

# WATER LOGGED

FALL 2022

THE OFFICIAL PUBLICATION OF THE NEVADA RURAL WATER ASSOCIATION

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- Executive Director  
Kevin Baughman
- Office Administrator  
Sheila Guzzetta
- Administrative Assistant  
Tabatha Guzzetta
- EPA Training and Technical Assistance Specialist  
Joe Mathein
- USDA Source Water Protection Specialist  
Christopher Berkey
- USDA Drinking Water Circuit Riders  
Danny Lofton  
Robert Ferrell
- USDA Wastewater Specialist  
Max Sosa

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Send editorial and advertising inquiries to:  
NvRWA  
363 Fairview Drive  
Carson City, NV 89701  
P: (775) 841-4222 | F: (775) 841-4243  
[sheilag@nvrwa.org](mailto:sheilag@nvrwa.org)



Nevada Rural Water Association staff and board members.

# NvRWA Updates From Your Executive Director

By Kevin Baughman, NvRWA Executive Director

Well, it has been a quick summer here for us. Lots of changes have taken place here in the association. I hope that your interaction with each of us has been a good experience for you. We are into the DBP and Lead and copper seasons. In this magazine we are sharing some thoughts on the LCR updates. As the days grow shorter, more changes are to come. I myself am preparing for the time to fall back an hour on November 08, 2022! Can any of you believe that I said NOVEMBER is around the corner? How about you? Has your life been full of changes recently? Are the days just too short of hours?

Some of the staff changes we have experienced lately include the departure of Mike Boney. Mike is already missed but we hope that he will enjoy his new position as he takes on directly managing his own staff. Thank you for your time with Nevada Rural Water Mike! As I used to tell other acquaintances "Fair winds and following seas to you, sir!" Mike is already missed here. Congratulations to the company that got him!

Speaking of staffing, how is your company doing in these times? We are working on helping to address the issue. I would like to hear from you if you have any interest or need in this effort. We are working to bring more awareness of the water / wastewater industry to the public. I know that a lot of push is going to having a high level of education with a high-level degree. I know from firsthand experience that this is not an opportunity available to everyone yet. This field of work is still an area that we succeed in even when you start out working BEFORE FINISHING HIGH SCHOOL. It has been a very interesting career for me and enabled me to work in some fantastic areas and situations. After my direct contact with other people and learning what they know, or think they understand about our work, I see the need for outreach and education. I am proud to be working toward improving this situation as we strive to increase our programs and work.

Some of the changes we are experiencing include getting new staff in the office. I hope you will get a chance to meet and speak with both Sheila and Tabatha. They are doing amazing work. Have you seen the new website? We are working to make YOUR continuing training easy to access. Right now, you can go to the training tab and see your classes attended and the hours of contact earned at the 2022 NvRWA Conference. Yes, you can even see that I did not complete a class session at the conference as I was running around trying to avoid all the challenges, I mean, I was working to make sure you all had the best experience possible. If you have any questions for our office, (775) 841-4222 is sure to get you help and a good follow-through with your situation. We are working hard to meet your needs! Sheila and Tabatha are getting it done! Be on the lookout for more social media connections with us moving forward. Speaking of the conference, there was sure a lot of behind the scenes work to make sure the temperature was right, snacks and food on the way, vendors had what they needed, the sound and projections worked for the presenters, and so forth. I was proud to see it happen for

the first time, live, in three years. It was a pleasure to have so many people back together again. The networking was great. Thank you to each of you who participated. We have started planning our 2023 NvRWA Conference and registration is now open for Attendees & Exhibitors. We hope to see you there! ALSO, we are seeking volunteers to help with room monitoring. For a four-hour shift, we are considering an offer of a reduction in registration price and working on some cool SWAG to enable you to show your support! If you have an idea about what would make this worth your time, PLEASE, let us know. YOUR ideas are what we are here for. We will do what we can to incorporate ideas to make this a fun event for all.

As for the conference, we are planning on changing it up a bit. We are working to bring in the bigger equipment (using the outside parking, yes, that big), planning to add training tracts focused on operator certification reviews, AND acknowledging the office and managers with an administrative / board member tract. We are looking for big sponsors to help with upping the contests. Any interest in drawing for a side by side? Please do give us your thoughts. What are some other raffle items you suggest?

. We hope you can join us on November 8, 2022 in Minden, NV at the AVK facility. We'll be taking a tour of the Valve and Hydrant Assembling Factory a run through of the hydrant parts and pieces, a class review of a system flushing program, and finally a networking session to allow the water operators to get better acquainted with each other. It has been my experience that in our normal routines we do not get to know our neighbors very well. This is an opportunity to get six contact hours, and a lunch provided by AVK. To Register for this event please visit our website at [www.NvRWA.org](http://www.NvRWA.org) and click on our training calendar. Our plan is to do this quarterly except for in Spring when we focus on our conference event. It would be great to get your feedback on things like locations, subjects, and talking points for the networking sessions.

Please don't keep in your thoughts. Share your ideas and wishes with us so we may better serve you. As time moves forward new ideas, tools, rules, and challenges come up. The more we share the better we can all respond, right? Let's work together to make it the best experience for us all.

If your company has a job announcement, please email the link to Sheila and she will get it added to our website.

When I started here, I put out the notice that we really want to be an organization that is doing good support for you as you take on the tasks of making modern life civilized by collecting treating, storing, and distributing clean safe drinking water. This act is followed by the AMAZING act of collecting the used water, treating it to make it safe and then returning it to nature with a minimum ecological impact that keeps us all living clean safe lives! Well done to ALL of you professionals that make this happen every day.

**THANK YOU, HEROES!**

# Message From New Office Administrator | HR Rep

By Sheila Guzzetta, Office Administrator | HR Rep

My name is Sheila Guzzetta, and I am the new Office Administrator | HR Rep at NvRWA. I have lived in Carson City, NV for almost 30 years now, transplanted from Los Angeles. I have been happily married to my husband for 15 years and we have three wonderful children together. I love reading novels, going to the movies, trying out new restaurants and taking the family to Lake Tahoe every chance I get.

