Colorado Centre Metropolitan District

EMERGENCY RESPONSE PLAN

March 2026

Prepared By:

CCMD

9696 Flagstone St • COLORADO SPRINGS, CO • 80925 • (719) 390-7000

Colorado Centre Metropolitan District

Emergency Response Plan

CWS and ERP Information

Please fill in the information below as indicated.

PWSID	CO0121140
Street Address	9686 Flagstone St
City, State Zip Code	Colorado Springs, CO 80925
Phone Number	(719) 390-7000
Population Served	3,600
Prepared By	Colorado Centre Metro District
Reviewed By	Alvaro Testa, District Manager
Date Completed	March 2026

PLAN DISTRIBUTION

Please fill in the recipient's name and title, the person who gave them the plan, and on what date.

RECIPIENT/TITLE	DISTRIBUTED BY	DATE
Sheriff's Department – Chief		
CCMD Fire Station – Chief		
Colorado Springs Fire Department – Chief		
District Manager		
County Emergency Response		
County Public Works		
CCMD Administration Office		
CCMD Water Plant		
Professional Consultants, Inc.		

CHANGE HISTORY

Please describe the changes made to this plan since its original development, who made the changes, and on what date the changes were incorporated into this plan.

DESCRIPTION OF CHANGE	NAME/TITLE	DATE
Update all Contact information; Water System Plan; Monitoring Plan & Monitoring Schedule.	**Pedro Velazquez, Assistant District Manager & Superintendent**	**3/16/2026**

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UTILITY INFORMATION

During an incident, you need to have system information about your water utility readily available for your personnel, first responders, repair contractors/vendors, the media, and other response partner agencies.

i. Utility Overview

Provide basic information about your utility.

Utility Information	
PWSID	CO0121140
Utility name and address	Colorado Centre Metro District 9686 Flagstone St Colorado Springs, CO 80925
Owner	Colorado Centre Metro District
Directions to utility from major roadway, include lat./long. coordinates	From the intersection of S Powers Blvd and Bradley Rd, head east on Bradley Rd until you reach the intersection between Bradley Rd and Marksheffel Rd, continue east on Bradley Rd. Then, turn left onto Horizonview Dr, continuo until you reach Flagstone St, turn right and the district office will be on the left. Lat./long. coordinates: 38.762841, -104.655241
Total population served and total service connections	**Population**: 3,675 **Service Connections**: 1,131
Name, title, phone number of primary contact (e.g., ERP Lead)	Alvaro Testa, District Manager, (719) 232-6793
Alternate contact	Pedro Velazquez, Assistant District Manager & Superintendent, (719) 310-5270
Location of treatment, distribution, collection schematics and operation manuals	9696 Flagstone Street Colorado Springs, CO 80925

The district's main phone number directs a caller to the phone tree for all District contacts, facilities, matters, etc.

All maps, manuals, plans, etc. (see below) are located at the operator's office in the water treatment plant, located at 9696 Flagstone Street.

- Map of distribution system
- Process flow diagram
- Plans for the following:
    - Pumping and storage facilities
    - Water treatment facilities
    - Chemical storage locations
    - Booster pump stations
- Distribution system diagrams and instrumentation information
- Equipment specifications
- O+M manuals
- SCADA system operation instructions
- Communications system operation instruction manuals

ii. Personnel Information

Attach your personnel roster here or fill out the table below.

Personnel			
Name and Title	**Job Duties and Responsibilities**	**Contact Information**	**Emergency Contact Information**
Alvaro Testa – District Manager		(719) 232-6793 altesta@outlook.com	
Lisa Wiencek – Accounting		(719) 652-4615 lisa.wiencek@coloradocentre.org	
Roseanne Romero – Office Administrator		(719) 390-7000 roseanne.romero@coloradocentre.org	
Pedro Velazquez – Assistant District Manager & Superintendent		(719) 310-5270 pedro.velazquez@coloradocentre.org	
Ben Martinez – Assistant Superintendent (Water & Wastewater)		(719) 640-2728 ben.martinez@coloradocentre.org	
Anthony Romero – Field Tech (Water & Wastewater)		(719) 216-3921 anthony.romero@coloradocentre.org	
Jimmy Allen – Field Tech (Water & Wastewater)		(719) 232-4080 jimmy.allen@coloradocentre.org	

iii. Primary Utility Components

List all the components necessary to maintain effective operation of your utility. Simply add more rows to the tables below if you have additional components. Text in italics represents examples – be sure to delete italicized text as necessary as you fill out the tables below and throughout this template.

Wells

Well Name	Depth/Location	Available Yield per Water Rights	Treatment Requirements/Associated Treatment Plant
Janitell #206	40 feet	The combined average annual amount of groundwater appropriated by the District Wells shall not exceed 600 acre-feet.	CCMD Water Treatment Plant – Hypochlorination, pressure filtration for manganese removal
Janitell #210	62 feet		CCMD Water Treatment Plant – Hypochlorination, pressure filtration for manganese removal
Janitell #211	64 feet		CCMD Water Treatment Plant – Hypochlorination, pressure filtration for manganese removal
Janitell #214	65 feet		CCMD Water Treatment Plant – Hypochlorination, pressure filtration for manganese removal
Janitell #217	53 feet		CCMD Water Treatment Plant – Hypochlorination, pressure filtration for manganese removal

Treatment Facilities

Facility Name	Address	Capacity
Water Treatment Plant	9696 Flagstone Street	1,000 GPM (permitted), 2,000 GPM (total)

Pump Stations

Facility Name	Address	Description
Booster Station	South and adjacent to water treatment plant	Boosters after treatment to distribution system

Tanks

Facility Name	Address	Capacity
3.0-MG Potable Water Storage Tank	Lot 7 Colorado Springs Airport Filing No. 1d except those parts described in Reception No.s 219009160, 219009162, and 219009164	3.0 million gallons

iv. Industry Chemical Handling & Storage Facilities

List all the facilities used for industry chemical handling and storage. Simply add more rows to the tables below if you have additional components. Text in italics represents examples – be sure to delete italicized text as necessary as you fill out the tables below and throughout this template.

Chemical Handling & Storage Facilities

Facility Name	Location	Chemicals Present	Other Comments
Water Treatment Plant	9696 Flagstone Drive	Sodium Hypochlorite 12.5%	750-gallons storage

v. Safety

Safety plans and procedures are being developed and will be available in the near future.

1. RESILIENCE STRATEGIES

This section contains strategies and resources to improve the resilience of the system, including the physical security and cybersecurity of the system.

1.1. Emergency Response Roles

Describe the roles and responsibilities for key utility and external response partner personnel in the table below. You can add, edit, or delete rows as necessary.

Water Utility and Partner Roles

Name/Title	Emergency Response Role	Responsibilities
Pedro Velazquez, Assistant District Manager & Superintendent	Emergency Response Lead	Responsible for all incident response activities, including developing strategies and tactics and ordering and releasing resources.
Joseph Roybal, County Sheriff	Security	Will provide incident security as needed once notified by ER Lead.
Randy Royal, Fire Chief	Other	Provide services as requested by Emergency Response Lead.
Pikes Peak Office of Emergency Management	Other	Coordinating with water department for notification to public.

External Response Partner Roles

Name/Title	Organization	Responsibilities During an Incident
Local Partners		
(719) 385-5957	Pikes Peak Office of Emergency Management	Coordinate with Emergency Response lead/alternate for response/set up command center
	911	Receive/dispatch appropriate response to emergency
(719) 520-7202 Joseph Roybal	Sheriff's Department	Provide safety to residents
(719) 444-7000 Randy Royal	Fire/HAZMAT	Provide medical treatment of fire suppression
(719) 578-3199 DeAnn Ryberg	El Paso County Public Health Director	Assistance with public notifications
State Partners		
(877) 518-5608	CDPHE	Assist with public notifications if water quality issue
(303) 239-4500	Colorado State Patrol	Assist with traffic as needed during emergency
(303) 908-7519	CoWARN	Assist with water supply/provide equipment
(303) 373-4772	SGS	Provide water quality analysis
(720) 852-6600	Colorado Division of Homeland Security	Assist with acts of terrorism
Federal Partners		
(800) 227-8917	EPA regional office – Region 8	Water Emergency Response Team Coordinator
(303) 629-7171	FBI field office – Denver, CO	Cyber-crime investigations
Complete NORS-Water Form	CDC	Report waterborne disease

1.2. Incident Command System (ICS) Roles

ICS is used to organize both near-term and long-term field-level operations for a broad spectrum of emergencies, from small to complex incidents, both natural and manmade. An ICS Incident Organization Chart (ICS Form 207), available at FEMA's ICS Resource Center, may be completed for your utility and inserted here or attached to your ERP.

1.3. Communication

Communication during an incident is critical to relay information to employees, response partners and critical customers about potential risks to health, infrastructure, and the environment.

1.3.1. Internal Communication

List all utility emergency response team members, their response role, title, and contact information.

Contact List

Name	Role/Title	Phone	Alternate Phone	Email	
Pedro Velazquez	Assistant District Manager & Superintendent	(719) 310-5270	(719) 390-7000	pedro.velazquez@coloradocentre.org	
Ben Martinez	Assistant Superintendent Water & Wastewater	(719) 640-2728	(719) 390-7000	ben.martinez@coloradocentre.org	
Anthony Romero	Field Tech Water & Wastewater	(719) 216-3921	(719) 390-7000	anthony.romero@coloradocentre.org	
Jimmy Allen	Field Tech Water & Wastewater	(719) 232-4080	(719) 390-7000	jimmy.allen@coloradocentre.org	

The District's main phone number directs a caller to the phone tree for all District contacts, facilities, matters, etc.

1.3.2. External Response Partner Communication

List all external response partners, their response role or position as well as contact information.

External Response Partner Contact List

Organization or Department	Point Person Name or Position	Phone	Alternate Phone	Email or Website
Local Partners				
911		911	911	https://www.911.gov/
County Sheriff	Joseph Roybal	(719) 520-7202	(719) 520-7100	https://www.epcsheriffsoffice.com/
County Administrator	Bret Waters	(719) 520-7276		https://admin.elpasoco.com/
El Paso County Public Health	DeAnn Ryberg	(719) 578-3199		elpasocountyhealth.org
IT Vendor – ITS, LLC	Josh List	(303) 564-4090	(719) 598-7524	https://www.itsaerospace.com/
SCADA Support – Browns Hill Engineering & Controls	John Suder	(720) 344-7771		https://www.brownshilleng.com/
Electrician – Fisher Enterprises	Mike Fisher	(719) 214-6723		https://www.fisherentfix.com/
Engineer – JDS-Hydro Consultants	Ryan Mangino	(719) 227-0072	(719) 649-8210	rmangino@jdshydro.com
State Partners				
CDPHE	Water Quality Control Dept.	(877) 518-5608	(303)-692-2000	https://cdphe.colorado.gov/
Colorado State Patrol		(303) 239-4500	(303) 239-4501	https://csp.colorado.gov
CoWARN – West	Kyra Gregory	(303) 908-7519	(720) 842-4257	Kyra.gregory@state.co.us
Federal Partners				
EPA Region 8	Cyrus Western	(800) 227-8917	(303) 312-6312	Western.Cyrus@epa.gov r8eisc@epa.gov
FBI field office	Mark D. Michalek,	(303) 629-7171		https://www.fbi.gov/contact-us/field-offices/denver
CDC		(800) 232-4636		https://www.cdc.gov/
FEMA	Katherine Fox	(303) 235-4800		https://www.fema.gov/
Cybersecurity & Infrastructure Security Agency	David d. Pemberton			CISARegion8@hq.dhs.gov

1.3.3. Communication Equipment Inventory

Inventory your utility's communication equipment below.

Communication Equipment

Type	Assigned to	Location	Number/Frequency/Channel
Cell phones	All operators	On persons	Pedro Velazquez (719) 310-5270 Ben Martinez (719) 640-2728 Anthony Romero (719) 216-3921

1.4. Media Outreach

List contact information for all media outlets that your utility may coordinate with during notification efforts. Additionally, include existing risk communication procedures, such as composing and delivering messages (e.g. message mapping), or reference an existing Risk Communication Plan.

Contact List

Organization or Department	Point Person Name & Position	Phone	Alternate phone	Email or Website
Newspaper – Gazette	Rich Williams – President & COO	(719) 632-5511 (719) 636-0121	1-866-632-6397	rich.williams@gazette.com
Radio station – KVOR-AM 740	Jim Arthur – News Director	(719) 593-2700		Jim@KVOR.com
TV station – KRDO Channel 13	Steve Doerr – General Manager	(719) 632-1515 Main Line	719-575-6285 Newsroom	steve.doerr@krdo.com krdonews@krdo.com https://krdo.com
Mountain View Electric Association	Sarah Muirheid – Communications Supervisor	(719) 715-3050	800-388-9881	sarah.m@mvea.coop https://www.mvea.coop/

1.5. Public Notification Templates

Insert your templates for public notifications here, or reference where they may be found. Ensure that your templates are consistent with the regulatory requirements for public notification contained in the Public Notification Rule (see 40 CFR 141, Subpart Q) and all relevant state regulations.

See Appendix C for CDPHE Public Notifications for Potable Water

https://docs.google.com/a/state.co.us/forms/d/e/1FAIpQLSc50w4W0hSDbm5B2S-w5OeKsm7vQoJq7bfDSg-_HR_J699e7Q/viewform

(Website for creating public notification form)

2. EMERGENCY PLANS AND PROCEDURES

This section contains plans and procedures that can be implemented in the event of a malevolent act or natural hazard that threatens your utility's ability to deliver safe drinking water.

2.1. Core Response Procedures

Core procedures are the "building blocks" for incident specific response procedures, as they are typically implemented across a broad variety of incidents (e.g., hurricane, earthquake, flood). List all your core procedures here.

Access

Item	Description
Equipment	Two (2) GMC 1500 trucks, one (1) Ram 3500 dump truck with snowplow, one (1) John Deere 318G Skid loader with bucket & pallet fork, one (1) Caterpillar 2PT6M trailer, one (1) WACHS VMT-1 maintenance trailer with vacuum & pressure washer, one (1) John Deere 4052R utility tractor with bucket. Equipment stored at water treatment facility.
Routes	Routes into and out of the District rely on access to Bradley Road, Drennan Road, and Marksheffel Road.
Identification	CCMD logo presents on staff uniforms and vehicles.

Physical Security

Item	Description
Access control procedures	District property and facilities are either fenced/locked or have SCADA capabilities.
Restricted areas	Restricted utilities are fenced with relevant warning signs.
Evidence protection measures	Report any unauthorized entry or vandalism to responding to law enforcement.

Cybersecurity

Item	Description
Disconnect procedure	Contact IT department.
Notification	Contact IT department.
Assess procedure	Contact IT department.
Equipment Redundancies	Firewall protection for digital assets.

Power Loss

Item	Description
Backup power systems	Only servers and SCADA systems have backup power. The water stored in 3-MG tank will provide supply during down times
Power utility	Mountain View Electric Association
Fuel plan	None required
Maintenance plan	Located in Superintendent Office in Water Treatment Plant

Emergency Alternate Drinking Water Supplies*

Item	Description
Bottled water	Provider name: Safeway The District has no official provider of bottled water but in the event of an entire water system emergency, the District could purchase cases of bottled water from several local grocers.
Stored water	Provider name: Colorado Centre Metropolitan District The District has one (1) 3.0-MG potable water storage tank.

Sampling and Analysis

Item	Description
Sampling procedures	Water quality sampling procedures and the 2021 Monitoring Schedule can be found in Appendix D. Constituents and quantity of samples to be determined by water quality incident.
Pre-identified sampling locations	Water quality sampling should be taken at any impacted well, discharge from tanks, and/or within the distribution system as necessary depending on water quality incident.
Sample collection	Lead water operator – Pedro Velazquez
Sample transportation	An operator on duty will oversee transporting the samples if lead operator is unavailable.
Laboratory capabilities	- 18-Residual Analyzer Depolox 3 Plus at the water treatment plant for chlorine residual testing - WG-702 Analyzer at the water treatment plant for chlorine residual testing - Hach DR 900 for manganese testing at the filtration plant - Hach Chlorine Pocket Colorimeter for residual testing on the distribution system - All other samples taken to Colorado Analytical Laboratories or El Paso County lab (see below)
Interpreting results	Report results to CDPHE when restarting the system to determine if State approves of results.
Other	See Monitoring Schedule in Appendix G for sample schedules, collection periods, locations, and other pertinent information.

Local Contract/State/Federal Laboratory Contact List

Name	Address	Analytes/Methods	Phone	Email or Website
Colorado Analytical Laboratory	10411 Heinz Way Commerce City 80640	See above	(303) 659-2313	coloradolab.com
El Paso County lab	1675 W. Garden of the Gods Road Ste. 2044 Colorado Springs, CO 80907	See above	(719) 578-3199	elpasocountyhealth.org

See Appendix D for sampling procedures. E. coli, VOCs (diesel, gasoline), Cl2, NOx, inorganics, general parameters

Family and Utility Personnel Well Being

Item	Description
Family disaster plan	Implement your family plan to ensure their well-being during an incident.
Assembly area	In the event of an emergency, all essential personnel will report to the Fire Station and will begin emergency protocol. The Fire Station will be "home base" during the emergency.
Supplies	Food, water, gloves, masks, goggles, and ear plugs can all be found in the water treatment facility in the event of an emergency.
Alternate work and shelter locations	Location: Water Treatment Plant During an emergency that requires the community to take shelter or the utilities at their private residents are unusable, the Water Treatment Plant will be open and will provide shelter, food, and water to those who need it.
Extreme temperatures	In the event the District experiences an extreme temperature event (more than likely it will be due to freezing), personnel will respond.

2.2. Incident-Specific Response Procedures

Applicable Incident-Specific Response Procedures (ISRPs), specialized procedures tailored to an incident type, are found in Appendix E. Incidents include:

- Cybersecurity
- Power Outage
- Drought
- Wildfire
- Extreme Cold and Winter Storms
- Flooding
- Tornado

EPA's website provides a number of incident action checklists (IACs) that you can use to help develop your own ISRPs. EPA also published the Prepared for Contamination in Your Distribution System? guidance that can help you develop a distribution system contamination ISRP.

See Appendix E for Incidence-Specific Response Procedures for the above incidences.

3. MITIGATION ACTIONS

This section contains actions, procedures, and equipment which can obviate or significantly lessen the impact of a malevolent act or natural hazard on the public health and the safety and supply of drinking water provided to your community and individuals, including the development of alternative source water options, relocation of water intakes, and construction of flood protection barriers.

3.1. Alternative Source Water Options and Interconnected Utilities

List information on alternative source water options and interconnected utilities to mitigate impacts during incidents.

Alternative Source Water Options

Type	Location	Comments
Possible	TBD	CCMD is working with Colorado Springs Utilities to create an emergency portable water connection.

Interconnected Utilities

Utility Name	Location	Contact Information	Comments
None			

3.2. Other Mitigation Actions

List any mitigation procedures or projects implemented at your utility, such as raising facilities and controls or constructing berms to protect against flood damage.

Mitigation Actions

Type	Location	Comments
Emergency Power	Water Plant	3-MG storage tank reserve, rent generator(s)
Emergency Power	Water Plant	Rent generator if more than one week
Emergency Power	Throughout System	Each station PLC, SCADA computer, and internet hardware has a backup battery
Telecommunication	Water Plant	Switch to manual operation
Telecommunication	Any	Switch to on-call and manual operations
Contamination	Well Location and Plant	CCMD is working with Colorado Springs Utilities to create an emergency portable water connection.
Leaks/Spills	Cl_2 at Plant	Containment vessels used for all tanks

4. DETECTION STRATEGIES

This section contains strategies that can be used to aid in the detection of malevolent acts or natural hazards that threaten the security or resilience of the system.

Please refer to the District's Risk and Resilience Assessment (RRA) for complete information regarding all facilities.

Detection Strategies

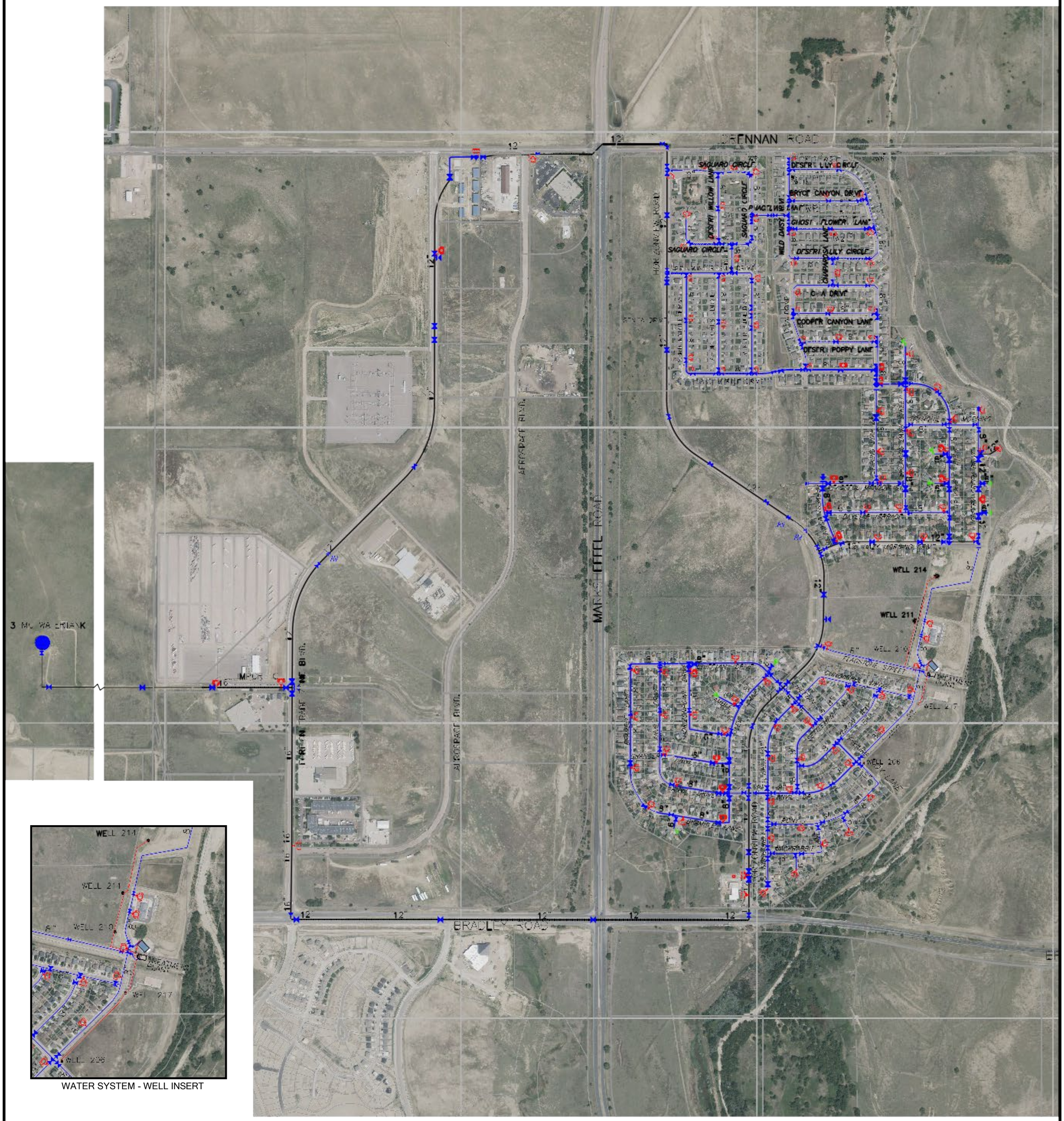
Threat	Detection Method	Procedure
Leaks/Spills	Visual	Switch to manual operations
Contamination	State-required testing	Pending deal with CSU
Cyberattack	Visual, Firewall	Switch to manual operations
Power Outage	Visual	Switch to manual operations
Telecommunications Failure	Visual	Manual operations by on-call staff
Equipment Failure	Visual	Multiple wells, backup treatment
Other	General	Fire Department personnel are available 24/7. The on-duty Fire Department will contact the District Manager and Superintendent in case of power outage or emergency response is needed.

Once an incidence occurs, begin documenting everything from response procedures, receipts for mitigation, and timesheets for future planning, as well as reimbursement.

Appendix A

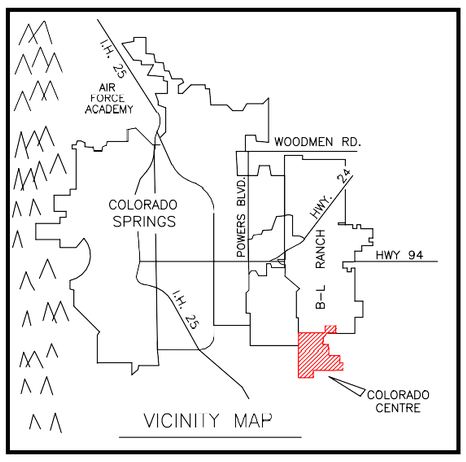
COLORADO CENTRE

WATER SYSTEM PLAN



WATER SYSTEM - WELL INSERT

COLORADO CENTRE WATER SYSTEM QUANTITY TABLE		
118 FIRE HYDRANTS		
299 MAIN LINE VALVES		
Size	Linear Feet	Miles
6"pvc	3,448	0.65
8"pvc	43,699	8.28
12"dip	20,963	3.97
12"pvc	520	0.10
16"dip	5,546	1.05
Total =	74,170	14.05



LEGEND:

- WATER LINE (D.I.P.)
- WATER LINE (PVC)
- VALVE
- HYDRANT / POST HYDRANT
- PLUG
- REDUCER
- AIR VAC

N

SCALE : 1" = 300'

300 150 0 300 600

COLORADO CENTRE METROPOLITAN DISTRICT

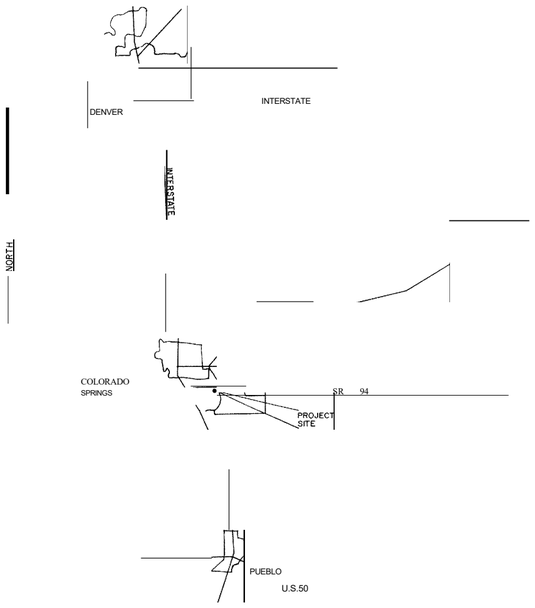
SEPTEMBER 2025

Appendix B

COLORADO CENTRE
PHASE I IMPROVEMENTS
SCHEDULE 1-3 MG TANK

FOR

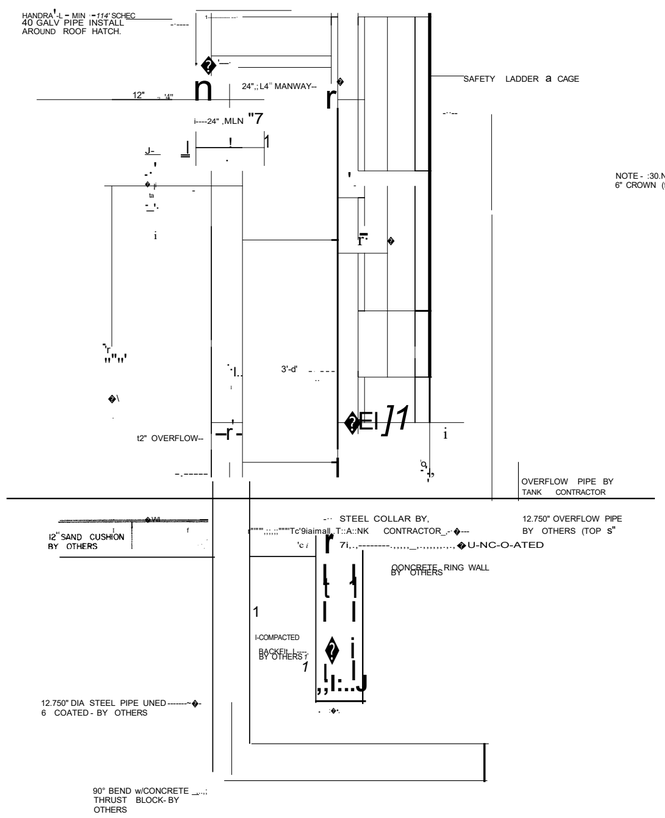
COLORADO CENTRE METROPOLITAN DISTRICT



VICINITY MAP

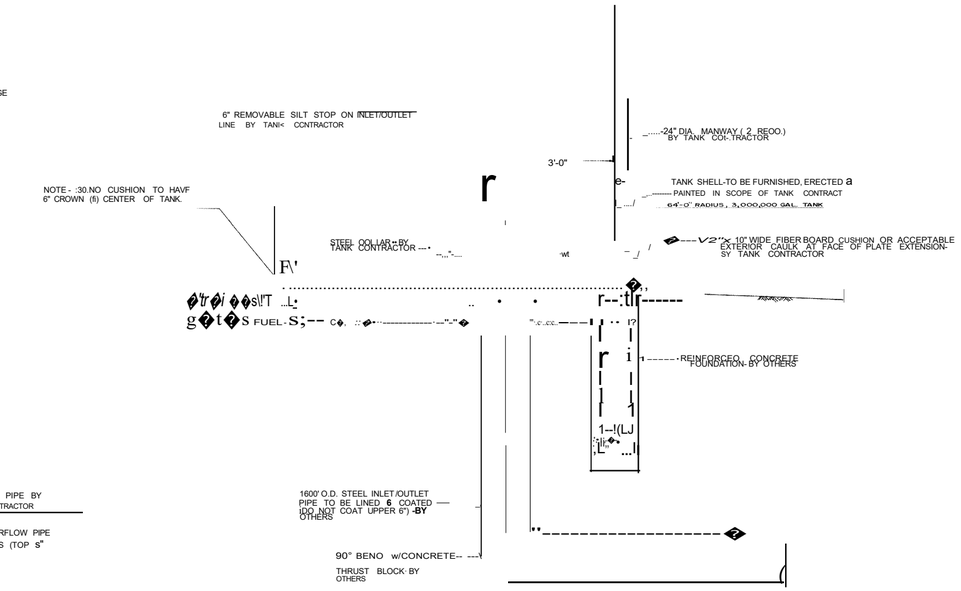
JANUARY 1984

GILBERT , MEYER S SAMS , INC.
1011 NORTH WEBER , SUITE C
COLORADO SPRINGS , COLORADO 80903



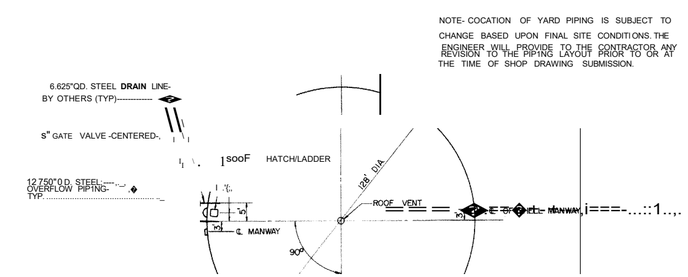
OVERFLOW PIPING DETAIL

SCALE: 1/2"; I'-0"



INLET a OUTLET PIPING DETAIL

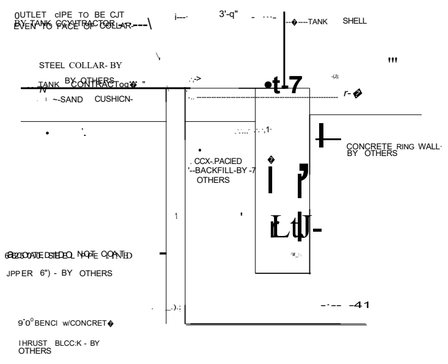
SCALE: 1/2"=1'-0"



NOTE- A :TOTAL MAXIMUM ALLOWABLE SOIL PRESSURE HAS YET TO Bf DETERMINED FOR THE SITE. ONCE OBTAINED THE ALLOWABLE SOIL PRESSURE WILL 8E MADE AVAILABLE TO THE CONTRACTOR a SHALL BE USED FOR FOUNDATION DESIGN. CENTER & INTERMEDIATE ROOF SUPPORT COLUMNS WITHIN THE TANK THE CONTRACTOR SHALL HAVE THE OPTION OF PROVIDING A STANDARD BEAM SUPPORT OR AN INDIVIDUAL CONCRDE FOUTING FOUNDATION FOR COLUMNS. SUBMITTAL OF CALCULATIONS S. SHOP DRAWINGS ARE REQUIRED.

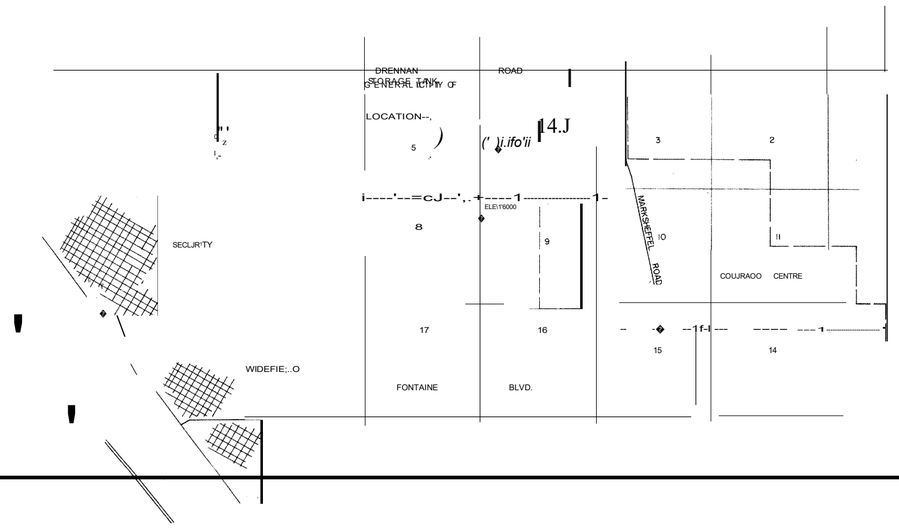
TANK PIPING PLAN

NO SCALE

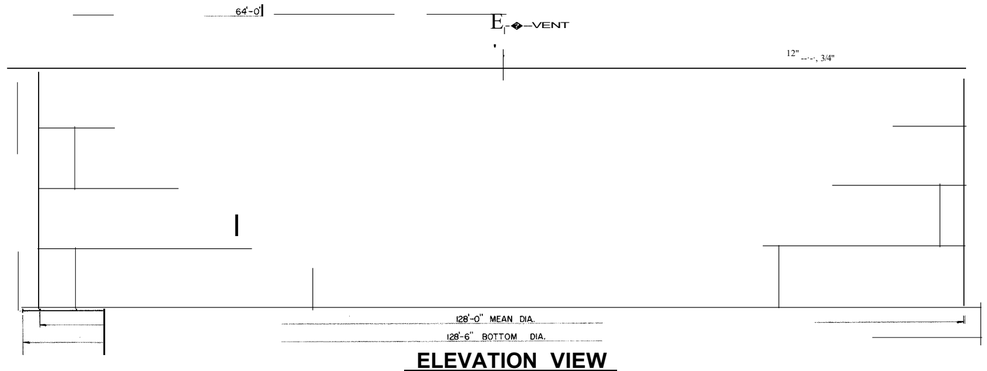


DRAIN PIPE DETAIL

SCALE: 1/2"= 1'-0"



VICINITY • MAP



ELEVATION VIEW

SCALE: I"= 10'

SCHEDULE I - 3 MG TANK

COLORADO CENTRE-PHASE I IMPROVEMENTS
COLORADO CENTRE METROPOLITAN DISTRICT

DRAWN	RSE
DESIGNED	EDM
CHECKED	EDM
DATE	1-84
PROJECT NO.	830070

GILBERT, MEYER 8c SAMS, INC.
CONSULTING ENGINEERS
1011 NORTH WEBER, SUITe..c··
COLORADO SPRINGS, COLORADO 00903

SHEET 2 OF 2

Appendix C

Tier 1 Public Notice Instructions

Delivery Requirements

Violations and other situations that require Tier 1 public notice have significant potential to have serious adverse effects on human health as a result of short-term exposure. Therefore, the water system must provide public notice to persons served as soon as practical but within 24 hours after learning of the violation or situation. The water system must issue a repeat notice at a frequency determined by the Water Quality Control Division for as long as the violation or situation persists. ***Public water systems that provide water to other water systems must deliver public notices to the owners or operators of all receiving water systems (consecutive water systems).***

Community systems must, at a minimum, use the following delivery method:

- ✓ Hand delivery

Non-community systems must, at a minimum, use the following delivery method:

- ✓ Posting in conspicuous locations

In addition, both community and non-community systems must use another method reasonably calculated to reach others if they would not be reached by the first method. Such methods could include emergency reverse 911 system phone calls, television, radio, newspapers, e-mail, or delivery to community organizations. If you post the notice, it must remain posted until the violation or situation is resolved, but no less than seven days.

