize the water to rinse.
- Consider advising residents to wash garments only as necessary.
- Ask the system to consider shutting off water to vacant homes.
- Use disposable cutlery.
- Use waterless hand sanitizing liquid.
- Save any gray water you use for toilet flushing of solids

Common Development Issues & Solutions

- Sections 4, 5 and 10 are interrelated but the Developer does not realize they need to complement each other to create a functional plan
  - Section 4: Probability of an Event
  - Section 5: Severity Scale
  - Section 10: Response Actions

Section 4: Probability of an Event

Type of event	Probability or risk (High-Med-Low)	Comments
Transmission or Line Breaks	Medium (4-10/ yr)	• The aspects that <u>are</u> considered a factor are as follows: age of lines, the materials used, local geology, freeze/ thaw interaction. • The aspects that <u>are not</u> considered a factor are as follows: water hammer, altitude, burial depth
Power Outages	Low (1-2/ yr)	• The aspects that <u>are</u> considered a factor are as follows: accidents and operator neglect with the power provider, tree falls.
Disinfection Equipment Failure	Low (clogs ~6/ yr)	• The aspects that <u>are</u> considered a factor are as follows: Line and injector clogs, pump failure, hose may come loose on the chlorinator.
Pump Failure	Low (1/ 2-3 yrs)	• The aspects that <u>are</u> considered a factor are as follows: pumps have generally lasted 4 to 8 years. Water hardness may be a factor.

Section 5: Severity of Emergencies

Severity Level	Service & Public Health Risk	Percent of System Affected	Time Lapse of Interruption	Example
1	Minor	≤ 10	≤ 24-hrs	Valve Damage
2	Moderate	≤ 50	≤ 72-hrs	Chemical Pump Failure
3	Major	≥ 50	≥ 72-hrs	Well Outage
4	Severe	≥ 50	≥ 1-wk	Drought
5	Catastrophic	Catastrophic	Catastrophic	Flood

G. Microbial (coliform, E. coli) Contamination

Assessment	Low

Immediate actions	• Turn off all connections to houses, and notify customers while turning off service
	  ○ **Ensure customers have not turned service back on**
	• **super chlorinate (10 ppm)**
	• **flush (2.5 fps)**
	  ○ Take residuals to ensure the affected portion of distribution water quality is back in compliance.
	• Preferably that a BacT sample (labeled accordingly as a special sample) to be tested at **CERTIFIED LAB** in CITY **(refer to OMP, Appendix J)**.
	  ○ Wait for result negative microbial results before returning to service.
	• **Restore service to all customers**
	  ○ Ensure service connection meter is not running indicating an open valve within the property
	  ▪ Preferably return service when the customer is present in this situation.
	• **Perform Level I/II Assessment.**
	  ○ **https://www.env.nm.gov/dwb/RTCR.htm**

Notifications	• **Notify customers while shutting off service connections** • **Notify system compliance officer** • Notify customer when service is returned
Follow-up actions	• Monitor water quality assess issue what caused problem.

Section 10: Follow-up Actions

- What about maintenance work orders and changing on-hand inventory tracking for asset management?
- Is there notification or follow-on actions for other agencies and/ or companies?
- Should you evaluate the frequency of this occurrence to determine if the O&M plan is being followed and/or if changes are needed in the system's O&M process?
- Does this indicate another vulnerability that should be included Section 9?
- Do employee's need remedial training?
- Are Senior Water Rights in jeopardy?
- Optimize blending of lower quality water?
- Evaluate the rate structure?

Section 10: Follow-up Actions (cont'd)