I found this job while I was working in real estate. I was looking for a change of scenery and something a little closer to home as the long commute was arduous on my personal and professional life. I have a healthy work-life balance which I believe allows me to keep calm in stressful situations and plan out the best course of action without becoming overly emotional. Balance and organization is my key to happiness.

Professionally, I have 15+ years' experience as an office coordinator and human resources coordinator. I have a great deal of experience building and managing multiple websites and social media accounts. I'm very

detail-oriented in every aspect of my life. I love creating order from the chaos! I am very skilled at figuring out problems and coming up with quick, lasting solutions and protocols. Organization is the most crucial aspect to success in any office setting or job, in my opinion.

Along with taking care of our NvRWA office and clerical needs, I am responsible for processing payroll, website maintenance and paying office vouchers and payables. I am the point of contact for CEU certificates, all registrations and any other activities to support the people outside of this office. My goal is to get all Contact Hour Certificates out within a timely manner from this point forward and work with training our new Administrative Assistant Tabatha.

If there is anything that I can help you with (or if you have any suggestions or helpful ideas) I can be reached at (775) 841-4222 Monday – Friday, from 8:30am PT – 4:30 pm PT. You can contact me any time at sheilag@nvrwa.org and I will get back to you as soon as possible.

Thank you for welcoming me to the NvRWA family!

## Max's Wastewater Corner:

Max Sosa, NvRWA Wastewater Technician

### 1) What is a term that pertains to chlorine residual?

- a) Chloramination
- b) Cryogenic
- c) Breakpoint
- d) Pyrogenic

### 2) What chemical is used to detect a chlorine leak that will give off white smoke when mixed with chlorine?

- a) Sulfur dioxide
- b) Carbon dioxide
- c) Ammonia
- d) Antimony

### 3) Calculate the Chlorine demand using the following information:

- Usage 1,400 lbs /day
- Plant flow is 13.5 MGD
- Effluent Cl<sub>2</sub> residual = 2.5 mg/l

- a) 6,305 lbs/day
- b) 1,118 lbs/day
- c) 1,681 lbs/day
- d) 281 lbs/day

### 4) Which repair kit is designed for use with a 1-ton cylinder?

- a) C kit
- b) SCBA kit
- c) A kit
- d) B kit

### 5) What is the approximate expansion rate of one volume of chlorine liquid when it is converted to a gas?

- a) 7.48
- b) 8.34
- c) 460
- d) 640

See page 22 for answers



# Don't Wait to Start Your Inventory

By 120Water

## Why Creation & Validation Should Be Your Top Priority

Your Lead Service Line Inventory is foundational to Lead and Copper Rule Compliance—and while it may be tempting to put off this project until further legislative steps are taken, systems should begin the process now to keep up with compliance deadlines.

### Inventory Deadline: 2024

LCR will go into effect in 2024, and we believe it will only get more complex.

After nearly a year of review in accordance with Presidential directives issued on January 20, 2021, The Biden Administration passed the Lead and Copper Rule Revisions on December 16, 2021. However, the EPA and Administration pointed out that more should be done to improve LCRR. With that, the Biden Administration is developing a new proposed rule called the Lead and Copper Rule Improvements (LCRI), which the Administration hopes to be finalized by the LCRR compliance deadline of October 16, 2024.

At that time, systems will need to submit the first draft of their inventories—inventories that not only show where lead can be found in your communities but have been validated to confirm its presence. The validation process is essential to verify your current data set and fill in gaps. For tips on what validation techniques make sense for your system, check out our Inventory Validation Guide.

Understanding the requirements of the Revisions, progress toward compliance should begin now to allow ample time.

### A Validated Inventory Leads to LCR Compliance

Knowing where the lead is—and having that location verified—will be the basis for the majority of the LCR compliance requirements. For a full list of requirements and due dates as they stand, view our LCR Pipeline. The revisions introduce numerous new mandates that will be based around this validated inventory—without it, your system could use up valuable resources trying to make up for lost time.

Your inventory will be the basis of the LSL Replacement plan required by the revisions, providing the foundation for the next several years of work as lead pipes are removed. You'll also need to notify all customers served by LSLs or unknown materials in 2024, a significant communication challenge that won't happen without accurate inventory data.

The inventory will also dictate your Tier Site Monitoring, where utilities will soon be required to provide 1st and 5th liter sampling at any home with a known LSL. Accurate Tier Lists can only come from an accurate inventory.

### A Project of Unprecedented Scale

The scope of the LSL inventory project will require years of planning and collaboration.

Inventory is a massive project, and utilities need time to unravel all the moving pieces. In what is essentially a large-scale data puzzle, gathering and validating the numerous relevant parts will be a big undertaking. According to polls conducted during 120Water webinar sessions, 82.7%

percent of utilities are missing complete data on private-side line materials. Tools such as 120Water's Inventory Management Solution can expedite this process but performing an audit of the current data in your utility will help to build a realistic timeline.

In addition to data complications, you'll need to bring together multiple departments to collaborate on this project, including contractors and third-party services to empower your team. Building the inventory, validating materials, and completing replacement efforts is potentially a decades-long process, and postponing the process is one more day your community has to live with the possibility of lead in their drinking water.

### Take Advantage of Federal Funding

Make yourself eligible for funding opportunities with a "shovel-ready" inventory. Numerous funding sources have been made available to systems for infrastructure, including water quality and LSL-related projects. Utilities should focus efforts on LSL inventorying if they hope to capture a piece of this funding pie.

Many of the sources will prioritize "shovel-ready" projects, which implies at the very least an estimation of lines, and most likely a complete inventory. Replacing service lines will be a costly endeavor, and you'll likely need to utilize funding that's been made available waiting to begin your inventory will not put your system in a position to capitalize on those opportunities.

### Save Time & Money

The Lead and Copper Rule Revisions are certainly the most important legislative changes in the world of drinking water in decades, however, regulations will continue to evolve as we learn more and as public pressure to remove all lead from the ground mounts. We recommend operating under a future-proof definition of what constitutes a lead service line, collecting public and private information on the following up front:

- Lead Pipes
- Lead Fittings
- Copper with Lead Solder
- Galvanized Lines
- Unknown Materials

This is a project large enough you don't want to have to do it twice. Approaching it with a broader mentality of what may constitute a replaceable service line will save your utility valuable time and money down the road as regulations evolve.