Ten Required Elements of a Public Notice

1. Description of the violation or situation including contaminant(s) of concern and (as applicable) the contaminant level(s).
2. When the violation or situation occurred.
3. Any potential adverse health effects from the violation or situation, including any standard language provided in the rule. The health effects language may not be modified.
4. The population at risk; including subpopulations particularly vulnerable if exposed to the contaminant in their drinking water.
5. Whether alternate water supplies should be used.
6. What actions consumers should take, including when to seek medical help, if known.
7. What the system is doing to correct the violation or situation (corrective action).
8. When the system expects to return to compliance or resolve the situation.
9. Contact information: name, business address, and phone number of the water system owner or the owner's legal representative of the PWS that can provide additional information.
10. A statement encouraging notice recipients to distribute the notice to other persons served using the following standard language from the rule. This statement may not be modified: "Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in public places or by distributing copies by hand."

Corrective Actions

In the notice, describe corrective actions the water system is taking. Use one or more of the following actions, if appropriate, or develop your own:

- ✓ We are sampling throughout the distribution system for the presence of [contaminant]
- ✓ We are monitoring chlorine levels and will adjust them as needed
- ✓ We have isolated the break and are working to correct the problem.

After Issuing the Notice

Make sure to send WQCD copies of all public notice(s) and a Tier 1 Certificate of Delivery Form within ten days after issuing the notice.

Recommendations:

Although not required, it is recommended that the water system issue a "Problem Corrected" public notice once the violation or situation has been resolved.

It is recommended that the water system notify health professionals in the area of the potential health risks. People may call their doctors with questions about how the violation may affect their health, and the doctors should have the information they need to respond appropriately. In addition, health professionals, including dentists, use tap water during their procedures and need to know of potential problems so they can use bottled water.

Tier 2 Public Notice Instructions

Delivery Requirements

Tier 2 public notices are required for violations and situations that can have potential serious adverse effects on human health. Water systems must provide public notice to persons served as soon as practical but within 30 days after learning of the violation. The water system must issue a repeat notice every three months for as long as the violation or situation persists. ***Public water systems that provide water to other water systems must deliver public notices to the owners or operators of all receiving water systems (consecutive water systems).***

Community systems must use at least one of the following delivery methods :

- ✓ Hand delivery or other direct delivery method
- ✓ Mail (can be included with the bill)

Non-community systems must use at least one of the following delivery methods:

- ✓ Posting in conspicuous locations
- ✓ Mail, hand delivery, or other direct delivery method to each user (where known)

In addition, both community and non-community systems must use another method reasonably calculated to reach others if they would not be reached by the first method. Such methods could include newspapers, e-mail, or delivery to community organizations. If you post the notice, it must remain posted until the violation is resolved, but no less than seven days.

Ten Required Elements of a Public Notice

1. Description of the violation or situation including contaminant(s) of concern and (as applicable) the contaminant level(s).
2. When the violation or situation occurred.
3. Any potential adverse health effects from the violation or situation, including any standard language provided in the rule. The health effects language may not be modified.
4. The population at risk; including subpopulations particularly vulnerable if exposed to the contaminant in their drinking water.
5. Whether alternate water supplies should be used.
6. What actions consumers should take, including when to seek medical help, if known.
7. What the system is doing to correct the violation or situation (corrective action).
8. When the system expects to return to compliance or resolve the situation.
9. Contact information: name, business address, and phone number of the water system owner or the owner's legal representative of the PWS that can provide additional information.
10. A statement encouraging notice recipients to distribute the notice to other persons served using the following standard language from the rule. This statement may not be modified: "Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in public places or by distributing copies by hand."

Corrective Actions

In the notice, describe corrective actions the water system took or is taking. Listed below are some steps commonly taken by water systems with MCL violations. Choose the appropriate language, or develop your own:

- ✓ We are working with [*local/state agency*] to evaluate the water supply and researching options to correct the problem. These options may include treating the water to remove [*contaminant*] or connecting to [*system*]'s water supply.
- ✓ We have stopped using the contaminated well. We have increased pumping from other wells, and we are investigating drilling a new well.
- ✓ We will increase the frequency at which we test the water for [*contaminant*].
- ✓ We have since taken samples at this location and had them tested. They show that we meet the standards.

After Issuing the Notice

Make sure to send WQCD copies of all public notice(s) and a Tier 2 Certificate of Delivery Form within ten days after issuing the notice.

Tier 3 Public Notice Instructions

Delivery Requirements

Tier 3 public notices must be provided to persons served within one year (365 days) after you learn of the violation. Multiple monitoring violations can be serious. ***Public water systems that provide water to other water systems must deliver public notices to the owners or operators of all receiving water systems (consecutive water systems).***

Community systems must use at least one of the following delivery methods:

- ✓ Hand delivery or other direct delivery method
- ✓ Mail (can be included with the bill)
- ✓ Insert the notice in the Consumer Confidence Report, as long the CCR is directly delivered within one year (365 days) after you learn of the violation.

  Note: In order to meet the public notification requirement using the CCR the system **must use the direct delivery method** and **cannot use the waiver options for small systems**.

Non-community systems must use at least one of the following delivery methods:

- ✓ Posting in conspicuous locations
- ✓ Mail, hand delivery, or other direct delivery method to each user (where known)

In addition, both community and non-community systems must use another method reasonably calculated to reach others if they would not be reached by the first method. Such methods could include newspapers, e-mail, or delivery to community organizations. If you post the notice, it must remain posted until the violation is resolved, but no less than seven days.

Ten Required Elements of a Public Notice

1. Description of the violation or situation including contaminant(s) of concern and (as applicable) the contaminant level(s).
2. When the violation or situation occurred.
3. Any potential adverse health effects from the violation or situation, including any standard language provided in the rule. The health effects language may not be modified.
4. The population at risk; including subpopulations particularly vulnerable if exposed to the contaminant in their drinking water.
5. Whether alternate water supplies should be used.
6. What actions consumers should take, including when to seek medical help, if known.
7. What the system is doing to correct the violation or situation (corrective action).
8. When the system expects to return to compliance or resolve the situation.
9. Contact information: name, business address, and phone number of the water system owner or the owner's legal representative of the PWS that can provide additional information.
10. A statement encouraging notice recipients to distribute the notice to other persons served using the following standard language from the rule. This statement may not be modified: "Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in public places or by distributing copies by hand."

Corrective Actions

In your notice, describe corrective actions you took or are taking. Listed below are some steps commonly taken by water systems with monitoring violations. Choose the appropriate language, or develop your own:

- ✓ We have since taken the required samples, as described in the last column of the table above. The samples showed we are meeting drinking water standards.
- ✓ We have since taken the required samples, as described in the last column of the table above. The sample for [contaminant] exceeded the limit. [Describe corrective action; use information from public notice prepared for violating the limit.]
- ✓ We plan to take the required samples soon, as described in the last column of the table above.

After Issuing the Notice

Make sure to send WQCD copies of all public notice(s) and a Tier 3 Certificate of Delivery Form within ten days after issuing the notice.

Public Notification (PN) Certificate of Delivery Form

Submit Form and a Copy of the Delivered PN No Later than 10 Days After Distribution

Submit Online: wqcdcompliance.com/login (preferred)

Fax: (303) 758-1398

WQCD – Drinking Water CAS

4300 Cherry Creek Drive South; Denver, CO 80246-1530

Revision: 12/08/2015

Section I - Public Water System Information

PWSID:	CO0121140	System Name:	COLORADO CENTRE METROPOLITAN DISTRICT
Contact Person:		Phone #:	
Comments:			

I hereby affirm the Public Notification for the violation or situation identified above has been provided to consumers and any consecutive water systems in accordance with the delivery, content, and format requirements of the Colorado Primary Drinking Water Regulations (CPDWR). I affirm that future requirements for notifying new billing units will be met. I also understand this notice may need to be repeated in accordance with the CPDWR and I must submit this form again with each repeated notice.

Signature of Owner or Owner's Legal Representative — Date

Printed Name of Owner or Owner's Legal Representative

Section II - Public Notification Report Delivery

Date of Violation Letter or Public Notice Requirement Letter:

Violation Tier Level (Check One): ○ Tier 1 ○ Tier 2 ○ Tier 3

Date Public Notice Distributed:

Reason for Notice (Description of Violation or Situation):

Check All Distribution Methods Used to Reach All Consumers

- ☐ **Direct Delivery Method (Includes Hand Delivery and U.S. Mail) - Required for Community Water Systems**
- ☐ **Continuously Posted: (List Locations):**
- ☐ **Television, Radio, and/or Newspaper:**
- ☐ **Delivery of Multiple Copies to Hospitals, Apartment Buildings, Schools, or Other Community Centers**
- ☐ **E-mail**
- ☐ **Other Method Approved by CDPHE:**
- ☐ **Emergency - 911 System Message**

List All Consecutive Water Systems (Systems that Purchase Water From Your System) the Notice was Delivered to:

Appendix D

United States Environmental Protection Agency
Region 8 Laboratory
16194 W. 45th Dr.
Golden, CO 80403

September 2016

United States Environmental Protection Agency

Quick Guide To Drinking Water Sample Collection

Second Edition, Update

Disclaimer

This document provides a general summary of techniques used by EPA Region 8 Laboratory staff for the collection of chemistry samples for drinking water analysis. Other approaches to sample collection may be acceptable or desirable under given conditions. This document is intended as a refresher for those already trained in sample collection. The user is urged to check with the laboratory performing the analysis to ensure that the bottles, preservatives, and holding times which are to be employed are compatible with the methods used by the laboratory.

The second edition corrects and expands on the guidance for sampling water lines for compliance with the lead/copper rule. The first edition should not be used. The second edition also updates sampling techniques for total coliforms and *E. coli* and provides a reference for the Revised Total Coliform Rule. In addition, it contains minor editorial corrections and updates.

The second edition update expands on the guidance for sampling water lines for compliance with the lead/copper rule.

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General Sampling Procedures

This summary document is designed to be used by personnel trained in the collection of drinking water samples and handling of sample preservatives. Follow the procedures described below to assist in the collection of an acceptable sample and to maintain the integrity of the sample after collection.

1. Prepare a Sampling and Analysis Plan (SAP) which describes the sampling locations, numbers and types of samples to be collected, and the quality control requirements of the project.
2. Check with the laboratory before collecting samples to ensure that sampling equipment, preservatives, and procedures for sample collection are acceptable. It is best to obtain sampling supplies directly from the laboratory performing the analyses. Gather all equipment and supplies necessary for the project.

3. The acids and bases used in preservation of many types of samples described in this document are dangerous and must be handled with care. Always wear gloves and eye protection when handling preservatives. When opening a preservative bottle, particularly a glass ampoule, break open the ampoule away from yourself and others. Have acid/base neutralization supplies (baking soda) on hand in the event of a spill. If acid spills on your skin or clothing, remove the contaminated clothing and rinse the area with water. Do not apply baking soda (the heat of reaction can cause burns).
4. Collect samples in an area free of excessive dust, rain, snow or other sources of contamination.
5. Select a cold water faucet for sampling which is free of contaminating devices such as screens, aeration devices, hoses, purification devices or swiveled faucets. Check the faucet to be sure it is clean. If the faucet is in a state of disrepair, select another sampling location.

6. Collect samples from faucets which are high enough to put a bottle underneath, generally the bath tub or kitchen sink, without contacting the mouth of the container with the faucet.
7. Open the faucet and thoroughly flush. Generally 2 to 3 minutes will suffice, however longer times may be needed, especially in the case of lead distribution lines. Typically the water temperature will stabilize which indicates flushing is completed. Once the lines are flushed, adjust the flow so it does not splash against the walls of the bathtub, sink or other surfaces.

8. Follow the collection instructions provided for the analytes of interest described on the following pages. Wear eye protection and gloves if you are handling containers with acidic/basic preservatives and when you are collecting samples.

9. **Lead and Copper Rule Compliance Samples:**
   Select a cold water faucet for sampling which is free from devices that are designed to change the water composition, such as water softeners or point of use filters. DO NOT remove any screens or aeration devices. If you are collecting a first-flush sample for lead/copper, allow the water to sit undisturbed for at least six hours. DO NOT intentionally flush the water line before the start of the 6 hour period. Place a wide-mouth 1 L bottle under the faucet. Open the faucet and collect the first water out of the tap.

   If you want to test a lead service line then 8 to 10 sequential sample bottles (the number depends on how far the lead service line is from the tap) would be needed to see the profile of lead distribution.

   For more detailed sampling instructions, refer to the EPA's "Clarification of Recommended Tap Sampling Procedures for Purposes of the Lead and Copper Rule" at: https://www.epa.gov/sites/production/files/2016-02/documents/epa_lcr_sampling_memorandum_dated_february_29_2016_508.pdf.

10. Fill out the chain of custody form with the sample collection information. Record the site location, name of the sampler, date and time of collection, method of collection, type of analysis to be completed, and preservative in use.

11. Deliver or ship samples to the laboratory to ensure that holding times are met. Holding time starts at sample collection and ends at preparation and/or analysis. Be sure to allow time for the laboratory to process the samples

12. Return empty preservative containers to the laboratory for proper disposal.

SAMPLING FOR ASBESTOS

Bottles to Use


Or


Plastic or glass bottles may be used but plastic is preferred.

Preservative to Use

Cool to ≤ 4 °C (≤ 39.2 °F)

Holding Times

48 Hours

Sampling Instructions

Check with the laboratory but generally 1 L is required for analysis. Wear gloves and eye protection when collecting samples. Rinse the bottle and cap three times with sample water and fill the bottle to within one to two inches from the top. Place the sample into a cooler with ice for immediate delivery or shipment to the laboratory.

SAMPLING FOR BIOLOGICAL CONTAMINANTS

Total coliforms; Fecal coliforms; *E. coli*;
Enterococci; Heterotrophic Bacteria; or Coliphage

Bottle to Use

Sterile 125 or 150 mL plastic bottles must be used.

Preservatives to Use

Sodium Thiosulfate if sample is chlorinated

and

Cool to < 10 °C (< 50 °F) for source water and groundwater samples (recommended for drinking water as well) but do not allow samples to freeze

Holding Times

Holding times are generally very short - 8 hours for source water compliance samples, 30 hours for drinking water samples, 48 hours for coliphage samples. Deliver samples to the lab the day of collection if possible or ship via overnight delivery.

Sampling Instructions

Wear gloves when collecting samples. Do not rinse the bottles. The bottles are sterile so care must be taken not to contaminate the bottle or cap. Once the distribution line is flushed and the flow reduced, quickly open the bottle (but do not set the cap down), hold the cap by its outside edges only, and fill the sample bottle to just above the 100 mL line leaving a one inch headspace. Cap the bottle immediately and place it into a cooler with ice for delivery or overnight shipment to the laboratory.

SAMPLING FOR BIOLOGICAL CONTAMINANTS

Tips and Guidance for Total Coliform and *E. coli* Sampling

Some Tips on Collecting Samples

- Remove any attachments on the faucet
- Allow water to flow for 5 or 6 minutes before sampling
- Do not rinse or overfill container
- Always collect cold water; never sample hot water
- Do not touch the inside of the sample bottle or its cap

Avoid These Sampling Sites for Total Coliform, if Possible

- Outdoor faucets
- Faucets connected to cisterns, softeners, pumps, pressure tanks or hot water heaters
- New plumbing and fixtures or those repaired recently
- Faucets that hot and cold water come through
- Threaded taps
- Swing spouts
- Faucets positioned close to sink or ground
- Leaky faucets

For guidance on sampling related to the Revised Total Coliform Rule (effective April 1, 2016), refer to EPA's "Quick Reference Guide", found under the **RTCR Implementation Materials** heading at:
http://water.epa.gov/lawsregs/rulesregs/sdwa/tcr/regulation_revisions.cfm

SAMPLING FOR BIOLOGICAL CONTAMINANTS

Giardia* and *Cryptosporidium
using EPA Analytical Methods 1622 1623, or 1623.1
without filtration in the field

Bottle to Use

Plastic cubitainers or equivalent which can hold 10 L samples are used.

Preservatives to Use

Cool to ≤ 10 °C but do not freeze, keep at < 20 °C during shipment.

Holding Time

96 hours

Sampling Instructions

This method of sample collection is acceptable for EPA analytical methods 1622, 1623, and 1623.1 when sending water samples to the laboratory without filtering in the field. Talk to the lab to determine if this collection procedure is acceptable for the analytical method they plan to perform. Wear gloves when collecting samples. Rinse the sample bottle three times and fill the bottle completely to ensure 10 liters are collected. Chill samples to 1 – 10 °C as soon as possible by storing in a refrigerator or by pre-icing them in a cooler prior to shipment. Load samples into a cooler with fresh ice for either immediate delivery or overnight shipment to the laboratory. Complete any applicable sample collection forms.

Note: An additional 10 L matrix spike sample may be required by the laboratory.

For additional sampling instructions, including those for filtration refer to the EPA's "LT2 Rule *Cryptosporidium & E. coli* Sample Collection Recommendations Pocket Guide" found under the **Training Modules** heading at:
http://water.epa.gov/lawsregs/rulesregs/sdwa/lt2/lab_home.cfm

SAMPLING FOR UNPRESERVED CLASSICAL CHEMISTRY CONSTITUENTS INCLUDING NUTRIENTS, ANIONS, AND OTHER ANALYTES AS LISTED (IOCs)

Acidity, Alkalinity, Biological Oxygen Demand, Bromate, Chloride, Chlorite, Color, Conductivity, Fluoride, Foaming Agents, Nitrate, Nitrite, Odor, o-Phosphate, Residues, Silica, Sulfate, Surfactants, Total Dissolved Solids, Total Suspended Solids, Turbidity

Bottles to Use

Or

Plastic or glass bottles may be used but plastic is preferred.

Preservative to Use

Cool to ≤ 4 °C (≤ 39.2 °F)

Holding Times

Most of these analytes have short holding times. Deliver samples to the lab the same day if possible or ship via overnight delivery. Check with the lab regarding the holding times for the specific analytes of interest.

Sampling Instructions

Check with the laboratory on the sample volume required for analysis. Wear gloves and eye protection when collecting samples. Rinse the bottle and cap three times with sample water and fill the bottle to within one to two inches from the top. Place the sample into a cooler with ice for immediate delivery or shipment to the laboratory.

SAMPLING FOR CLASSICAL CHEMISTRY CONSTITUENTS AND NUTRIENTS REQUIRING ACID PRESERVATION AS LISTED (IOCs)

Ammonia; Nitrate + Nitrite Combined; Kjeldahl and Organic Nitrogen; Total Phosphorus

Bottles to Use

Or

Plastic or glass bottles may be used but plastic is preferred.

Preservative to Use

Sulfuric Acid (H_2SO_4) to pH < 2

Holding Times

28 days

Sampling Instructions

Check with the laboratory on the sample volume required for analysis. Wear gloves and eye protection when handling acids and while collecting samples. If the bottle contains a preservative, do not rinse the bottle. If the preservatives are not included in the bottle, rinse the bottle and cap three times with sample water, fill the bottle, and then carefully add the preservatives following the instructions provided by the laboratory. The bottle should be filled to within one to two inches from the top. Deliver or ship the sample to the laboratory.

SAMPLING FOR CYANIDE (IOC)

Bottles to Use


Or


Plastic or glass bottles may be used but plastic is preferred.

Preservatives to Use

0.6 g Ascorbic Acid if sample is chlorinated.

and

Sodium Hydroxide (NaOH) to pH >12

and

Cool to ≤ 4 °C (≤ 39.2 °F)

Holding Time

14 days

Sampling Instructions

Check with the laboratory on the sample volume required for analysis. Wear gloves and eye protection when handling acids and other preservatives and while collecting samples. If the bottle contains a preservative, do not rinse the bottle. If the preservatives are not included in the bottle, rinse the bottle and cap three times with sample water, fill the bottle, and then carefully add the preservatives following the instructions provided by the laboratory. The bottle should be filled to within one to two inches from the top. Place the sample into a cooler with ice for delivery or shipment to the laboratory.

SAMPLING AND COLORIMETRIC ANALYSIS FOR DISINFECTANT RESIDUALS

Free Chlorine, Combined Chlorine, Chloramines, Total Chlorine,

Bottles to Use

Glass test tubes are generally used.

Preservative to Use

None

Holding Times

Analyze Immediately On-Site

Sampling and Analysis Instructions for the DPD Colorimetric Methods

Several methods are approved for analysis of disinfectant residuals. A common method is the DPD Colorimetric Method (*Standard Methods*, 18th edition or later 4500-Cl G). Test kits for the DPD method are available commercially. The analyst should follow the specific directions provided with the test kit.

In general, the analyst will need to measure out a known volume of sample using a test tube or flask provided with the kit and will need to add the DPD reagents in the order described, wait a specific reaction time, and then measure the pink color that develops in the sample. The intensity of the pink color that develops after the addition of a reagent is measured using a spectrophotometer or a color comparator and relates directly to the amount of disinfection residual present in the sample.

Example Test Kits

SAMPLING FOR HALOACETIC ACIDS (HAA5s)

Monochloroacetic Acid, Dichloroacetic Acid, Trichloroacetic Acid,
Monobromoacetic Acid, Dibromoacetic Acid

Bottles to Use

Glass bottles must be used.

Preservatives to Use

Ammonium Chloride

and

Cool to ≤ 4 °C (≤ 39.2 °F) but do not freeze

Keep samples in the dark

Holding Times

Holding times are either 14 or 28 days depending upon the laboratory method in use.

Sampling Instructions

Check with the laboratory on the sample volume required for analysis. Wear gloves and eye protection when handling acids and other preservatives and while collecting samples. Do not rinse the bottle. If the preservatives are not included in the bottle, carefully add the preservatives following the instructions provided by the laboratory. Fill the bottle to within one to two inches from the top. Place the sample in a cooler with ice for delivery or shipment to the laboratory.

SAMPLING FOR METALS (IOCs)

Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium (total), Magnesium, Manganese, Mercury, Nickel, Selenium, Sodium, Silver, Thallium, Lead, Copper, Zinc, and other trace metals

Bottles to Use


Or

Or
*


Plastic or glass bottles may be used but plastic is preferred.

***Note:** 1000 mL wide-mouth bottles are recommended for collection of Lead and Copper Rule compliance samples

Preservative to Use

Nitric Acid (HNO_3) to pH < 2

Holding Times

28 days for mercury, 6 months for other metals

Sampling Instructions

Check with the laboratory on the sample volume required for analysis. Wear gloves and eye protection when handling acid and while collecting samples. If the bottle contains a preservative, do not rinse the bottle. If the preservatives are not included in the bottle, rinse the bottle and cap three times with sample water, fill the bottle, and then carefully add the preservatives following the instructions provided by the laboratory. The bottle should be filled to within one to two inches from the top. Deliver or ship the samples to the laboratory.

Lead and Copper Rule Compliance Samples: Refer to Item #9 in the General Sampling Instructions above. Do not remove aerators or rinse bottles. Use the bathroom tap if the kitchen tap has a water softener or point of use filter on it.

Note: If samples are not acid preserved, they must be received by the laboratory within 14 days of sampling.

SAMPLING FOR SAMPLING FOR RADIONUCLIDES

Gross Alpha, Gross Beta, Strontium-89, Strontium-90, Radium-226, Radium-228, Cesium-134, Iodine-131, Tritium, Uranium, Photon emitters

Bottles to Use


Or


Plastic or glass bottles may be used but plastic is preferred.

Preservatives to Use

Hydrochloric Acid (HCl) or Nitric Acid (HNO_3) preservation for all analytes except Iodine-131 and Tritium which do not require acid preservation. For Cesium-134, only HCl may be used as a preservative.

Holding Times

8 days for Iodine-131, 6 months for all other radionuclides

Sampling Instructions

Check with the laboratory on the sample volume required for analysis. Wear gloves and eye protection when handling acids and other preservatives and while collecting samples. If the bottle contains a preservative, do not rinse the bottle. If the preservatives are not included in the bottle, rinse the bottle and cap three times with sample water, fill the bottle, and then carefully add the preservatives following the instructions provided by the laboratory. The bottle should be filled to within one to two inches from the top. Deliver or ship samples to the laboratory.

SAMPLING FOR SYNTHETIC ORGANIC COMPOUNDS (SOCs)

Alachlor, Atrazine, Benzo(a)pyrene (PAHs), Carbofuran, Chlordane, 2,4-D, Dalapon, 1,2-Dibromo-3Chloropropane (DBCP), Di(2-ethylhexyl)adipate, Di(2-ethylhexyl)phthalate, Dinoseb, Endrin, Ethylene Dibromide (EDB), Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, Hexachlorocyclopentadiene (HEX), Lindane, Methoxychlor, Oxamyl (Vydate), Pentachlorophenol, Picloram, PCBs, Simazine, Toxaphene, 2,4,5-TP (Silvex), Diquat, Endothall, Glyphosate, Dioxin

Bottles to Use

Or

Glass bottles must be used. The type of cap required will depend upon the analyte and method the lab is using. Talk to the lab to be sure.

Preservatives to Use

Check with the lab to verify the type of preservation required which depends on laboratory method in use

and

Cool to ≤ 4 °C (≤ 39.2 °F) but do not freeze

Holding Times

Holding times are generally short – call the lab to be sure.

Sampling Instructions

Check with the laboratory on the sample volume required for analysis. Wear gloves and eye protection when handling acids and other preservatives and while collecting samples. Do not rinse the bottles. Ask the lab how to fill the bottle as this may depend on the bottle in use and the method used for analysis. Place the sample into a cooler with ice for immediate delivery or shipment to the laboratory.

SAMPLING FOR TOTAL ORGANIC CARBON

Bottles to Use


Or


Glass bottles are preferred but plastic may be used as well.

Preservatives to Use

Check with the lab to verify the type of preservation required which depends on laboratory method in use. Generally, preservation includes

Hydrochloric (HCl) or Sulfuric (H_2SO_4)
or Phosphoric Acid (H_3PO_4) to pH <2
and
Cool to ≤ 4 °C (≤ 39.2 °F) but do not freeze

Holding Time

28 days

Sampling Instructions

Check with the laboratory on the sample volume required for analysis. Wear gloves when handling acids and other preservatives and while collecting samples. If the bottle contains a preservative, do not rinse the bottle. If the preservatives are not included in the bottle, rinse the bottle and cap three times with sample water, fill the bottle, and then carefully add the preservatives following the instructions provided by the laboratory. The bottle should be filled to within one to two inches from the top. Place the sample into a cooler with ice for delivery or shipment to the laboratory.

SAMPLING FOR
VOLATILE ORGANIC COMPOUNDS (VOCs)

Benzene, Carbon Tetrachloride, o-Dichlorobenzene, p-Dichlorobenzene, 1,2-Dichloroethane, 1,1-Dichloroethylene, cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, Dichloromethane, 1,2-Dichloropropane, Ethylbenzene, Monochlorobenzene, Styrene, Tetrachloroethylene, Toluene, 1,2,4-Trichlorobenzene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichloroethylene, Vinyl Chloride, Xylenes(total)

Bottles to Use

Or

Clear or amber volatile organic analysis (VOA) glass bottles with Teflon septum-cap must be used.

Preservatives to Use

Check with the lab to verify the type of preservation required which depends on laboratory method in use. Generally, preservation includes

Sodium Thiosulfate or Ascorbic Acid if sample chlorinated
and **Hydrochloric Acid (HCl) to pH <2** and
Cool to ≤ 4 °C (≤ 39.2 °F) but do not freeze

Holding Time

14 days

Sampling Instructions

Check with the laboratory on the sample volume required for analysis. Typically duplicate samples must be collected (triplicate preferred) at each sampling location. Wear gloves and eye protection when handling acids and other preservatives and while collecting samples. Do not rinse the bottle as it should contain the preservatives before it is filled. Check to make sure this is the case and if not add the preservative. Slowly fill the bottle by allowing the sample to gently flow down the inside of the bottle. Create a meniscus of water at the mouth so that the bottle is actually overfilled. Cap the bottle so that no air bubbles are present in the bottle and the excess water spills down the sides of the bottle. Check to make sure that the bottle does not contain bubbles by inverting the bottle several times. Place the sample into a cooler with ice for delivery or shipment to the laboratory.

SAMPLING FOR TOTAL TRIHALOMETHANES (TTHMs)

Bromodichloromethane, Dibromochloromethane, Tribromomethane (Bromoform), Trichloromethane (Chloroform)

Bottles to Use

Or

Clear or amber volatile organic analysis (VOA) glass bottles with Teflon septum-cap must be used.

Preservatives to Use

Check with the lab to verify the type of preservation required which depends on laboratory method in use. Generally, preservation includes the following…

Sodium Thiosulfate or Ascorbic Acid if sample chlorinated
and **Hydrochloric Acid (HCl) to pH < 2** and
Cool to ≤ 4 °C (≤ 39.2 °F) but do not freeze

Holding Time

14 days

Sampling Instructions

Check with the laboratory on the sample volume required for analysis. Typically duplicate samples must be collected (triplicate preferred) at each sampling location. Wear gloves and eye protection when handling acids and other preservatives and while collecting samples. Do not rinse the bottle as it should contain the preservatives before it is filled. Check to make sure this is the case and if not add the preservative. Slowly fill the bottle by allowing the sample to gently flow down the inside of the bottle. Create a meniscus of water at the mouth so that the bottle is actually overfilled. Cap the bottle so that no air bubbles are present in the bottle and the excess water spills down the sides of the bottle. Check to make sure that the bottle does not contain bubbles by inverting the bottle several times. Place the sample into a cooler with ice for delivery or shipment to the laboratory.

Colorado Analytical Laboratories

Drinking Water Sampling and Shipping Instructions

Correct sample collection is essential to ensure accurate results and to avoid costly re-sampling.
If you have questions or problems, please call Colorado Analytical 303-659-2313.

Color-coded guide to bottle preservatives:

White Cap – Orange Stripe = Non-preserved
Yellow Stripe = Sulfuric Acid (H_2SO_4)
Red Stripe = Nitric Acid (HNO_3)
Blue Stickers = Hydrochloric Acid (HCl)
Orange Stickers = Ammonium Chloride, Ascorbic Acid, Sodium Sulfite or Sodium Thiosulfate for dechlorination.

Before Sampling:

- Read all instructions to ensure proper sampling results.
- Check your sample kit for broken or leaking bottles.
- Be aware of the type of preservative contained in the bottle(s). Safety glasses and gloves are recommended.
- Sample early in the week, or in sufficient time for samples to be delivered to the lab and analyzed within holding time.

General Sampling Steps (Nitrate/Nitrite, Fluoride, Inorganics (metals), Nutrients, Herbicides by 515.4, Endothall by 548, HAA5s by 552.2 and Radionuclides)

- If your sampling point has a faucet with an aerator, it should be removed prior to sample collection.
- Flush the cold-water sampling line approximately 10 minutes immediately prior to sampling.
- Do not touch the inside of the cap or around the edge of the bottle.
- Slow the water stream before collection.
- Fill the bottle with water to the line or just below the neck of the bottle if no line is indicated. The exception is for a ZERO HEADSPACE vial as described below.
- Securely replace the same bottle lid.
- Indicate sampling date, time, site and name of sampler on both the bottle and the Chain of Custody. Information on the COC and labels must match and be complete.

Additional Sampling Instructions

Method 525.2 – **Semi Volatile** (2 1-liter amber glass bottles).

- Do not let any plastic or rubber items come in contact with the water you are collecting as they might lead to phthalate or adipate contamination.
- Collect each sample as in General Sampling Steps.
- Bottles contain sodium sulfite, take care not to flush away this dechlorinating agent. Do not overfill.
- Add entire contents of one small clear vial labeled Hydrochloric Acid (HCl) to each 1-liter glass bottle.

Additional Sampling Instructions (cont.)

Method 549.2 – Diquat (500 mL amber plastic bottle).

- Collect the sample as in General Sampling Steps.
- Bottle contains sodium thiosulfate, take care not to flush away this dechlorinating agent.
- Add entire contents of one small clear vial labeled Sulfuric Acid (H_2SO_4).

Method 524.2 - Volatile Organic Analyses (VOC, TTHM)

- These 3 vials each have a specific dechlorinating agent.
- Remove the VOA vial cap.
- Slowly fill the vial with the water sample.
- To achieve ZERO HEADSPACE, the water sample must for a "dome" on top just before overflowing.
- Carefully add 2 - 4 drops of the HCl acid from the dropper provided to the vial filled with water.
- Replace the vial cap securely. Invert the vial to verify that no air bubbles are present. If air bubbles are present in the vial, open the cap and add more water sample until a "dome" has been established without overflowing.
- Rinse the HCl dropper and dispose of it in the trash, or return to the laboratory. Repeat for each vial.

Methods 504.1, 505, 531.1 and 547 – Additional Organic Compounds in VOA vials

- These vials each have a specific dechlorinating agent. Fill as above for ZERO HEADSPACE ensuring that you do not overflow.
- Replace the vial cap securely. Invert the vial to verify that there are no air bubbles greater than pea-size.

Method 5310-B – TOC analysis – Red Cap VOA Vials

- These vials contain sulfuric acid. Do not come in contact with the acid.
- Slowly fill the vial - zero headspace is not required.
- Replace the cap securely.

Sample Shipment

- EPA preservative protocol requires that samples be received at 6° C or less. The best way to achieve correct temperature is to use ice cubes rather than "blue-ice". Place sample containers and double-bagged ice into cooler.
- Add packing material to prevent shifting or breakage.
- Place the COC form in the Ziploc bag provided on top of all contents in the cooler.
- To keep shipping costs at a minimum, replace cooler in the box it was shipped in. The cooler is now ready for sealing and shipping.
- Ship cooler by overnight service to the **Commerce City, Colorado** address below (please do not ship to Lakewood). Feel free to hand deliver to either location.

Ship or Hand Deliver:	Colorado Analytical Laboratory 10411 Heinz Way Commerce City, CO 80640	or	**Hand Deliver**:	Colorado Analytical Laboratory 12860 W Cedar Dr, Unit 100A Lakewood, CO 80228

Eastern Analytical, Inc.
professional laboratory and drilling services

Questions? Call 1-800-287-0525

Sample Collection Instructions for Public Water Supplies: Volatile Organic Compounds (VOCs)

Please read instructions prior to collecting sample(s).