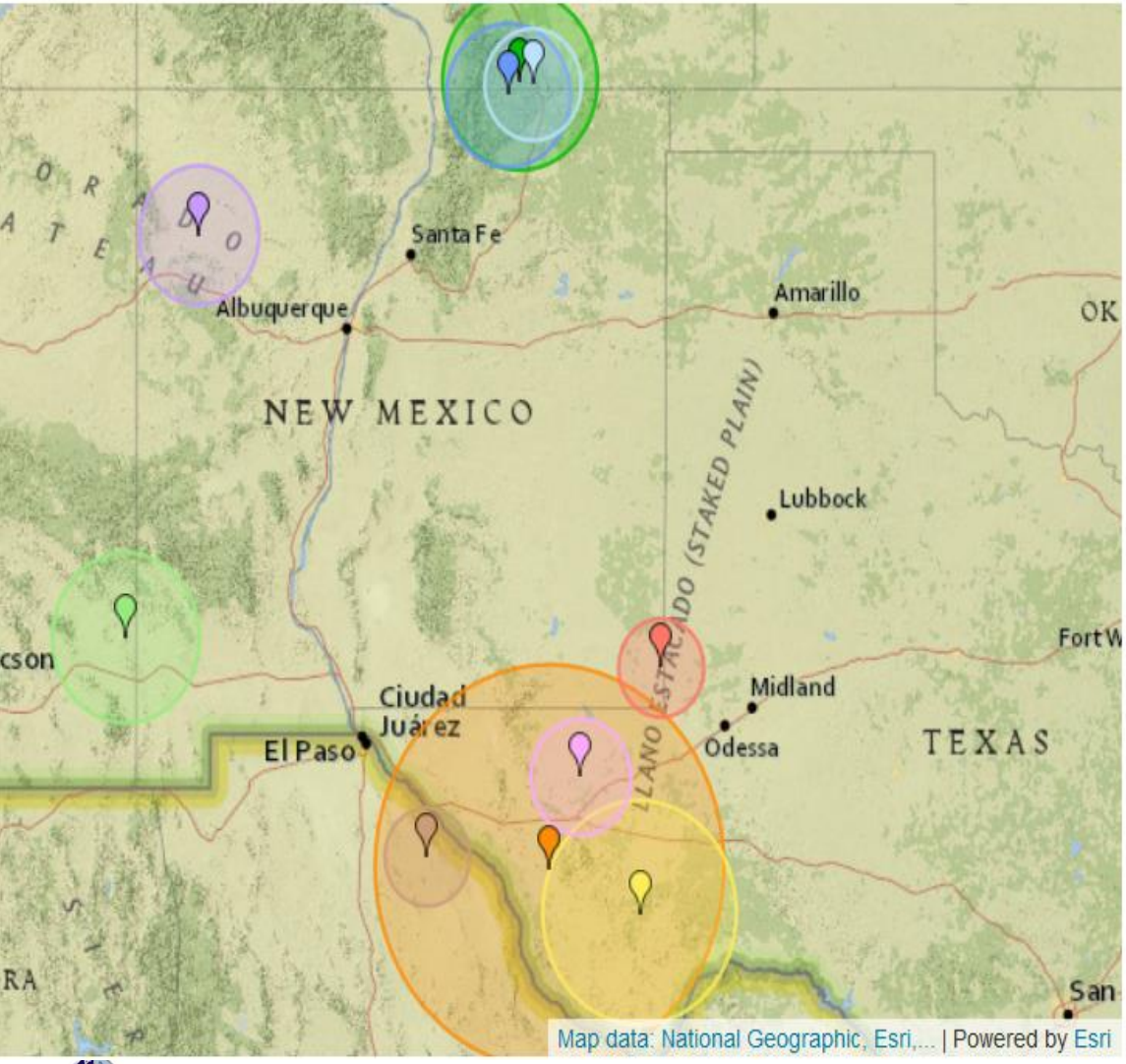
- Long-term infrastructure plan, PER, etc.?
- Water conservation program?
- Evaluating the structural integrity of surface structures before subsurface structures?
- Damage to distribution lines due to shifting ground and soil liquefaction, resulting in potential water loss, water service interruptions, low pressure, contamination and sink holes and/or large pools of water throughout the service area?
- Incur liability.
- Evaluate security programs.
- Evaluate user access.
- Is the event a symptom of a greater problem?

Common Development Issues & Solutions

- Developer frequently dismisses emergency events as never being likely

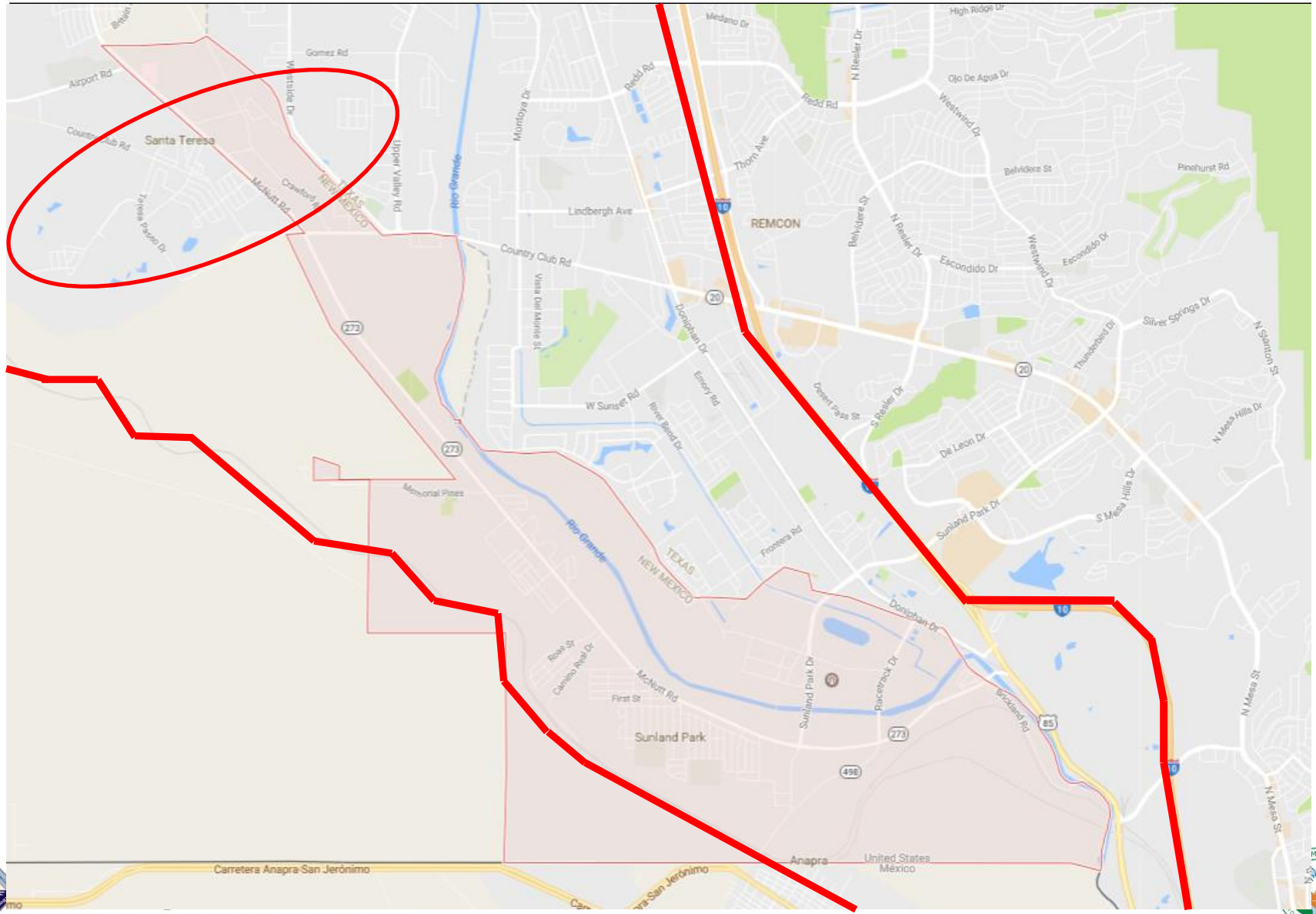
- Developer does not consider all the aspects associated with an emergency