### Where to Begin

Systems are juggling a lot of priorities right now, and it can be easy to assume that with no immediate deadlines, this project can wait until next year. We hope you'll consider the reasons it's important to start now so your system is set up for success in the future.

**If you're wondering exactly how to get started, schedule a call with our team and we'll walk alongside you to assess the best next steps for your system.**

# The Meter is Running For Rural Water Systems

By Lowell Huffman Director of Business Development  
120Water, the nation's leading solutions provider for managing lead programs.

## How rural providers can tackle LCRR compliance

There has been discussion around potential updates to the Lead and Copper Rule (LCR) for years. While the revised LCR (LCRR) was passed in December 2020, delays in its implementation have led many water systems to postpone preparations for it.

They do so at their own peril: it is just a matter of time before the LCRR is enforced. In fact, the current deadline for action is December 16.

The LCRR is sweeping in its impact on water systems, and none will feel it more acutely than rural systems.

The Association of State Drinking Water Administrators (ASDWA) estimates that the revisions could create up to five million additional hours of workload for systems over the next five years and cost upwards of \$47 billion to enact.

While funding is available in the \$1.2 trillion Infrastructure Investment and Jobs Act that became law in November, smaller water systems will still struggle to comply. That's because small, rural, and disadvantaged communities often lack the resources needed to meet safe drinking water standards. Their staff members wear many hats, are spread thin, and may not have the technical expertise needed to comply with this complicated rule.

What rural water systems need to know

With LCRR deadlines scheduled for 2024, the three years leading up to that date are critical to preparing for compliance.

A recent study by 120Water shows that the majority of water systems—regardless of size—are not ready for the new rule. More than half of water systems surveyed said they have no data on lead service lines (LSL) in their systems, and just 10% said that their LSL replacement plan would allow them to comply with the rule.

With a short horizon, it's important that rural systems understand what the new rule entails so they can begin taking action. The key aspects of the rule include:

**LSL inventory and replacement.** Utilities will be required to conduct a "location-based" inventory of publicly owned and privately-owned LSL materials, including all systems and connections. The inventory must be submitted to the EPA within three years. Water systems with more than 50,000 customers must make the inventory public, and this is a good practice for smaller systems, as well (See Chart 1). Results also must be resubmitted alongside annual or triennial monitoring results. Once the inventory is complete, systems must develop an LSL replacement plan if lead service lines are found or if galvanized pipes that previously were connected to a lead pipe are found.

**Tier site monitoring.** Some utilities did a lot of work for tier monitoring requirements for community water systems. With the new rule, tier monitoring sites must specifically be based on the LSL inventory results.

The LCRR changes the definitions of the tiers and creates two additional tiers:

- Tier 1 includes single-family homes served by LSLs.
- Tier 2 includes multifamily residences with LSLs.
- Tier 3 includes single-family homes with galvanized service lines downstream from an LSL, which must be replaced.
- Tier 4 includes single-family homes with copper pipes and lead solder installed before the 1986 ban.
- Tier 5 includes locations where plumbing is similar to other sites served.

Any Tier 1 locations will require water sampling. The new rule requires a first and fifth liter draw and testing as a best practice to truly understand water quality in the system. The idea is that the first liter will identify if copper is present in the resident's plumbing system, and the fifth liter draw will identify if lead is present.

Rural operators must be prepared for the results of this testing. After Michigan began sampling the first and fifth liter, the number of water utilities above the EPA's action level for lead doubled in a year.

**Regulatory thresholds.** The "Action Level" of 15 ppb remains the same, but the new rule adds a "Trigger Level" of 10 ppb that serves as a new trigger for Corrosion Control Treatment (CCT) and other actions designed to get to the root of known or suspected issues. In addition, if the 90th percentile of samples exceeds 15 ppb, new rules for regulatory review, increased monitoring, CCT deployment, public notification and education, and LSL replacement kick in. (See Chart 2)

**Find and fix.** Utilities will be required to resample for both lead and water quality at any home with lead levels above 15 ppb within five days of receiving the result and must attempt to determine what caused the elevated lead level. This will require resources to visit the home and do further testing.

**School and childcare sampling.** Under a completely new rule, utilities will be required to sample 20% of all elementary schools and 20% of all childcare facilities built before 2014 in the service area each year. In addition, any non-elementary school can request sampling and the utility is required to perform it. Utilities will be required to communicate the results to stakeholders, which raises the risk of damaging news stories, and must be managed properly.

**Communications and reporting.** The LCRR enhances communications standards. Customers with a lead sample result greater than 15 ppb must be notified within three days, compared to the previous 30-day requirement. If the 90th percentile levels are greater than 15 ppb, all customers in the service area must be notified within 24 hours. Overall, communications will be a necessary component of compliance.

In addition, water systems will be required to report LSLs, updated



tier sites, monitoring results, school and daycare testing results, public notification templates, and water quality parameter results to their state agency.

### **A carve-out for small systems**

Fortunately, the LCRR gives a choice to small systems serving fewer than 10,000 people on how they respond to the presence of lead in drinking water:

- Utilities can install corrosion control treatments.
- Utilities can opt to replace all LSLs within 15 years.
- Utilities can install and maintain point-of-use water filters.
- Utilities can replace all lead-bearing plumbing materials.

Again, in order to make the right choice—or any choice—water systems will first need an LSL inventory to understand what is causing the high lead levels in drinking water.

### **The first step: a lead service line inventory**

Public water systems must develop a preliminary inventory of both public and private side service lines within three years of the final rule publication, and publication and use this preliminary inventory to create a replacement plan for known or possible LSLs. Therefore, the best way for water systems to prepare for LCRR is to start an LSL inventory today. (See Chart 3)

Getting a jump on creating an LSLI has other benefits for rural operators, as well. Chief among this is access to funding, as most grants and funding mechanisms will require systems to know what they need to remediate in order to apply. After all, utilities cannot replace LSLs until they know where they exist.