Non-Chlorinated Water Supply Instructions

1. Do NOT disinfect the sample tap with chlorine before taking this sample.
2. Remove aerator and screen from the faucet.
3. Turn on the cold water tap. Flush the system for 4-5 minutes or until the temperature has stabilized, whichever is longer. Reduce the flow so that the stream of water is no greater than a thin stream.
4. Fill both 40ml VOA vials provided with NO headspace or air bubbles by filling the vials just above the rim to form a meniscus. Gently tap the vials to dislodge any air bubbles.
5. Carefully place the cap over the vial. The Teflon side, (shiny side) of the septum will be facing up. Screw cap on securely. Check for air bubbles by inverting the vial and gently tapping the cap. If bubbles are present, add more water.
6. Cool sample with ice to < 6 degrees C and return to the lab as soon as possible.

Chlorinated Water Supply Instructions

1. Do NOT disinfect the sample tap with chlorine before taking this sample.
2. Remove aerator and screen from the faucet.
3. Turn on the cold water tap. Flush the system for 4-5 minutes or until the temperature has stabilized, whichever is longer. Reduce the flow so that the stream of water is no greater than a thin stream.
4. Fill both 40ml VOA vials provided with NO headspace or air bubbles by filling the vials just above the rim to form a meniscus. Gently tap the vials to dislodge any air bubbles.
5. Carefully add 5 drops of the 1:1 HCl provided. The acid will sink to the bottom of the vial and displace 5 drops of sample.
6. Carefully place the cap over the vial. The Teflon side, (shiny side) of the septum will be facing up. Screw cap on securely. Check for air bubbles by inverting the vial and gently tapping the cap. If bubbles are present, add more water.
7. Cool sample with ice to < 6 degrees C and return to the lab as soon as possible.

HCl is corrosive please use caution.

1. The sampler will receive a sample kit from our lab.

2. **WHEN SAMPLING, BRING ICE IN SEALED BAGS TO CHILL SAMPLES DURING SAMPLE COLLECTION.**

3. Put on nitrile gloves. If sampling from faucet, remove the aerator and screen.

4. Open the tap and let the water of the sample source run at fast flow for approximately 5 minutes.

5. The sample kit will include sample bottles depending on the type of test. Bottles, volumes, and preservatives required per test are as follows:

TEST NAME	BOTTLES AND PRESERVATIVE	HOLD TIME
524.2 (Chlorinated)	(4) 40 mL amber glass vials with 25 mg ascorbic acid (1) plastic dropper bottle with 2 mL 1:1 HCl	14 days
524.2 (un-Chlorinated)	(4) 40 mL amber glass vials with 10 mg of Sodium thiosulfate (in liquid form) (1) plastic dropper bottle with 2 mL 1:1 HCl	14 days
524.3	(3) 40mL amber glass vials with 25 mg Ascorbic Acid and 200 mg of maleic acid.	14 Days
624 (un-Chlorinated)	(3) 40mL amber glass vials with 25 mg Ascorbic Acid (1) plastic dropper bottle with 2 mL 1:1 HCl	14 Days
624 (Chlorinated)	(4) 40 mL amber glass vials with 10 mg of Sodium thiosulfate (in liquid form) (1) plastic dropper bottle with 2 mL 1:1 HCl	14 Days
8260 (un-Chlorinated)	(3) 40mL amber glass vials with 4 drops 6N HCL 1:1	14 days

CAUTION: Handle the dropper bottle with care: HCl is a very strong acid.

6. Use indelible ink (i.e. Sharpie pens) to clearly identify the sample bottles with the information listed below (if not already on the label).
   - Client Name
   - Analysis required
   - Preservative used
   - Sample ID
   - Date and Time of collection

7. Slow water flow to thickness of a pencil (to minimize splashing) and fill bottle.

8. If you are sampling from un-Chlorinated source or for 524.3, please go directly to step no. 9.

Chlorinated source:

Fill sample vials to the bottom of the neck. Let sample sit one minute to allow the dechlorinator to take effect. LEAVE THE SAMPLE TAP WATER FLOWING DURING THIS WAIT PERIOD. Make sure the mouth of the bottle does not come in contact with anything other than the sample water. Collect the sample directly from the source and not through any plastic or rubber hose or tubing. **DO NOT RINSE OUT PRESERVATIVE.**

After the wait, add **10** drops of acid, or enough to bring the sample pH to less than 2, to each vial from the dropper bottle for final preservation. Using a very slow flow speed, VERY SLIGHTLY overfill each vial with additional sample water. (If the vial is overfilled excessively, the preservatives will be diluted and may not be effective.)

Go to step 10

9. **Un-Chlorinated source:**
   Fill sample vials to the bottom of the neck. Using a very slow flow speed, VERY SLIGHTLY overfill each vial with additional sample water. (If the vial is overfilled excessively, the preservatives will be diluted and may not be effective.)

10. Cap and invert the bottles at least 5 times to mix the sample and preservative. Invert each sample vial and tap it to check for trapped air bubbles. If air bubbles are detected, carefully open the vial (right side up), and add more sample.

11. Store at ≤6˚C but above the freezing point of water until transported to the lab.

SAMPLE SHIPPING AND STORAGE

1. If shipping samples on the same day of sampling, chill samples until ≤6°C by exchanging the wet ice used during sampling with **FRESH** wet ice.

2. **Pack chilled samples** in a cooler and add enough **FRESH** wet ice to take up 30-50% of the cooler (e.g. most of the remaining space) inside two large plastic bags as recommended in our "***Wet Ice Packing Instructions***."

3. Complete the Chain of Custody during sample collection. Place Kit Order and completed Chain of Custody in a Ziploc style bag in the cooler on top of packing material. The following information is required on the completed Chain of Custody.
   - Collector's name
   - Client Name
   - Sample site
   - Date and time of collection
   - Comments about the sample (if applicable)
   - Sample type

4. **Ship via overnight service such as FEDEX, UPS, or DHL, etc.** Maintain an environment at ≤6˚C but above the freezing point of water during transit. It is recommended that samples arrive within 48 hours of sampling, with no more than 40 hours for transit.

5. If samples are received on the same day as collection, temperature may be >10˚C with evidence of cooling.

6. Maximum **HOLDING TIME FOR SAMPLES** is **14 days** from time of collection.

7. Alternatively, cool the samples down by placing them **overnight** in a cooler with wet ice, or in a refrigerator (store chilled for at least 12 hours before packing for shipment). Maintain the cold samples until repacked in the cooler for shipment to the lab.

ADDITIONAL NOTES

- Try to collect only on a Monday, Tuesday or Wednesday and ship no later than Thursday of each week, and try to **NOT** collect samples on Friday, Saturday, or Sunday unless special arrangements have been made for the receipt of samples at the laboratory within 48-hours of collection.
- If shipping to the laboratory with **frozen gel packs** rather than wet ice, please be sure that the gel packs have **been frozen for at least 48 hours** prior to the shipment time.

Appendix E

Incident Action Checklist – Cybersecurity

For on-the-go convenience, the actions in this checklist are divided up into three "rip & run" sections and provide a list of activities that water and wastewater utilities can take to prepare for, respond to and recover from a cyber incident. You can also populate the "My Contacts" section with critical information that your utility may need during an incident.

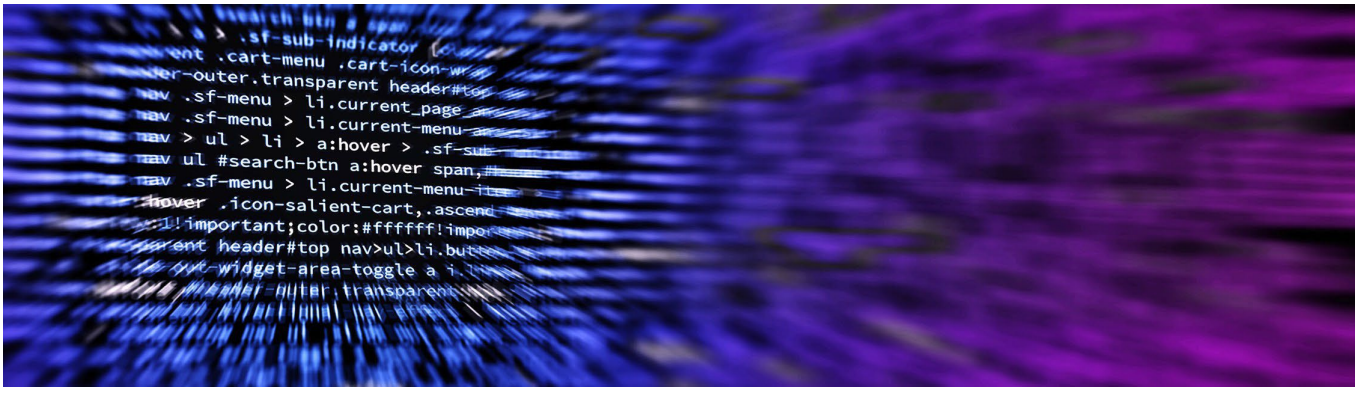
Cyber Incidents and Water Utilities

Cyberspace and its underlying infrastructure are vulnerable to a wide range of hazards from both physical attacks as well as cyberthreats. Sophisticated cyber actors and nation-states exploit vulnerabilities to steal information and money and are developing capabilities to disrupt, destroy or threaten the delivery of essential services such as drinking water and wastewater.

As with any critical enterprise or corporation, drinking water and wastewater utilities must evaluate and mitigate their vulnerability to a cyber incident and minimize impacts in the event of a successful attack. Impacts to a utility may include, but are not limited to:

- Interruption of treatment, distribution or conveyance processes from opening and closing valves, overriding alarms or disabling pumps or other equipment
- Theft of customers' personal data such as credit card information and social security numbers stored in on-line billing systems
- Defacement of the utility's website or compromise of the email system
- Damage to system components
- Loss of use of industrial control systems (e.g., SCADA system) for remote monitoring of automated treatment and distribution processes

Cyber incidents can compromise the ability of water and wastewater utilities to provide clean and safe water to customers, erode customer confidence and result in financial and legal liabilities. The following sections outline actions drinking water and wastewater utilities can take to prepare for, respond to and recover from cyber incidents.



Actions to Prepare for a Cyber Incident

Utility

- [ ] Identify all mission critical information technology (IT) systems, considering business enterprise, process control and communications. Document the key functions of the mission critical objectives, and identify the personnel or entity responsible for operating and maintaining each IT system.

- [ ] Identify an overall IT security lead to coordinate with each IT system manager and oversee all cyber-related duties.

- [ ] Ensure that IT system managers enforce cybersecurity practices on all business enterprise, process control and communications systems. For example, verify adherence to user authentication, current anti-virus software and installation of security patches.

- [ ] Identify priority points of contact for reporting a cyber incident and requesting assistance with response and recovery. Include any state resources that may be available such as State Police, National Guard Cyber Division or mutual aid programs, as well as the Department of Homeland Security Cybersecurity and Infrastructure Security Agency (CISA) at https://www.cisa.gov/reporting-cyber-incidents.

- [ ] Review and update the utility's emergency response plan (ERP) to address a cyber incident impacting business enterprise, process control and communications systems. Account for all potential impacts on operations, and ensure emergency contacts are current.

- [ ] Prevent unauthorized physical access to IT systems through security measures such as locks, sensors and alarms. Include workstations and process control systems (e.g., programmable logic controllers or PLCs).

- [ ] Train all essential personnel to perform mission critical functions during a cyber incident that disables business enterprise, process control and communications systems. Include the manual operation of water collection, storage, treatment and conveyance systems.

- [ ] Conduct drills and exercises for responding to a cyber incident that disables critical business enterprise, process control and communications systems.

Actions to Prepare for a Cyber Incident *(continued)*

IT Staff or Vendor

- ☐ Establish a program for maintaining updated anti-virus software on all critical IT systems, along with rapid installation of all security patches.
- ☐ Set up an automatic back-up on critical systems and ensure the process is producing a readable, uncorrupted restore file on a routine basis.
- ☐ Implement rigorous user authentication, including multi-factor authentication where possible. Use individual accounts and unique passwords for each employee, and restrict IT system access privileges to the level needed for a user's duties.
- ☐ Restrict internet access to process control systems unless absolutely necessary.
- ☐ Where possible, separate process control system traffic from business traffic through the use of a firewall. If this is not possible, logically filter traffic through the use of a firewall.
- ☐ Identify all routes of remote access to IT systems. Eliminate remote access where possible, and restrict remaining access (e.g., do not allow persistent remote access to control networks).
- ☐ Assess the use of additional strategies to protect IT systems, such as application whitelisting, network segmentation with restricted communication paths and active monitoring for adversarial system penetration.
- ☐ Conduct a detailed assessment of vulnerabilities in all mission critical IT systems. Consider use of the tools and subject matter experts provided by the DHS Cybersecurity and Infrastructure Security Agency (https://www.cisa.gov/cybersecurity). Develop an action plan to mitigate all significant vulnerabilities identified in the assessment.

Notes:

Actions to Respond to a Cyber Incident

Utility

- [ ] If possible, disconnect compromised computers from the network to isolate breached components and prevent further damage, such as the spreading of malware. Do not turn off or reboot systems – this preserves evidence and allows for an assessment to be performed.
- [ ] Notify IT personnel and/or IT vendor of the incident and the need for emergency response assistance. In addition, DHS CISA can assist with IT system response and recovery (https://www.cisa.gov/reporting-cyber-incidents).
- [ ] Assess any damage to utility systems and equipment, along with disruptions to utility operations.
- [ ] Execute the utility ERP as needed, including notification of utility personnel, actions to restore operations of mission critical processes (e.g., switch to manual operation if necessary), and public notification (if required).
- [ ] Report the cyber incident as required to law enforcement and regulatory agencies.
- [ ] Notify any external entities (e.g., vendors, other government offices) that may have remote connections to the affected network(s).
- [ ] Document key information on the incident, including any suspicious calls, emails, or messages before or during the incident, damage to utility systems, and steps taken in response to the incident (including dates and times).

IT Staff or Vendor

- [ ] Review system and network logs, and use virus and malware scans to identify affected equipment, systems, accounts and networks.
- [ ] Document which user accounts were or are logged on, which programs and processes were or are running, any remote connections to the affected IT systems or network(s) and all open ports and their associated applications.
- [ ] If possible, take a "forensic image" of the affected IT systems to preserve evidence. Tools to take forensic images include Forensic Tool Kit (FTK) and EnCase.
- [ ] If possible, identify any malware used in the incident, any remote servers to which data may have been sent during the incident, and the origin of the incident. DHS CISA can assist with the forensic analysis (www.cisa.gov/reporting-cyber-incidents).
- [ ] Research and identify if any employee or customer personally identifiable information (PII) was compromised.
- [ ] Check the system back-up time stamp to determine if the back-up was compromised during the incident.
- [ ] Document all findings, and avoid modifying or deleting any data that might be attributable to the incident.

Notes:

Actions to Recover from a Cyber Incident

Utility

- [ ] Continue to work with IT staff, vendors and integrators, government partners and others to obtain needed resources and assistance for recovery.
- [ ] Notify affected employees and customers if any PII was compromised.
- [ ] Submit an incident report through WaterISAC (866-H2O-ISAC). Membership is not required to submit a report.
- [ ] Develop a lessons learned document and/or an after action report (AAR) to document utility response activities, successes, and areas for improvement. Create an improvement plan (IP) based on your AAR and use the IP to update your vulnerability assessment, ERP and contingency plans.
- [ ] Register for cybersecurity alerts and advisories from water sector and government partners to be aware of new vulnerabilities and threats. Two sources of cybersecurity alerts are WaterISAC, which has a basic membership that is free, and ICS-CERT (https://ics-cert.us-cert.gov/alerts).

IT Staff or Vendor

- [ ] Remove any malware, corrupted files and other changes made to IT systems by the incident.
- [ ] Restore IT systems as required (e.g., re-image hard drives, reload software). DHS CISA can assist with the IT system recovery (https://www.cisa.gov/reporting-cyber-incidents).
- [ ] Restore compromised files from a system back-up that has not been compromised.
- [ ] Install patches and updates, disable unused services and perform other countermeasures to harden the system against known vulnerabilities that may have been exploited.

Notes:

My Contacts and Resources

CONTACT NAME	UTILITY/ORGANIZATION NAME	PHONE NUMBER
Joseph Roybal	Law Enforcement	(719) 520-7202
Josh List, ITS, LLC	IT Staff/Vendor	(303) 564-4090
John Suder, Browns Hill Engineering & Controls	SCADA Staff/Vendor	(720) 344-7771
	DHS Cybersecurity and Infrastructure Security Agency (CISA)	(888) 282-0870
Colorado Analytical Laboratory	Local Laboratory	(303) 659-2313
Public Notification	CDPHE	(877) 518-5608
James Reid	Pikes Peak Office of Emergency Management	(719) 385-5957
El Paso County Public Health	Local Health Department	(719) 578-3199
CoWARN, Kyra Gregory	WARN Chair	(303) 908-7519

Resources

- Best Cybersecurity Practices (Water ISAC)
- Cyber Security Evaluation Tool (DHS ICS-CERT)
- Advisories (DHS ICS-CERT)
- Cybersecurity Advisors (DHS)
- DHS Cybersecurity and Infrastructure Agency (CISA)
- Cybersecurity Guidance and Tool (AWWA)

Notes:

Incident Action Checklist – Power Outages

For on-the-go convenience, the actions in this checklist are divided into three "rip & run" sections and are examples of activities that drinking water and wastewater utilities can take to prepare for, respond to and recover from power outages. You can also populate the "My Contacts" section with critical information that your utility may need during a power outage.

Power Outages and Water Utilities

The loss of electric power can have profound impacts on drinking water and wastewater utilities. Sometimes the loss of power can be caused by events that can be predicted in advance such as hurricanes or ice storms. Other power outages, such as those caused by earthquakes, cyber incidents or space weather may occur with little or no notice. In California, the Public Safety Power Shutoff program allows electric companies to proactively shut off grid power to customers, including water utilities, to reduce fire ignition potential in high risk areas when extreme conditions present a clear and imminent danger to public safety.

The impacts of losing grid power at drinking water and wastewater utilities may include pressure losses and boil water advisories, a reduction or cessation of water treatment, sewage back up and the discharge of untreated sewage into public right of ways, rivers and streams. The consequences of these impacts on the community could be devastating:

- Firefighters would not be able to access water from hydrants.
- Local healthcare facilities and hospitals may have to evacuate patients or close.
- Restaurants and businesses may have to close, resulting in economic losses.
- Homes, businesses and healthcare facilities may become unsanitary and uninhabitable.
- Environmental damage could occur.

There are many steps drinking water and wastewater utilities can take to obtain backup power and ensure that their lifeline services continue as long as possible during grid power outages.

Preparing for the Loss of Power During Hurricanes

New Hanover County, North Carolina

When Hurricane Florence struck New Hanover County in September 2018, Cape Fear Public Utility Authority (CFPUA) was ready: facility and vehicle fuel tanks were topped off (a standard practice for CFPUA, especially in advance of a hurricane); generator run times and fuel capacities were calculated to help ensure continuity of operations under back-up power; facility power specifications and requirements were uploaded to the US Army Corps of Engineer's Emergency Power Facility Assessment Tool (EPFAT); and, CFPUA implemented its established emergency fuel supply contract.

With four major treatment plants, 150 pump stations and dozens of groundwater well sites, all facilities were preemptively running on emergency generator power when tropical storm force winds made landfall. When the full force of the hurricane struck, ninety percent of the county and all CFPUA facilities lost grid power. The emergency generators did their job of maintaining power to all critical facilities and equipment.

Still, these preparations were almost not enough when the fuel supplier was unable to fulfill its contract. During the hurricane, the supplier lost grid power and had no redundancy. Business employees had evacuated and there were not enough drivers to dedicate themselves to supplying fuel to CFPUA.

Working with the County Emergency Operations Center (EOC), CFPUA was able to obtain fuel from a terminal at the North Carolina State Port. Determining a vendor's ability to maintain business continuity was identified as a planning gap in the utility's after-action report. In the aftermath of Florence, CFPUA increased fuel storage capacity by contracting for seasonal fuel tanks, purchasing additional saddle tanks for vehicles and requiring emergency fuel vendors to have backup power on-site. The utility also purchased its own 2,800-gallon fuel truck to ensure it can pick up and deliver fuel at any time.

Actions to Prepare for a Power Outage

Planning

- [ ] Create and maintain an emergency response plan and a business continuity plan for all critical system components.
- [ ] Develop plans that specifically address actions to be taken during power outages; plans should address both short-duration and long-duration outages.
- [ ] Develop and issue standard operating procedures to manage power outages.
- [ ] Know your system; have a plan for stationary and portable generators. Make sure, if possible, that generators are pre-staged at locations when an event can be expected to potentially affect one or more of your stations.
- [ ] Develop roles and responsibilities for staff before, during and after a power outage, including appropriate communication protocols.

Coordination

- [ ] Get to know key staff at your electric utility, especially your designated account representative, if assigned one. Learn if circuits (e.g., power transmission lines or electric service area zone) serving your utility are in high risk fire areas, such as in the western states.
- [ ] Obtain 24/7 emergency contact information for your electric utility and local emergency management agency and plan together for power outage events.
- [ ] For a Public Safety Power Shutoff, confirm with your electric provider and local emergency management agency the communication method and timing (e.g., 72 hours before the shutoff) by which you will be notified of a planned outage.
- [ ] Determine where your treatment facility and key pumping stations rank on the prioritization list for power restoration. Try to get as high on the list as possible by making sure the list manager understands the reliance of the community (e.g., fire protection, hospitals, shelters and sensitive populations) on drinking water and wastewater services.
- [ ] Make sure your electric utility has the actual street addresses and locations of your treatment facilities and pumping stations. In case street signs are damaged or lost, also include latitude and longitude positions. Decimal latitude/ longitude positions should be recorded with a value six digits to the right of the decimal point.
- [ ] Learn what alternative communication methods (e.g., 2-way radios, ham radio operators, satellite phones) are available in your community.
- [ ] Join your state's Water and Wastewater Agency Response Network (WARN).
- [ ] Develop an approved notification procedure for communicating boil water advisories, water use restrictions and other information to customers during a power outage (e.g., precautionary boil water notices, reverse 911).
- [ ] Develop standard written notification templates to quickly send alerts in emergencies. Ensure customer information is regularly updated.
- [ ] Participate in local, state and federal emergency preparedness exercises.

Generators and Bypass Pumps

- [ ] Conduct a power assessment to determine your utility's critical facility backup power requirements. The assessment should provide the kilowatt, voltage, and phase(s) of any required generators. It should also include a basic order of connection materials needed (e.g., number and length of cables to connect generator, number and size of lugs to connect cable runs) and to what location within each facility's electrical system the generator needs to be connected.

Actions to Prepare for a Power Outage *(continued)*

- [ ] Ensure generators and associated electrical connection points are always accessible to qualified personnel.
- [ ] Determine lift station bypass capabilities and needed pump sizes, hoses and connections.
- [ ] Enter your generator needs into the U.S. Army Corps of Engineers' Emergency Power Facility Assessment Tool (EPFAT) and keep a copy of your power assessment information with your emergency response plan.
- [ ] Install transfer switches (automatic or manual depending on mode of operation) and quick-connect plugs to connect your facility's electrical equipment to generators.
- [ ] Purchase generators and bypass pumps or develop plans to obtain them through a contractor or mutual aid agreement to be utilized during a power outage. Be sure any contract includes wording that you are a priority customer. Consider renting generators in advance of hurricane or fire season.
- [ ] Maintain your generator(s) according to the manufacturer's recommendations and annually exercise generators under full load. Identify maintenance requirements and arrange for specialized support as necessary.
- [ ] Keep basic maintenance supplies on hand (e.g., Diesel Emissions Fluid (DEF), coolant, belts, oil, fuel filters).
- [ ] Keep small generators and variable frequency drives (VFDs) on trailers for easy transport during emergencies and maintain the trailers, especially the tires.
- [ ] Develop transportation routes and a rotation plan for facilities if there are not enough generators or bypass pumps available for each facility.

Fuel

- [ ] Know the pros and cons of the various fuel types.
- [ ] Calculate how much fuel is needed to operate each generator and bypass pump for one day and determine your total on-site fuel storage. Be sure to include DEF requirements, as applicable. The U.S. Army Corps of Engineers uses the following formula to determine the approximate generator fuel consumption for a 24-hour period: Generator kW size x 0.07 gallons/hour/kW x 24 hours.
- [ ] Develop a fuel management plan that includes fuel polishing and fuel additives (e.g., algaecides). Because of potential fuel quality issues, consider stocking extra fuel filters.
- [ ] Have contracts with multiple fuel vendors and check their ability to pump and move fuel during a power outage. Be sure these contracts include wording that you are a priority customer.
- [ ] Have multiple options to move fuel during an emergency, possibly including tanks mounted on utility owned vehicles.
- [ ] Monitor fuel tank levels and refill when they fall below a defined level so that tanks are as full as possible for a no-notice power outage.
- [ ] If a storm or other emergency situation is predicted, fill vehicle, equipment and fuel storage tanks to capacity. Have an alternate plan for pumping from fuel storage tanks if their pumps operate on grid power only.
- [ ] Work with your city, county and state to develop an area wide emergency operations fuel acquisition and distribution plan.
- [ ] If applicable, establish contacts at your natural gas utility and learn about their response and recovery plans.

Notes:

Actions to Respond to a Power Outage

Notifications

- [ ] Immediately notify your electric utility and local emergency management agency of power outages impacting your facilities. Inform them of:
  - how long you can sustain operations without grid power
  - the consequences to the community of the loss or reduction of water and wastewater services (e.g., a possible reduction in fire protection)

  Know water storage and wet well capacities for determining when storage will be exhausted.
- [ ] Maintain contact with your electric utility provider to obtain power outage duration estimates.
- [ ] Notify your regulatory or primacy agency if operations and/or water quality or quantity are affected by a power outage, if your utility is running on generator power and what your fuel status is.
- [ ] Notify the public of any boil water notices or water use restrictions.
- [ ] As needed, request generators and fuel through your WARN, other mutual aid networks and/or the local emergency operations center (EOC). Once your need is met, be sure to cancel any outstanding requests.
- [ ] Implement pre-developed emergency response and communications plans.

Generators

- [ ] Monitor power quality and proactively switch to generators if there is poor power quality, which can damage equipment.
- [ ] Ensure that generators are connected by qualified personnel.
- [ ] Use backup generators, as needed, to supply power to critical facilities.
- [ ] Transport small generators on trailers and address operations, security and logistics (e.g., maintenance, fuel, parts) for mobile generators.
- [ ] Establish a schedule for maintenance, fuel checks and refueling for each generator, and ensure scheduled maintenance is regularly completed. The standard service interval is 240 operational hours or after every 10 days of continuous operations. Be sure to plan for redundancy as in most events there is over 10% failure of backup equipment.
- [ ] Consult with air quality agencies as necessary for emergency waivers for prolonged use of certain kinds of generators.
- [ ] Ensure sufficient personnel are available and cross-trained to serve as generator operators. Smaller utilities may need pre-arranged emergency service contracts with qualified electricians or to work with their WARN.

Notes:

Actions to Respond to a Power Outage *(continued)*

Fuel

- [ ] Constantly monitor fuel quality and needs and coordinate fuel deliveries to generators. If possible, shut down generator during refueling.
- [ ] Shut down generators based on operational conditions to conserve fuel.
- [ ] Consider cancelling any non-essential trips in utility administrative vehicles to prolong your fuel reserves.
- [ ] Adjust climate control systems and any other large electrical uses at critical facilities to prolong generator run times.
- [ ] Implement staff carpooling to and from work where possible.

Operations

- [ ] Plan for and be prepared to reduce levels of service across the system or in pressure zones incrementally; plans should include actions taken to restore operations to normal levels.
- [ ] Be prepared to operate components of your utility manually without the aid of computerized systems.
- [ ] Implement plans, procedures or agreements to provide alternate drinking water as necessary.
- [ ] If possible, switch to source water with less power intensive requirements.
- [ ] Consider use of interties and emergency connections with neighboring utilities unaffected by the power disruption.

Documentation

- [ ] Document all damage assessments, mutual aid requests, emergency repair work, fuel and equipment used, purchases made, staff hours worked and contractors used during the response to assist in requesting reimbursement and applying for federal disaster funds. When possible, take photographs of damage at each work site (with time and date stamp). Proper documentation is critical to requesting reimbursement.

Notes:

Actions to Recover from a Power Outage

Coordination

- [ ] Check with your electric utility to make sure that all three phases of power are available before switching back to grid power. When power is restored, not all three phases may be initially available, which can damage three-phase equipment.
- [ ] Follow set procedures for taking your facilities off generator power and back onto grid power.
- [ ] Conduct an after-action discussion with utility staff to identify portions of the response that went well and areas for improvement.
- [ ] Share key after-action items and lessons learned with your electric utility provider, emergency management agency and other response partners (e.g., fuel vendors).

Notifications

- [ ] Revise or lift (as applicable) any water use advisories that were put in place during the outage.
- [ ] Update your status with your regulatory or primacy agency and your local emergency management agency.
- [ ] Notify utility staff that any energy consumption restrictions that may have been put into place are now lifted.

Generators

- [ ] Perform any necessary maintenance or repairs on generators.
- [ ] Consider testing your generator oil for signs of metal, which could indicate engine wear and the need for repairs.
- [ ] If a generator is serviced or repaired, be sure to test it under load after work is complete.

Fuel

- [ ] Clean tanks as necessary and polish on-hand fuel supply as time allows.
- [ ] Refill tanks as necessary. Stabilize fuel.
- [ ] Establish new fuel vendor contracts as applicable.
- [ ] Assess your on-site fuel storage and adjust as necessary.

Documentation

- [ ] Compile damage assessment forms and cost documentation into a single report to facilitate the sharing of information and the completion of state and federal funding applications. Visit EPA's web-based tool, Federal Funding for Utilities—Water/Wastewater—in National Disasters (Fed FUNDS), for tailored information and application forms for various federal disaster funding programs: http://water.epa.gov/infrastructure/watersecurity/funding/fedfunds/.
- [ ] Develop a lessons learned document and/or an after action report (AAR) to keep a record of your response activities. Update your risk assessment, emergency response plans and contingency plans.

Notes:

My Contacts and Resources

CONTACT NAME	UTILITY/ORGANIZATION NAME	PHONE NUMBER
Mountain View Electric Association	Electric Utility	(719) 495-2283
James Reid	Pikes Peak Office of Emergency Management	(719) 385-5957
Fisher Enterprises, Mike Fisher	Licensed electrician	(719) 214-6723
CoWARN, Kyra Gregory	WARN Chair	(303) 908-7519
El Paso County Public Health	Local Health Department	(719) 578-3199
Public Notification	CDPHE	(877) 518-5608

Resources

- Power Resilience Guide for Water and Wastewater Utilities (EPA)
- Emergency Power Facility Assessment Tool (USACE)
- Connecting Water Utilities and Emergency Management Agencies (EPA)
- Water and Wastewater Agency Response Network (EPA)
- Federal Funding for Utilities—Water/Wastewater—in National Disasters (Fed FUNDS) (EPA)

Incident Action Checklist – Drought

The actions in this checklist are divided up into three "rip & run" sections and are examples of activities that water and wastewater utilities can take to: prepare for, respond to and recover from drought. For on-the-go convenience, you can also populate the "My Contacts" section with critical information that your utility may need during an incident.

Drought Impacts on Water and Wastewater Utilities

Drought is a period of abnormally dry and/or unusually hot weather that is sufficiently prolonged to cause a serious hydraulic imbalance. Droughts normally develop and end slowly with impacts potentially lasting several years afterwards. Areas that have experienced a drought are also at an increased risk of flash flooding because the dry ground cannot effectively absorb rainwater. Droughts in the United States have caused cascading effects on the water sector that may include, but are not limited to:

NOAA

- Loss of supply (both surface water and groundwater)
- Increased demand from customers (e.g., previously self-supplied communities that cannot meet the demand, agricultural customers requiring more water for irrigation)
- Deterioration of water quality and difficulties complying with drinking water regulations
- Increases in treatment and pumping-related costs
- Limited options for accessing other local water sources through interconnections due to increased regional demand and water scarcity
- Decreased capacity in alternative and supplementary sources due to high demand for emergency water by other industries and communities in the drought affected area
- Potential power interruptions due to high energy demand if drought is accompanied with unusually high temperatures
- Loss of fire suppression capabilities
- Possible increased pressure to develop water reuse practices

The following sections outline actions water and wastewater utilities can take to prepare for, respond to and recover from drought. (Because drought and extreme heat events can coincide, please see the Extreme Heat Incident Action Checklist for intense heat-specific activities.)

NOAA

Example of Water Sector Impacts and Response to Drought

El Paso, Texas Drought Response

El Paso and surrounding areas in West Texas experienced severe drought conditions in 2011 and 2012. The arid region gets much of its water from snowmelt in the New Mexico and Colorado mountains, which experienced below-normal snow levels. The other source, southern New Mexico reservoirs, was also at record-low levels. The water shortage did not significantly impact El Paso's water supply for homes and businesses because in addition to conservation efforts, more well water and water from a water-desalination plant was used to augment the shortage.

Since 1963, to adapt to historic shortages, El Paso Water Utilities has supplemented its water supply (100 MGD capacity plant) with reclaimed water. The utility supplies city parks and other public spaces, construction sites, and industrial sites with almost 6 million gallons of reclaimed water per day.

Furthermore, El Paso Water Utilities has instituted a number of conservation efforts and incentive programs for customers, including watering restrictions, general use conservation activities and indoor and outdoor water efficiency rebates.

Despite the conservation efforts, farmers who rely on water for irrigation and grazing lands were hurt by the 2011-2012 water shortage. The El Paso County Water Improvement District #1 planned to allocate six inches of water per acre to its customers when the river water was first released from the dam, which is substantially lower than the previous year's allocation of 42 inches of water per acre, and below the full allocation of 48 inches per acre. The 2014 irrigation allocations are 18 inches per acre, which is still below the full allocation.

In an effort to secure sufficient supply for all customers, the city has purchased about 100,000 acres of land in outlying areas, acquiring the rights to the water that flows underneath. The utility also is considering future investment in water pipelines to pump water from supplies that are further away.

Source: El Paso Times, "El Paso – Area farmers to suffer as drought drags on."
Source: El Paso Water Improvement District #1, "Allocation for 2014 Irrigation Season."