Common Development Issues & Solutions



- 86 years ago 6.5 magnitude, 10 km depth
  Fort Davis, Texas, United States
- 22 years ago 5.7 magnitude, 17 km depth
  Alpine, Texas, United States
- 3 years ago 5.3 magnitude, 6 km depth
  Lordsburg, New Mexico, United States
- 5 years ago 5.3 magnitude, 4 km depth
  Trinidad, Colorado, United States
- 12 years ago 5.0 magnitude, 5 km depth
  Raton, New Mexico, United States
- 41 years ago 5.0 magnitude, 25 km depth
  Crownpoint, New Mexico, United States
- 42 years ago 4.8 magnitude, 5 km depth
  Pecos, Texas, United States
- 5 years ago 4.7 magnitude, 5 km depth
  Trinidad, Colorado, United States
- 6 years ago 4.6 magnitude, 10 km depth
  Sierra Blanca, Texas, United States
- 25 years ago 4.6 magnitude, 5 km depth
  Eunice, New Mexico, United States

Common Development Issues & Solutions



Common Development Issues & Solutions

Common Development Issues & Solutions

- General Factors Not Realized by Utility When Responding to an Emergency
  - Record Keeping
    - Financial and Legal Accountability
  - Priority Customers
    - Schools, Hospitals, Nursing Homes, Daycares
  - MOU's, MOA's, NM WARN, Regionalization of Resources

Operations and Maintenance Plan

Operation & Maintenance Plan

- Required when applying for approval from NMED for a water system project
  - 20.7.10.200.A, 20.7.10.201.A NMAC
- Helps the system define organizational structure
- Describes the system and its components
- Identifies SOPs, maintenance and sampling
- Defines specs for new installations and repairs
- Lists suppliers and contractors
- Schedules maintenance activities and reports
- Compiles system component O&M manuals

Template

- NMED Drinking Water Bureau
  - Applications and Forms
    - Operation & Maintenance Plan

https://www.env.nm.gov/drinking_water/applications-and-forms/

Drinking Water Bureau

- Drinking Water Bureau Home
- About Us
- Announcements & Public notices
- Applications and Forms
- Assistance
- Frequently Asked Questions (FAQs)
- Operator Certification
- Private Well Owners
- Public Water System Information
- Regulations
- Sampling & Analysis
- Water System Modification, Design & Construction

Applications and Forms

Applications

Certification of Virus Inactivation by Chlorine

Hypochlorination Application Checklist

Application for Construction or Modification of Public Water Supply System

Application for Groundwater Rule 4 – Log Certification

Application for Potable Water Hauling Operation

Water Hauler Application Checklist

Forms

Consumer Confidence Report Certification

Disinfection By-Products Stage 2 Operational Evaluation (OEL)

Surface Water Treatment System Monthly Operating Report (MOR)

Plans

Public Water System Emergency Reponse Plan (instructions & plan template)

Public Water Systems Operation & Maintenance Plan (instructions & plan template)

Public Water Systems Distribution System Sampling Plan (instructions & plan template)

Source Water and Wellhead Protection Toolkit

OMP Components

1. System Ownership and Designation
   - Name and PWS #
   - What type of system is it?
   - What's the water source?

OMP Components

2. Introduction and Overview

- State the goal of your system ("to serve the public with safe potable water, maintain the system")
- State the goal of OMP
- Training schedule and continuing education
- When is plan updated?

OMP Components

3. System organizational structure and contacts
   - System organizational type
   - Description of governing body (board, commissioners, etc.)
   - Contact information of all decision-makers

OMP Components

4. Regulatory Agency and Regulations

- Compliance officer contact

Check with Joe Martinez	Northern Region Compliance Supervisor	Santa Fe	505-476-8635
Brandi Garcia	Southern Region Compliance Supervisor	Las Cruces	575-915-1113

- List of resources:
  - From the template
  - Local resources

OMP Components

5. General system description
   - Background
   - Water Sources
   - Distribution system
   - Treatment/disinfection
   - Storage
   - Include maps

OMP Components

6. System operation and control
   - Start-up and shutdown procedures
   - Emergency procedures
   - Troubleshooting
   - Operation and Control (SCADA)
   - Include all system components
   - List of daily, weekly, monthly, annual tasks (table)
   - Create logs to record operator activities

OMP Components

7. Testing, recordkeeping, and recording
   - Reference distribution system sampling plan (DSSP)
   - Any other sampling?
   - List of records kept; where they are found?
     - Sanitary survey item
       - 5 yrs micro, 10 yrs chem, 12 yrs lead/copper