It also will help rural operators be ready to meet LCRR deadlines once the rule is enforced.

By definition, an LSL is a portion of pipe that is made of lead, which connects the water main to the building inlet and may be owned by the water system, owned by the property owner, or both.

To create a proper inventory, utilities should include lead and non-lead pipes, galvanized pipes, and pipes of unknown materials, as well as goosenecks/pigtails, copper and lead solder, and other non-lead components. While the revisions only mandate four categories today, it is a best practice to document all pipe and connection materials in an effort to “future proof” the inventory.

Start by conducting an internal records review of tap cards or in work order systems to determine if your utility has recorded information about the types of materials used for service lines. If the type of material isn't recorded, look for clues such as the year the service lines were installed

(lead lines were banned in the 1970s), and the size of the service line (lead pipes are almost always two inches or less in diameter).

With this framework in place, start filling in the gaps. Some strategies to do this include:

- Record sampling information to determine if lead is present in the water, using the first and fifth liter practice.
- Make it a practice for employees to look for inventory information during service calls, water meter updates, etc.
- Enlist the help of homeowners to provide visuals of plumbing materials.
- Use statistical modeling and predictive analytics to help determine the most likely areas for the location of lead pipes.
- Track this data using a cloud-based platform built for water utilities that will house the data and create workflows to meet compliance rules.

Once an LSLI is created, utilities will have the information needed to identify tier sites and conduct cost/benefit analyses of compliance alternatives.

The time has come to take action on the pending LCRR. As the great Vince Lombardi said, “If you're five minutes early, you're already 10 minutes late.”

It's time to get in the game.

About the author:

*Lowell Huffman is director of business development at 120Water, the nation's leading solutions provider for managing lead programs*

# A Cannabis Dispensary is Coming to Town

By Max Sosa

Cannabis is the most commonly used drug in the United States and its use is causing cannabinoids such as THC and THC-COOH to enter the environment. Before a new cannabis operation comes to town it would be advisable to do some research into what processing methods are going to take place before issuing permits and having the cannabis operation get underway. Listed below are items of concern that may affect biological treatment.

Biological wastewater treatment systems are not designed to remove many common drugs such as THC, amphetamines, and opiates. The presence of THC in water bodies where treated wastewater is released indicates that wastewater treatment systems are ineffective at removing THC.

Several studies on the disinfection process have evaluated the reactions between chlorine and pollutants such as pharmaceuticals and THC and have found that there are 7 possible by-products of THC and chlorine during the disinfection process of wastewater treatments. These disinfection by-products are more toxic than the original THC.

## **At cultivation facilities contaminants of concern that are harmful to the biological process of a wastewater pond or treatment plant are:**

- Nitrates
- Pesticides
- Phosphorus
- Total Suspended Solids

Edible cannabis processing facilities where cooking and preparation take place could be required to install a food related oil and grease interceptor (grease-trap)

## **Contaminants of concern for an edible cannabis processing facility would be:**

- BOD - Biochemical Oxygen Demand
- COD - Chemical Oxygen Demand



- Oil and Grease
- Total Suspended Solids

Also, these contaminants do not include what damage can be done to a wastewater system by hexane or alcohols that are typically used for volatile extraction of oils from the cannabis plant. Keep in mind that , the solvents mentioned are flammable and could cause an explosion risk in the collection system.

More research is needed to determine the chemical properties of cannabinoids to determine what effect is the cannabis operation is going to have on wastewater systems and the environment.



# Source Water Protection Assistance for Rural Communities

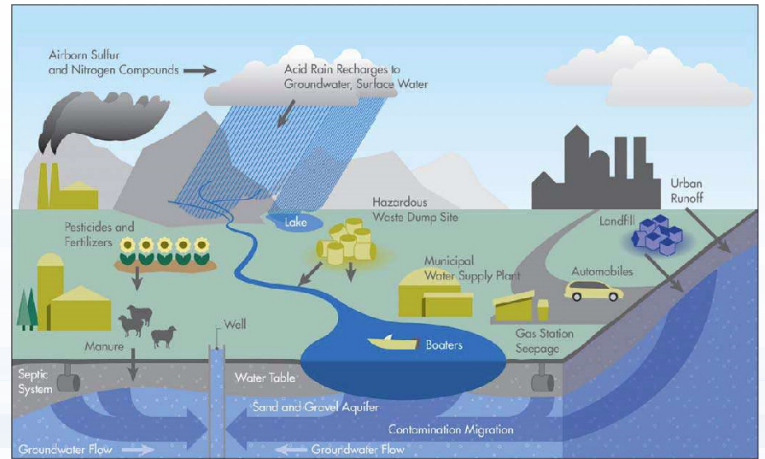
By Christopher E. Berkey, Source Water Protection Specialist

Safe clean drinking water is essential to maintaining a thriving community; clean water provides for economic development, agriculture, residential growth, recreation, and tourism. Having reliable source of water ensures a community's future, but how can a community protect their water? Through the development of a Source Water Protection (SWP) plan a community can evaluate their source water, determine potential sources of contamination, and advance measures to protect their source water.

## Is SWP mandatory or regulated?

Source Water Protection is a voluntary effort that is encouraged and supported by regulatory agencies without being a regulated activity.

A community is not alone in developing and implementing a source water protection plan. "Through National Rural Water Association (NRWA), full-time Rural Source Water technicians with practical experience are hired. The technicians work with specialists from the USDA Natural Resources Conservation Service (NRCS) and state and county Farm Service Agency staff to identify areas where pollution prevention is most needed. Once areas for pollution prevention are identified, technicians work with state Rural Water Associations to create local teams made up of citizens and individuals from federal, state, local, and private organizations. These teams collaborate to create a Rural Source Water Protection plan to promote clean source water." 1 Through this program, Nevada Rural Water Association (NvRWA) has a Source Water Protection (SWP) Specialist on staff to



assist communities develop and implement source water protection plans at no cost to the community.