FEMA

My Contacts and Resources

CONTACT NAME	UTILITY/ORGANIZATION NAME	PHONE NUMBER
James Reid	Pikes Peak Office of Emergency Management	(719) 385-5957
CoWARN, Kyra Gregory	WARN Chair	(303) 908-7519
Mountain View Electric Assn.	Power Utility	(719) 495-2283

Planning

- Drought mapping and outlooks
  - U.S. Drought Monitor (National Drought Mitigation Center, National Oceanic and Atmospheric Administration [NOAA], U.S. Department of Agriculture [USDA])
  - U.S. Seasonal Drought Outlook (NOAA)
- U.S. Drought Portal (National Integrated Drought Information System [NIDIS])
- Drought Resource Community (American Water Works Association [AWWA])
- Drought Planning Resources, By State (National Drought Mitigation Center [NDMC])
- Drought Planning Toolbox (Colorado Water Conservation Board [CWCB])
- Drought Ready Communities (NDMC)
- Fire Weather Outlooks and Forecasting Tools (National Weather Service [NWS])
- National Significant Wildland Fire Potential Outlook (National Interagency Fire Center [NIFC])
- Planning for an Emergency Drinking Water Supply (EPA)
- All-Hazard Consequence Management Planning for the Water Sector (Water Sector Emergency Response Critical Infrastructure Partnership Advisory Council [CIPAC] Workgroup)
- Vulnerability Self Assessment Tool (VSAT) (EPA)
- Preparing for Extreme Weather Events: Workshop Planner for the Water Sector (EPA)
- Tabletop Exercise Tool for Water Systems: Emergency Preparedness, Response, and Climate Resiliency (EPA)
- How to Develop a Multi-Year Training and Exercise (T&E) Plan (EPA)

Coordination

- When Every Drop Counts: Protecting Public Health During Drought Conditions (Centers for Disease Control and Prevention [CDC])
- Water/Wastewater Agency Response Network (WARN) (EPA)
- Community Based Water Resiliency (EPA)

Communication with Customers

- The following resources are examples of comprehensive outreach materials to encourage utility customers to conserve water during droughts and educate them on procedures.
  - WaterSense (EPA)
  - Water Efficiency (Portland Water Bureau [PWB])
  - Water Efficiency Tips (Dallas Water Utilities [DWU])
  - Water Conservation Strategies (Association of California Water Agencies [ACWA])
  - Drought Management Plan Template for Small Water Systems (Florida Rural Water Association [FRWA])

Facility and Service Area

- Water Audit Tool (AWWA)

Documentation and Reporting

- Federal Funding for Utilities in National Disasters (Fed FUNDS) (EPA)

Mitigation

- Climate Resilience Evaluation and Awareness Tool (CREAT) (EPA)
- Adaptation Strategies Guide (EPA)

Actions to Prepare for a Drought

Planning

- [ ] Actively monitor local and regional drought conditions.
- [ ] Review and update your utility's emergency response plan (ERP), and ensure all emergency contacts are current.
- [ ] Conduct briefings, training and exercises to ensure utility staff is aware of all preparedness, response and recovery procedures.
- [ ] Identify priority water customers (e.g., hospitals), obtain their contact information, map their locations and develop a plan to restore those customers first, in case of water service disruptions.
- [ ] Monitor water supply and calculate how long water could be provided if the drought persists.
  - Actively monitor surface water levels and groundwater well levels, and identify the sustainable withdrawal rate for each
- [ ] Review and update your utility's drought management plan. Establish "triggers" or "threshold values" for drought conditions that will require action (e.g., if reservoirs fall below a certain level, a certain number of days without precipitation).
- [ ] Develop an emergency drinking water supply plan and establish response partner contacts (potentially through your local emergency management agency [EMA] or mutual aid network) to discuss procedures, which may include bulk water hauling, mobile treatment units or temporary supply lines, as well as storage and distribution.
- [ ] Review or develop your conservation plan and prepare for voluntary or mandatory conservation measures. Know your largest water users and be aware of usage patterns in order to determine the most effective conservation practices for your system (e.g., water fixture rebate programs, watering restrictions, facility audits to mitigate water loss).
- [ ] Conduct a hazard vulnerability analysis in which you review historical records to understand the past frequency and intensity of drought and how your utility may have been impacted. Consider taking actions to mitigate drought impacts to the utility, including those provided in the "Actions to Recover from a Drought: Mitigation" section.
- [ ] Complete pre-disaster activities to help apply for federal disaster funding (e.g., contact state/local officials with connections to funding, set up a system to document damage and costs, take photographs of the facility for comparison to post-damage photographs).

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Actions to Prepare for a Drought *(continued)*

- [ ] Determine if technical assistance programs are offered by the state, including wellhead protection programs for community water supplies. Assistance may involve:
  - Development and utilization of predictive water use models that assist in locating water for communities
  - Development and utilization of formal groundwater monitoring networks

Coordination

- [ ] Join your state's Water/Wastewater Agency Response Network (WARN) or other local mutual aid network.
- [ ] Coordinate with WARN members and other neighboring utilities to discuss:
  - Potential drought and conservation measures
  - Outlining response activities, roles and responsibilities, and mutual aid procedures (e.g., how to request and offer assistance)
  - Conducting joint tabletop or full-scale exercises
  - Obtaining resources and assistance, such as equipment, personnel, technical support or water
  - Establishing interconnections between systems and agreements with necessary approvals to activate this alternate water source. Equipment, pumping rates, demand on the water sources, and any impacts on water rights laws need to be considered and addressed in the design and operations
  - Establishing communication protocols and equipment to reduce misunderstandings during the incident
- [ ] Coordinate with other key response partners, such as your local EMA, to identify potential points of distribution for the delivery of an emergency water supply (e.g., bottled water) to the public, as well as who is responsible for distributing the water.
- [ ] Understand how the local and utility emergency operations center (EOC) will be activated and what your utility may be called on to do, as well as how local emergency responders and the local EOC can support your utility during a response. If your utility has assets outside of the county EMA's jurisdiction, consider coordination or preparedness efforts that should be done in those areas.
- [ ] Coordinate with other neighboring water systems to develop a water use plan, especially if your utility is in an agricultural area, to ensure there will be an adequate water supply by managing drawdown rates with agricultural (e.g., irrigation, livestock watering), industrial and public water supply needs.
- [ ] Coordinate water usage with neighboring irrigation districts that are supplied by the same aquifer.
- [ ] Coordinate with community leaders and high water-using organizations within the community to discuss potential drought and conservation measures.
- [ ] Sign up for mobile and/or email alerts from your local EMA, if available.

Notes:

Actions to Prepare for a Drought *(continued)*

Communication with Customers

- [ ] Communicate with critical customers, high water users, and agricultural customers to discuss seasonal demand, irrigation practices and conservation measures.

- [ ] Review public information protocols with local EMA and public health/primacy agencies. These protocols should include developing water advisory messages (e.g., boil water, warnings that service disruptions are likely) and distributing them to customers using appropriate mechanisms, such as reverse 911.

- [ ] Develop outreach materials for the public (e.g., radio, social media, and bill stuffers) that clearly describe conservation measures and activities.
  - Become a WaterSense partner and download free water efficiency outreach materials to distribute to your customers: http://www.epa.gov/watersense/

- [ ] Consider establishing programs to encourage customers to conserve water year round, such as rebate programs, distribution of home retrofit kits and water conservation classes.

Facility and Service Area

- [ ] Conduct a water audit to detect and repair leaks throughout distribution system.

- [ ] Identify opportunities for groundwater recharge using stormwater and reclaimed water.

- [ ] Document pumping requirements and storage capabilities, as well as critical treatment components and parameters.

- [ ] Maintain a full storage tank to assist with demand should there be a source loss, power failure or fire suppression needs.

- [ ] In the case of a power loss, ensure personnel are trained to shut down and start up the system manually.

Power, Energy and Fuel

- [ ] Evaluate condition of electrical panels to accept generators; inspect connections and switches.

- [ ] Document power requirements of the facility; options for doing this may include:
  - Placing a request with the US Army Corps of Engineers 249th Engineer Battalion (Prime Power): http://www.usace.army.mil/249thEngineerBattalion.aspx
  - Using the US Army Corps of Engineers on-line Emergency Power Facility Assessment Tool (EPFAT): http://epfat.swf.usace.army.mil/

- [ ] Confirm and document generator connection type, capacity load and fuel consumption. Test regularly, exercise under load and service backup generators.

NOAA

Actions to Respond to a Drought

Planning

- [ ] Work with your regulatory agency to assist in identifying and approving alternate water supplies and operational or design changes.
- [ ] Monitor wildfire conditions and outlooks. See the Wildfire Incident Action Checklist for more information on how to prepare for wildfires.
- [ ] Monitor conditions for flash flooding, as dry ground cannot effectively absorb rainwater, and assess conditions of the watershed.

Coordination

- [ ] Communicate with public health officials, local EMA, and other partners to:
  - Discuss issues related to heat index emergencies, fires, and public health activities
  - Evaluate conditions and water use requirements related to HVAC systems required by hospitals and identify alternative means to supply water if the utility is unable to meet demand
- [ ] If needed, request or offer assistance (e.g., water buffalos, water sampling teams, generators) through mutual aid networks, such as WARN.

Communication with Customers

- [ ] Implement mandatory or voluntary water conservation efforts, and conduct regular outreach to customers.
- [ ] If water shortages or outages occur, notify customers of water advisories; consider collaborating with local media (television, radio, newspaper, etc.) to distribute the message. If emergency water is being supplied, provide information on the distribution locations.

Facility and Service Area

- [ ] Utilize pre-established emergency connections or set up temporary connections to nearby communities, as needed. Alternatively, implement plans to draw emergency water from pre-determined tanks or hydrants. Notify employees of the activated sites.
- [ ] Monitor source water quantity (e.g., reservoir levels, stream flows, well levels, groundwater levels).
- [ ] Monitor water quality and adjust treatment, if necessary, as reduced water quantity and increased temperatures could change water chemistry.
- [ ] Notify regulatory/primacy agency if operations and/or water quality or quantity are affected.

Documentation and Reporting

- [ ] Document all damage assessments, mutual aid requests, emergency repair work, equipment used, purchases made, staff hours worked and contractors used during the response to assist in requesting reimbursement and applying for federal disaster funds. When possible, take photographs that illustrate the drought conditions (with time and date stamp). Proper documentation is critical to requesting reimbursement.

Power, Energy and Fuel

- [ ] Use backup generators, as needed, to supply power to system components.
- [ ] Monitor and plan for additional fuel needs in advance; coordinate fuel deliveries to generators.

Actions to Recover from a Drought

Coordination

- [ ] Continue work with response partners to obtain funding, equipment, etc.

Communication with Customers

- [ ] Continue to communicate with customers concerning sustained water conservation measures and practices.

Facility and Service Area

- [ ] Complete damage assessments.
- [ ] Complete permanent repairs, replace depleted supplies and return to normal service.
- [ ] Be prepared for a spike in water demand. Once normal service has been restored after a period of time with no water or highly restricted usage, customers will address those domestic and agricultural water needs that were postponed.

Documentation and Reporting

- [ ] Compile damage assessment forms and cost documentation into a single report to facilitate the sharing of information and the completion of state and federal funding applications. Visit EPA's web-based tool, Federal Funding for Utilities—Water/Wastewater—in National Disasters (Fed FUNDS), for tailored information and application forms for various federal disaster funding programs: http://water.epa.gov/infrastructure/watersecurity/funding/fedfunds/
- [ ] Develop a lessons learned document and/or an after action report (AAR) to keep a record of your response activities. Update your vulnerability assessment, ERP and drought/extreme heat contingency plans.
- [ ] Revise budget and asset management plans to address increased costs from response-related activities.

Mitigation

- [ ] Identify mitigation and long-term adaptation measures that can prevent damage and increase utility resilience. Consider impacts related to the increased frequency and duration of drought/extreme heat when planning for system upgrades.
- [ ] Consider implementing the following mitigation measures to prepare for possible flash flooding events following a drought:
  - Monitor conditions for flash flooding and assess conditions of the watershed
  - Install a rain gauge upstream of intake for early warning of heavy precipitation that could lead to high turbidity water and sensors to monitor the amount of debris and sediment coming downstream
  - Consider instituting erosion control measures to protect against runoff and sediment concerns that occur during heavy precipitation

Notes:

Incident Action Checklist – Extreme Cold and Winter Storms

The actions in this checklist are divided up into three "rip & run" sections and are examples of activities that water and wastewater utilities can take to: prepare for, respond to and recover from extreme cold. For on-the-go convenience, you can also populate the "My Contacts" section with critical information that your utility may need during an incident.

Extreme Cold and Winter Storm Impacts on Water and Wastewater Utilities

Cold weather brings with it the potential for freezing temperatures, heavy snowfall and ice incidents that can have multiple impacts on a community. Impacts to drinking water and wastewater utilities may include, but are not limited to:

- Pipe breaks throughout the distribution system, due to freeze/thaw cycles
- Loss of power and communication lines
- Limited access to facilities due to icy roads or debris such as downed tree limbs
- Reduced work force due to unsafe travel conditions throughout the service area
- Source water quality impacts due to increased amount of road salt in stormwater runoff
- Potential flooding risk due to snowpack melt and ice jams (accumulations of ice in rivers or streams)
- Potential surface water supply challenges as ice and frozen slush can block valves and restrict intakes

The following sections outline actions water and wastewater utilities can take to prepare for, respond to and recover from extreme cold and winter storms.

Example of Water Sector Impacts and Response to a Winter Storm

Kentucky 2009 Ice Storm

Kentucky experienced a severe winter storm in January 2009 that resulted in the largest power outage in the state's history. The storm began as a mixture of snow, followed by sleet and freezing rain coupled with strong winds. Although there was advanced notice of hazardous weather, the storm was more severe than anticipated and significant impacts to the water sector occurred. Ninety water utilities regulated by the Kentucky Public Service Commission (PSC) were impacted by the ice storm, and over 32,000 customers were without water at some point during the storm. One utility, the Hickory Water District in Graves County, Kentucky, lost all service during the storm. Although the Water District had approximately 48 hours of water storage, they were unable to supply water to their customers once that storage was exhausted, as they were without power and had no back-up power source.

A significant number of utilities had service restored the day after the ice storm as a result of prioritization by electric providers. Following the ice storm response, the PSC provided a number of recommendations to water and wastewater utilities on how to better prepare for future incidents. Recommendations included issuing consumer advisories prior to incidents that may result in service disruptions, considering the establishment of interconnections, and joining a mutual aid network, such as WARN.

Source: Kentucky Public Service Commission, "Ike and Ice: The Kentucky Public Service Commission Report on the September 2008 Wind Storm and the January 2009 Ice Storm."

My Contacts and Resources

CONTACT NAME	UTILITY/ORGANIZATION NAME	PHONE NUMBER
James Reid	Pikes Peak Office of Emergency Management	(719) 385-5957
Public Notification	CDPHE	(877) 518-5608
CoWARN, Kyra Gregory	WARN Chair	(303) 908-7519
Mountain View Electric Assn.	Power Utility	(719) 495-2283

Planning

- Incident monitoring:
  - Storm Prediction Center (National Oceanic and Atmospheric Administration [NOAA])
  - Winter Weather Safety and Awareness (NOAA)
- Winter Storms: The Deceptive Killers (NOAA)
- Planning for an Emergency Drinking Water Supply (EPA)
- National Weather Service Weather Alerts (NOAA)
- All-Hazard Consequence Management Planning for the Water Sector (Water Sector Emergency Response Critical Infrastructure Partnership Advisory Council [CIPAC] Workgroup)
- Vulnerability Self Assessment Tool (VSAT) (EPA)
- How to Develop a Multi-Year Training and Exercise (T&E) Plan (EPA)
- Preparing for Extreme Weather Events: Workshop Planner for the Water Sector (EPA)
- Tabletop Exercise Tool for Water Systems: Emergency Preparedness, Response, and Climate Resiliency (EPA)
- Make a Plan (FEMA)

Coordination

- Water/Wastewater Agency Response Network (WARN) (EPA)

Communication with Customers

- Salt Pollutes postcard (tips for customers on ways to reduce salt) (Minnesota Pollution Control Agency [MPCA])

Facility and Service Area

- A Fresh Look at Road Salt: Aquatic Toxicity and Water-Quality Impacts on Local, Regional, and National Scales (United States Geological Survey [USGS] and Wisconsin State Laboratory of Hygiene [WSLH])
- The Kentucky Public Service Commission Report on the September 2008 Wind Storm and the January 2009 Ice Storm (Kentucky Public Service Commission [KYPSC])

Power, Energy and Fuel

- EPA Region 1 Water/Wastewater System Generator Preparedness Brochure (EPA)

Documentation and Reporting

- Federal Funding for Utilities In National Disasters (Fed FUNDS) (EPA)

Mitigation

- Climate Resilience Evaluation and Awareness Tool (CREAT)
- Adaptation Strategies Guide (EPA)

Actions to Prepare for Extreme Cold and Winter Storms

Planning

- [ ] Actively monitor weather conditions for inclement weather.
- [ ] Review and update your utility's emergency response plan (ERP), and ensure all emergency contacts are current.
- [ ] Conduct briefings, training and exercises to ensure utility staff is aware of all preparedness, response and recovery procedures.
- [ ] Identify priority water customers (e.g., hospitals), obtain their contact information, map their locations and develop a plan to restore those customers first, in case of water service disruptions.
- [ ] Develop an emergency drinking water supply plan and establish response partner contacts (potentially through your local emergency management agency [EMA] or mutual aid network) to discuss procedures, which may include bulk water hauling, mobile treatment units or temporary supply lines, as well as storage and distribution.
- [ ] Conduct a hazard vulnerability analysis in which you review historical records to understand the past frequency and intensity of winter storms and how your utility may have been impacted. Consider taking actions to mitigate extreme cold, snow and ice storm impacts to your utility, including those provided in the "Actions to Recover from Extreme Cold and Winter Storms: Mitigation" section.
- [ ] Complete pre-disaster activities to help apply for federal disaster funding (e.g., contact state/local officials with connections to funding, set up a system to document damage and costs, take photographs of the facility for comparison to post-damage photographs).

Coordination

- [ ] Join your state's Water/Wastewater Agency Response Network (WARN) or other local mutual aid network.
- [ ] Coordinate with WARN members and other neighboring utilities to discuss:
  - Outlining response activities, roles and responsibilities and mutual aid procedures (e.g., how to request and offer assistance)
  - Conducting joint tabletop or full-scale exercises
  - Obtaining resources and assistance, such as equipment, personnel, technical support or water
  - Establishing interconnections between systems and agreements with necessary approvals to activate this alternate source. Equipment, pumping rates and demand on the water sources need to be considered and addressed in the design and operations
  - Establishing communication protocols and equipment to reduce misunderstandings during the incident
- [ ] Coordinate with other key response partners, such as your local EMA, to discuss:
  - How restoring system operations may have higher priority than establishing an alternative water resource
  - Potential points of distribution for the delivery of emergency water supply (e.g., bottled water) to the public, as well as who is responsible for distributing the water
- [ ] Understand how the local and utility emergency operations center (EOC) will be activated and what your utility may be called on to do, as well as how local emergency responders and the local EOC can support your utility during a response. If your utility has assets outside of the county EMA's jurisdiction, consider coordination or preparedness efforts that should be done in those areas.

Actions to Prepare for Extreme Cold and Winter Storms
(continued)

- [ ] Work with community partners to ensure the utility is properly prioritized when determining plowing and road salting/sanding operations.
- [ ] Ensure credentials to allow access will be valid during an incident by checking with local law enforcement.
- [ ] Sign up for mobile and/or email alerts from your local EMA, if available.

Communication with Customers

- [ ] Review public information protocols with local EMA and public health/primacy agencies. These protocols should include developing water advisory messages (e.g., boil water, warnings that service disruptions are likely due to extreme winter weather) and distributing them to customers using appropriate mechanisms, such as reverse 911. Keep in mind that the notice may need to be delivered prior to the storm to be effective.
- [ ] Instruct customers on how to prevent pipe breaks in their homes (e.g., insulating outdoor faucets, drip warm water from an indoor faucet) and what to do if a pipe breaks.

Facility and Service Area

- [ ] Inventory and order extra equipment and supplies, as needed:
  - Motors
  - Fuses
  - Chemicals (ensure at least a two week supply)
  - Cellular phones or other wireless communications device
  - Emergency Supplies
    - Salt
    - Shovels/snow blowers
    - Tarps/tape/rope
    - Cots/blankets
    - First aid kits
    - Foul weather gear
    - Plywood
    - Flashlights/flares
    - Bottled water
    - Batteries
    - Non-perishable food
- [ ] Ensure communication equipment (e.g., radios, satellite phones) works and is fully charged.
- [ ] Prepare equipment and vehicles to start and run in cold weather (e.g., tune ups, batteries, engine block heaters).
- [ ] Develop a GIS map of all system components and prepare a list of coordinates for each facility.
- [ ] Document pumping requirements and storage capabilities, as well as critical treatment components and parameters.
- [ ] Prior to a storm, apply road salt/sand as necessary, and pre-stage snowplow equipment.
- [ ] Consider installing wind or snow drift barriers at critical facilities.
- [ ] If surface water systems are equipped with intake heaters, ensure they are maintained and in working order before winter begins.

Personnel

- [ ] Identify essential personnel and ensure they are trained to perform critical duties in an emergency (and possibly without communication), including the shut down and start up of the system.
- [ ] Establish communication procedures with essential and non-essential personnel. Ensure all personnel are familiar with emergency evacuation and shelter in place procedures.
- [ ] Pre-identify emergency operations and clean-up crews. Establish alternative transportation strategies if roads are impassable.

Actions to Prepare for Extreme Cold and Winter Storms
(continued)

- ☐ Consider how evacuations or limited staffing due to transportation issues (potentially all utility personnel) will impact your response procedures.
- ☐ Identify possible staging areas for mutual aid crews if needed in the response, and the availability of local facilities to house the crews.
- ☐ Encourage personnel, especially those that may be on duty for extended periods of time, to develop family emergency plans.

Power, Energy and Fuel

- ☐ Evaluate condition of electrical panels to accept generators; inspect connections and switches.
- ☐ Document power requirements of the facility; options for doing this may include:
  - Placing a request with the US Army Corps of Engineers 249th Engineer Battalion (Prime Power): http://www.usace.army.mil/249thEngineerBattalion.aspx
  - Using the US Army Corps of Engineers on-line Emergency Power Facility Assessment Tool (EPFAT): http://epfat.swf.usace.army.mil/
- ☐ Confirm and document generator connection type, capacity load and fuel consumption. Test regularly, exercise under load and service backup generators.
- ☐ Fuel vehicles and fill fuel tanks to full capacity and ensure that you have the ability to manually pump gas in the event of a power outage. Ensure this equipment and other hazardous materials are located in a safe zone.
- ☐ Contact fuel vendors and inform them of estimated fuel volumes needed if utility is impacted. Determine your ability to establish emergency contract provisions with vendors and your ability to transport fuel if re-fueling contractors are not available. Develop a backup fueling plan and a prioritization list of which generators to fuel in case of a fuel shortage.
- ☐ Collaborate with your local power provider and EOC to ensure that your water utility is on the critical facilities list for priority electrical power restoration, generators and emergency fuel.

Example of Water Sector Impacts and Response to a Winter Storm

2014 Northern Ohio Winter Water Shortage

In January 2008, ice accumulation on the intake valves for Avon Lake Regional Water severely reduced water production and caused the utility to ask customers to reduce usage. Avon Lake Regional Water's source water is Lake Erie, and it provides water to over 200,000 residential and commercial customers in multiple communities in and around the western Cleveland suburbs. The utility contracted with another company to put six additional pumps into Lake Erie to increase water flow to the plant. This involved workers cutting through ice 300 feet from shore to put new pipes in the water. The utility was forced to deliver two sets of automated phone calls to residents: the first asked them to reduce water use by refraining from washing clothes or taking long showers; the second asked people to stop using water altogether, if possible. Mayors in communities affected by the water shortages worked with their local EMAs to discuss contingency plans in the event of a fire. At least one county declared a State of Emergency in order to free up resources around the state if they were needed.

The City of Cleveland was able to supply water to several communities served by Avon Lake Regional Water Authority through interconnections. Its intakes were not affected, as they are farther out into Lake Erie where the water is deeper.

Source: The Cleveland Plain Dealer, "Water shortage reaching critical point in Avon as utility tries another way to pull water from the frozen lake."

Actions to Respond to Extreme Cold and Winter Storms

Coordination

- [ ] Notify your local EMA and state regulatory/primacy agency of system status.
- [ ] If needed, request or offer assistance (e.g., equipment, personnel) through mutual aid networks, such as WARN.
- [ ] Assign a representative of the utility to the incident command post or the EOC for the community.

Communication with Customers

- [ ] Notify customers of any water advisories and consider collaborating with local media (television, radio, newspaper, etc.) to distribute the message. If emergency water is being supplied, provide information on the distribution locations.

Facility and Service Area

Overall

- [ ] Conduct damage assessments of the utility to prioritize repairs and other actions.
- [ ] Check that back-up equipment and facility systems, such as controls and pumps, are in working order, and ensure that chemical containers and feeders are intact.

Drinking Water Utilities

- [ ] Inspect the utility and service area for damage. Identify facility components (e.g., valve boxes) and fire hydrants that have been buried in snow, frozen in ice or are inaccessible.
- [ ] Systems that utilize surface water should monitor intakes, as ice and frozen slush can block valves and cause restrictions.
- [ ] Ensure pressure is maintained throughout the system and isolate those sections where it is not.
- [ ] Isolate and control leaks in water transmission and distribution piping.
- [ ] Monitor source water quality, develop a sampling plan and adjust treatment as necessary; increased usage of road salt within the service area may be a concern for utilities.
- [ ] Notify regulatory/primacy agency if operations and/or water quality or quantity are affected.
- [ ] Utilize pre-established emergency connections or setup temporary connections to nearby communities, as needed. Alternatively, implement plans to draw emergency water from pre-determined tanks or hydrants. Notify employees of the activated sites.

Wastewater Utilities

- [ ] Inspect the utility and service area, including lift stations, for damage and power availability. Inspect the sewer system for debris and assess the operational status of the mechanical bar screen. If necessary, run system in manual operation.
- [ ] Notify regulatory/primacy agency of any changes to the operations or required testing parameters.
- [ ] Monitor the type and amount of bacteria in the treatment process, as severe cold can affect growth rates.
- [ ] Consider curtailing or ceasing secondary treatment wasting procedures during periods of heavy freezing rain or snowmelt to conserve bacteria and prevent it from washing out of the plant.

Documentation and Reporting

- [ ] Document all damage assessments, mutual aid requests, emergency repair work, equipment used, purchases made, staff hours worked and contractors used during the response to assist in requesting reimbursement and applying for federal disaster funds. When possible, take photographs of damage at each work site (with time and date stamp). Proper documentation is critical to requesting reimbursement.

Actions to Respond to Extreme Cold and Winter Storms
(continued)

- [ ] Work with your local EMA on the required paperwork for public assistance requests.

Personnel

- [ ] Account for all personnel and provide emergency care, if needed. Caution personnel about known hazards resulting from severe winter weather.
- [ ] Deploy emergency operations and clean-up crews. Identify key access points and roads for employees to enter the utility and critical infrastructure; coordinate the need for snow and ice clearance with local officials and/or emergency management or prioritize it for employee operations.

Power, Energy and Fuel

- [ ] Use backup generators, as needed, to supply power to system components.
- [ ] Monitor and plan for additional fuel needs in advance; coordinate fuel deliveries to generators.
- [ ] Maintain contact with electric provider for power outage duration estimates.


Image by Nick Fillipelli, Northeast Ohio Regional Sewer District

Notes:

Actions to Recover from Extreme Cold and Winter Storms

Coordination

- [ ] Continue work with response partners to obtain funding, equipment, etc.

Communication with Customers

- [ ] Assign a utility representative to continue to communicate with customers concerning a timeline for recovery and other pertinent information.

Facility and Service Area

- [ ] Complete damage assessments.
- [ ] Complete permanent repairs, replace depleted supplies and return to normal service.

FEMA

Documentation and Reporting

- [ ] Compile damage assessment forms and cost documentation into a single report to facilitate the sharing of information and the completion of state and federal funding applications. Visit EPA's web-based tool, Federal Funding for Utilities—Water/Wastewater—in National Disasters (Fed FUNDS), for tailored information and application forms for various federal disaster funding programs: www.epa.gov/fedfunds
- [ ] Develop a lessons learned document and/or an after action report (AAR) to keep a record of your response activities. Update your vulnerability assessment, ERP and corresponding extreme cold and winter storm contingency plans.
- [ ] Revise budget and asset management plans to address increased costs from response-related activities.

Mitigation

- [ ] Identify mitigation and long-term adaptation measures that can prevent damage and increase utility resilience. Consider impacts related to the increased frequency of extreme cold and intense snow and ice storms when planning for system upgrades (e.g., replacing weak pipes to reduce the risk of main breaks, landscaping and tree trimming to minimize debris issues).

Notes:

Incident Action Checklist – Flooding

The actions in this checklist are divided up into three "rip & run" sections and are examples of activities that water and wastewater utilities can take to: prepare for, respond to and recover from flooding. For on-the-go convenience, you can also populate the "My Contacts" section with critical information that your utility may need during an incident.

Flooding Impacts on Water and Wastewater Utilities

Flooding is common throughout much of the United States and can be caused by heavy precipitation events, storm surge, levee or dam failures or inadequate drainage. These events often occur with little or no notice, and can cause extensive damage to drinking water and wastewater infrastructure. Flooding impacts to utilities often include, but are not limited to:

- Infrastructure damage, possibly resulting in service interruptions
- Pipe breaks due to washouts, which could result in sewage spills or low water pressure throughout the service area
- Debris blockage at an intake or unearthed water and wastewater lines due to falling trees
- Loss of power and communication lines
- Combined sewer overflows (CSOs)
- Water quality changes to source waters and treated effluents, including increased turbidity, increased nutrients and other potential contaminants
- Restricted access to the facility due to debris, flood waters and damage to roadways from washouts and sinkholes
- Loss of water quality testing capability due to restricted facility and laboratory access and damage to utility equipment

The following sections outline actions water and wastewater utilities can take to prepare for, respond to and recover from floods.

Example of Water Sector Impacts and Response to a Flood

Warwick, Rhode Island Wastewater Treatment Plant Flooding

In March of 2010, a monthly record of nearly 16 inches of rain caused extreme flooding along the Pawtuxet River in the City of Warwick, Rhode Island, and left the Warwick Wastewater Treatment Plant completely flooded. Staff members were forced to move critical mobile equipment to higher ground as flood waters rose and threatened electrical equipment. The flood took the facility and six pumping stations along the Pawtuxet River offline. The Warwick Sewer Authority was forced to purchase five large portable pumps to keep up capacity.

Although the levees in Warwick were built three feet higher than the 100-year flood level, the river reached three feet above the levees during the 2010 flood. Rhode Island Department of Emergency Management (RIDEM) personnel recommended that the wastewater treatment plant be designed to higher flood levels (e.g., 500-year flood) to mitigate future damage from flooding events. Since the flood, the utility moved its Supervisory Control and Data Acquisition (SCADA) system to the second floor from the ground floor of the operations building. The utility has also purchased several new generators and other energy efficient equipment.

Source: Brown University Center for Environmental Studies, "Emergency Management in Rhode Island: A Look at the State's Level of Preparedness and Management of Resources, Communication, and Infrastructure During the March 2010 Floods."

Source: Treatment Plant Operator Magazine, January 2011 Issue, "Managers and operators at two Rhode Island treatment plants report experiences and lessons learned from the severe floods of March 2010."

My Contacts and Resources

CONTACT NAME	UTILITY/ORGANIZATION NAME	PHONE NUMBER
James Reid	Pikes Peak Office of Emergency Management	(719) 385-5957
Public Notification	CDPHE	(877) 518-5608
CoWARN, Kyra Gregory	WARN Chair	(303) 908-7519
Mountain View Electric Assn.	Power Utility	(719) 495-2283

Planning

- Incident monitoring:
  - Quantitative Precipitation Forecasts (National Oceanic and Atmospheric Administration [NOAA])
  - Excessive Rainfall Forecasts (NOAA)
  - River Observations, Forecasts, and Experimental Long-Range Flood Risk (NOAA)
  - U.S. Spring Flood Risk (NOAA)
  - Flood Inundation Mapper (United States Geological Survey [USGS])
  - WaterNow (USGS)
  - WaterAlert (USGS)
  - WaterWatch (USGS)
- Map Service Center to find flood map by address (Federal Emergency Management Agency [FEMA])
- National Weather Service Weather Alerts (NOAA)
- Planning for an Emergency Drinking Water Supply (EPA)
- All-Hazard Consequence Management Planning for the Water Sector (Water Sector Emergency Response Critical Infrastructure Partnership Advisory Council [CIPAC] Workgroup)
- Vulnerability Self Assessment Tool (VSAT) (EPA)
- Preparing for Extreme Weather Events: Workshop Planner for the Water Sector (EPA)
- Tabletop Exercise Tool for Water Systems: Emergency Preparedness, Response, and Climate Resiliency (EPA)
- How to Develop a Multi-Year Training and Exercise (T&E) Plan (EPA)
- Make a Plan (FEMA)

Coordination

- Water/Wastewater Agency Response Network (WARN) (EPA)
- Community Based Water Resiliency (EPA)

Facility and Service Area

- Emergency Response and Preparedness Florida WARN Best Management Practices for Water and Wastewater Systems (University of Florida Center for Training)
- What to Do After the Flood (EPA)

Mitigation

- Climate Resilience Evaluation and Awareness Tool (CREAT) (EPA)
- Adaptation Strategies Guide (EPA)

Actions to Prepare for a Flood

Planning

- [ ] Monitor weather and stream/river flow conditions to anticipate potential flooding conditions. Sign up for US Geological Survey's (USGS) WaterAlert service to receive an email or text message alert when the river gauges that you have identified surpass specified parameters.
- [ ] Review and update your utility's emergency response plan (ERP), and ensure all emergency contacts are current.
- [ ] Conduct briefings, training and exercises to ensure utility staff is aware of all preparedness, response and recovery procedures.
- [ ] Identify priority water customers (e.g., hospitals), obtain their contact information, map their locations and develop a plan to restore those customers first, in case of water service disruptions.
- [ ] Develop an emergency drinking water supply plan and establish response partner contacts (potentially through your local emergency management agency [EMA] or mutual aid network) to discuss procedures, which may include bulk water hauling, mobile treatment units or temporary supply lines, as well as storage and distribution.
- [ ] Consult Federal Emergency Management Agency (FEMA) flood maps (link provided in the Resources section of this document) to determine which locations in your service area are most vulnerable to flooding.
- [ ] Conduct a hazard vulnerability analysis in which you review historical records to understand the past frequency and intensity of flood events and how your utility may have been impacted; consult USGS's WaterWatch (link provided in the Resources section of this document) to review archived streamflow maps. Consider taking actions to mitigate flood impacts to the utility, including those provided in the "Actions to Recover from a Flood: Mitigation" section.
- [ ] Complete pre-disaster activities to help apply for federal disaster funding (e.g., contact state/local officials with connections to funding, set up a system to document damage and costs, take photographs of the facility for comparison to post-damage photographs).

Coordination

- [ ] Join your state's Water/Wastewater Agency Response Network (WARN) or other local mutual aid network.
- [ ] Coordinate with WARN members and other neighboring utilities to discuss:
  - Outlining response activities, roles and responsibilities and mutual aid procedures (e.g., how to request and offer assistance)
  - Conducting joint tabletop or full-scale exercises
  - Obtaining resources and assistance, such as equipment, personnel, technical support or water
  - Establishing interconnections between systems and agreements with necessary approvals to activate this alternate source. Equipment, pumping rates and demand on the water sources need to be considered and addressed in the design and operations
  - Establishing communication protocols and equipment to reduce misunderstandings during the incident
- [ ] Coordinate with other key response partners, such as your local EMA, to discuss:
  - How restoring system operations may have higher priority than establishing an alternative water source
  - Potential points of distribution for the delivery of emergency water supply (e.g., bottled water) to the public, as well as who is responsible for distributing the water

Actions to Prepare for a Flood *(continued)*

- [ ] Understand how the local and utility emergency operations center (EOC) will be activated and what your utility may be called on to do, as well as how local emergency responders and the local EOC can support your utility during a response. If your utility has assets outside of the county EMA's jurisdiction, consider coordination or preparedness efforts that should be done in those areas.

- [ ] Ensure credentials to allow access will be valid during an incident by checking with local law enforcement.

- [ ] Sign up for mobile and/or email alerts from your local EMA, if available.

Communication with Customers

- [ ] Develop outreach materials to provide your customers with information they will need during a flood (e.g., clarification about water advisories, instructions for private well and septic system maintenance).