OMP Components

8. Maintenance
   - Table for preventative maintenance tasks based on manufacturer's recommendations and operator experience
   - List of contractors
   - Repair/service protocol, NSF specs

Example

Table 2. Preventive Maintenance Schedule

Well House	
Daily	Log production Check appurtenances - pressure gage, flow meter, hydro tank, for leaks and proper operation
Weekly	General housekeeping Check the particle trap filter and clean if necessary
Quarterly	Check electrical wiring and communication with tank
Wellhead	
Weekly	Check casing cover Check vent screen for holes and debris General housekeeping of pad
Tank	
Daily	Check level in tank
Weekly	Inspect inside of tank Clean floats as needed
Monthly	Check hatches, vent, and overflows screens for holes and debris Check tank exterior for corrosion and/or coating failures
Booster Pump House	
Daily	Log volume pumped Check appurtenances - pressure gage, flow meter, hydro tank, for leaks and proper operation
Weekly	General housekeeping
Quarterly	Check electrical wiring and communication with well and tank
Treatment Building	
Daily	Check sodium hypochlorite dosing pump operation Check sodium hypochlorite liquid level Check holding tank levels Check that booster pumps are operating Check levels at salt tank and add salt if necessary Log volume pumped to treatment and to rest areas Log RO operating data: pressure before treatment, pressure before RO, rejection rate, flows

OMP Components

9. Spare parts, supplies, chemicals

- List of spare parts with quantities

Table 3. Spare Parts and Supplies

Chemicals
Liquid sodium hypochlorite, 30-day supply Regeneration salt, 100 lbs (2 regenerations)
Treatment System – Softener and Reverse Osmosis
Trap filters: 50-100 microns, 1 spare 5 microns, 1 spare
Distribution System
20 feet of 2-inch PVC pipe 20 feet of 3-inch PVC pipe 40 feet of 4-inch PVC pipe Various 2-, 3-, and 4-inch pipe fittings Two ball valves – 2-inch pipe
Supplies
Chlorine residual test kit Pressure gages, 0 to 100 psi

OMP Components

10. Safety
    - Table to include PPE required for each task
    - Safety SOPs
    - Reference to OSHA regulations

OMP Components

11. Emergency preparedness and response
    - Community public water systems – ERP
    - NM WARN

OMP Components

12. Source Water/Wellhead Protection Plan

- Indicate if you have one, currency, appendix

Appendices

- Job duties
- Operator certificates and contracts
- NMED regulations
- Site map
- System control logs
- OSE documents
- Water purchase/sales agreements
- Equipment data and drawings
- Manufacturer's O&M manuals
- DSSP
- Testing, recordkeeping, and recording templates
- Maintenance tracking forms
- List of manufacturers, reps, suppliers
- Safety/OSHA regulations
- ERP
- Source Water Protection Plan

Common Development Issues & Solutions

- The Developer lacks the technical and managerial knowledge of the water system which the OMP is being developed for to create a functional document

Common Development Issues & Solutions

General Information
Table of contents
Section 1: System Ownership and Designations
Section 2: Introduction and Overview
Section 3: System Organizational Structure and Contacts
Section 4: Regulatory Agency(s) and Regulation
Section 10: Safety
Appendices

Technical Sections
Section 5: General System Description
Section 6: System Operation and Control
Section 7: testing, recordkeeping and reporting
Section 8: Maintenance
Section 9: Spare Parts, Supplies and Chemicals

Common Development Issues & Solutions

- The Developer does not know how to populate Section 10 – Safety.
  - Developer simply states the Utility follows all OSHA regulations
  - Developer does not reference safety consideration for specific tasks
    - Chlorine – PPE, SDS's, etc
    - Tank Inspection – Confined Area
  - Developer leaves the Section blank

Common Development Issues & Solutions

- Developer does not realize that the completeness checklist for the OMP is in the instructions

- Developer misunderstands the section examples and either misrepresents their system by building on them or leaves them in the plan untouched

Common Development Issues & Solutions

Name: OMP Instructions_Checklist_Template 2
Effective Date: October 1, 2015
Version: 1

Drinking Water System Operation and Maintenance Plan
Minimum Essential Criteria Review Checklist

The following checklist is provided by the NMED-DWB as a guide for water systems developing their operation and maintenance plan (OMP). The DWB will also use the checklist when providing technical assistance and when reviewing these plans for compliance. Please note that all items may not apply to all water systems, some items may be included as standard operating procedures (SOPs), as appendices or in multiple chapters (provide once and reference back to original location).

This plan is required by the DWB so that systems can convey to the Bureau that they are aware of every component of their system, how each one works individually and together to provide multi-barrier protection against contamination, and that the system has the capacity to operate their system. Missing or inadequate OMPs will be noted as a significant deficiency during a sanitary survey and the DWB Compliance Officer will require the water system to address this deficiency within a prescribed timeframe. Similarly, systems applying for certain public funds for water system improvements will be assessed by their capacity to operate their system; the OMP is one of those technical capacity criteria.