The NvRWA SWP Specialist will work with communities to delineate Source Water Protection areas, form a SWP committee, facilitate meetings, and implement their SWP goals. These plans are tailored to each community unique SWP circumstances and goals. For more information regarding the Grassroots Source Water Protection Program in Nevada please contact: Christopher E. Berkey

Christopher E. Berkey  
 Source Water Protection Specialist  
 Nevada Rural Water Association  
 363 Fairview Drive  
 Carson City, NV 89701  
 Office: (775) 841-4222  
 Cell: (702) 540-6107

<sup>1</sup>"Grassroots" Source Water Protection Program (usda.gov)



# Conditions are Brewing for Summer Power

By Christopher Berkey, NVRWA - Source Water Protection Specialist

With an unprecedented drought reducing output from hydroelectric dams, proposed closures of coal/gas/nuclear power generating facilities, aging infrastructure, and an increase in demand in the southwestern United States we are sure to see brownouts and/or blackouts. Levels along the Colorado River continue to decline reducing power output at several dams, and there is no end in sight for the end to the drought causing the low lake levels. California is proposing the closure of several gas fired powerplants and Diablo Canyon Nuclear Powerplant before 2025; this is amid supply chain shortages in battery materials, etc. needed for renewable energy sources such as wind and solar. Aging infrastructure has demonstrated that it is susceptible to significant outages due to weather and fire related events. It is a common occurrence for demand to spike in summer months exacerbating the issues listed above. Considering the interconnectedness of utilities, the effect from a blackout can be especially impactful to the supply of potable water to communities.



"Power production at Hoover Dam is down about 33% and will continue to drop as the "megadrought" affecting the Southwest continues, according to a U.S. Bureau of Reclamation spokesman." When Lake Mead is full, 2,074 megawatts of electricity can be produced, but, as 23 years of drought have affected that level, the turbines are generating 33% less power. Typically, the dam produces enough power for 1,000,000 homes to 675,000 homes; the reduction of hydropower puts strain on the grid in other areas. "About 50% of the power produced at Hoover Dam still goes to California. Nevada gets about 22% and Arizona gets 20%. Contracts managed by the Department of Energy control the distribution of the power, and Native American tribes are also among the dam's customers."<sup>1</sup> With so many communities relying on power produced from hydroelectric dams on the Colorado River, the drought will continue to reduce capacity which is bound to contribute to brownouts and blackouts in the future.

"California regulators note delays in supplies, potentially through 2025, amid impending closures of gas-fired plants and a nuclear plant, Diablo Canyon. Democrat Gov. Gavin Newsom has considered keeping that nuclear plant open to avoid shortages."<sup>2</sup> With California proposing to remove power generating capacity, it will further strain power output as supply chain issues continue to plague the renewable energy sector. Like everything the energy sector has been far from immune to supply chain shortages which is affecting solar panel production, battery storage for wind generation, and materials for the construction of proposed new natural gas fired power plants. California currently imports most of its energy and as it reduces its capacity more will be needed potentially impacting customers in neighboring states.

The American Society of Civil Engineers (ASCE) has estimated that the U.S. energy infrastructure needs at least \$650,000,000,000 in upgrades due to its age and capacity. The age of the energy infrastructure has left it susceptible to extreme weather events and wildfires. "However, weather remains an increasing threat.

Among 638 transmission outage events reported from 2014 to 2018, severe weather was cited as the predominant cause. Additionally, distribution infrastructure struggles with reliability, with 92% of all outages occurring along these segments."<sup>3</sup> One only has to remember the ice storms in Texas that caused a wide swath blackout to see how much extreme weather events can impact the power grid.

As summer heats up the U.S. so does the consumption of energy across the U.S. straining an aging energy infrastructure with reduced capacity due to droughts and the decommissioning of older generating plants. The amount of energy used during summer compounds the risk of rolling blackouts when energy is at its most needed. "Above-normal summer heat increases electricity demand from temperature-dependent loads, such as air conditioning, and can reduce electricity supplies if power

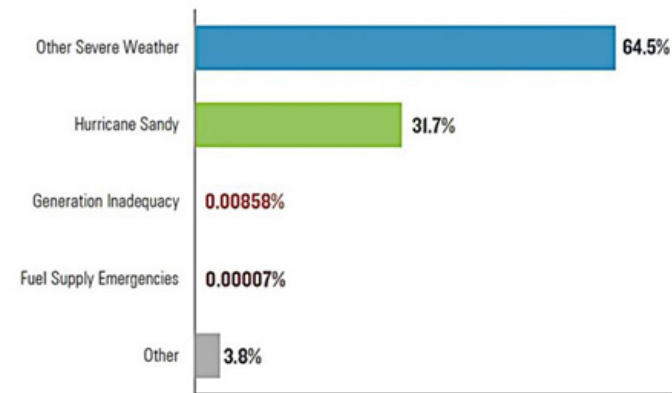


Diablo Canyon Nuclear Plant — <https://shoah.org.uk/the-devilish-dangers-of-diablo-canyon/>

# Shortages

## Cause of Major Electricity Disturbances in the U.S. 2012 - 2016

Share of total customer-hours disrupted



Source: EIA and Rhodium Group analysis

plant outages or reduced output stem from heat-related issues. Wide-area heat waves can challenge grid operators and may limit electricity transfers because the electricity is needed to meet local electricity demand.<sup>4</sup>

Regions of the U.S. are expected to have increased risk of brownouts and/or blackouts due to reduced capacity, impacts from weather, closures of existing power plants, extreme weather and fire, and heightened demand. The impacts of losing power are often overlooked when it comes to the interdependency of utilities, and this is especially concerning when it comes to water. Without enough backup/supplemental power the nations water utilities are at risk of shutting down during these episodes causing cases of rolling blueouts.