- [ ] Review public information protocols with local EMA and public health/primacy agencies. These protocols should include developing water advisory messages (e.g., boil water, warnings that service disruptions are likely) and distributing them to customers using appropriate mechanisms, such as reverse 911. Keep in mind that the notice may need to be delivered prior to the storm to be effective.

Facility and Service Area

- [ ] Inventory and order extra equipment and supplies, as needed:
  - Motors
  - Fuses
  - Chemicals (ensure at least a two week supply)
  - Cellular phones or other wireless communications device
  - Emergency Supplies
    - Tarps/tape/rope
    - Cots/blankets
    - First aid kits
    - Foul weather gear
    - Plywood
    - Flashlights/flares
    - Sandbags (often, sand must be ordered as well)
    - Bottled water
    - Batteries
    - Non-perishable food

- [ ] Ensure communication equipment (e.g., radios, satellite phones) works and is fully charged.

- [ ] Develop a GIS map of all system components and prepare a list of coordinates for each facility.

- [ ] Document pumping requirements and storage capabilities, as well as critical treatment components and parameters.

Notes:

Actions to Prepare for a Flood *(continued)*

Personnel

- ☐ Identify essential personnel and ensure they are trained to perform critical duties in an emergency (and possibly without communication), including the shut down and start up of the system.
- ☐ Establish communication procedures with essential and non-essential personnel. Ensure all personnel are familiar with emergency evacuation and shelter in place procedures.
- ☐ Pre-identify emergency operations and clean-up crews. Establish alternative transportation strategies if roads are impassable.
- ☐ Consider how evacuations or limited staffing due to transportation issues (potentially all utility personnel) will impact your response procedures.
- ☐ Identify possible staging areas for mutual aid crews if needed in the response, and the availability of local facilities to house the crews.
- ☐ Encourage personnel, especially those that may be on duty for extended periods of time, to develop family emergency plans.

Power, Energy and Fuel

- ☐ Evaluate condition of electrical panels to accept generators; inspect connections and switches.
- ☐ Document power requirements of the facility; options for doing this may include:
  - Placing a request with the US Army Corps of Engineers 249th Engineer Battalion (Prime Power): http://www.usace.army.mil/249thEngineerBattalion.aspx
  - Using the US Army Corps of Engineers on-line Emergency Power Facility Assessment Tool (EPFAT): http://epfat.swf.usace.army.mil/
- ☐ Confirm and document generator connection type, capacity load and fuel consumption. Test regularly, exercise under load and service backup generators.
- ☐ Contact fuel vendors and inform them of estimated fuel volumes needed if utility is impacted. Determine your ability to establish emergency contract provisions with vendors and your ability to transport fuel if re-fueling contractors are not available. Develop a backup fueling plan and a prioritization list of which generators to fuel in case of a fuel shortage.
- ☐ Collaborate with your local power provider and EOC to ensure that your water utility is on the critical facilities list for priority electrical power restoration, generators and emergency fuel.

EPA

Actions to Respond to a Flood: With Advance Notice

Facility and Service Area

- [ ] Secure equipment; move electronics, equipment and important data to a water-tight facility or out of flood-prone areas. Determine areas outside of the floodplain where vehicles/equipment can be moved.
- [ ] Clear storm drains and set up sandbags to protect facilities in flood-prone areas. Place sandbags on the top of tanks so that backwash water is directed away from plant structures.
- [ ] Check that back-up equipment and facility systems, such as controls and pumps, are in working order, and ensure that the utility has a two week supply of all chemicals on hand.
- [ ] Protect exposed lines or pipes that may become vulnerable due to streambank erosion.
- [ ] Fill storage tanks to full capacity to maximize storage and fill empty chemical storage tanks with water if a heavy precipitation event is anticipated, to prevent floating.
- [ ] Wastewater utilities should empty holding tanks, ponds and/or lagoons to prepare for an increase in flow and to minimize the chance of a release during heavy weather incidents.

Power, Energy and Fuel

- [ ] Fuel vehicles and fill fuel tanks to full capacity and ensure that you have the ability to manually pump gas in the event of a power outage. Ensure this equipment and other hazardous materials are located in a safe zone.

NOAA

Actions to Respond to a Flood

Coordination

- [ ] Notify your local EMA and state regulatory/primacy agency of system status.
- [ ] If needed, request or offer assistance (e.g., equipment, personnel) through mutual aid networks, such as WARN.
- [ ] Assign a representative of the utility to the incident command post or the community's EOC.

Communication with Customers

- [ ] Notify customers of any water advisories and consider collaborating with local media (television, radio, newspaper, etc.) to distribute the message. If emergency water is being supplied, provide information on the distribution locations.

Facility and Service Area

Overall

- [ ] Conduct damage assessments of the utility to prioritize repairs and other actions.
- [ ] Check that back-up equipment and facility systems, such as controls and pumps, are in working order, and ensure that chemical containers and feeders are intact.
- [ ] If necessary and possible, turn off all utilities associated with your facilities to prevent further damage and minimize electrical and explosive hazards.

Drinking Water Utilities

- [ ] Inspect the utility and service area for damage due to debris, downed trees and floodwaters. Identify facility components (e.g., valve boxes) and fire hydrants that have been buried, are inaccessible or have been destroyed.
- [ ] Ensure pressure is maintained throughout the system and isolate those sections where it is not.
- [ ] Isolate and control leaks in water transmission and distribution piping.
- [ ] Monitor water quality, develop a sampling plan and adjust treatment as necessary.
- [ ] Notify regulatory/primacy agency if operations and/or water quality or quantity are affected.
- [ ] Utilize pre-established emergency connections or setup temporary connections to nearby communities, as needed. Alternatively, implement plans to draw emergency water from pre-determined tanks or hydrants. Notify employees of the activated sites.

Wastewater Utilities

- [ ] Inspect the utility and service area, including lift stations, for damage and power availability. Inspect the sewer system for debris and assess the operational status of the mechanical bar screen. If necessary, run system in manual operation.

Notes:

Actions to Respond to a Flood *(continued)*

- [ ] Inspect all manholes and pipelines in flood-prone areas for inflow and infiltration after the flood waters recede.
- [ ] Consider suspending solid waste processing during periods of high flow to conserve bacteria and prevent it from washing out of the plant.
- [ ] Notify regulatory/primacy agency of any changes to the operations or required testing parameters.

Documentation and Reporting

- [ ] Document all damage assessments, mutual aid requests, emergency repair work, equipment used, purchases made, staff hours worked and contractors used during the response to assist in requesting reimbursement and applying for federal disaster funds. When possible, take photographs of damage at each work site (with time and date stamp). Proper documentation is critical to requesting reimbursement.
- [ ] Work with your local EMA on the required paperwork for public assistance requests.

Personnel

- [ ] Account for all personnel and provide emergency care, if needed. Caution personnel about known hazards resulting from floods.
- [ ] Deploy emergency operations and clean-up crews. Identify key access points and roads for employees to enter the utility and critical infrastructure; coordinate the need for debris clearance with local emergency management or prioritize it for employee operations.

Power, Energy and Fuel

- [ ] Use backup generators, as needed, to supply power to system components.
- [ ] Monitor and plan for additional fuel needs in advance; coordinate fuel deliveries to generators.
- [ ] Maintain contact with electric provider for power outage duration estimates.

Notes:

Actions to Recover from a Flood

Coordination

- [ ] Continue work with response partners to obtain funding, equipment, etc.

Communication with Customers

- [ ] Assign a utility representative to continue to communicate with customers concerning a timeline for recovery and other pertinent information.

Facility and Service Area

- [ ] Complete damage assessments.
- [ ] Complete permanent repairs, replace depleted supplies and return to normal service.

FEMA

Documentation and Reporting

- [ ] Compile damage assessment forms and cost documentation into a single report to facilitate the sharing of information and the completion of state and federal funding applications. Visit EPA's web-based tool, Federal Funding for Utilities—Water/Wastewater—in National Disasters (Fed FUNDS), for tailored information and application forms for various federal disaster funding programs: http://water.epa.gov/infrastructure/watersecurity/funding/fedfunds/
- [ ] Develop a lessons learned document and/or an after action report (AAR) to keep a record of your response activities. Update your vulnerability assessment, ERP and contingency plans.
- [ ] Revise budget and asset management plans to address increased costs from response-related activities.

Mitigation

- [ ] Identify mitigation and long-term adaptation measures that can prevent damage and increase utility resilience. Consider impacts related to the increased frequency of intense flooding when planning for system upgrades (e.g., elevating critical utility assets above projected flood levels, waterproofing building access areas, using flood control methods to modify runoff, managing stormwater through green infrastructure).

Notes:

Incident Action Checklist – Tornado

The actions in this checklist are divided up into three "rip & run" sections and are examples of activities that water and wastewater utilities can take to: prepare for, respond to and recover from a tornado. For on-the-go convenience, you can also populate the "My Contacts" section with critical information that your utility may need during an incident.

Tornado Impacts on Water and Wastewater Utilities

Tornadoes can occur in any location with little to no notice. Tornadoes can have wind gusts from 65 to over 200 miles per hour (mph) and are often accompanied by floods, high straight-line winds up to 140 mph, hail and lightning. About 1,200 tornadoes occur in the United States each year, and they can have devastating impacts to water and wastewater utilities. Impacts may include, but are not limited to:

- Damage to infrastructure (e.g., storage tanks, hydrants, residential plumbing fixtures, distribution system) due to hail, wind, debris and flash flooding, resulting in loss of service and/or reduced pressure throughout the system
- Restricted access to the facility due to debris and damaged roads
- Loss of power and communication lines
- Potential contamination due to chemical leaks from ruptured containers
- Severe water and pressure loss due to ruptured service lines in damaged buildings and broken fire hydrants from airborne debris

NOAA

The following sections outline actions water and wastewater utilities can take to prepare for, respond to and recover from a tornado.

Example of Water Sector Impacts and Response to a Tornado

Smithville, Mississippi 2011 Tornado

An EF-5 tornado with estimated winds of 205 mph and a half-mile wide base hit Smithville, Mississippi in April 2011, destroying 150 homes and several businesses and city facilities, including the water system. The utility's elevated storage tank was damaged and several pipes were bent due to a car striking the structure. The tornado also tore out appliances and plumbing fixtures from homes and destroyed at least three fire hydrants.

Both the drinking water and wastewater systems lost power immediately after the tornado hit, and half of the town was without water due to damage to infrastructure and the power outage. Generators were coordinated through the Mississippi Rural Water Association to provide temporary power. The drinking water and wastewater utilities conducted damage assessments and teams were quickly deployed to fix leaks, turn off meters in destroyed homes and restore service throughout the systems.

Source: NRWA's "Rural Water assists tornado-ravaged Mississippi"

My Contacts and Resources

CONTACT NAME	UTILITY/ORGANIZATION NAME	PHONE NUMBER
James Reid	Pikes Peak Office of Emergency Management	(719) 385-5957
Public Notification	CDPHE	(877) 518-5608
CoWARN, Kyra Gregory	WARN Chair	(303) 908-7519
Mountain View Electric Assn.	Power Utility	(719) 495-2283

Planning

- Incident monitoring:
  - Storm Prediction Center (National Oceanic and Atmospheric Administration [NOAA])
- U.S. Tornado Climatology (NOAA)
- Enhanced F Scale for Tornado Damage (NOAA)
- Severe Weather 101: Tornado Basics (NOAA)
- National Weather Service Weather Alerts (NOAA)
- Planning for an Emergency Drinking Water Supply (EPA)
- All-Hazard Consequence Management Planning for the Water Sector (Water Sector Emergency Response Critical Infrastructure Partnership Advisory Council [CIPAC] Workgroup)
- Vulnerability Self Assessment Tool (VSAT) (EPA)
- Preparing for Extreme Weather Events: Workshop Planner for the Water Sector (EPA)
- Tabletop Exercise Tool for Water Systems: Emergency Preparedness, Response, and Climate Resiliency (EPA)
- How to Develop a Multi-Year Training and Exercise (T&E) Plan (EPA)
- Make a Plan (FEMA)

Coordination

- Water/Wastewater Agency Response Network (WARN) (EPA)
- Community Based Water Resiliency (EPA)

Facility and Service Area

- Emergency Response and Preparedness Florida WARN Best Management Practices for Water and Wastewater Systems (University of Florida Center for Training)
- Water Agencies Respond to Tornadoes (Florida Rural Water Association and Florida WARN)

Documentation and Reporting

- Federal Funding for Utilities In National Disasters (Fed FUNDS) (EPA)

Power, Energy and Fuel

- EPA Region 1 Water/Wastewater System Generator Preparedness Brochure (EPA)

Mitigation

- Climate Resilience Evaluation and Awareness Tool (CREAT) (EPA)
- Adaptation Strategies Guide (EPA)

Actions to Prepare for a Tornado

Planning

- [ ] Review and update your utility's emergency response plan (ERP), and ensure all emergency contacts are current.
- [ ] Conduct briefings, training and exercises to ensure utility staff is aware of all preparedness, response and recovery procedures.
- [ ] Identify priority water customers (e.g., hospitals), obtain their contact information, map their locations and develop a plan to restore those customers first.
- [ ] Develop an emergency drinking water supply plan and establish contacts (potentially through your local emergency management agency [EMA] or mutual aid network) to discuss procedures, which may include bulk water hauling, mobile treatment units or temporary supply lines, as well as storage and distribution.
- [ ] Conduct a hazard vulnerability analysis in which you review historical records to understand the past frequency and intensity of tornado events and how your utility may have been impacted. Consider taking actions to mitigate tornado impacts to the utility, including those provided in the "Actions to Recover from a Tornado: Mitigation" section.
- [ ] Complete pre-disaster activities to help apply for federal disaster funding (e.g., contact state/local officials with connections to funding, set up a system to document damage and costs, take photographs of the facility for comparison to post-damage photographs).

Coordination

- [ ] Join your state's Water/Wastewater Agency Response Network (WARN) or other local mutual aid network.
- [ ] Coordinate with WARN members and other neighboring utilities to discuss:
  - Outlining response activities, roles and responsibilities and mutual aid procedures (e.g., how to request and offer assistance)
  - Conducting joint tabletop or full-scale exercises
  - Obtaining resources and assistance, such as equipment, personnel, technical support or water
  - Establishing interconnections between systems and agreements with necessary approvals to activate this alternate source. Equipment, pumping rates and demand on the water sources need to be considered and addressed in the design and operations
  - Establishing communication protocols and equipment to reduce misunderstandings during the incident
- [ ] Coordinate with other key response partners, such as your local EMA, to discuss:
  - How restoring system operations may have higher priority than establishing an alternative water source
  - Potential points of distribution for the delivery of emergency water supply (e.g., bottled water) to the public, as well as who is responsible for distributing the water
- [ ] Understand how the local and utility emergency operations center (EOC) will be activated and what your utility may be called on to do, as well as how local emergency responders and the local EOC can support your utility during a response. If your utility has assets outside of the county EMA's jurisdiction, consider coordination or preparedness efforts that should be done in those areas.
- [ ] Ensure credentials to allow access will be valid during an incident by checking with local law enforcement.
- [ ] Sign up for mobile and/or email alerts from your local EMA, if available.

Actions to Prepare for a Tornado *(continued)*

Communication with Customers

- [ ] Develop outreach materials to provide your customers with information they will need after a tornado (e.g., clarification about water advisories, instructions for private well and septic system maintenance and information about tornado mitigation).
- [ ] Review public information protocols with local EMA and public health/primacy agencies. These protocols should include developing water advisory messages (e.g., boil water) and distributing them to customers using appropriate mechanisms, such as reverse 911.

Facility and Service Area

- [ ] Inventory and order extra equipment and supplies, as needed:
  - Motors
  - Fuses
  - Chemicals (ensure at least a two week supply)
  - Cellular phones or other wireless communications device
  - Emergency Supplies
    - Tarps/tape/rope
    - Cots/blankets
    - First aid kits
    - Foul weather gear
    - Plywood
    - Flashlights/flares
    - Sandbags (often, sand must be ordered as well)
    - Bottled water
    - Batteries
    - Non-perishable food
- [ ] Ensure communication equipment (e.g., radios, satellite phones) works and is fully charged.
- [ ] Develop a GIS map of all system components and prepare a list of coordinates for each facility.
- [ ] Document pumping requirements and storage capabilities, as well as critical treatment components and parameters.

Personnel

- [ ] Identify essential personnel and ensure they are trained to perform critical duties in an emergency (and possibly without communication), including the shut down and start up of the system.
- [ ] Establish communication procedures with essential and non-essential personnel. Ensure all personnel are familiar with emergency evacuation and shelter in place procedures.
- [ ] Pre-identify emergency operations and clean-up crews. Establish alternative transportation strategies if roads are impassable.
- [ ] Consider how evacuations or limited staffing due to transportation issues (potentially all utility personnel) will impact your response procedures.
- [ ] Identify possible staging areas for mutual aid crews if needed in the response, and the availability of local facilities to house the crews.
- [ ] Encourage personnel, especially those that may be on duty for extended periods of time, to develop family emergency plans.

Actions to Prepare for a Tornado *(continued)*

Power, Energy and Fuel

- ☐ Evaluate condition of electrical panels to accept generators; inspect connections and switches.
- ☐ Document power requirements of the facility; options for doing this may include:
  - Placing a request with the US Army Corps of Engineers 249th Engineer Battalion (Prime Power): http://www.usace.army.mil/249thEngineerBattalion.aspx
  - Using the US Army Corps of Engineers on-line Emergency Power Facility Assessment Tool (EPFAT): http://epfat.swf.usace.army.mil/
- ☐ Confirm and document generator connection type, capacity load and fuel consumption. Test regularly, exercise under load and service backup generators.
- ☐ Fill fuel tanks to full capacity and ensure that you have the ability to manually pump gas in the event of a power outage. Ensure this equipment and other hazardous materials are located in a safe zone.
- ☐ Contact fuel vendors and inform them of estimated fuel volumes needed if utility is impacted. Determine your ability to establish emergency contract provisions with vendors and your ability to transport fuel if re-fueling contractors are not available. Develop a backup fueling plan and a prioritization list of which generators to fuel in case of a fuel shortage.
- ☐ Collaborate with your local power provider and EOC to ensure that your water utility is on the critical facilities list for priority electrical power restoration, generators and emergency fuel.

FEMA

Notes:

Actions to Respond to a Tornado

Coordination

- [ ] Notify your local EMA and state regulatory/primacy agency of system status.
- [ ] If needed, request or offer assistance (e.g., water buffalos, water sampling teams, generators) through mutual aid networks, such as WARN.
- [ ] Assign a representative of the utility to the incident command post or the community's EOC.

Communication with Customers

- [ ] Notify customers of any water advisories and consider collaborating with local media (television, radio, newspaper, etc.) to distribute the message. If emergency water is being supplied, provide information on the distribution locations.

Facility and Service Area

Overall

- [ ] Conduct damage assessments of the utility to prioritize repairs and other actions.
- [ ] Check that back-up equipment and facility systems, such as controls and pumps, are in working order, and ensure that chemical containers and feeders are intact.

Drinking Water Utilities

- [ ] Inspect the utility and service area for damage. Identify facility components (e.g., valve boxes) and fire hydrants that have been buried, are inaccessible or have been destroyed.
- [ ] Ensure pressure is maintained throughout the system and isolate those sections where it is not.
- [ ] Isolate and control leaks in water transmission and distribution piping.
- [ ] Turn off water meters at destroyed homes and buildings.
- [ ] Monitor water quality, develop a sampling plan and adjust treatment as necessary.
- [ ] Notify regulatory/primacy agency if operations and/or water quality or quantity are affected.
- [ ] Utilize pre-established emergency connections or setup temporary connections to nearby communities, as needed. Alternatively, implement plans to draw emergency water from pre-determined tanks or hydrants. Notify employees of the activated sites.

Wastewater Utilities

- [ ] Inspect the utility and service area, including lift stations, for damage, downed trees and power availability. Inspect the sewer system for debris and assess the operational status of the mechanical bar screen. If necessary, run system in manual operation.
- [ ] Notify regulatory/primacy agency of any changes to the operations or required testing parameters.

Notes:

Actions to Respond to a Tornado *(continued)*

Documentation and Reporting

- [ ] Document all damage assessments, mutual aid requests, emergency repair work, equipment used, purchases made, staff hours worked and contractors used during the response to assist in requesting reimbursement and applying for federal disaster funds. When possible, take photographs of damage at each work site (with time and date stamp). Proper documentation is critical to requesting reimbursement.
- [ ] Work with your local EMA on the required paperwork for public assistance requests.

Personnel

- [ ] Account for all personnel and provide emergency care, if needed. Caution personnel about known hazards resulting from tornadoes.
- [ ] Deploy emergency operations and clean-up crews (e.g., securing heavy equipment). Identify key access points and roads for employees to enter the utility and critical infrastructure; coordinate the need for debris clearance with local emergency management or prioritize it for employee operations.
- [ ] Ensure personnel are aware of potential hazards and delays while traveling within the affected service area (i.e., flat tires caused by debris, navigation issues caused by uprooted/missing street signs).

Power, Energy and Fuel

- [ ] Use backup generators, as needed, to supply power to system components.
- [ ] Monitor and plan for additional fuel needs in advance; coordinate fuel deliveries to the generators.
- [ ] Maintain contact with electric provider for power outage duration estimates.

Notes:

Actions to Recover from a Tornado

Coordination

- [ ] Continue work with response partners to obtain funding, equipment, etc.

Communication with Customers

- [ ] Assign a utility representative to continue to communicate with customers concerning a timeline for recovery and other pertinent information.

Facility and Service Area

- [ ] Complete damage assessments.
- [ ] Complete permanent repairs, replace depleted supplies and return to normal service.

FEMA

Documentation and Reporting

- [ ] Compile damage assessment forms and cost documentation into a single report to facilitate the sharing of information and the completion of state and federal funding applications. Visit EPA's web-based tool, Federal Funding for Utilities—Water/Wastewater—in National Disasters (Fed FUNDS), for tailored information and application forms for various federal disaster funding programs: http://water.epa.gov/infrastructure/watersecurity/funding/fedfunds/
- [ ] Develop a lessons learned document and/or an after action report to keep a record of your response activities. Update your vulnerability assessment, ERP and contingency plans.
- [ ] Revise budget and asset management plans to address increased costs from response-related activities.

Mitigation

- [ ] Identify mitigation and long-term adaptation measures that can prevent damage and increase utility resilience. Consider impacts related to the increased frequency and intensity of tornadoes when planning for system upgrades (e.g., ensure adequate backup power supply for key assets, pursue interconnections with neighboring utilities).

Notes:

Incident Action Checklist – Wildfire

The actions in this checklist are divided up into three "rip & run" sections and are examples of activities that water and wastewater utilities can take to: prepare for, respond to and recover from wildfires. For on-the-go convenience, you can also populate the "My Contacts" section with critical information that your utility may need during an incident.

Wildfire Impacts on Water and Wastewater Utilities

A wildfire is any instance of uncontrolled burning in grasslands, brush or woodlands. Wildfires can be caused by lightning, human carelessness or arson. Wildfires often begin unnoticed spread quickly and present a direct risk to property and infrastructure, in addition to potential degradation of the water supply. In some cases, source water quality issues can persist for 5-10 years following a wildfire. Areas that have experienced a wildfire are also at an increased risk of flash flooding and mudslides because the ground where vegetation has burned away cannot effectively absorb rainwater. Often, post-fire impacts (including those impacts resulting from flash floods) are more detrimental to drinking water and wastewater systems than the fire itself. Specific impacts to drinking water and wastewater utilities may include, but are not limited to:

- Infrastructure damage to the facility or distribution system due to proximity to the fire or firefighting activities
- Loss of water quantity due to increased withdrawals for firefighting activities
- Source water quality changes due to increased nutrients and other pollutants, which can result in higher turbidity, algal blooms, potential odor and taste issues, and subsequent higher treatment costs
- Increased sediment in reservoirs as a result of runoff and flash floods from burned areas, which can affect water quality, and reduced reservoir capacity and effective service lifespan
- Increased sediment and debris in stormwater runoff following flash floods, impacting water quality and treatment processes
- Decreased water supply downstream, as loss of forest canopy can lead to increased evaporation and reduction in the amount of water stored in snowpack

The following sections outline actions water and wastewater utilities can take to prepare for, respond to and recover from wildfires.

Examples of Water Sector Impacts and Response to a Wildfire

Denver Water responds to impacts from wildfire and flooding

On May 18, 1996, the 11,900-acre Buffalo Creek fire occurred on a tributary to the upper South Platte River, the main source of Denver, Colorado's water supply. While Buffalo Creek itself contributes a very small share of Denver's water supply, it is located directly upstream of the Strontia Springs Reservoir, the intake point for the Foothills Treatment Plant – a facility that handles approximately 80% of Denver's water.

Two months after the Buffalo Creek fire, heavy thunderstorms occurred directly over the burned area, causing a flash flood that washed more sediment into the reservoir than had accumulated over the previous 13 years, resulting in an estimated loss of 30 years of the reservoir's planned 50-year life.

The emergency cleanup costs totaled nearly $1 million. Chronic cleanup costs due to increased turbidity totaled $250,000 in water treatment costs per year, and dredging was estimated to cost $15 to $20 million over 10 years.

To mitigate future damage, the utility installed sensors upstream of the reservoir to monitor the amount of debris and sediment coming down the river, allowing the utility to shut down its treatment plant before flash floods could cause damage. Denver Water and the US Forest Service Rocky Mountain Region are also investing $33 million over a 5-year period for mechanical thinning, fuel reduction, creating fire breaks, erosion control, decommissioning roads and reforestation.

Source: EPA "Adaptation Strategies Guide for Water Utilities, 2012"

My Contacts and Resources

CONTACT NAME	UTILITY/ORGANIZATION NAME	PHONE NUMBER
James Reid	Pikes Peak Office of Emergency Management	(719) 385-5957
Public Notification	CDPHE	(877) 518-5608
CoWARN, Kyra Gregory	WARN Chair	(303) 908-7519
Mountain View Electric Assn.	Power Utility	(719) 495-2283

Planning

- Fire mapping and outlooks:
  - Active Fire Mapping Program (U.S. Forest Service [USFS])
  - National Significant Wildland Fire Potential Outlooks (National Interagency Coordination Center [NICC])
  - NOAA National Weather Service – Fire Weather (National Oceanic and Atmospheric Administration [NOAA])
  - Fire Weather Outlooks and Forecasting Tools (National Weather Service [NWS])
  - Incident Information System (InciWeb)
  - Geospatial Multi-Agency Coordination (GeoMAC) Group Wildland Fire Support application (U.S. Geological Survey [USGS])
  - Fire Forecast (National Public Radio)
  - Wildfire Assessment System (USFS)
- National Interagency Fire Center (NIFC)
- NIFC Burned Area Emergency Response (BAER)
- Firewise Communities (National Fire Protection Association [NFPA])
- Ready.gov Wildfire Preparedness (Federal Emergency Management Agency [FEMA])
- Fire Management Planning for Public Water Systems (CoWARN)
- Best Management Practices for Fire Preparedness and Response (Florida Rural Water Association [FRWA])
- U.S. Drought Portal (National Integrated Drought Information System [NIDIS])
- Wildfire Impacts on Water Quality (Southwest Hydrology)
- All-Hazard Consequence Management Planning for the Water Sector (Water Sector Emergency Response Critical Infrastructure Partnership Advisory Council (CIPAC) Workgroup)
- Preparing for Extreme Weather Events: Workshop Planner for the Water Sector (EPA)
- Tabletop Exercise Tool for Water Systems: Emergency Preparedness, Response, and Climate Resiliency (EPA)

Coordination

- Water/Wastewater Agency Response Network (WARN) (EPA)
- Community Based Water Resiliency (EPA)

Facility and Service Area

- Defensible Space Guidance (CAL FIRE)
- Private Wells after the Fire: A private well owner's guide to protecting your drinking water source (Arizona Department of Environmental Quality [ADEQ])
- Firewise Landscaping and Plant Lists (NFPA)
- Firewise Guide to Landscape and Construction (NFPA)
- Post-Fire Rehabilitation Techniques (Colorado State University)
- Recovery Assistance for Water Utilities Dealing with the Effects of Wildfire (CoWARN)
- Water Quality Concerns Fact Sheet (ADEQ)
- Municipal Water Supply Systems and Evaluation Methods for Fire Protection (FEMA)

Power, Energy and Fuel

- EPA Region 1 Water/Wastewater System Generator Preparedness Brochure (EPA)

Documentation and Reporting

- Federal Funding for Utilities in National Disasters (Fed FUNDS) (EPA)

Mitigation

- Burned Area Emergency Response (BAER) Treatment Catalog (USFS)
- Plants for Wildfire Protection and Restoration (USDA)
- Land Rehabilitation FAQ: Lower North Fork Fire (Jefferson Conservation District)
- Climate Resilience Evaluation and Awareness Tool (CREAT)
- Adaptation Strategies Guide (EPA)

Actions to Prepare for a Wildfire

Planning

- [ ] Actively monitor fire and weather conditions and be aware of regional wildfires.
- [ ] Review and update your utility's emergency response plan (ERP), and ensure all emergency contacts are current.
- [ ] Conduct briefings, training and exercises to ensure utility staff is aware of all preparedness, response and recovery procedures.
- [ ] Identify priority water customers (e.g., hospitals), obtain their contact information, map their locations and develop a plan to restore those customers first, in case of water service disruptions.
- [ ] Develop an emergency drinking water supply plan and establish response partner contacts (potentially through your local emergency management agency [EMA] or mutual aid network) to discuss procedures, which may include bulk water hauling, mobile treatment units or temporary supply lines, as well as storage and distribution.
- [ ] Review and update fire management plans, including contingency plans for system operation if critical facilities are impacted by wildfire and access is limited or not possible.
- [ ] Conduct a hazard vulnerability analysis in which you review historical records to understand the past frequency and intensity of wildfires and how your utility may have been impacted. Consider taking actions to mitigate wildfire impacts to the utility, including those provided in the "Actions to Recover from a Wildfire: Mitigation" section.
- [ ] Complete pre-disaster activities to help apply for federal disaster funding (e.g., contact state/local officials with connections to funding, set up a system to document damage and costs, take photographs of the facility for comparison to post-damage photographs).
- [ ] Ensure proper safety gear is available for field employees.

Coordination

- [ ] Join your state's Water/Wastewater Agency Response Network (WARN) or other local mutual aid network.
- [ ] Coordinate with WARN members and other neighboring utilities to discuss:
  - Outlining response activities, roles and responsibilities and mutual aid procedures (e.g., how to request and offer assistance)
  - Conducting joint tabletop or full-scale exercises
  - Obtaining resources and assistance, such as equipment, personnel, technical support or water
  - Establishing interconnections between systems and agreements with necessary approvals to activate this alternate source. Equipment, pumping rates and demand on the water sources need to be considered and addressed in the design and operations
  - Establishing communication protocols and equipment to reduce misunderstandings during the incident
- [ ] Coordinate with other key response partners, such as your local EMA, to discuss:
  - How restoring system operations may have higher priority than establishing an alternative water source
  - Potential points of distribution for the delivery of emergency water supply (e.g., bottled water) to the public, as well as who is responsible for distributing the water
- [ ] Understand how the local and utility emergency operations center (EOC) will be activated and what your utility may be called on to do, as well as how local emergency responders and the local EOC can support your utility during a response. If your utility has assets outside of the county EMA's jurisdiction, consider coordination or preparedness efforts that should be done in those areas.

Actions to Prepare for a Wildfire *(continued)*

- [ ] Meet with the fire agency with authority in your utility's area. This could include a local fire department, state conservation and forestry offices, and/or the US Forest Service. Review plans, discuss response activities (e.g., fire suppression chemical use) and identify hazards and vulnerabilities at your utility.

- [ ] Ensure credentials to allow access will be valid during an incident by checking with local law enforcement.

- [ ] Sign up for mobile and/or email alerts from your local EMA, if available.

Communication with Customers

- [ ] Develop outreach materials to provide your customers with information they will need during a wildfire (e.g., clarification about water advisories, instructions for private well and septic system maintenance, and information about fire prevention and mitigation).

- [ ] Review public information protocols with local EMA and public health/primacy agencies. These protocols should include developing water advisory messages (e.g., boil water) and distributing them to customers using appropriate mechanisms, such as reverse 911.

Facility and Service Area

- [ ] Inventory and order extra equipment and supplies, as needed:
  - Motors
  - Fuses
  - Chemicals (ensure at least a two week supply)
  - Cellular phones or other wireless communications device
  - Emergency Supplies
    - Tarps/tape/rope
    - Cots/blankets
    - First aid kits
    - Foul weather gear
    - Plywood
    - Flashlights/flares
    - Sandbags (often, sand must be ordered as well)
    - Bottled water
    - Batteries
    - Non-perishable food

- [ ] Ensure communication equipment (e.g., radios, satellite phones) works and is fully charged.

- [ ] Develop a GIS map of all system components and prepare a list of coordinates for each facility.

- [ ] Practice mechanical thinning, weed control, selective harvesting, controlled burns and creation of fire breaks on utility managed property, and encourage these practices on property that may directly impact the utility, its water supply and/or water quality.

Notes:

Actions to Prepare for a Wildfire *(continued)*

- [ ] Address and, if possible, remove vegetation from around facilities located in medium to high fire danger zones. Consider replacing flammable vegetation with fire-resistant landscaping.
- [ ] Create a zone of defensible space of approximately 50-100 feet for utility equipment and facilities (e.g., wellheads, structures, supports to wires and transformers). Consult with your local fire department for specific recommendations or requirements.
- [ ] Install manual or automatic irrigation systems to provide wetting of components and groundcover for vulnerable areas (e.g., chlorine storage, control equipment buildings).
- [ ] Assess the possibility of and procedures for using reclaimed water for fire suppression (prepare public notice and talking points).
- [ ] Document pumping requirements and storage capabilities, as well as critical treatment components and parameters.
- [ ] Back-up essential records and data, and store in a fireproof safe or offsite facility.

Personnel

- [ ] Identify essential personnel and ensure they are trained to perform critical duties in an emergency (and possibly without communication), including the shut down and start up of the system.
- [ ] Establish communication procedures with essential and non-essential personnel. Ensure all personnel are familiar with emergency evacuation and shelter in place procedures.
- [ ] Pre-identify emergency operations and clean-up crews. Establish alternative transportation strategies if roads are impassable.
- [ ] Consider how evacuations or limited staffing due to transportation issues (potentially all utility personnel) will impact your response procedures.
- [ ] Identify possible staging areas for mutual aid crews if needed in the response, and the availability of local facilities to house the crews.
- [ ] Encourage personnel, especially those that may be on duty for extended periods of time, to develop family emergency plans.

Power, Energy and Fuel

- [ ] Evaluate condition of electrical panels to accept generators; inspect connections and switches.
- [ ] Document power requirements of the facility; options for doing this may include:
  - Placing a request with the US Army Corps of Engineers 249th Engineer Battalion (Prime Power): http://www.usace.army.mil/249thEngineerBattalion.aspx
  - Using the US Army Corps of Engineers on-line Emergency Power Facility Assessment Tool (EPFAT): http://epfat.swf.usace.army.mil/
- [ ] Confirm and document generator connection type, capacity load and fuel consumption. Test regularly, exercise under load and service backup generators.
- [ ] Fill fuel tanks to full capacity and ensure that you have the ability to manually pump gas in the event of a power outage. Ensure this equipment and other hazardous materials are located in a safe zone.
- [ ] Contact fuel vendors and inform them of estimated fuel volumes needed if utility is impacted. Determine your ability to establish emergency contract provisions with vendors and your ability to transport fuel if re-fueling contractors are not available. Develop a backup fueling plan and a prioritization list of which generators to fuel in case of a fuel shortage.
- [ ] Collaborate with your local power provider and EOC to ensure that your water utility is on the critical facilities list for priority electrical power restoration, generators and emergency fuel.