Checklist Items

- Title page with water system name, PWS #, contact info, preparer's name & date prepared, revisions tracking
- Table of Contents
- Section 1 - System Ownership and Designations
  - Ownership name(s) & contact info
  - System type based on federal definitions
  - System source(s) based on federal definitions
  - Contact list; governing board, admin, operations/maintenance
- Section 2 - Introduction and Overview
  - Purpose of O&M Plan
    - System mission
  - Plan contents overview
  - Review frequency and updates
  - Use as training tool for new hires
- Section 3 – System Organizational Structure and Contacts, including ownership, governance & operations
  - Personnel list with job title and summary of duties & responsibilities
    - Training/continuing education requirements
  - Reference Appendix A for job descriptions
  - Reference Appendix B for all operator and other certificates/licenses
    - Include contract operator contract(s) in Appendix B if operator not an employee of system

Common Development Issues & Solutions

- Reference Appendix F for well permit(s)/log(s)/water rights from OSE
- Transmission
- Treatment
- Disinfection
- Storage
  - Water age determination SOP
  - Corrosion control
  - Inspection, cleaning & repair protocols/SOPs
- Pressure tanks
- Pump stations
- Distribution system – pipe, valves, hydrants, meters
  - Standard plans and specifications for new installations, expansions
  - New service connection SOP
  - Specialty valves such as PRV, altitude
  - Flushing
  - Valve exercise program
  - Cross-connection control
    - Customers with private wells
- Fire protection
  - Backflow/back siphonage protection
- SCADA
- Back-up power
- Description of any water purchase or sales agreements
  - Reference Appendix G for contracts
- Reference Appendix H for equipment technical data, specifications, as-builts, other drawings
- Reference Appendix I for manufacturer's O&M manuals

EXAMPLE:
Operation of the <water system> is provided by <name(s)> who is/are currently licensed by the NMED-UOCP as <levels>.

<operator name(s)> operational responsibilities and procedures are as follows:

Table 1 Distribution System Routine Operational Tasks
(Adapted from EPA 816-F-06-038, September 2006)

Frequency	Task	Benefits
Continuously	Maintain the operating pressure range of distribution system	❖ Reduces the risk of backflow contamination. ❖ Helps your system provide better service to customers. ❖ Reduces damage to infrastructure due to excess pressure. ❖ Provides adequate fire flow.
Daily	Track unaccounted for water	❖ Can reduce pumping and treatment costs. ❖ Helps identify leaks, breaks, stolen water, and inaccurate meters.
Daily	Inspect storage tanks	❖ Detects vandalism. ❖ Ensures that access hatches are locked.
Monthly	Test for presence of excess biofilms	❖ Indicates a presence of inadequate chlorine residual, possible high disinfection byproduct levels, and water stagnation.
Monthly	Monitor water quality (e.g., pH, temperature)	❖ Provides information on potential contamination of raw and finished water. ❖ Helps determine effectiveness of treatment. ❖ Helps assure the compatibility of the water with the materials.

Common Development Issues & Solutions

- Developer does not know how to develop Sections 6 & 8 (Operator Sections) due to formatting, technological literacy or lack of water system knowledge

Common Development Issues & Solutions

- Developer has difficulty differentiating between Water System tasks Section 6 and 8 tasks:
  - Operation & Control Tasks (Section 6)
  - Maintenance Tasks (Section 8)

Potential Operations & Control Tasks	
Complete Security Checks	Continuously
Check Chemical Supply Levels and Record Usage	Daily
Record Water Levels in Storage Tanks	Daily
Check and Record Water Levels in Pressure Tanks	Daily
Inspect Chemical Feed Pumps for Proper Operation	Daily
Check and Record Chlorine Residuals at Entry Point	Daily
Record Well Run Time and Pump Cycle Starts	Daily
Check Water Meter Readings and Record Water Production.	Daily
Record other daily chemical Solution Usage	Daily
Check and Record Chlorine Residuals in Distribution	Daily to Weekly
Inspect Booster Pump Stations	Daily to Weekly
Check Fluoride Concentration in Distribution	Daily to Weekly
Check Instrumentation for Proper Input/ Output	Daily to Weekly
Check and Record Fluoride Concentration in the Distribution System	Daily to Weekly
Check and Record Static and Pumping Levels of Each Well	Monthly
Begin Safety Equipment Repair Log Card	Monthly

Potential Maintenance Tasks	
Investigate Customer Complaints	As Needed
Maintain a Log of Water Line Repairs	As needed
Record Pumping Rate for each Well or Source Water Pump	Daily
Inspect Heater Operation	Daily to Weekly
Clean Pump House and Grounds	Weekly to Monthly
Ensure Fire Hydrants Are Accessible	Weekly to Monthly
Inspect Storage Tanks	Weekly to Monthly
Clean Storage Tank Grounds	Weekly to Monthly
Operate all Valves Inside the Treatment Plant and Pump House	Monthly
Inspect, Clean, and Repair Control Panels in Pump House and Treatment Plant	Monthly
Calibrate Chemical Feed Pumps after Overhaul	Every 3-Months
Inspect Testing Equipment	Every 3-Months
Inspect and Clean Chemical Feed Lines and Solution Tanks	Every 3-Months
Valve Exercising Program	Annual Rotation of Distribution
Flush the Distribution System and exercise/ Check Fire Hydrant Valves	Annual Rotation of Distribution
Prepare for Season Operation Differences	Annually

Common Development Issues & Solutions

- Developer thinks that it is mandatory to incorporate entire large documents such as:
  - Drinking Water Regulations (Appendix C)
  - Manufacturer's O&M Manuals (Appendix I)
  - NMED-DWB DSSP (Appendix K)
  - Emergency Response Plan (Appendix O)
  - Source Water/ Wellhead Protection Plan (Appendix P)