<sup>1</sup> Hoover Dam power production down 33%, official says (msn.com)

<sup>2</sup> <https://www.newsmax.com/newsfront/power-electricity-energy-summer/2022/05/08/id/1068948/>

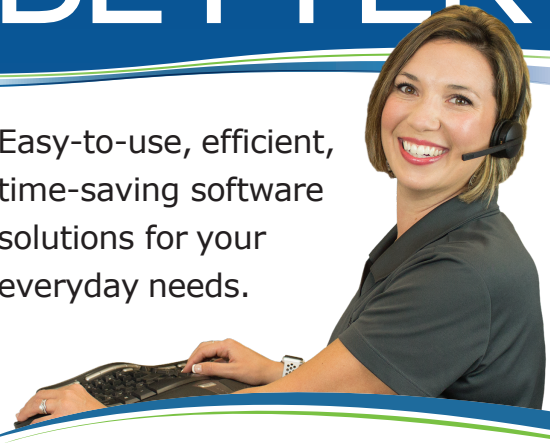
<sup>3</sup> America's Aging Infrastructure Gets C-Minus On Its Report Card (forbes.com)

<sup>4</sup> U.S. Energy Information Administration - EIA - Independent Statistics and Analysis

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# Compliance in Very Small Water Systems

By Joe Mathein, Training and Technical Assistance Specialist

## **The Nevada Rural Water Association (NvRWA)**

provides the resources and staffing to assist a rural water systems ability to improve their capacity, sustainability, and performance. As well, NvRWA offers training and support for its operators, managers and board members.

While many of the towns and communities have made use of the training and technical assistance to improve their systems capacities, sustainability and performance, there is a number of very small water systems that didn't even know they were a recognized water system until a representative of the Nevada Department of Environmental Protection (NDEP) made contact with them. Examples of these very small systems are RV parks, stores, saloons, and mobile home parks.

{A public water system as defined in Nevada Revised Statute 445A.235 means "a system, regardless of ownership, that provides the public with water for human consumption through pipes or other constructed conveyances, if the system has 15 or more service connections, as defined in NRS 445A.843, or regularly serves 25 or more persons ..."} Courtesy of NDEP

**Even the bravest and most prepared** are wary when entering the regulatory compliance realm. It has the same concerns for the certified operator of a large Public Water System (PWS) as well as the owner/operator of Transient Non-Community Water System (TNCWS). The operator of the larger PWS is usually prepared and has an expectation of what is going to happen more than the owner/operator of the very small TNCWS. The requirements for operating a TNCWS is not that different from the more established PWS. The U.S. Environmental Protection Agency (EPA) and the NDEP are first and foremost concerned with the health and safety of the public. The requirements for delivering clean, safe, and aesthetically pleasing potable water are the same for all systems. There are a few variations that are designed to consider the ability of the very small system meeting the required drinking water standards. But the result is still the safety of the public's health when consuming the water produced by every water system, large or small.

**I'm a business owner with a well not a certified water operator.** Often this is the reality of the very small water system owner/operator. They have been in business for their primary enterprise

and given minimal thought to their well and water they serve to their customers. In many cases, the only time they focused on the water system is when:

- a) it sprung a leak,
- b) the pump failed,
- c) someone complained, and/or
- d) they expanded their system.

Most of these owners have a vague idea of what is required and roll along with the attitude that it's their water and system and they don't need to comply with regulations that apply to public water systems.

**Those days are gone.** The reality of this day is that a growing sector of the public is keenly aware of what they are consuming, and a growing number even investigate what they are drinking on social media sites. NDEP has increased its efforts to identify and visit all the water systems in Nevada, no matter how small. If you serve water or water could be potentially consumed on your premises from your well and water system then you may be a water system with the same required regulatory compliance for the production of safe, clean, and aesthetically pleasing potable water as a larger PWS. Compliance is not a choice, it is required. I hesitate to use terms like you must or you shall, I'll leave that to the State and their representatives. So, before you think you can just slip back into anonymity and continue doing business as before, think about this. The EPA and the NDEP are required to ensure that compliance to the regulations safeguarding the water that is consumed by the public and yourself is thorough and complete. They are required to see the resolution of compliance throughout to ensure the public's health and safety.



## How did this happen and why is it happening to me now

is a question that many of the owner/operators of these systems wrestle with. It is difficult for the very small system owner/operator to implement many of the requirements that have suddenly been thrust upon them by the representative of the State. The financial obligation needed to meet compliance is usually at the forefront. The next hurdle is how or what changes/improvements do I need to make to meet regulatory compliance and go back to running my business.

Many times, the visit from NDEP is the result of a positive coliform sample. This visit is not intended to punish the system owner/operator but to investigate the source of the contamination. NDEP is, as previously stated, primarily concerned with the health and wellbeing of the public. Although the visit may seem to be a negative scenario, the reality is the system owner/operator has potentially jeopardized the health and safety of the general public. Whether the positive coliform result was from negligence, poor sampling methods, or previously unknown vulnerabilities to the water system, the representative from NDEP is onsite to assist the owner/operator finding and resolving the problem.

Other times the visit is prompted by the requirements for a scheduled sanitary survey. Whichever the case is, the results are not always openly welcomed by the very small water system owner/operator. While the EPA and NDEP cannot be everywhere, they offer these owner/operators the help and service of the NvRWA as well as other resources. Some recognize the benefit being offered to them while others remain bitter and combative to anyone they view as a representative of the State.

**Help is on the way, you only have to ask.** These owner/operators don't even have to ask most of the time. NDEP usually sends a note to NvRWA advising us of a recent visit and ask if we could contact these systems. In most cases, the owner/operator is overwhelmed by the reported findings by the State and is paralyzed not knowing what to do first. Once they have decided to meet with NvRWA staff they have taken the first step to unraveling the perceived labyrinth of compliance. While some owner/operators remain contentious the majority welcome the expertise and services offered by NvRWA staff. The staff of NvRWA have a



tremendous knowledge base and expertise in many facets of the water industry that provide the needed resources for many of these owner/operators. Many times, the initial meeting provides a level of relief and confidence for these owner /operators just knowing that someone understands what has happened to them and can translate the reports and findings for them. While the reason for contacting these owner/operators is often different, the result is generally the same, the realization that help is being provided to navigate the requirements for compliance.

**In the end,** the over-arching theme that you may have noticed throughout this article is the health and safety of the public when consuming water produced from any sized water system. This is the mission of the EPA and NDEP, first and foremost. The NvRWA is aligned with this mission also. While it may seem that the regulations are extreme and designed for the larger PWS, they must be accepted by the TNCWS owner/operator. And why isn't it? Would you expose your family and friends to a potentially contaminated beverage or food? Of course not. This is the reason for these regulations, the safeguarding of the most precious resource we have, our water. Only the air we breathe is more necessary to life than water.