Actions to Respond to a Wildfire

Planning

- [ ] Identify possible alternate water supplies and operational changes to assist in mitigating demand and water quality concerns.

Coordination

- [ ] Once the wildfire is about 40% contained, reach out to your local EMA, the incident's Public Information Officer (PIO) and the Burned Area Emergency Response (BAER) team to maintain awareness of the situation and, if possible, to lend assistance as resource advisors or observers.
- [ ] Notify your local EMA and state regulatory/primacy agency of system status.
- [ ] If needed, request or offer assistance (e.g., equipment, personnel) through mutual aid networks, such as WARN.
- [ ] Assign a representative of the utility to the incident command post or the community's EOC.

Communication with Customers

- [ ] Notify customers of any water advisories and consider collaborating with local media (television, radio, newspaper, etc.) to distribute the message. If emergency water is being supplied, provide information on the distribution locations.

Facility and Service Area

Overall

- [ ] Conduct damage assessments of the utility to prioritize repairs and other actions.
- [ ] Check that back-up equipment and facility systems, such as controls and pumps, are in working order, and ensure that chemical containers and feeders are intact.

Drinking Water Utilities

- [ ] If possible, refill storage tanks each day to ensure maximum storage for demand, including fire suppression.
- [ ] Work with the local EMA to identify passable access roads and to ensure that utility facilities in forest areas are clearly identified.
- [ ] Keep intakes and access hatches clear of debris.
- [ ] Monitor raw water quality, develop a sampling plan and adjust treatment as necessary.
- [ ] Notify regulatory/primacy agency if operations and/or water quality or quantity are affected.
- [ ] Utilize pre-established emergency connections or setup temporary connections to nearby communities, as needed. Alternatively, implement plans to draw emergency water from pre-determined tanks or hydrants. Notify employees of the activated sites.

Notes:

Actions to Respond to a Wildfire *(continued)*

- [ ] Prepare and deploy equipment as needed to support firefighting operations, such as tanker trucks and related pumping equipment, as well as bulldozers for the construction of firebreaks.
- [ ] Conduct sediment removal activities, such as installing permanent or temporary debris basins.

Wastewater Utilities

- [ ] Inspect the utility and service area, including lift stations, for damage and power availability. Inspect the sewer system for debris and assess the operational status of the mechanical bar screen. If necessary, run system in manual operation.
- [ ] Notify regulatory/primacy agency of any changes to the operations or required testing parameters.

Documentation and Reporting

- [ ] Document all damage assessments, mutual aid requests, emergency repair work, equipment used, purchases made, staff hours worked and contractors used during the response to assist in requesting reimbursement and applying for federal disaster funds. When possible, take photographs (with time and date stamp). Proper documentation is critical to requesting reimbursement.
- [ ] Work with your local EMA on the required paperwork for public assistance requests.

Personnel

- [ ] Account for all personnel and provide emergency care, if needed. If personnel are in the field, communicate with the National Weather Service (NWS) on local wind conditions in the fire area so staff are aware of how quickly winds are shifting and if evacuation from facilities is required.
- [ ] Deploy emergency operations and clean-up crews. Identify key access points and roads for employees to enter the utility and critical infrastructure; coordinate the need for debris clearing with local emergency management or prioritize it for employee operations.

Power, Energy and Fuel

- [ ] Use backup generators, as needed, to supply power to system components.
- [ ] Monitor and plan for additional fuel needs in advance; coordinate fuel deliveries to generators.
- [ ] Maintain contact with electric provider for power outage duration estimates.

EPA

Notes:

Actions to Recover from a Wildfire

Coordination

- [ ] Continue work with response partners to obtain funding, equipment, etc.
- [ ] Coordinate with land owners and other partners to restore and treat burned areas.

Communication with Customers

- [ ] Assign a utility representative to continue to communicate with customers concerning a timeline for recovery and other pertinent information.

Facility and Service Area

- [ ] Complete damage assessments.
- [ ] Complete permanent repairs, replace depleted supplies and return to service.

Documentation and Reporting

- [ ] Compile damage assessment forms and cost documentation into a single report to facilitate the sharing of information and the completion of state and federal funding applications. Visit EPA's web-based tool, Federal Funding for Utilities—Water/Wastewater—in National Disasters (Fed FUNDS), for tailored information and application forms for various federal disaster funding programs: http://water.epa.gov/infrastructure/watersecurity/funding/fedfunds/
- [ ] Develop a lessons learned document and/or an after action report (AAR) to keep a record of your response activities. Update your vulnerability assessment, ERP, fire models and fire management plans.
- [ ] Revise budget and asset management plans to address increased costs from response-related activities.

Mitigation

- [ ] Identify mitigation and long-term adaptation measures that can prevent damage and increase utility resilience. Consider impacts related to future climate conditions and the increased frequency of wildfires when planning for system upgrades (e.g., installing buffer strips, removing hazardous fuels).
- [ ] Consider implementing the following mitigation measures to prepare for possible flash flooding events following a wildfire:
  - Monitor the watershed, as conditions may be different post-fire. Identify potential failure points within your service area: ensure culverts can handle increased flow, and determine runoff points and areas where water will now collect
  - Install a rain gauge upstream of intake for early warning of heavy precipitation that could lead to high turbidity water and sensors to monitor the amount of debris and sediment coming downstream
  - Consider instituting erosion control measures to protect against runoff and sediment concerns that occur during suppression and precipitation

Notes:

Appendix F

COLORADO CENTRE METROPOLITAN DISTRICT
WATER TREATMENT PLANT IMPROVEMENTS

SHEET INUEX

SHEET NO.	DESCRIPTION
CIVIL DRAwINGS	
COVER SHt.tl	
C1	GENERAL NOTES
C2	OVERALL SITEPLAN
CJ	TREATMENT PLANT SITEPLAN
C4	PLAN & PROFILE STA. 10+00 TO END
C5	ROAD SECTIONS & DETAILS
C6	MANHOLE DETAILS
C1	FIRE HYDRANT DETAILS
CB	REVERSE ANCHOR DETAILS
C9	THRUST BLOCK DETAILS
C10	MISC. DETAILS
C11	MISC. DETAILS
PROCESS DRAwINGS	
PI	BUILDING & INTERIOR PIPING LAYOUT
P2	RECLAIM TANK SECTION
P3	BACKwASH LINE SECTION

LEGEND

BOUNDARY / RIGHT-OF-WAY

EXISTING WAI1:.k UNI:. (W) ———〰———

EXISTING RAW WATER LINE RAW -- RAW -

EXISTING SANITARY SEWER LINE - ss - ss -

EXISTING SIORiif SI:.WI:.k

EXISTING UNDERGROUND ELECTRIC - LIGE-- UGE-

EXISTING OVERHEAC ELECTRIC - OHE -- OHE -

EXISTING 11:.LI:.PHONI:. UNI:. - ItL - ItL -

EXISTING GAS UNI:. - GAS - GAS -

EXISTING FIBER OPTIC LINE ro◆- ro◆-

ORIGINAL FENCELINE ———×=———

EXISTING VALVI:. M

EXISTING CONTOURS -7270- -

AS-BUILI SEWER UNI:.

AS-BUILI WAI mUNI:.

AS-BUILI kAW WAII:.kLINI:. - RAW-- RAW-

AS-BUILI FENCELINE ----u----------u-

AS-BUILI VALVI:.

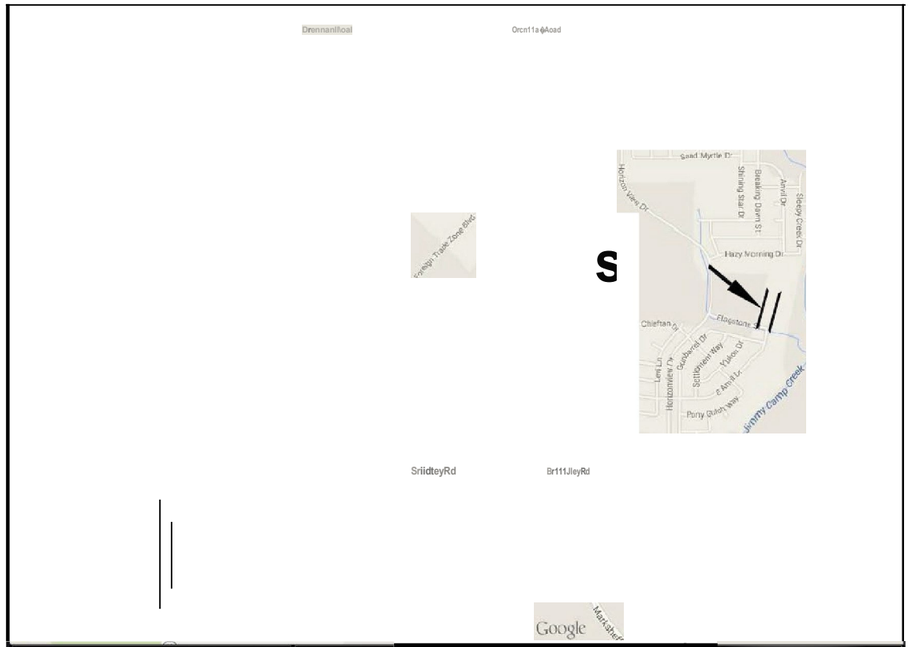
AS-BUILT FIRE HYDRANT {j

A::i-BUILI MANHOLI:. 0

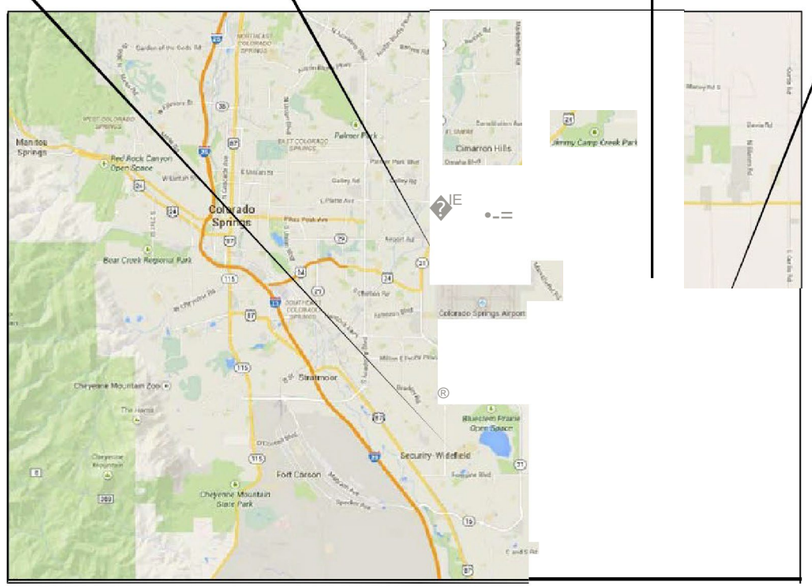
PLAN SET I NFORMA 11 ON

REVISION #	DATE
0	08/17/15
AS-BUILT	07/11/16

LOCATION & VICINITY MAI-1◆



VICINITY MAP
N.T.S.



LOCATION MAP
N.T.S.

SIGNATURES

DISTRICT APPROVALS:

THE COLORADO CENTRE METROPOLITAN DISTRICT RECOGNIZES THE DESIGN ENGINEER AS HAVING RESPONSIBILITY FOR THE DESIGN. THE COLORADO CENTRE METROPOLITAN DISTRICT HAS LIMITED ITS SCOPE OF REVIEW ACCORDINGLY.

DISTRICT MANAGER: _____

DISTRICT ENGINEER: _____

DATE: _____

PROJECT NO. _____

II\ CASE OF ERRORS OR OMISSIONS WITH THE DESIGN AS SHOWN ON THIS DOCUMENT, THE STANDARDS AS DEFINED IN THE "GENERAL NOTES" SHALL GOVERN.

COLORADO CENTRE EIRE DEPARTMENT APPROVALS:

_____

JOSH WINTER / FIRE CHIEF DATE

ENGINEER'S STATEMENT:

THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECTION AND SUPERVISION. SAID DETAILS AND SPECIFICATIONS HAVE BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE STATE OF COLORADO.

RYAN MANGINO, P.E. #43304 DATE

PREPARED FOR:

COLORADO CENTRE METROPOLITAN DISTRICT
4770 HORIZONVIEW DRIVE
COLORADO SPRINGS, CO 80925

PkEPARED 8Y:

_____

JDS-HYDRO CONSULTANTS, INC.
545 EAST PIKES PEAK AVENUE, SUITE 300
COLORADO SPRINGS, COLORADO 80903
(719) 227-0072

COLORADO CENTRE METROPOLITAN DISTRICT
WATER TREATMENT PLANT IMPROVEMENTS

GENERAL NOTES

1. ALL UTILITY CONSTRUCTION TO BE CONDUCTED IN CONFORMANCE WITH THE CURRENT COLORADO CENTRE METROPOLITAN DISTRICT (CCMD) SPECIFICATIONS.

2. ALL PLANS ON THE JOB SITE SHALL BE SIGNED BY THE DISTRICT AND THE DISTRICT'S ENGINEER, ANY REVISION TO THE PLANS SHALL BE SO NOTED WITH THE OLD DRAWING MARKED NOT VALID.

3. ALL STATIONING IS CENTER LINE UNLESS OTHERWISE NOTED. ALL ELEVATIONS ARE CENTER LINE UNLESS OTHERWISE NOTED

4. SANITARY SEWER LENGTHS ARE MH CENTER-MH CENTER. ALL SANITARY SEWER PIPES SHALL BE SDR 35 PVC OR EQUAL. SEWER LINES MAY NOT EXCEED 77. GRADE FOR ANY SIZE WITHOUT PRIOR APPROVAL OF THE DISTRICT. ALL NEWLY CONSTRUCTED RESIDENTIAL SANITARY SEWER TAPS SHALL USE PRE-MANUFACTURED IN-LINE PVC PUSH-ON WYES. TAPPING SADDLES MAY ONLY BE USED FOR TAPPING PRE-EXISTING MAINS.

5. ALL SANITARY SEWER MANHOLES SHALL BE FIVE (5; FOOT IN DIAMETER AND WRAPPED WITH RU116 - RUBR-NEK JOINT WRAP OR EQUIVALENT AND COATED.

6. SEWER UNDERDRAIN SYSTEM IS TO BE PASSIVE AND THE SIZE TO BE DETERMINED BY THE ENGINEER. EACH MANHOLE TO CONTAIN TWO (2) SIX (6) INCH CLEAN-OUTS PER DISTRICT STANDARD DETAIL.

7. ALL WATER AND FORCE MAIN PIPE SHALL BE AWWA C900 PVC, OR EQUAL, PRESSURE CLASS 200, INSTALLED WITH A MAXIMUM JOINT DEFLECTION OF 3 DEGREES. ALL WATER AND FORCE MAIN FITTINGS SHALL HAVE MECHANICAL RESTRAINTS AND THRUST BLOCKS. ALL WATER AND FORCE MAIN PIPE SHALL HAVE A MINIMUM COVER DEPTH OF 5'-6".

8. ALL WATER VALVES ASSOCIATED WITH TIIE POTABLE WATER SYSTEM SHALL BE OPEN CLOCKWISE. ALL VALVES INSTALLED IN LANDSCAPED AREAS AND/OR NOT WITHIN PAVED STREETS SHALL BE MARKED WITH CARSONITE MARKERS. ALL VALVES ASSOCIATED WITH THE RAW WATER SYSTEM SHALL BE OPEN COUNTERCLOCKWISE AND MARKED WITH CARSONITE MARKERS AS APPLICABLE.

9. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE METROPOLITAN DISTRICT. THE METROPOLITAN DISTRICT RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO ITS STANDARDS AND SPECIFICATIONS.

10. THE DEVELOPER OR HIS ENGINEER SHALL LOCATE ALL FIRE HYDRANTS AND SERVICE STUB OUTS FOR FUTURE DEVELOPMENT. ANY REQUIRED REALIGNMENT, (HORIZONTAL OR VERTICAL). SHALL BE AT THE EXPENSE OF THE DEVELOPER. FIRE HYDRANT LOCATION SHALL BE REVIEWED AND APPROVED BY THE APPLICABLE FIRE AUTHORITY.

11 FIRE HYDRANTS SHALL BE AMERICAN AVK SERIES 27DO MODERN, OPEN-RIGHT WITH 3/4" x 7/6" SQUARE TAPERED OPERATING NUT ALONG WITH SERVICE CAPS. LUBRICATION TYPE (GREASE).

12. ALL WATER AND SEWER SERVICE LOCATIONS SHALL BE CLEARLY MARKED ON EITHER THE CURB HEAD OR THE FACE OF THE CURB, WITH AN ··S·· FOR SEWER AND A ·W" FOR WATER.

13. DUCTILE IRON PIPES, INCLUDING FITTINGS, VALVES AND FIRE HYDRANTS SHALL BE WRAPPED WITH POLYETHYLENE TUBING, DOUBLE BONDED AT EACH JOINT AND ELECTRICALLY ISOLATED. BONDING AND ANODE CONNECTIONS SHALL BE THOROUGHLY COATED WITH BITUMINOUS COATINGS.

14. ALL DUCTILE IRON PIPE LESS THAN 12 INCHES ANO FITTINGS SHALL HAVE CATHODIC PROTECTION USING TWO NO. 6 WIRES WITH 17 LB. MAGNESIUM ANODES EVERY 400 FEET AND 9 LB. MAGNESIUM ANODES AT EACH FITTING. ALL DUCTILE IRON PIPE 12 INCHES AND GREATER AND FITTINGS SHALL HAVE CATHODIC PROTECTION USING TWO NO. 6 WIRES WITH 17 LB. MAGNESIUM ANODES EVERY 300 FEET AND 9 LB. MAGNESIUM ANODES AT EACH FITTING.

15. ALL MAIN LINES (PVC & DUCTILE IRON) SHALL BE INSTALLED WITH COATED NO. 12 TRACER WIRE WITH TEST STATIONS EVERY 500 FT (UNLESS VALVE BOXES CAN BE USED AT INTERSECTIONS AND SERVICE STUBS).

16. ALL PIPE MATERIAL, BACKFILL AND INSTALLATION SHALL CONFORM TO THE APPLICABLE SPECIFICATIONS OF THE CITY OF COLORADO SPRINGS, COLORADO DEPARTMENT OF TRANSPORTATION, EL PASO COUNTY DEPARTMENT OF TRANSPORTATION, COLORADO SPRINGS UTILITIES AND THE GEOTECHNICAL ENGINEER.

17. COMPACTION TESTS SHALL BE 957. STANDARD PROCTOR AS DETERMINED BY ASTM D698, UNLESS OTHERWISE APPROVED BY THE DISTRICT OR HIGHER STANDARD AS IMPOSED BY ANOTHER AGENCIES HAVING RIGHT-OF-WAY JURISDICTION. THIS SHALL INCLUDE ALL VALVES, FIRE HYDRANT RUNS, WATER & SEWER SERVICE LINES AND MANHOLES. ALL REPORTS SHALL BE SUBMITTED TO THE DISTRICT FOR REVIEW AND APPROVAL.

18. THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THESE DRAWINGS, ARE APPROXIMATE ONLY. THE LOCATION OF ALL UTILITIES SHALL BE FIELD VERIFIED PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. THE DISTRICT SHALL BE NOTIFIED OF ANY DEVIATIONS TO THE LINE AND/OR GRADE AS DEPICTED ON THE PLANS. CONTRACTOR SHALL SUBMIT TO THE DISTRICT AND THE ENGINEER OF RECORD A REPORT OF THE FIELD VERIFIED INFORMATION PRIOR TO THE START OF CONSTRUCTION.

19. ALL BENDS SHALL BE FIELD STAKED PRIOR TO THE START OF CONSTRUCTION.

20. BENDS, DEFLECTION & CUT PIPE LENGTHS SHALL BE USED TO HOLD HORIZONTAL ALIGNMENT OF SEWER AND WATER LINES TO NO MORE THAN 0.5' FROM THE DESIGNED ALIGNMENT. CONSTRUCTION STAKES TO BE AT 25' INTERVALS ALONG CURVES TO ASSURE LOCATION OF PIPE LINE CONSTRUCTION.

21. Al ALL LOCAIIONS WHIKI CAP AND SIU◆ IS NOIIO ON DfLAWINGS, PHOVI◆E A PLUG AT THE END OF THE PIPE JOINT NEAREST THE SPECIFIED STATION. PROVIDE A REVERSE ANCHOR AT ALL WATER LINE PLUGS.

22. ALL UNUSED SALVAGED WATER UTILITY MATERIAL SHALL BE RETURNED TO THE METROPOLITAN DISTRICT AS REQUESTED.

23. AT THE CONTRACTOR'S EXPENSE ALL UTILITY MAINS SHALL BE SUPPORTED ANO PROTECTED SUCH THAT THEY SHALL FUNCTION CONTINUOUSLY DURING CONSTRUCTION OPERATIONS. SHOULD A UTILITY MAIN FAIL AS A RESULT OF THE CONTRACTOR'S OPERATION, IT SHALL BE REPLACED IMMEDIATELY BY THE CONTRACTOR OR THE METROPOLITAN DISTRICT AT FULL COST OF LABOR AND MATERIALS TO THE CONTRACTOR/DEVELOPER.

24. CONTRACTOR SHALL MAKE CONNECTIONS TO EXISTING WATER LINE WITHOUT SHUTDOWN, OR ELSE NOTIFY THE METROPOLITAN DISTRICT OF ANY SERVICE SHUTDOWNS NECESSARY TO CONNECT TO EXISTING LINES.

25. PUMPING OR BYPASS OPERATIONS SHALL BE REVIEWED AND APPROVED BY BOTH THE METROPOLITAN DISTRICT AND THE ENGINEER PRIOR TO EXECUTION.

26. THE CONTRACTOR SHALL REPLACE OR REPAIR DAMAGE TO ALL SURFACE IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO FENCES, LAHDSCAPING, CURB AND GUTTER AND/OR ASPHALT THAT MAY BE CAUSED DURING CONSTRUCTION.

26. ALL CONTRACTORS WORKING ON OR NEAR A WATER OR SEWER FACILITY (TO INCLUDE SERVICE LINES) SHALL HAVE LIABILITY INSURANCE NAMING HJE DISTRICT AS AN ADDITIONAL INSURER AND SHALL PROVIDE A CURRENT COPY OF WORKERS COMPENSATION INSURANCE ON FILE WITH THE DISTRICT. NO WORK CAN PROCEED WITHOUT CURRENT CERTIFICATES ON FILE AT THE DISTRICTS' OFFICE.

27. THE CONTRACTOR SHALL NOTIFY THE METROPOLITAN DISTRICT AND ALL AFFECTED UTILITY COMPANIES ADJACEHT TO THE PROPOSED UTILITY CONSTRUCTION A MINIMUM OF 48 HOURS AND A MAXIMUM OF 96 HOURS PRIOR TO THE START OF CONSTRUCTION. A WEEKLY CONSTRUCTION MEETING SHALL BE REQUIRED WITH THE CONTRACTOR. DISTRICT ENGINEER AND ALL OTHER PARTIES AS DEEMED NECESSARY BY THE DISTRICT.

28. COMMENCEMENT OF CONSTRUCTION OF WATER/SEWER SYSTEMS WITHIN METROPOLITAN DISTRICT:
   a)PRIOR TO THE START OF CONSTRUCTION, A PRE-CONSTRUCTION Mill!.NI__ IS REQUJREO. A MINIMUM OF 48 HOURS IN ADVANCE OF COMMENCEMENT OF WORK". A REPRESENTATIVE OF THE OWNER OR DEVELOPER, A REPRESENTATIVE OF THE CONTRACTOR AND DESIGN ENGINEER ARE REQUIRED TO ATTEND. CONTACT THE METROPOLITAN DISTRICT TO SCHEDULE THE PRE-CONSTRUCTION MEETING. JIO, ... PRE-CONSTRUCJION MEETING CAN BE SCHEDULED PRIOR TO FOUR (4) SIGNED/APPROVED PLAN SETS ARE RECEIVED BY THE METROPOLITAN DISTRICT.
   b)THE CONTRACTOR IS REQUIRED TO NOTIFY THE METROPOLITAN DISTRICT A MINIMUM OF 48 HOURS AND A MAXIMUM OF 2 WEEKS PRIOR TO HJE START OF CONSTRUCTION. THE CONTRACTOR SHALL ALSO NOTIFY AFFECTED UTILITY COMPANIES AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION ADJACENT TO THE KNOWN UTILITY LINES.

30. TESTING OF FACILITIES,
   a)THE CONTRACTOR SHALL NOTIFY THE DISTRICT A MINIMUM QL.18_t:iQUB.$_AND A MAXIMUM OF 96 HOURS PRIOR TO THE START OF ANY TESTING.
   b)ALL SECTIONS OF WATER LINE ARE TO MEET THE FOLLOWING PRESSURE TESTING REQUIREMENTS
   - TEST 100 % OF ALL LINES
   - MUST PASS PRESSURE TEST TO 200 PSI FOR TWO HOURS (UNLESS OTHERWISE APPROVED ON THE PLANS).

   c)ALL SANITARY SEWER FACILITIES ARE TO MEET THE FOLLOWING TESTING REQUIREMENTS
   - ALL LINES SHALL BE JET CLEANED PRIOR TO VACUUM OR PRESSURE TESTING
   - ALL MANHOLES SHALL BE VACUUM TESTED WITH DISTRICT STAFF PRESENT PRIOR TO CCTV INSPECTION.
   - SEWER MAINS TO BE PRESSURE TEST PRIOR TO CCTV INSPECTION
   - ALL LINES SHALL BE CCTV INSPECTED AND VIDEO SHALL TO BE SUBMITTED TO THE DISTRICT FOR REVIEW AND APPROVAL.

31. COMMENCEMENT OF USE OF WATER LINES AND/OR SYSTEMS:
   a)NO WATER FACILITY SHALL BE PLACED IN SERVICE UNTIL AFTER THE COMPLETION OF ALL PRESSURE TESTING, FLUSHING; BAC-T TESTING, COMPACTION TESTING AND AS-BUILT DRAWINGS ARE SUBMITTED AND APPROVED BY THE DISTRICT.
   b)NO WATER FACILITY SHALL BE PLACED IN SERVICE UNTIL ALL SERVICE LINES ARE COMPLETED AND THE FIRST LIFT OF ASPHALT IS COMPLETED OVER THE LINE. IN THE CASE WHERE NO ASPHALT IS TO BE PLACED OVER THE LINE, SURFACE IMPROVEMENTS SHALL BE COMPLETED PRIOR TO USE OF THE FACILITY.
   c)ALL EASEMENTS (PLATTED OR DEEDED) ARE DEDICATED, EXECUTED BY THE DISTRICT, AND RECORDED.

32. COMMENCEMENT OF USE OF SEWER LINES AND/OR SYSTEMS,
   a)NO SANITARY SEWER FACILITY SHALL BE PLACED IN SERVICE UNTIL THE COMPLETION OF ALL JET CLEANING; PRESSURE TESTING, VACUUM TESTING, CCTV INSPECTION, COMPACTION TESTING, AS-BUILT DRAWINGS AND REVIEWS ARE COMPLETE AND APPROVED BY THE DISTRICT.
   b)NO SANITARY SEWER FACILITY SHALL BE PLACED IN SERVICE UNTIL ALL SERVICE LINES ARE COMPLETED ANO THE FIRST LIFT OF ASPHALT IS COMPLETED OVER THE LINE. IN THE CASE WHERE NO ASPHALT IS TO BE PLACED OVER THE LINE, ANY REQUIRED SURFACE IMPROVEMENTS SHALL BE COMPLETED PRIOR TO USE OF THE FACILITY.
   c)ALL NECESSARY EASEMENTS (PLATTEC OR DEEDED; ARE DEDICATED, EXECUTED BY THE DISTRICT, AND RECORDED.
   d)DOWN STREAM PLUG CAN BE REMOVED ONCE FIRST LIFT OF ASPHALT IS DOWN AND THE ABOVE REQUIREMENTS ARE MET.

33. PRELIMINARY ACCEPTANCE SHALL BE DEFINED AS THE POINT IN TIME. THAT THE DISTRICT ACCEPTS THE FACILITY FOR USE. ALL SURFACE IMPROVEMENTS AND RESTORATION SHALL BE COMPLETED WITHIN 30 DAYS OF COMMENCEMENT. SHOULD THE CONTRACTOR FAIL TO COMPLETE ALL SURFACE IMPROVEMENTS AND RESTORATION WITHIN 30 DAYS OF COMMENCEMENT OF SERVICE. THE DISTRICT, AT THEIR DISCRETION. MAY ELECT TO COMPLETE THE IMPROVEMENTS AT THE CONTRACTORS COST.

34. FINAL ACCEPTANCE BY THE DISTRICT OF ANY LINE OR SYSTEM SHALL NOT OCCUR UNTIL COMPLETION OF FINAL ASPHALT LAYERS AND/OR FINAL COMPLETION ANO/OR RESTORATION OF ALL SURFACE IMPROVEMENTS. THE WARRANTY PERIOD FOR ALL FACILITIES PRIOR TO FINAL ACCEPTANCE SHALL BE 12 MONTHS MINIMUM COMMENCING WITH PRELIMINARY ACCEPTANCE.

35. ACCEPTANCE,
   a)THE DISTRICT MAY GIVE PRELIMINARY ACCEPTANCE ONCE ALL OF THE TESTS ON ALL THE LINES HAVE BEEN COMPLETED AND A WALK-THRU HAS OCCURRED.
   b)A SECOND ACCEPTANCE MAY OCCUR ONCE FIRST LIFT OF ASPHALT GOES DOWN AND A SECOND WALK OF THE SYSTEM MAY OCCUR IF ALL FACILITIES ARE CLEAN ACCESSIBLE A FINAL ACCEPTANCE MAY OCCUR (THE DISTRICT MAY REQUIRE CLEANING AND RE-VIDEO OF THE SYSTEM, DEPENDING ON THE SEVERITY OF THE CONTAMINATION).

36. ALL WATER AND SEWER MAINS. INCLUDING SERVICE LINES, SHALL HAVE "AS-BUILT" DRAWINGS PREPARED AND APPROVED PRIOR TO PRELIMINARY ACCEPTANCE BY THE METROPOLITAN DISTRICT.

37. INSPECTION FEES, CALL THE DISTRICT FOR THEIR FEE SCHEDULE.

38. ALL COMMERCIAL/BUSINESS DEVELOPMENTS SHALL HAVE AN EIGHT INCH (MIN.) WATER MAIN LOOPED THROUGH THE PROPOSED PROPERTY WITH GATE VALVES LOCATED WHERE THE MAIN ENTERS THE PROPERTY LINE. AN EIGHT INCH SEWER MAIN SHALL BE INSTALLED FOR SERVICE TO COMMERCIAL/BUSINESS DEVELOPMENTS; A MANHOLE SHALL BE LOCATED WHERE THE MAIN ENTERS THE PROPERTY. THE END OF THE MAINS SHALL BE MARKED WITH THE APPROPRIATE COLORED CARSONITE MARKER ALONG WITH TRACER WIRE.

39. IRRIGATION SERVICES SHALL HAVE A STOP AND WASTE CURB STOP VALVE INSTALLED ALONG WITH A TRACER WIRE EXTENDING BACK TO THE MAIN LINE.

40. AFTER REVIEW AND APPROVAL OF PLANS FOR THE EXTENSION OF LINES, FACILITIES AND/OR SERVICES, CONSTRUCTION MUST BE COMMENCED WITHIN 18 MONTHS FOR RESIDENTIAL SUBDIVISIONS AND 12 MONTHS FOR ANY COMMERCIAL INSTALLATIONS.

41. COLORADO CENTRE METROPOLITAN DISTRICT CONTACT NUMBER 719-390-7003

Proj-ect No.,	247.01
Scale:	AS NOTED
Dote:	08/"7/15
Design	RMM
Drawn:	RMM
Check:	JPM
Revised:	
/1\	07/11/"6

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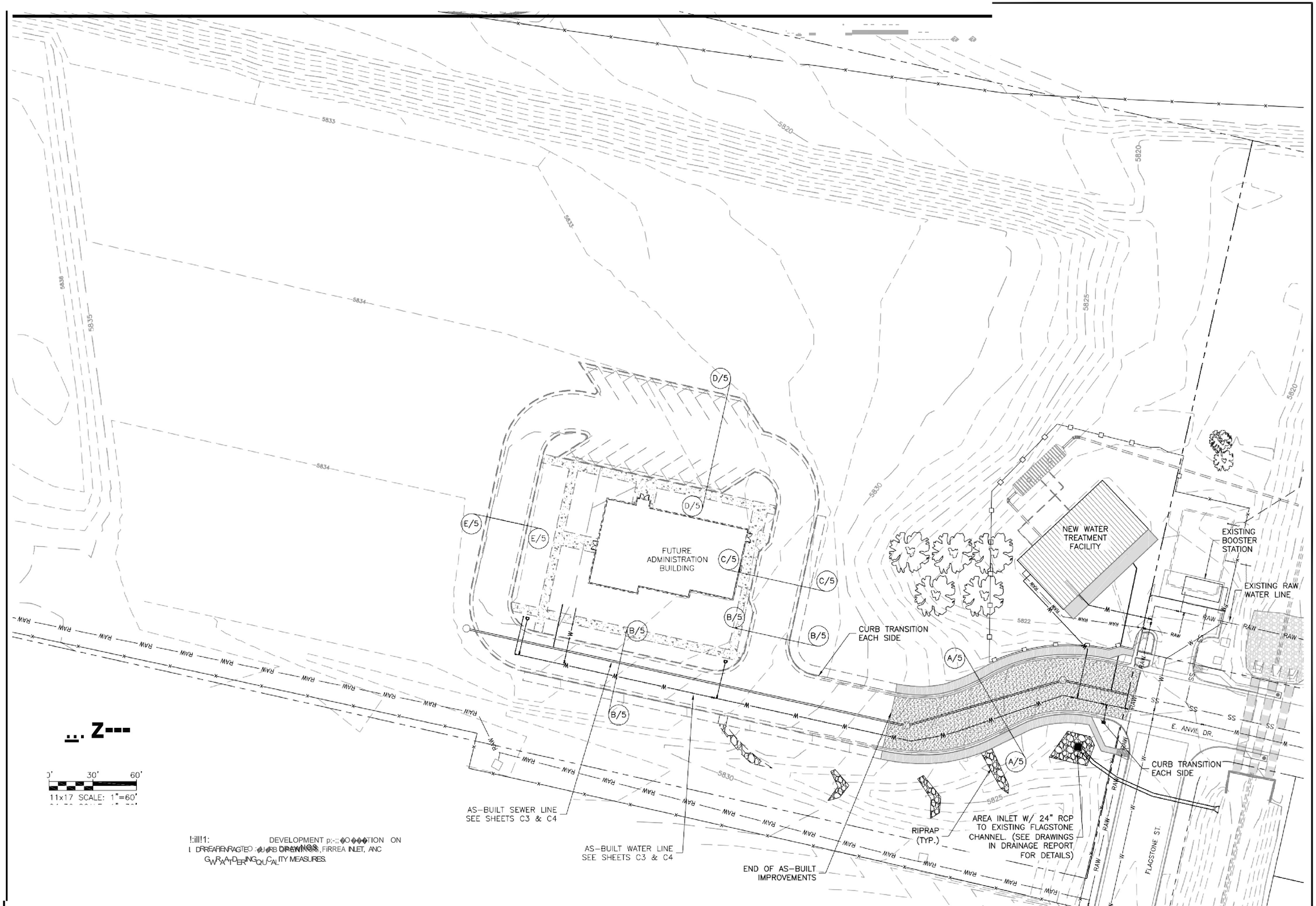
of **11**



DEVELOPMENT p:-::◆O◆◆◆TION ON
I DRREAFIENRAGTEO :.◆URB DRAWINGS ,FIRREA INLET, ANC
GWRAATDERINGQUCALITY MEASURES.