Common Development Issues & Solutions

- There is some redundancy within all of these plans
  - Facilitates each plan's individual functionality
  - Material from one plan may be used in another plan when developing these plans
  - Facilitates each plan's association with the others and helps to demonstrated the interconnectivity of each plan's purpose to real-world operations
  - Intended to bridge the knowing-doing gap

Interchangeable Material When Developing Plans

OMP	ERP
Section 2: Introduction and Overview	Section 1: Emergency Response Mission & Goals
Section 2: System Information	Section 2: System Information
Section 5: General System Description	
Section 7: testing, recordkeeping and reporting	Section 7: Water Quality Sampling
DSSP (OMP, Appendix J)	
Section 1: System Ownership and Designations	Section 3: Chain of Command - Lines of Authority
Section 3: System Organizational Structure and Contacts	

Interrelated Material When Developing Plans

OMP
Section 9: Spare Parts, Supplies and Chemicals
Section 10: Safety

ERP
Section 10: Response Actions for Specific Events

OMP
Section 6: System Operation and Control
Section 7: testing, recordkeeping and reporting

ERP
Section 13: Returning to Normal Operations
Section 14: Training and Rehearsals

OMP
Section 4: Regulatory Agency(s) and Regulation
DSSP (OMP, Appendix J)

ERP
Section 6: Emergency Notification
Section 8: Effective Communication
Section 12: Curtailing Water Use
Section 11: Alternative Water Sources

OMP
Section 8: Maintenance
Section 9: Spare Parts, Supplies and Chemicals

ERP
Section 9: The Vulnerability Assessment
Section 4: Events that Cause Emergencies

Useful links

- Drinking Water Watch

https://dww.water.net.env.nm.gov/NMDWW/

- SEP Database

https://sep.net.env.nm.gov/sep/login-form

- New Mexico Office of the State Engineer

www.ose.state.nm.us

Distribution System Sampling Plan

Template

- NMED Drinking Water Bureau
  - Applications and Forms
    - Distribution System Sampling Plan

https://www.env.nm.gov/drinking_water/applications-and-forms/

Drinking Water Bureau

Applications and Forms

Applications

Certification of Virus Inactivation by Chlorine

Hypochlorination Application Checklist

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Application for Groundwater Rule 4 – Log Certification

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Surface Water Treatment System Monthly Operating Report (MOR)

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Public Water System Emergency Reponse Plan (instructions & plan template)

Public Water Systems Operation & Maintenance Plan (instructions & plan template)

Public Water Systems Distribution System Sampling Plan (instructions & plan template)

Source Water and Wellhead Protection Toolkit

Distribution System Sampling Plan

- Required by DWB
- Has to be approved by DWB
- Uses an NMED Template
- Has to be specific!
- An appendix to OMP

DSSP Outline

- Written description of your system
- MAPS!
  - general layout
  - system components
  - sampling sites
- Written description of each sampling site
- Where to take the sample?
- Review and approval by DWB

It's a living document

- DSSP needs to be updated when:
  - regulations change
  - population changes (puts your system to a different bracket)
  - water source changes
  - infrastructure changes (incl pressure zones, extended lines, storage, treatment)

Drinking Water Watch

New Mexico Environment Department	UOCP Operator Lookup	Drinking W
County Map of NM	Water System Search	

Water System Facilities	Violations Enforcement Actions	TCR Sample Results GWR Sample Results	TTHM HAA
Sample Points	Assistance Actions	Recent Positive TCR Results	PBCU Summ
Sample Schedules / FANLs / Plans	Compliance Schedules	Other Chemical Results	Chlorine Sum
Site Visits Milestones	TOC/Alkalinity Results	Chemical Results by: Name Code	Turbidity Sur
Operators All POC	LRAA (TTHM/HAA5)	Recent Non-TCR Sample Results	TCR Sample

Water System Detail Information

Water System No.:	NM3590530	Federal Type:	
Water System Name:	RATTLESNAKE DRAW REST AREA	Federal Source:	
Principal County Served:	TORRANCE	System Status:	
Principal City Served:	CLINES CORNERS	Activity Date:	
Federal Population:	1000	NDPDES Permit No.	

Water System Facilities

Facility ID No.	Facility Name	Type
90530000	DIST	DS
90530003	TREATMENT PLANT #1	TP
90530004	WELL #3	WL
90530005	STORAGE TANK #1	ST
90530010	TREATMENT PLANT #2	TP
90530001	WELL #1	WL
90530002	WELL #2	WL

Sample Point ID

Sample Points		
Sample Point ID	**Location Description**	**Type**
CSAF	COMPLIANCE SAFE	DS
CUNS	COMPLIANCE UNSAFE	DS
HAA5-IND		DS
RDNS	REPEAT DOWNSTREAM	DS
ROLOC	REPEAT OTHER LOC	DS
RORIG	REPEAT ORIGINAL LOC	DS
RP001D	3 Westbound Mens restroom faucet	DS
RP001O	1 Eastbound Mens restroom faucet	DS
RP001U	2 Eastbound Mens restroom faucet	DS
RP002D	4 Westbound Mens restroom faucet	DS
RP002O	2 Eastbound Mens restroom faucet	DS
RP002U	3 Westbound Mens restroom faucet	DS
RP003D	1 Eastbound Mens restroom faucet	DS
RP003O	3 Westbound Mens restroom faucet	DS
RP003U	4 Westbound Mens restroom faucet	DS
RP004D	2 Eastbound Mens restroom faucet	DS
RP004O	4 Westbound Mens restroom faucet	DS
RP004U	1 Eastbound Mens restroom faucet	DS
RT001	1 Eastbound Mens restroom faucet	DS
RT002	2 Eastbound Mens restroom faucet	DS
RT003	3 Westbound Mens restroom faucet	DS
RT004	4 Westbound Mens restroom faucet	DS
RUPS	REPEAT UPSTREAM	DS
SP905300001	DISTRIBUTION SYSTEM	DS
TTHM-IND		DS