For assistance and more information please feel free to contact us at Nevada Rural Water Association NvRWA.org, 775-841-4222, or contact me directly at:

Joe Mathein

Training and Technical Assistance Specialist

Nevada Rural Water Association

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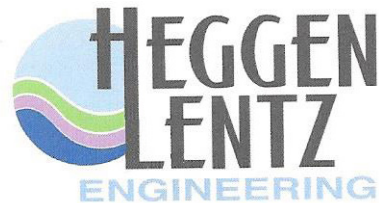
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# Weekend Safety Warrior

By Robert Ferrell

**A SAFETY CULTURE....** what is it at the workplace but maybe more importantly what is it at home? Just something we must do? Something we should do? Ahh, something we want to do.

To start, since we are not at “work”, lets give a non-scientific definition of safety. Simply put, I believe, “safety” is an individual being extremely selfish in the effort to preserve life and limb for themselves and possibly fellow co-workers that don’t show your boss how to group chat. Again, I said non-scientific. Face it, no one wants to get dead. Especially at home.... doing chores.

So why do we have safety in our lives? A little shop talk is needed so stay with me. Starting back with your friendly neighborhood Occupational Safety Health Administration, OSHA, in the 1970s, state and local agencies provided regulation requiring minimum standards for a whole myriad of topics, i.e., electrical, excavation, chemical storage and fire protection to name just a couple. The regulations were followed by private industry providing more and more layers of protection to employees via programs, procedures, and engineering solutions to simply remove the hazards in the workplace. But very little of these best practices make their way from the workplace into our homes.

If you ask me, “safety culture” starts at home. I’ll give you a few examples of how we should take safety home with us. I am not talking about the four left-handed work gloves in the garage or the two pairs of mirrored safety glasses sliding across the dash in the pickup either. Though PPE (Personal Protective Equipment) is important, I am talking about why don’t you have a fire extinguisher at home? Not one but two, one for the kitchen and one for the washer/dryer/furnace? If you do have one, is it rated properly for the fire you intended to use it on? Have you trained the other members of the household how to operate it? Have you ever actually pulled the pin and discharged a fire extinguisher yourself? This is only one example of one piece of safety equipment that almost everyone sees at least once a day in everyday life. They are at office buildings, schools, daycares, buses, gas stations, grocery stores, airports, hotels and restaurants. Have you ever thought about having to use the fire extinguisher near the entrance at your favorite breakfast joint as everyone in your party waits to be seated on Sunday morning? Can you tell me where the fire extinguisher nearest you is right now? Maybe not, but how much do you even think about using an extinguisher as you are walking past them hanging on the walls at work?

Another classic safety moto: Use the proper tool for the task. I never understood why this one was so hard at home vs work. Why is it we would never use the company’s screwdriver, for example, as a pry bar? Because if we break the screwdriver using it improperly and someone gets injured, then we must report it and then attempt to get a replacement screwdriver so on and so forth... total headache. Hopefully at work we do some sort of task hazard analysis, including

hand tool use and we request the proper tool for the job based off the hazards identified. But we all know the Saturday morning in the garage (paperwork be damned), a screwdriver is “whatever I say it is” mentality. This is the point I scratch my head. Mythinking is, what better excuse for me to buy more (better) tools and justify it? In addition to selfishly preserving life and limb, sign me up please! Why wouldn’t you want to be just as safe at home as at work?

My last example is how we store flammables and combustibles at home. This one is mind blowing. We store explosive gas, highly flammable liquids, and combustible solids not only near one another but, most of the time, in the same confined space withno labeling or signage at all to tell anyone that they are there. No, not Weapons of Mass Destruction, but camping propane bottles, gasoline, and cardboard. Simple items we all have in our garages, sheds, truck beds, camping totes and trunks of our cars. How about separating personal electric vehicle/batteries (bikes, scooters, carts) and lawn mower fuel? Do you separate the spare BBQ grill propane bottle from the 5-gal fuel can in the shed? If you participate in shooting sports, please take into consideration proper storage of ammunition and components to include physical security as well. How many of us have a flammable storage locker at home? Very few I would bet. Most of us can’t afford them and have to practice some common sense in how we store our flammable chemicals at home. Plus, odds are if we maintained our “home” flammable cabinets like the ones at work, they wouldn’t do us much good. Not vented properly, storing incompatible materials together, etc. You get my point.

**To wrap this up, safety really does start when you get up in the morning. Hopefully your sleep was interrupted by the smoke detector (that you recently changed the batteries in), that was set off due to a charging cell phone overheating and sparking a small blaze on the counter (that didn’t have a bunch of combustible mail around it making things worse) that was quickly put out because you have a fire extinguisher and your 13 year old knows how to use it. That’s how a “safety culture” gets started (Aluminum can crack).**



# TMF is Not a Static Measurement

By Joe Mathein, Training and Technical Assistance Specialist

The State of Nevada has used this measure of a system's capacity as the determining factor for evaluation of a loan applicant's ability to obtain, fulfill a project and repay the indebtedness without extreme financial hardships placed on the members of the community involved. There are other situations where the systems TMF is evaluated, the Sanitary Survey. The Sanitary Survey is one of the few times a regulatory agency has the opportunity to check in on a water system.

The acronym TMF itself stands for Technical, Managerial, and Financial capabilities of the water system. Each of these capabilities has an important role to play in the success of a water system's ability to provide a safe and healthful product as well as creating a sustainable future of potable water provision.

## Technical

The first letter in the acronym is "T" which stands for the technical capacity of the system. This is basically the system's ability to obtain an adequate and reliable source of water for the system's current and future needs. Not only the water, but the infrastructure needed for conveyance, storage, treatment, and distribution required to its customers. The employment of trained and certified operators is also one of the criteria that is measured in this capacity.