JDS-HYDRO CONSULTANTS, INC.
545 EAST PIKES PEAK AVENUE, SUITE 300
COLORADO SPRINGS, COLORADO 80903
(719) 227-0072

Project No.:	247.01
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Revised:	
1	07/11/16

C

SEE SHEET C4 FOR WATER & SEWER MAIN DESIGN

8 " MJ GATE VALVE W/ 12"x8" MJ REDUCER
N: 11263.1120
E: 6879.1830

12" 45° & 11.25° MJ BENDS W/ THRUST BLOCKS
N: 11256.6334
E: 6911.8095

12" 22.5° & 11.25° MJ BENDS W/ THRUST BLOCKS
N: 11273.0684
E: 6953.0631

12" go· MJ BEND W/ THRUST BLOCK
N: 11300.4342
E: 6958.3219

12" 90° MJ BEND W/ THRUST BLOCK
N: 11301.1185
E: 6963.4245

12" 90° BEND
N: 11311.7290
E: 7013.7134

12" C900 PVC DR14

4" SEWER SERVICE TAP
N: 11239.6807
E: 6883.3865

FH#1
N: 11245.1570
E: 6861.1580

12" 22.5° & 11.25° MJ BENDS W/ THRUST BLOCKS
N: 11255.1705
E: 6941.6054

4" PVC SDR35

25,000 GALLON BURIED FRP TANK (SEE P SHEETS FOR DETAILS)

0' 10' 20'
11x17 SCALE: 1"=20'
24x36 SCALE: 1"=10'

12" 45° & 22.5° BENDS
N: 11263.7388
E: 7057.7436

CHAINLINK FENCE PER DETAILS IN SITE DEVELOPMENT PLAN DRAWINGS

160 LF ±
12" PVC SDR35
@ 0.6% TO DAYLIGHT

ACCESS GATE

CONNECT TO EXISTING 6" RAW WATER LINE W/

6" CROSS, 6" MJ GATE VALVE & 12"x6" REDUCER
N: 11213.5888
E: 6924.9845

6" MJ GATE VALVE
N: 11212.6670
E: 6929.1230

6" C900 PVC DR14

6" MJ 90° BEND
N: 11193.4837
E: 6920.5063

CONNECT TO EXISTING 6" RAW WATER LINE W/ 6" TEE, 6" MJ GATE VALVE & 12"x6" REDUCER
N: 11212.0272
E: 6931.9955

CONNECT TO EXISTING 6" RAW WATER LINE WITH 6" MJ TEE & 6" MJ GATE VALVES AS SHOWN
N: 11189.8659
E: 6936.5906

HEADWALL & 12" CHECK VALVE PER DETAILS ON SHEET C11

5820

Proj-ect No.:	247.01
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Revised:	
	07/11/'6

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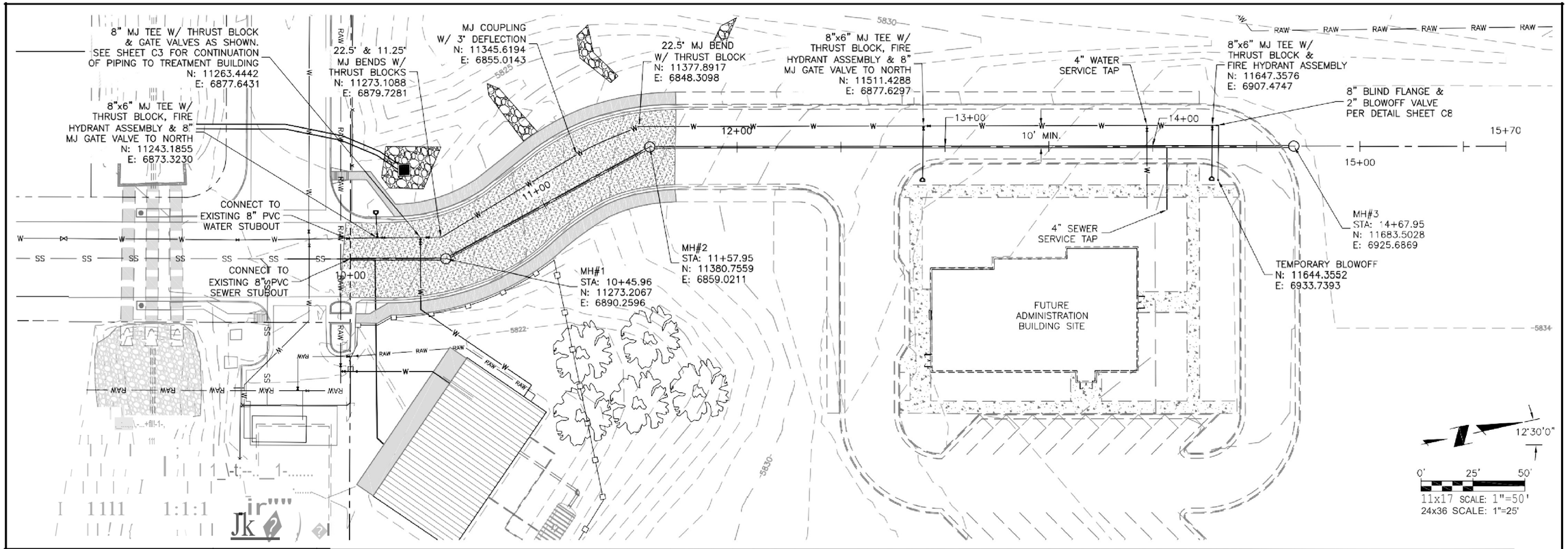
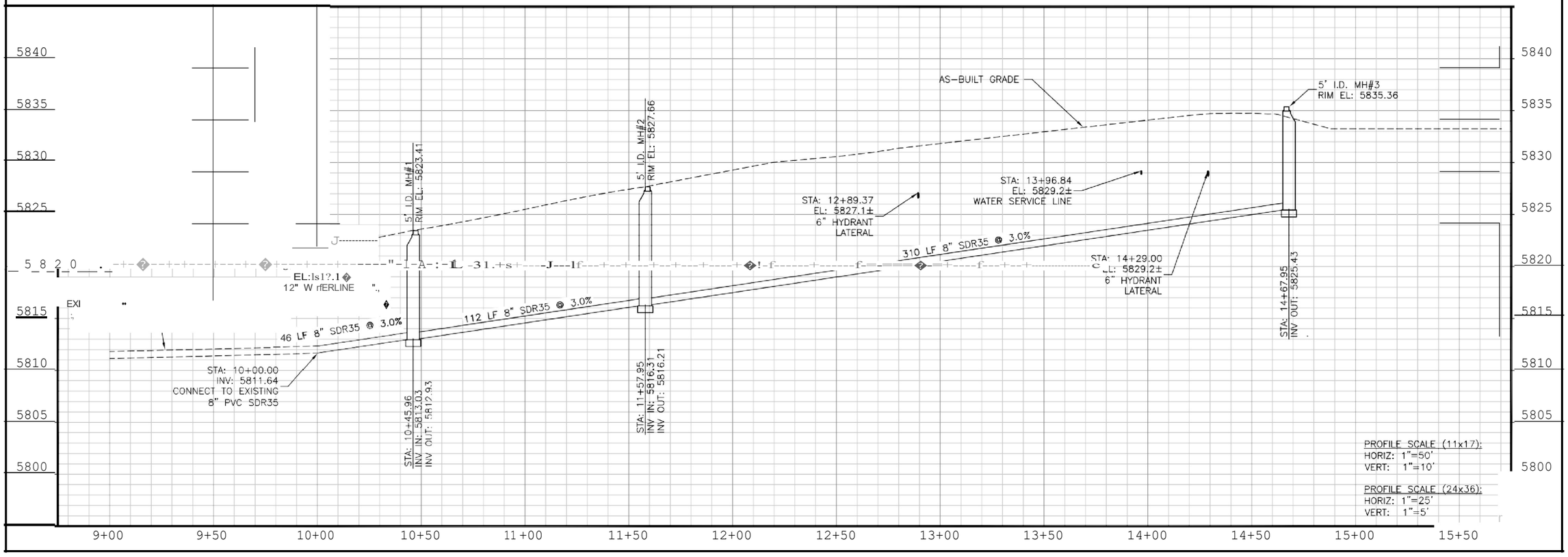
of 11





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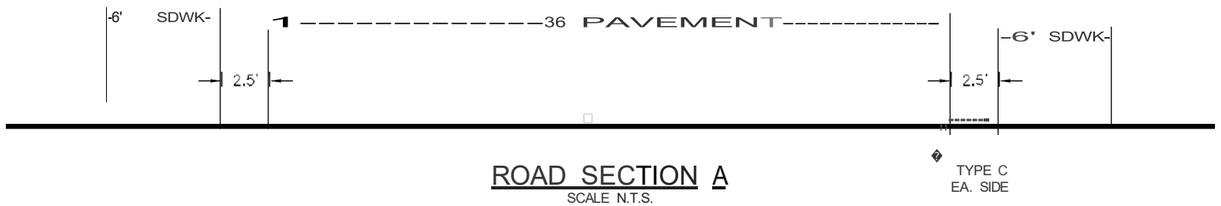
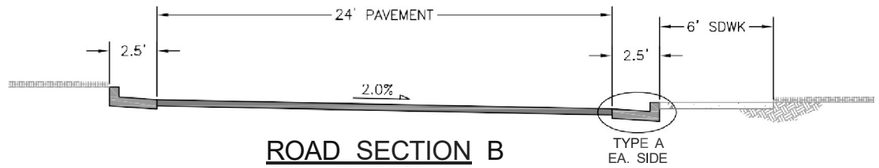
C4

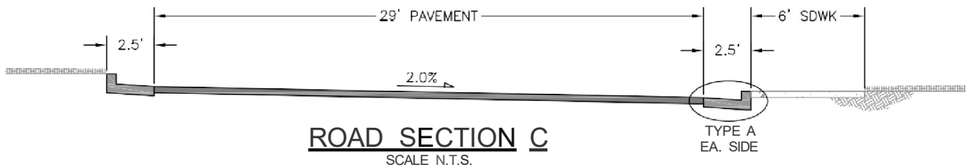
of 11



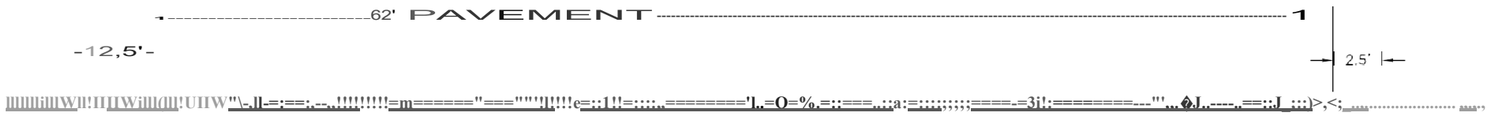
ROAD SECTION A
SCALE N.T.S.



ROAD SECTION B
SCALE N.T.S.



ROAD SECTION C
SCALE N.T.S.

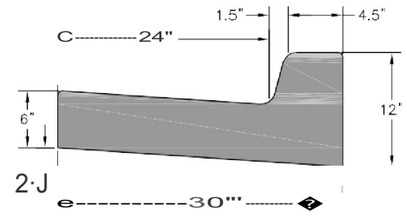


ROAD SECTION D
SCALE N.T.S.

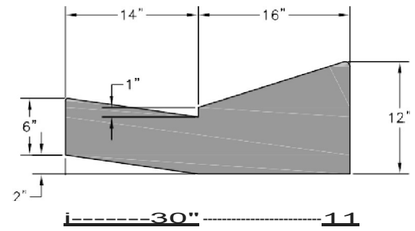
TYPE A
EA. SIDE

ROAD SECTION E
SCALE N.T.S.

TYPE A
EA. SIDE



Ef-'C IYf-'E A
(REVERSE SLOPE OF PAN FOR SPILL CURB)
SCALE N.T.S.



EPC TYPE C
(REVERSE SLOPE OF PAN FOR SPILL CURB)
SCALE N.T.S.

CONSULTANTS,
545 EAST PIKES PEAK AVENUE,
COLORADO SPRINGS, COLORADO
(719) 227-0072

Project No.:	247.01
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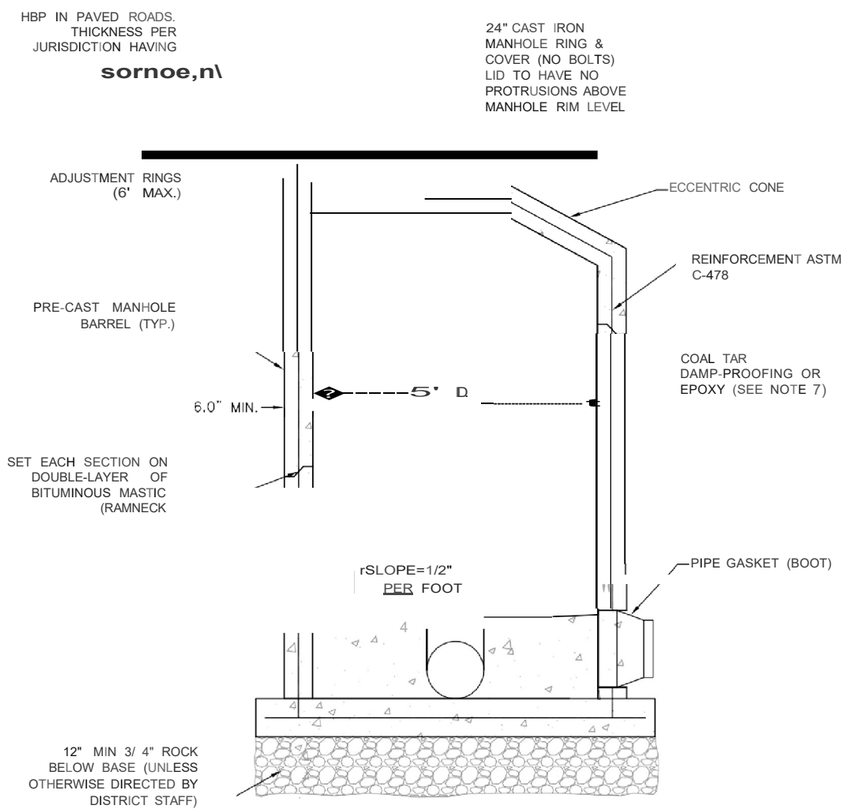
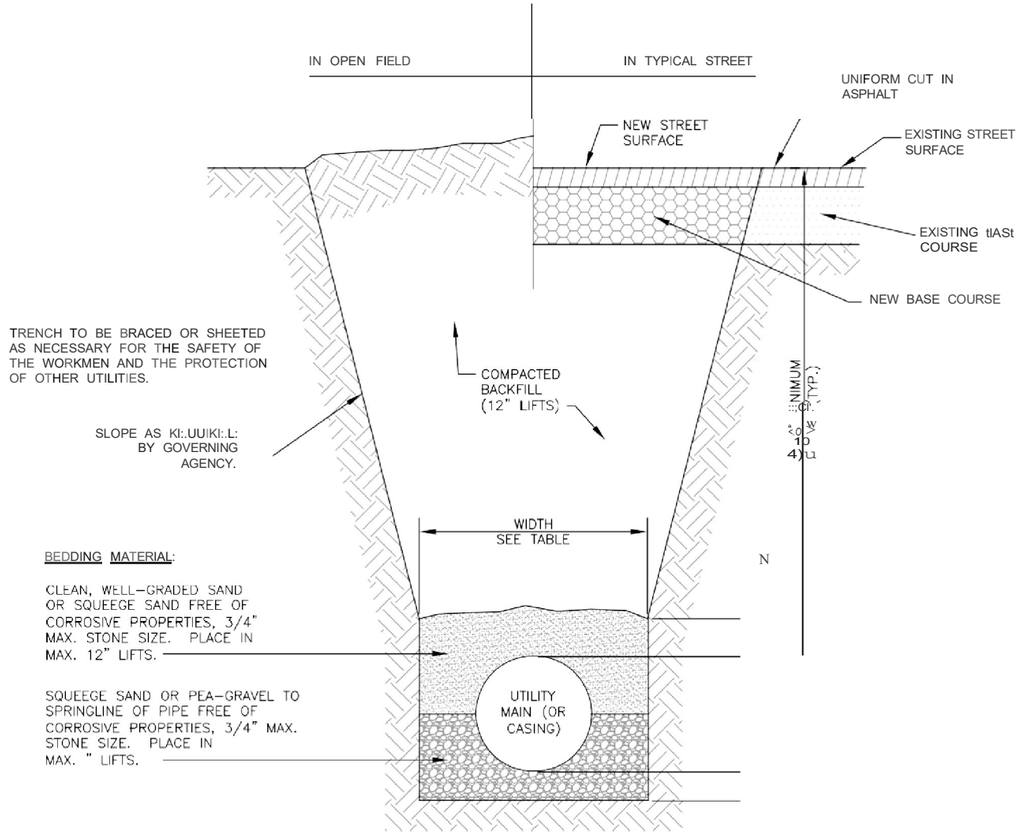


MANHOLE DETAIL

SCALE N.T.S.

1. MANHOLE 1.0. SHALL BE MINIMUM 5 FEET.
2. SHAPING FOR SMOOTH MANHOLE INVERTS MUST BE DONE BY FORMING/SHAPING CONCRETE BASE.
3. PRE-CAST SECTIONS TO CONFORM TO ASTM C-478
4. STUB-OUTS SHALL EXTEND A MINIMUM OF 6 FEET OUTSIDE OF MANHOLE AND BE SATISFACTORILY PLUGGED.
5. CONCRETE MANHOLES MAY BE POURED IN PLACE ONLY WITH PRIOR DESIGN AND INSPECTION APPROVAL.
6. ALL MORTOR GROUT SHALL BE TYPE *V* CEMENT.
7. APPLY COAL TAR EPOXY DAMP-PROOFING TO ALL EXTERIOR CONCRETE SURFACES.
8. CENTER REINFORCING IN BASE POUR BELOW PIPE O.D. AT FLOWLINE.
9. ALL EXTERIOR JOINTS SHALL RECEIVE BUTYL RUBBER JOINT WRAP.

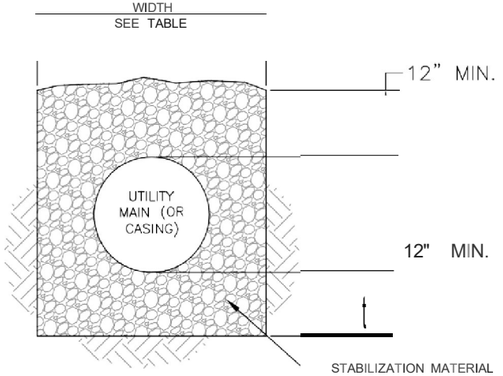


TYPICAL TRENCH SECTION

SCALE N.T.S.

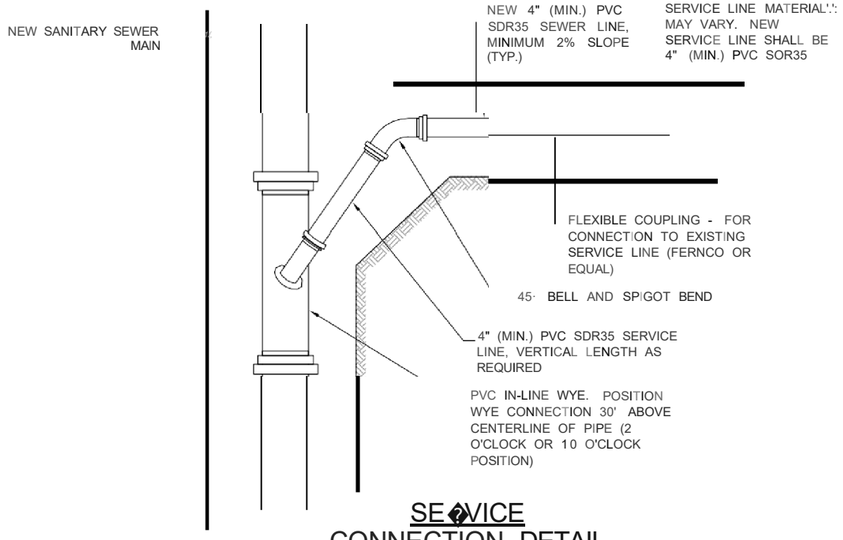
PIPE DIAMETER	MINIMUM WIDTH	MAXIMUM WIDTH
4"	2·-2·	.3'-0"
6"	2·-2·	.3'-0'
8"	2·-2·	3'-0'
10"	2'-4"	.3'-0"
12"	2'-6'	.3'-6'
18"	2'-1 J"	.3'-9"
24"	.3'-2'	4'-3'

b!!.i..LL.
AN OVER-EXCAVATED TRENCH SHALL BE REFILLED WITH BEDDING MATERIAL AND THOROUGHLY COMPACTED AS PER THE SPECIFICATIONS.



UNSTABLE TRENCH BEDDING DETAIL

SCALE N.T.S.



SE◆VICE CONNECTION DETAIL

SCALE N.T.S.

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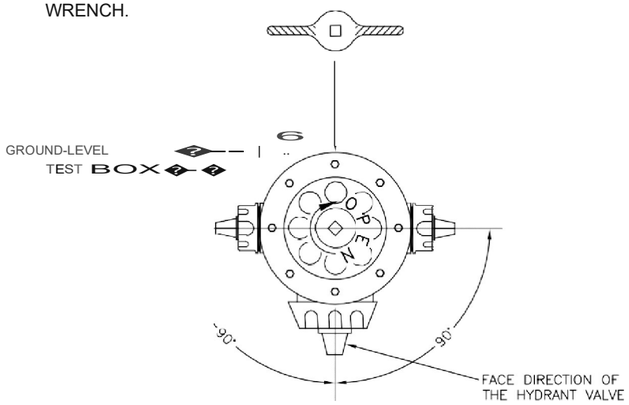
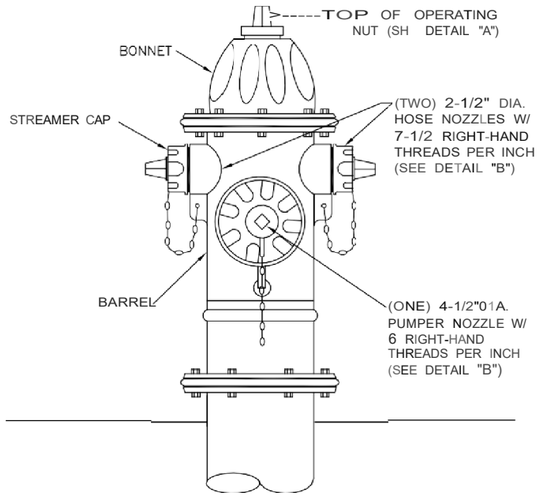
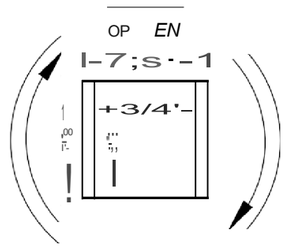
TAPERED SQUARE NUT, USE ONLY DEFINITE PURPOSE HYDRANT WRENCH THAT EXACTLY FITS THE NUT. DO NOT USE A GENERIC HYDRANT WRENCH WITH ADJUSTABLE CORNER BOLT. DO NOT USE A CRESCENT WRENCH OR PIPE WRENCH.



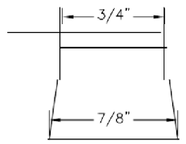
TOP (PLAN) VIEW



FACE VIEW

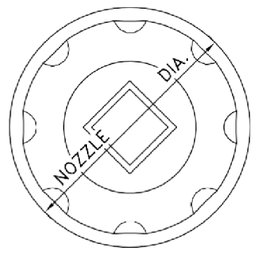


FACf (PLAf\) v11:..w

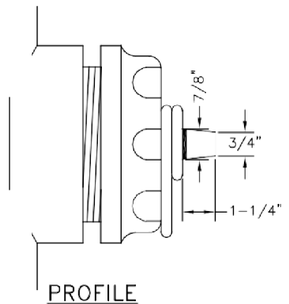


PROFILE

DETAIL "A" - OPERATING NUT



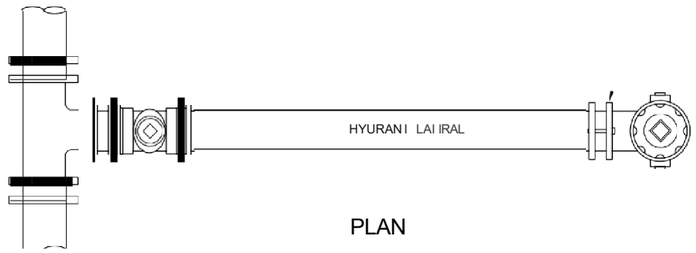
rACE VIEW



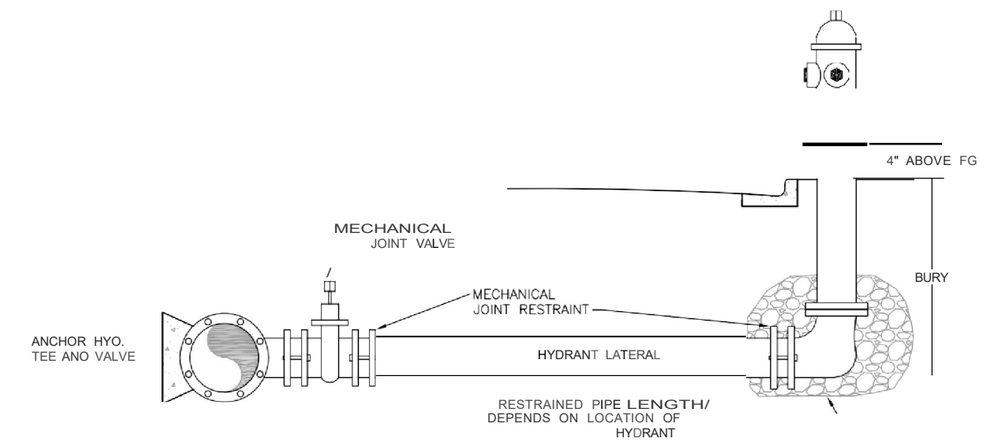
PROFILE

DETAIL "B" - NOZZLE DETAIL

FIRE HYDRANT SPECIFICATIONS
SCALE: N.T.S.



PLAN



NO I I: ALL JOIN I::, I:III WI:_1:_f\ HYL)I--(AN I Af\0 TEE MUST BE RESTRAINED.

1-1/2" TO 3' ROCK DRAIN SUMP TO 6" ABOVE FLANGE. DO NOT COVER WEEP HOLE.

PRUFILE

FIRE HYDRANT ASSEMBLY DETAIL
SCALE: N.T.S.

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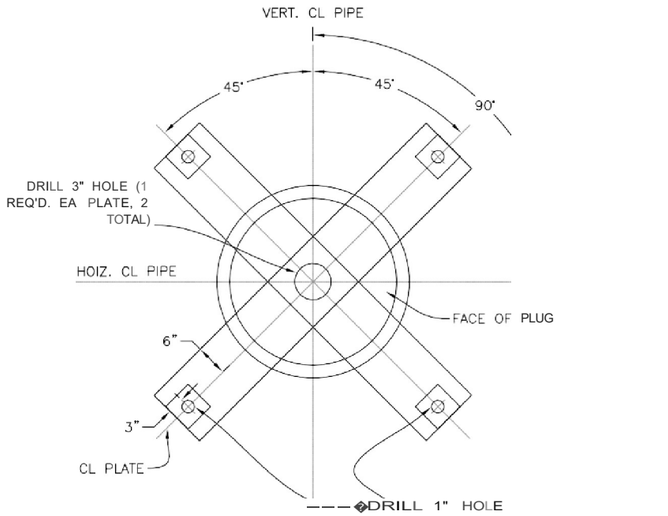
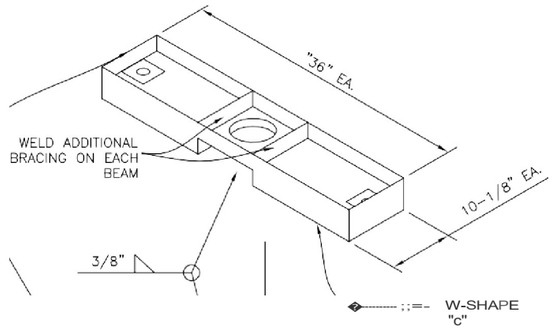
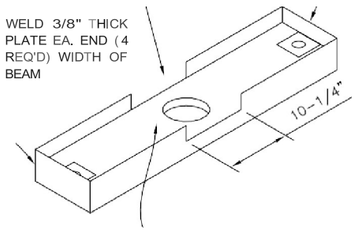






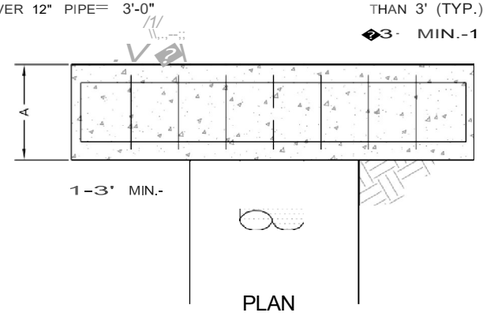
CUT AND WELD BEAMS SO AN EVEN SURFACE EXISTS ON CROSS FOR EQUAL BEARING ON ALL EDGES OF PLUG

'TRENCH'

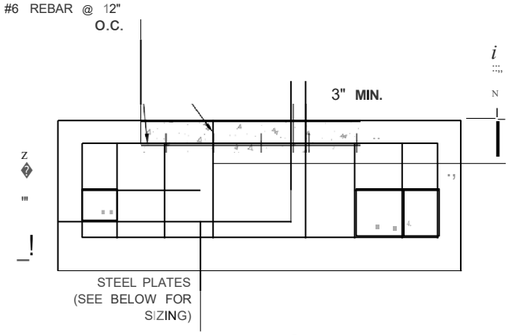
'A' MEASUREMENTS
12' PIPE & UNDER= 2'-0"
OVER 12" PIPE= 3'-0"

POUR INTO SOLID BANK OF TRENCH- NOT LESS THAN 3' (TYP.)

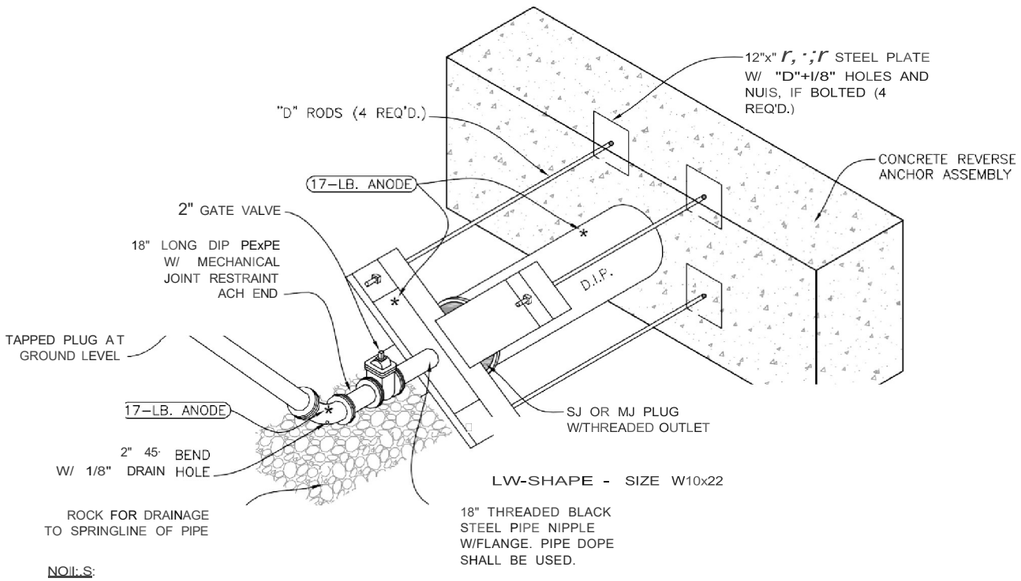
3" MIN.



PLAN



ELI:..VAIION

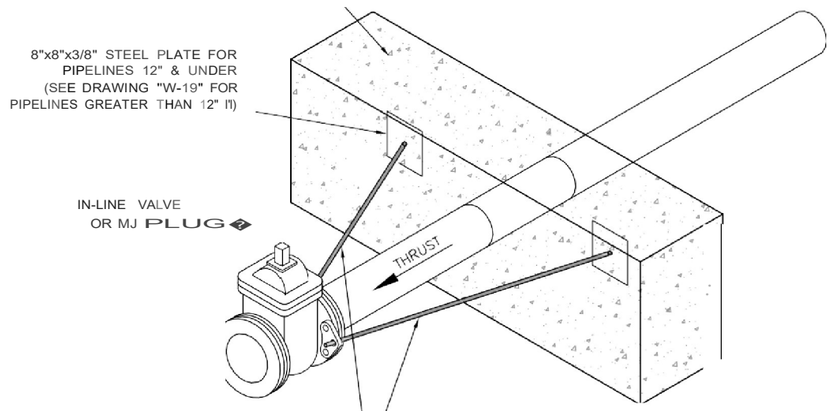


NOII:.S:

1. PIPE DOPE APPROVED FOR USE IN POTABLE WATER SYSTEMS MUST BE USED ON ALL THREADED JIJI\ IS,
2. I:.f\ IIKI:. bLIJW-<Jrr ASSEMBLY MUST BE FULLY SUPPORTED SO NO LOAD BEARS ON b IJW-<Jrr PIPING.
3. IF APPROPRIATE LUCA I(JI\ FOR DISCHARGED WATER CANNOT BE REACHEC BY ROLLING THE BEND, ALJLJ IIIJNAL BENDS MAY t:JI:. Rt.WUIRI:.U
4. CUA I III-ROIIS, t:JI:.AMS, ANII BLACK IRON I-'11-'I:. WI I I:.1-'0XY POL YA.Milli:. COATING, 10 MILS IHICK, MIN.

BLOW-OFF ASSEMBLY DETAIL
SCALE: N.T.S.

CONCRETE BLOCK



KI:.VI:.KSI:. ANCHUK LII:.IAIL
SCALE: N.T.S.

NOII:S

1. ALL MIIALLIC CUIVr'UNI:.NI'.:: IU I::!I:. 1:.NCASI:.L IN CONCRETE OF WRAPPEC IN POLYETHYLENE TUBING.
2. MAX. ROD LENGH- 12·
3. MIN. ROD LENGTH 4'

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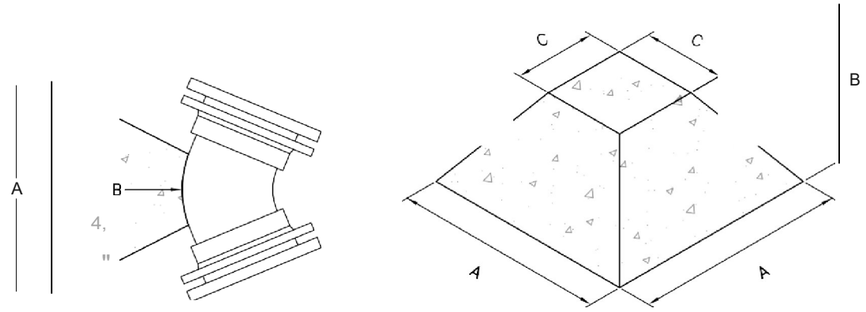


NOii:.: USI:. IHI:. FOLLOWINC VALLI:'.:; FOR "C"

PIf-'I:. SIILi:. =	C =
12" & UNI)t.k	1'-6"
16" 10 24"	2'-0"
30" TO 36"	3-0"
OVER 36"	A, B, & C WILL BE GIVEN II\ EACH INSIANCI:.