Sample Schedules

Basic info on Drinking Water Watch (DWW):

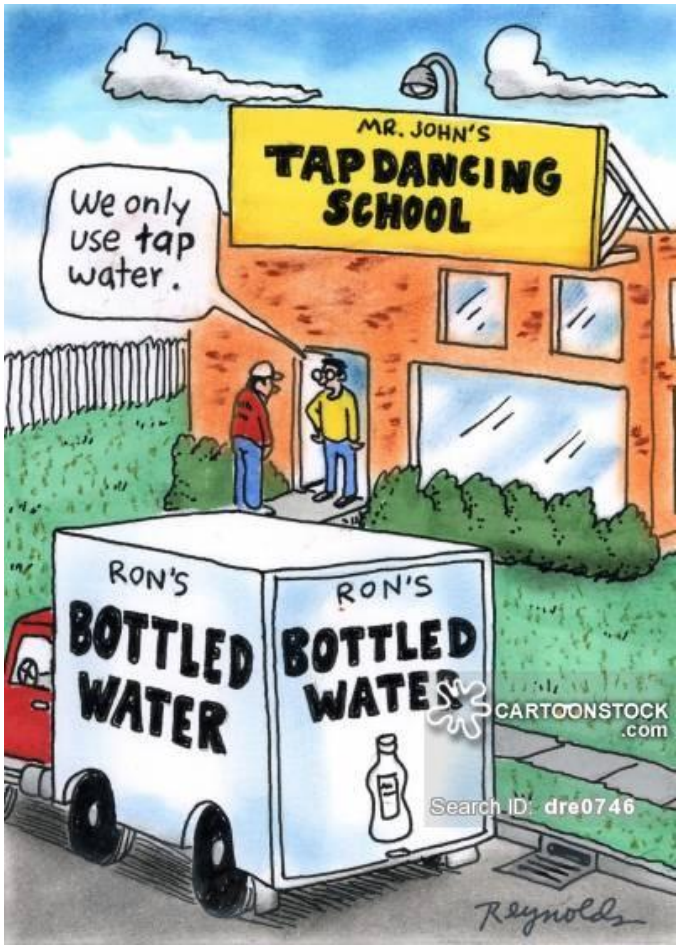
Routine TCR Sample Schedules		
Begin/End Date	Seasonal Period	Requirements
04-01-2016 - Continuous	1/1 - 12/31	1 RT/MN
01-01-2009 - 03-31-2016	1/1 - 12/31	1 RT/QT
12-01-2008 - 12-31-2008	12/1 - 12/31	5 TR/MN
01-01-1991 - 11-30-2008	1/1 - 12/31	1 RT/QT

Individual Non-TCR Sample Schedules					
Facility	Begin End Date	Seas	Init MP Begin Dt	Req.	Analyte
90530003	10-01-2013 Continuous		10-01-2013	1 RT/QT	1038-NITRATE-NITRITE

More details and sample tracking available through Secure Extranet Portal (SEP) on the Drinking Water Sample Collection Tool application

What kind of sampling is included?

- Bacteriological - RTCR
- Chlorine Residual
- Lead and Copper - LCR
- Disinfectants/ Disinfection By-Products - D/DBP
- Asbestos
- Turbidity



Revised Total Coliform Rule

- Sampling under RTCR is required by all systems
- Monthly sampling
- Specifics covered in a separate class

Chlorine Residual Monitoring

- Best Management Practice
  - MRDL - 4mg/L
  - maintain residual
  - meet chlorine demand
  - DBP control

Residual Chlorine + Water Age = DBPs!

- TOC is a precursor!!
  - SW: TOC from the source
  - GW: COD, biofilm in tanks and lines, HPC
- Required minimum number of monthly monitoring sites corresponds with RTCR and RTCR multiplier
  - Never just measure when sampling for RTCR!

Lead and Copper Rule

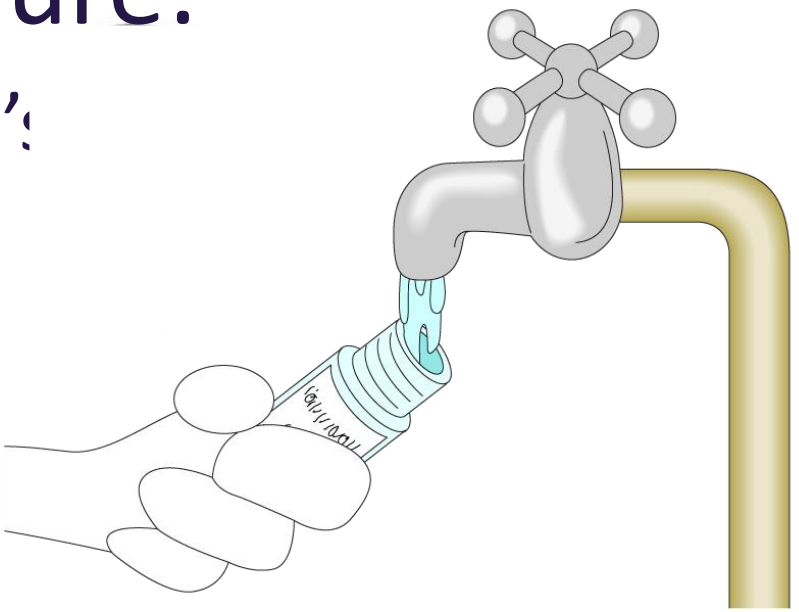
- Required for all community and NTNC water systems
- Number of samples based on population served, see DWW, or Sampling Tool
- No MCL - action level:
  - Pb = 0.015mg/L,
  - Cu = 1.3mg/L
- Corrosion Control