Within this capacity the physical structure and its components are evaluated for the current environment and their ability to provide for expansion and future complexities that may arise. The projections for larger storage capacities and increased pumping are necessary for systems that are new and projecting future development within the system. The concerns for treatment processes should always be considered when evaluating the experience and skill levels of a systems certified operator. Will the current staff be able to grow and maintain competency as the system adjusts to increases in population, regulatory requirements, and demands placed upon the system? Can the Distribution infrastructure, its appurtenances and employees continue seamlessly as future demands are placed upon it? A guiding document such as master plans, hydraulic mapping, and GIS can be instrumental for the changes that are coming.

## Managerial

The "M" in this acronym stands for Managerial, the system's institutional and administrative capabilities. This capacity is regarded as the cornerstone of the TMF evaluation. Which, in effect, means the system's abilities to conduct its affairs in a manner enabling the system to achieve and maintain compliance with the Safe Drinking Water Act (SDWA) requirements. This

capacity has overarching responsibilities for staffing, infrastructure planning, resource management, financial planning and decision-making. The ability for managerial success has direct effects on the Technical and Financial capabilities of a water system. As in any business management is the key to prolonged success.

The manager or managers, (depending on the size of the system) are evaluated on their ability to provide resources for achieving the goals of the system and its employees. The implementation of Best Practice Methods, understanding sustainable management, implementing recognized accounting principles, and establishing sound working relationships with neighboring systems, regulators, and the customer base are key components of this capacity. When the managerial capabilities are optimized the system's capacities are usually increased and result in a higher level of production with a higher quality product.

## Financial

The "F" in this acronym is for financial capabilities of a water system, which are plain and straightforward. Can the system pay its bills, provide for future capital improvements, and fund reserves. This entails many fiscal responsibilities; maintaining funds to pay the costs of operations and maintenance, account for and pay for depreciation of equipment and facilities, provide and pay for salaries, external costs, and capital costs. In short, the financial capability to pay for the costs of doing business while funding reserve accounts and debt obligations. There is a new tool in the toolbox for Finance and it is the Fiscal Sustainability Plan (FSP). This worksheet helps to establish a system's valuation, obligations, and rate comparison to support its ability to obtain financing and predict replacement of critical systems and equipment.

## TMF itself stands for Technical, Managerial, and Financial capabilities of the water system





Indicators of strong Financial Capacity include sound budgeting, adequate revenues and reserves, and the frequency of rate reviews. The FSP will help to identify any of the system components that are lacking or in need of improvement. While it is never an easy task to sit in a budget meeting and plan for these changes, it is quite another when it is a necessary change that has not been on the system's radar for planning and funding.

### **TMF Evaluation**

This has been a brief overview of the components that are encompassed in the TMF capabilities. These are evaluated by the State, the EPA, the USDA or any other funding agency when applying for a loan or a grant. The regulator also wants to evaluate these criteria to determine the health of the system in its present condition and into the future.

A wise man once said that we should be one step ahead what is coming. Therefore, the smart play is to take that step. Make an appointment with Nevada Rural Water Association staff to start the process or, if you have done this before, perform an evaluation of its current viability and needs. It is a far better thing to perform this task at your leisure than under an allotted time restraint that could result in a deficiency of your Sanitary Survey or denial of loan.

**It is a changing environment we live in, we should recognize and adjust the key components that are essential for sustaining the high quality of product and service our customers have come to expect and enjoy.**

# Max's Wastewater Corner: Answers

- 1) C – When sufficient chlorine is added and there is excess chlorine that is left over or free chlorine that leaves a residual amount, that point is referred to as breakpoint chlorination.
- 2) C – Ammonia is used to check for chlorine leaks at connection points.
- 3) B – 1,118 lbs/day. To solve for chlorine demand:
- Using the loadings or “pounds” formula, calculate the lbs of chlorine used to obtain a residual of 2.5 mg/l:  
 $13.5 \text{ mgd} \times 2.5 \text{ mg/l} \times 8.34 \text{ lbs/gal} = 281.47 \text{ lbs/day}$
  - Supply – Demand = Residual  
 $1,400 \text{ lbs/day} - 281.47 \text{ lbs/day} = 1,118 \text{ lbs/day}$

- 4) D – B kit  
There are three types of chlorine repair kits:  
A is for 150 lbs cylinders  
B is for 1-ton cylinders  
C is for rail cars  
SCBA (self-contained breathing apparatus) are the tanks typically worn by firefighters or rescue personnel.
- 5) C – When converted to a gas chlorine expands approximately 460 times.

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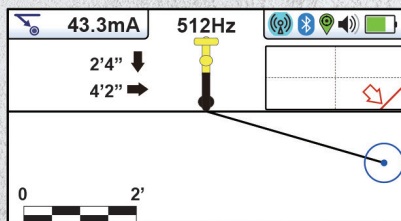
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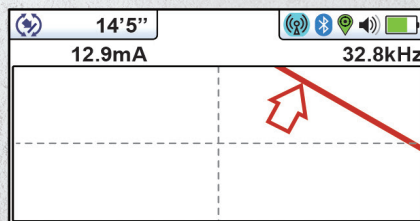
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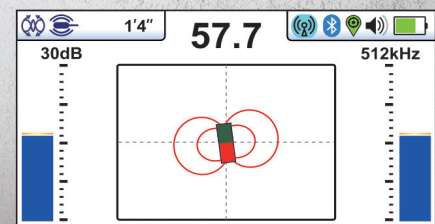
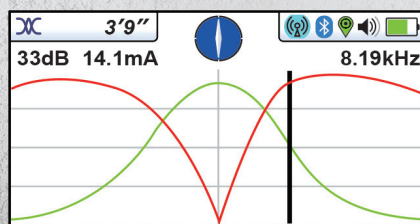
^ **Vector Locate** - shows orientation, line position, and distance relative to the locator in 3D

> **Transverse Plot Screen** - is used to display the peak and null to compare distortion shape



< **Plan View Screen** - displays the theoretical line in 2D from above ground in omnidirectional mode

∨ **Sonde Screen** - arrow guidance showing direction to the sonde and depth of cover





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- Catch and retain flushables



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## FOR LARGE MUNICIPAL LIFT STATIONS

### Deming Demersible Chopper Pumps

- Slice the most troublesome solids into small pieces

### StationGuard Manual Bar Screens

- Capture damaging wipes and debris

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