LCR Sampling Locations

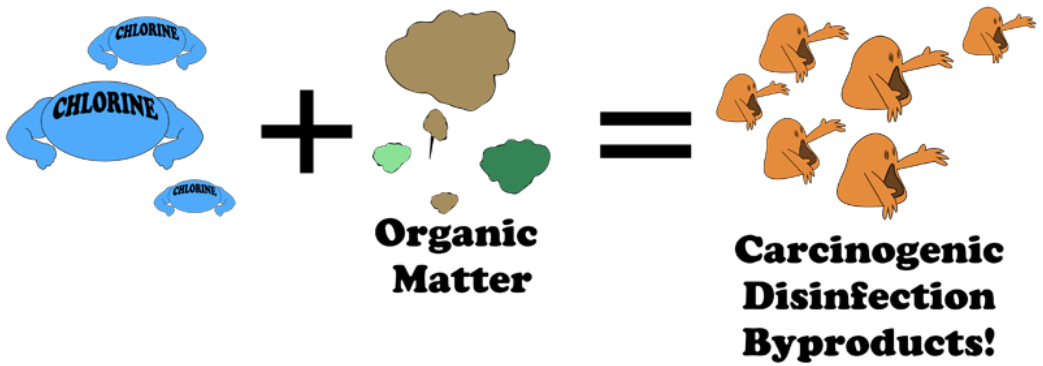
LCR TIER STRUCTURE			
Community (CWS)		Non Transient Non-Community (NTNCWS)	
Structures that have copper pipes with lead solder or lead pipes and/or served by lead service lines			
Tier 1	single family structures installed 1983 through 1985; or multi-family structures (1983-1985) that make up > 20% of total service connections	Tier 1	any structure installed from 1983 through 1985
Tier 2	multi-family structures installed by 1983 and after that make up 20% or less of total service connections	Tier 2	N/A
Tier 3	single family structures installed by 1982 or before	Tier 3	any structure installed by 1982 or before
Other	structures with other plumbing materials	Other	structures with other plumbing materials

LCR Sampling Procedure:

- Collected from a customer's
- "First draw"
- 6-18 hours of water age in customer's plumbing
- Collected by customer
- Collected during warm weather (July - Sept)



Disinfection Byproducts



- Applies to all community and NTNC water systems that disinfect (UV excluded), and TNC water systems that add Chlorine Dioxide
- Sample the "oldest water" in your system
- DBP formation influenced by pH and temperature:
  - Sample in the Summer (if required one sample per year)

D/DBP Sampling

- Serving under 500:
  - One sample for TTHM-IND and one sample for HAA5-IND
- GW system serving 500 - 9999
  - Annual dual sample for TTHM and HAA5
- SW system serving 500 - 3300
  - quarterly TTHM-IND and HAA5-IND
- SW system serving 3301 - 9999
  - Quarterly dual sample for TTHM and HAA5

D/DBP Sampling

- All other systems:
  - Based on system size
  - Anywhere from 4 to 20 samples for TTHM and HAA5 each quarter
- TTHM samples must be collected without any “headspace” or bubbles.

Asbestos

- Required to sample if:
  - system is using AC piping
  - potential asbestos contamination in the source water
- Sampling from a commonly used tap
- Talk to your CO about historic asbestos sampling results

Turbidity

- Turbidity is the measurement of cloudiness
- Originates from clay, silt, mud, organic matter
- Not a health risk, but can shield pathogens
- Applies to surface water and ground water under the influence of surface water - must provide treatment to meet MCL.
- See sample schedule in DWW or Sampling Tool

EPA Surface Water Treatment Rules

Turbidity is regulated in:

- First SWTR – 1989
- Interim Enhanced SWRT – 1998 (≥10,000)
- Long Term 1 Enhanced SWTR – 2002 (<10,000)
- Combined Filter Effluent - ≤0.3 NTU – 95%
- CFE Maximum – 1 NTU
- Individual Filter Effluent – monitor
- Measured at the plant, not DS

For More Information, Contact:

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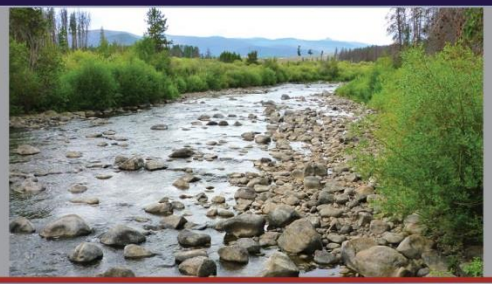
Danielle Shuryn
SWIG Manager
505-476-8637
danielle.shuryn@state.nm.us

Questions?



Solutions for water, natural resources, and the environment

Daniel B. Stephens & Associates, Inc.