VOL. (yds)	A	B if C=I'-6"	B if C-2'-0"	B if C-3'-0"
1/8	2'-6"	0'--O"	N/A	N/A
1/4	2-8"	1'-7"	N/A	N/A
1/2	3'-2"	2'-5"	2'-0"	N/A
3/4	4'-0"	2'-6"	2'-2"	N/A
1	4'_4"	3'-o"	2'-7"	2'-0"
1-1/i	4'-- O"	3'-1"	2'-9"	2'-2"
1-1/2	5'-3"	3'-3"	2'-11"	2'-4"
1-J/4	5'-7"	3'-5"	3'-1"	2'-6"
2	5'-- O"	3'-7"	3'-3"	2'-8"
2-1/4	6'-3"	3'-8"	3'-4"	2'-9"
2-'/2	6'-4"	3'-11"	3'-7"	3'-0"
2-3/4	6'-9"	3'-11"	3'-7"	3'-o"
3	6'-10"	4'-1"	3'-9"	3'-2"
j-1/4	7'-3"	4'-1"	3'-9"	3'-2"
3-'/2	7'-4"	4'_3"	3'-11"	3'_4"
3-3/4	7'-7"	4'_4"	4'-o"	3'-5"
4	7'-' 1"		4·_0"	3'-5"
4-1/4	8'-1"		4'-0"	3'-6"
4-'/2	8'-4"		4'-o"	3'-6"
4-3/4	8'-6"		4'-1"	3'-7"

VOL. (yes)	A	B if C=I'-6"	B if C-2'-0"	B if C-3'-0"
5	8'-8"		4'-2"	3'-8"
5-1/4	8'-11"		4'-2"	3'-8"
5-'/2	9'-1"		4'_3"	3'-9"
'.J-3/4	9'-3"		4'-4"	3'-10"
6	9'-4"		4'-5"	3'-- 1"
6-1/1	9-6"		4'-6"	4'-0"
6-1/2	9'-8"		4'-6"	4'-0"
6-3/4	9'-11"		4'-6"	4'-0"
7	10'-2"		4'-6"	4'-0"
/-1/t	10'-3"		4·_7"	4'-1"
7-'/2	10'-4"		4'-8"	4'-2"
7-3/4	10'-5"		4'_9"	4'-3"
8	10'-6"		4'-10"	4'_4"
8-114	10'-8"		4'-10"	4'_4"
8-'/2	10'-9"		4'-11"	4'-5"
8-3/4	10·-- 1"		4'-11"	4'-5"
9	11'-1"		4'-11"	4·_5"
9-1/4	11'-2"		5'-0"	4'-6"
9-'/2	11'-4"		5'-0"	4'-6"
9-3/4	11'-6"		5'-0"	4'-6"
10	11·-s"		5'-0"	4'-6"

ALL WATER MAINS GRt.Alt.k THAN 12-INCHES IN UIAMt.IIK '.)HALL HAVE THRUST bLOCKS DESIGI\ED AI\D SHOWN 01\ THE CONSTRUCTION LIOCUMENTS.

rIIIING	4"	6"	8"	8"
TEE	/8 yd.	1/2 yd.	3/4 ye.	2 yd.
90" I::H:..I\U	/8 ye.	.3/4 ye.	1-'/4ye.	3 yq.
4'.J" I:.H:.I\U	/8 ye.	1/2 yd.	3/4 yd.	1-1/2 ye.
22-1/2' BENU	/8 yd.	1/8 yd.	1/4 yd.	3/4 yd.
11-' /4' BEND	/8 ye.	1/8 yd.	1/8 yd.	1/1 ye.

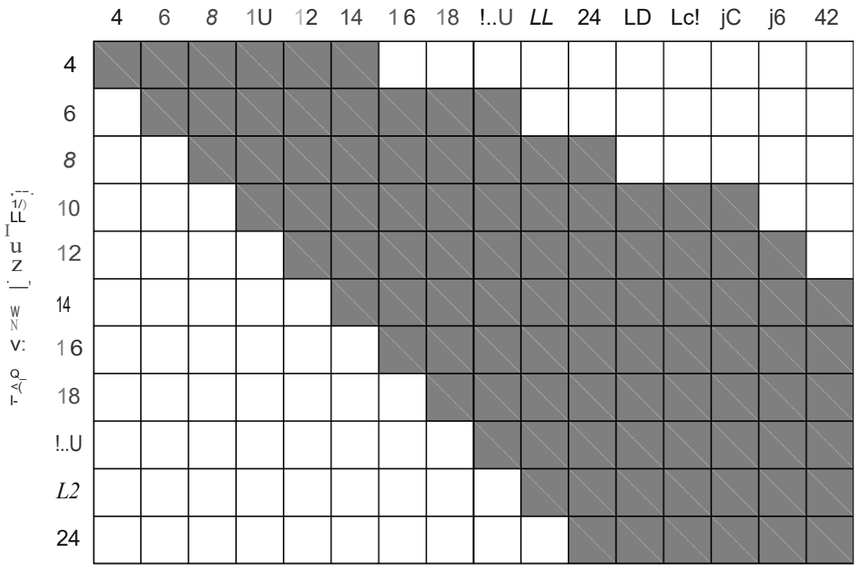
CUNCRETE THRL[illegible] oLUCK[illegible]

WATER MAN AI\D TAP SIZE COMB NATIONS WHICH KI::.I)UIkI:. A CONCRETE THRUST RI:.ACIION I:ILOCK BEHIND THE MAN AT THE TAPPING SLEEVE OR SADDLE.

ALL WAIER MAIN[illegible]

INUICA11:::: CONCRETE THRU:i I BLOCK RI:.QUIRI:J_;

MA[illegible] '.::IZE (INCHt..S)



ANY THRUSI RI:.ACIIUN BLOCK RIQLIRIMI:.NIS f-UR WAII:.R MAIN AND TAF SIZE COt,/BINAT ONS on-ER THAI\ THOSE SHOWN ABOVE WILL HIQUIRI SPECIAL nFSIGI\ APPROVAL clY THE UISI RICI.

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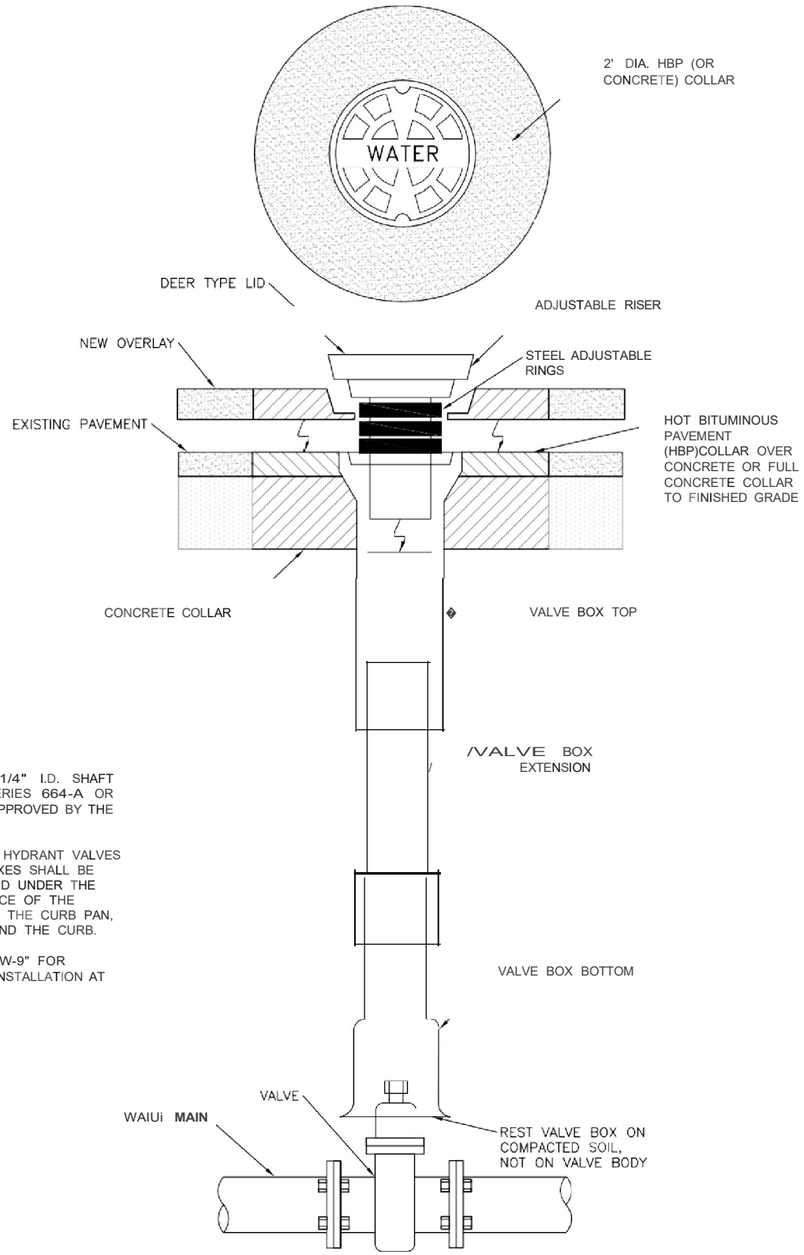
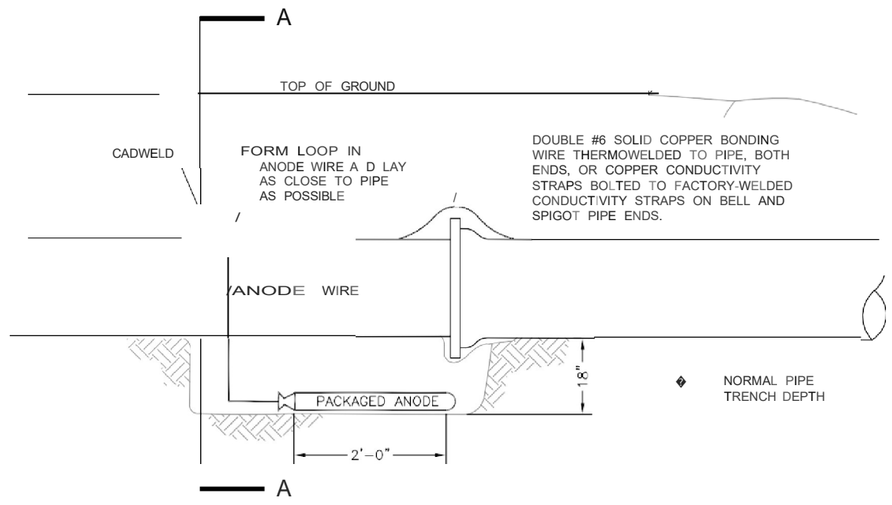


NOTES:

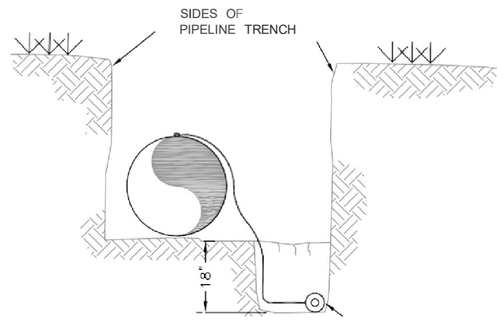
1. SLIP -TYPE 5-1/4" I.D. SHAFT TYLER PIPE SERIES 664-A OR 1:_I)UIVALI:_NI APPROVED BY THE DISTRICT.
2. MAIN AND FIRE HYDRANT VALVES AND VALVE BOXES SHALL BE LOCATED IN AND UNDER THE DRIVING SURFACE OF THE '.SIRI:_II, NOT IN THE CURB PAN, CURB, OR BEHIND THE CURB.

j. SEE DRAWING 'W-9" FOR TRACER WIRE INSTALLATION AT VALVE BOXES.

LYr'ICAL VALVE BOX INSTALLATION
SCALE: N.T.S.



ELEVATION



SECTION A-A

PLACE PACKAGED ANODE AS FAR AWAY AS POSSIBLE FROM PIPELINE IN SAME I)IICH, 18" LOWER

BONDING JOINT & ANODE INSTALLATION
SCALE: N.T.S.

NUII:.S:

1. CAUWI:.U; CONNECTION TC t:ji:. r'KIMI:.L ANC COATEC CAREFULLY. 1-'ACKAGI:.L ANODE SHOULD BE CQVI:.kI:.LWm- FINE SOIL CONTAINING NO kQCK'.::: Qk UIkI CLUMI-'S, IAMPI:.U.
2. WHI:.I\ ANOUI:.'.:: Aki:. Ht.UUIkt.U Wiii- Mt.IAL rll IING'.:: ANL APPURTENANCES 101..iI:.IHI:.K WIIH 1-'VC 1-'I'I':. INSTALLATION, THE ANOUt.S SHALL bt. PLACI:.L ANL AI I ACHI:.L IO THE Mt. IAL IN SAMI:._ MANNI:.k AS SHOWN ON I HIS D AWING. YU:I. ANOUI:_S CAN bI USI:.U ON Mt. IAL FITTINGS 1 2" AND LESS IN DIAMETER ANC 17LB. ANODES FOR METAL FITTINGS GREATE THAN 12" DIAMETER WHEN USING PVC PIPE
3. PACKAGED ANODE TO BE WETTED AND COVEREC WITH SOIL PRIOR TO BACKFILLING.

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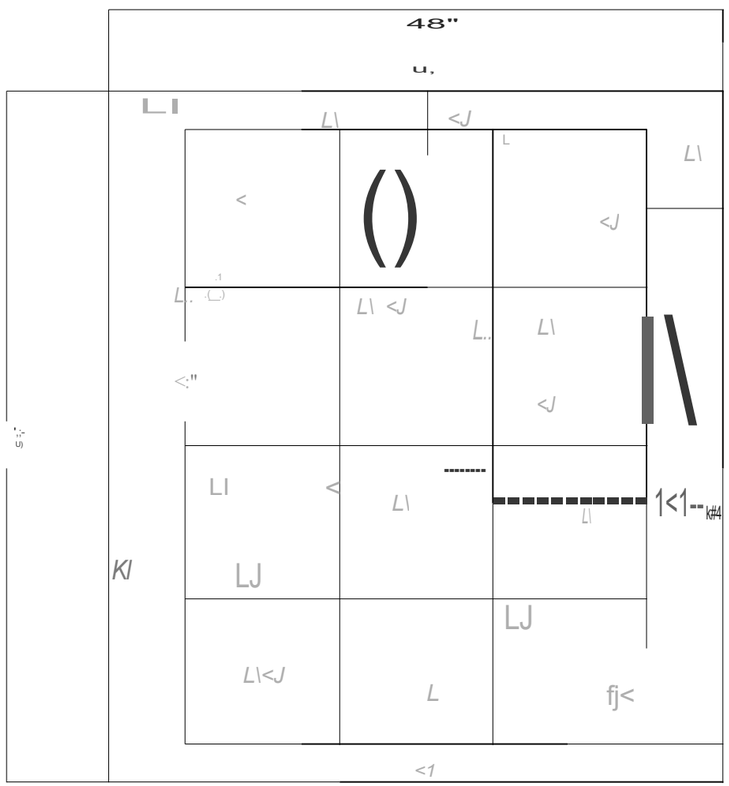
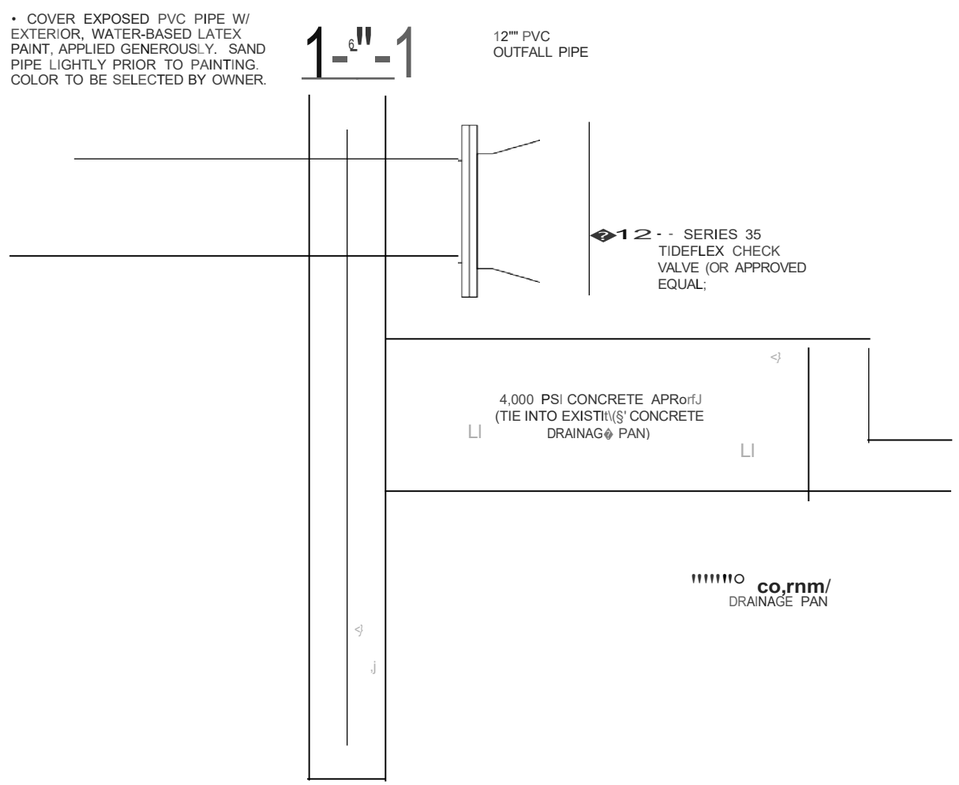


CONCRETE HEADWALL
DETAIL
SCALE: N.T.S.



CONCRETE HEADWALL
SECTION A-A
SCALE: N.T.S.

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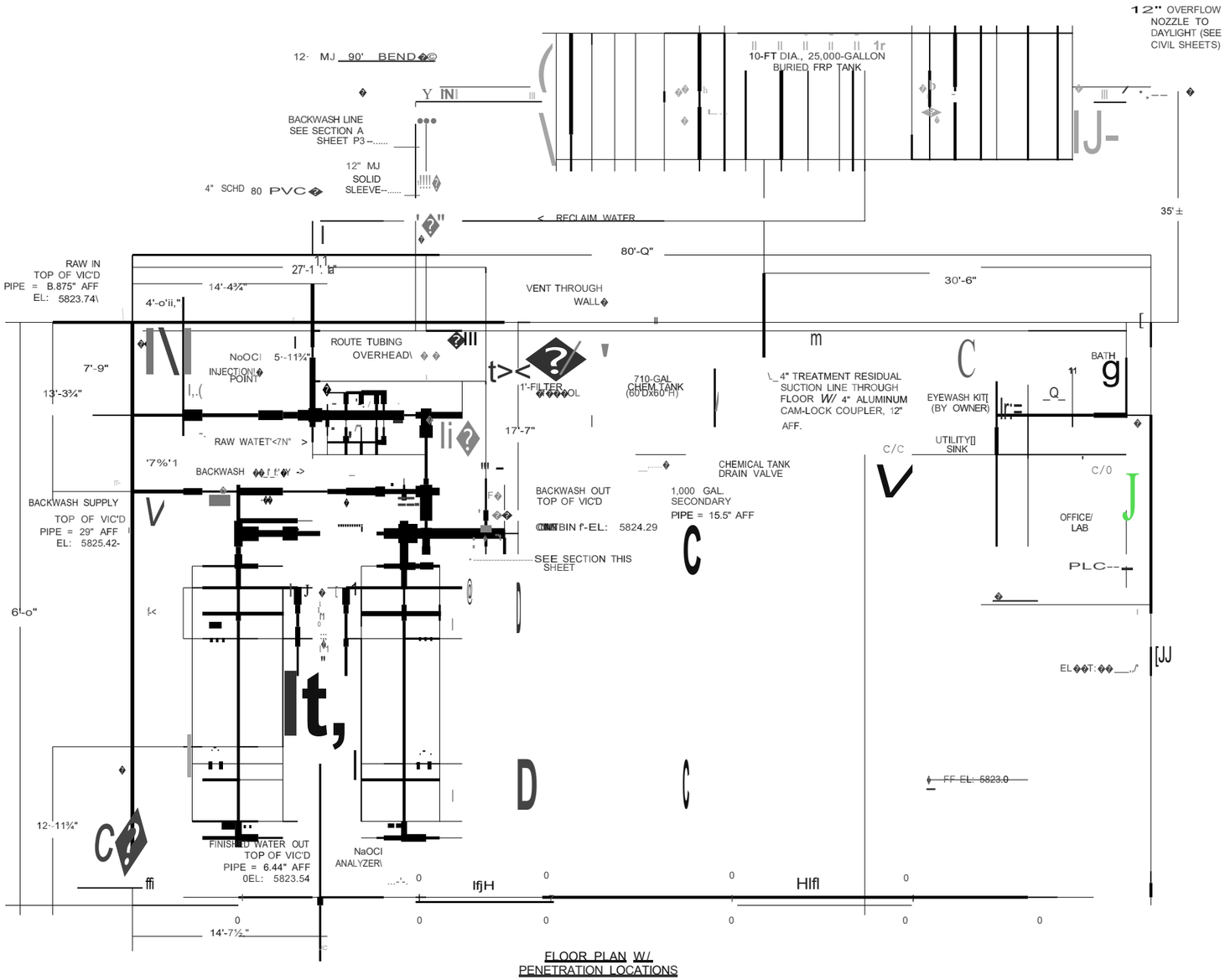
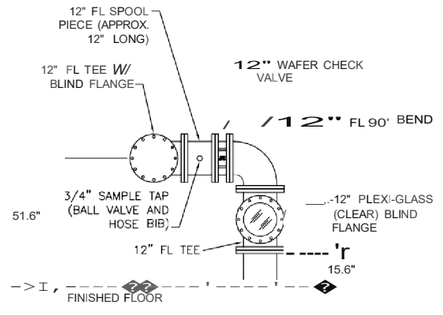


FLOOR PLAN W/ PENETRATION LOCATIONS

SCALE:
11x17: 1"=10'
24,36: 1"=5'



BACKWASH LINE SECTION

SCALE: N.T.S.

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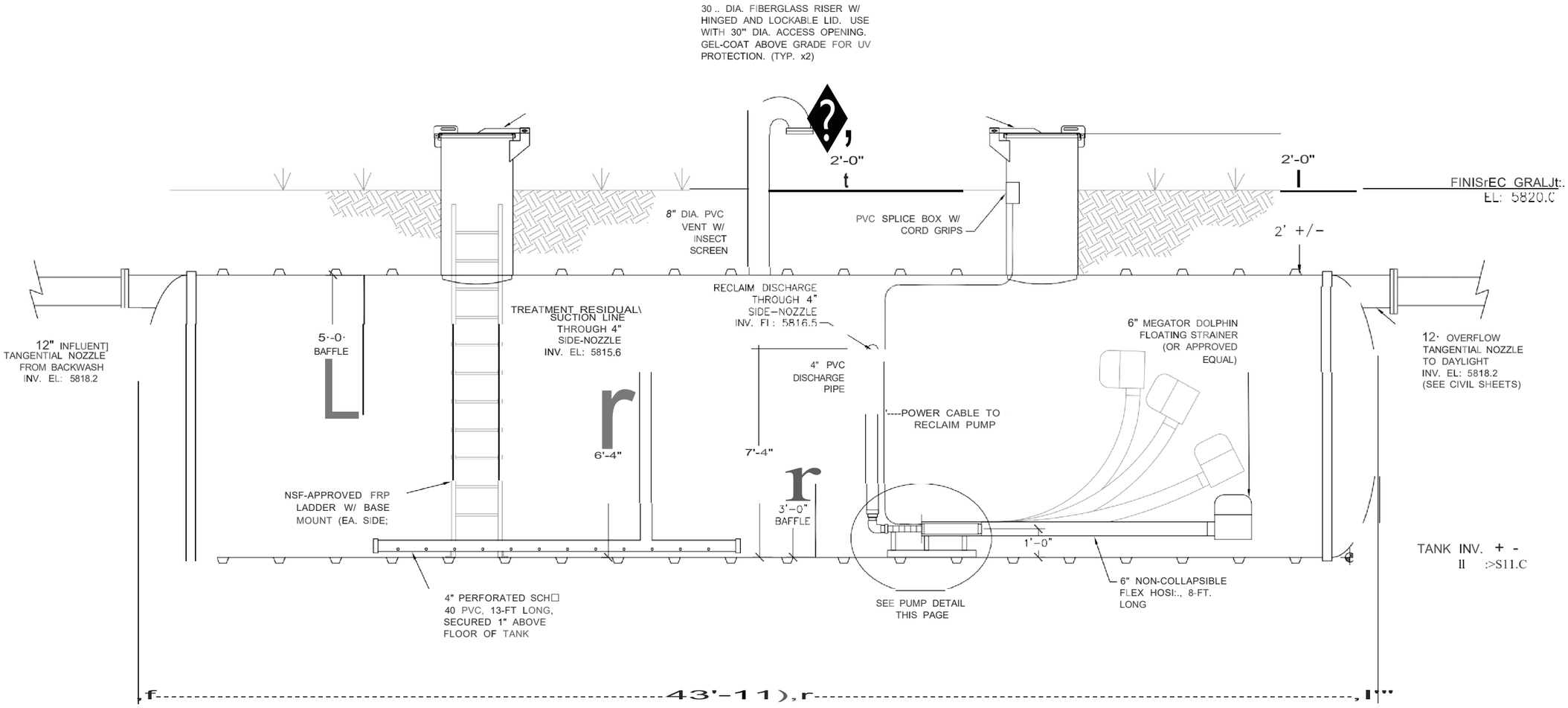
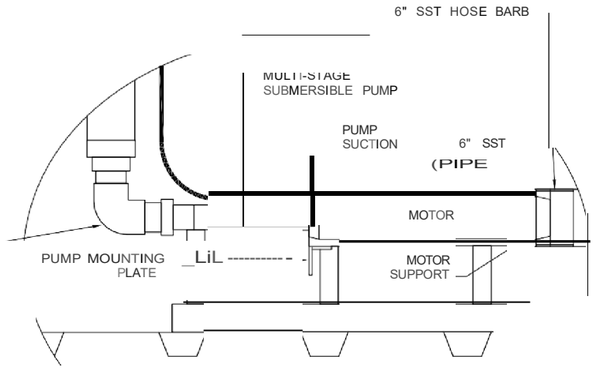


RECLAIM TANK
SECTION A-A
SCALE:
11x17: 1/4"=1'-Q"
24x26: 1/8"=1'-Q"

3" DISCHARGE go· BEND W/ 3"x4" REDUCER DOWNSTREAM



NUI I:.:::i:

1. REFER TO TANK MANUFACTURER'S DRAWINGS FOR ANCHOR STRAP LOCATIONS, DEAD-MEN SIZES AND LOCATIONS, AND OTHER INFORMATION.
2. REFER TO CIVIL DRAWINGS FOR ELEVATION RELATIVE TO INVERTS AND SITEPLAN.

PUMP LI: JAIL
SCALE: N.T.S.

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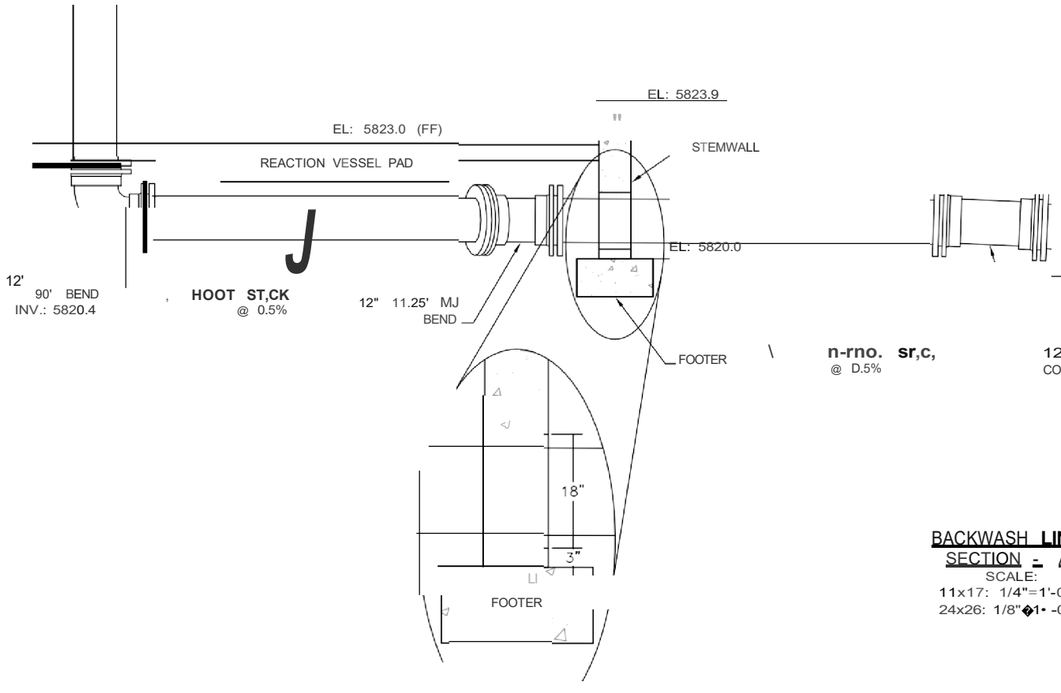
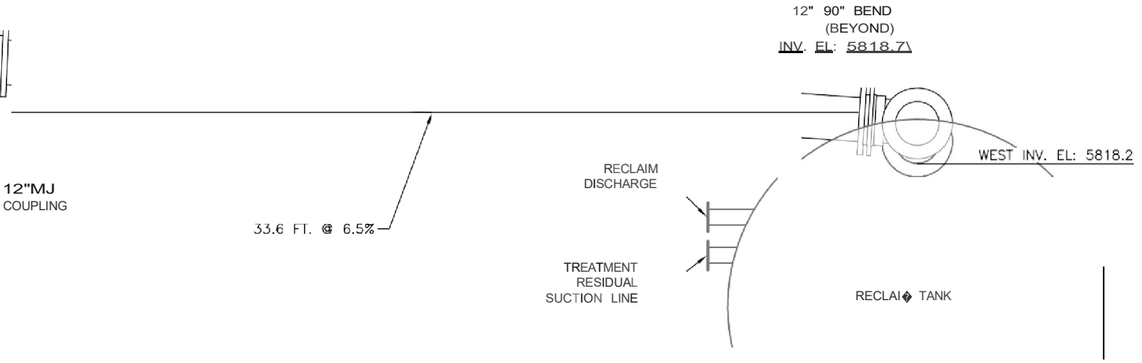


CORI: THROUGH FOUNDATION WALL
SCALE: N.T.S.

n-rno. sr,c,
@ D.5%

12"MJ
COUPLING



BACKWASH LINE
SECTION - A
SCALE:
11x17: 1/4"=1'-0"
24x26: 1/8"=1'-0"

CONSULTANTS,
545 EAST PIKES PEAK AVENUE,
COLORADO SPRINGS, COLORADO
(719) 227-0072

Project No.:	247.01
Scale:	AS NOTED
Date:	07/11/16
Design:	RMM
Drawn:	RMM
Check:	JPM
Revised:	
1	07/11/16

P3
of 3

Appendix G

Public Water System Monitoring Plan

System Name	**COLORADO CENTRE MD**
PWSID (Assigned by Department)	**CO0121140**
County	**EL PASO**
School or Daycare	**No**
Describe Changes	**Contact Information**
Change Reason	**Requested by Compliance Assurance**

Submittal to the Department
Submit Online (**Preferred**): wqcdcompliance.com/login
Fax: 303-758-1398
WQCD – B2 – Drinking Water CAS
4300 Cherry Creek Drive South
Denver, CO 80246-1530

Revisions
Water systems are required to submit any changes to the Department within thirty (30) calendar days following the effective date of the change. **If submitting revisions please only submit the individual section(s) that changed.**

Inactive Water Systems or Facilities
Water systems that either no longer serve water for human consumption or receive all of their water from another public water system and do not bill its customers for water are considered inactive water systems. Facilities that are physically disconnected from the water system are inactive facilities. Inactive facilities are not listed in a water system's monitoring plan. Facility design approval by the Department is required if an inactive facility will be reconnected to the water system. To report a system inactivation or facility inactivation, use the Department's Inactivation Form at https://cdphe.colorado.gov/monitoringplans.

Monitoring Schedules
All routine monitoring information, facilities and sample points (with state assigned IDs), system classification, and system source classification is available at wqcdcompliance.com/schedules. Schedules are updated on a weekly basis and should be checked regularly for any changes.

Immediately call **303-692-3308** (or **1-877-518-5608** if after-hours) for:
1. Positive coliform or Positive *E. coli*.
2. Nitrate greater than or equal to 10.0 mg/L.
3. Nitrite greater than or equal to 1.0 mg/L.
4. Surface water has high turbidity or inadequate disinfection.
5. Chlorine dioxide greater than or equal to 0.8 mg/L.
6. Chlorite greater than or equal to 1.0 mg/L.

Contact Information

Completed by: **Pedro Velazquez** Signature: Pedro J Velazquez

Certification of Accuracy: I hereby certify that the information is true, accurate, and complete to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

System Physical Address (Not Mailing)
Address: **9696 FLAGSTONE ST**
City: **COLORADO SPRINGS** State: **CO** Zip: **80925**
System Phone: **719-390-7000;** **System** Email: **pedro.velazquez@coloradocentre.org;**

Administrative Contact (AC) Name: PEDRO VELAZQUEZ

(The primary contact person for all Department mail or other communications regarding drinking water compliance)
Mailing Address: **9686 FLAGSTONE ST**
City: **COLORADO SPRINGS** State: **CO** Zip: **80925**
Phone: **719-390-7000;** E-mail: **pedro.velazquez@coloradocentre.org;**

**** If the Administrative Contact is also the Distribution or Treatment Operator and is not the owner or legal representative of the water system (e.g. contract operator), a signed delegation form must be submitted. (Form can be downloaded at: wqcdcompliance.com/forms) ****

Legally Responsible Water System Owner Name: COLORADO CENTRE MD

(An LLC, corporation, association, municipality, organization, individual, or other legal entity)

Has ownership changed parties through sale, decree, or other legal means? **No**
Mailing Address: **9686 FLAGSTONE ST** City: **COLORADO SPRINGS** State: **CO** Zip: **80925**
Phone: **719-390-7000;** Email: **cynthia.dixon@coloradocentre.org;**
**If applicable, I certify that I have a written agreement with the ORC and that written contract clearly specifies the duties of the ORC, as required by Regulation 100, Section 100.10.1(b).
Emergency Contact Name: 719-310-5270

(Someone the Department can contact in an emergency if the administrative contact is unavailable)
Phone: **PEDRO VELAZQUEZ** Email: **pjvelazquez@gmail.com**

Distribution System (DS) Operator Name: PEDRO VELAZQUEZ

(A certified operator designated by the owner to have ultimate responsibility for decisions regarding operational activities)
Operator ID#: **9945** (**not the certificate number**)
Phone: **719-390-7000;** Email: **pedro.velazquez@coloradocentre.org;**
DS Operator Signature: Pedro J Velazquez

Treatment Operator Name: PEDRO VELAZQUEZ **Same as DS?** Yes

(A certified operator designated by the owner to have ultimate responsibility for decisions regarding operational activities)
Operator ID#: **9945** (**not the certificate number**)
Phone: **719-390-7000;** Email: **pedro.velazquez@coloradocentre.org;**
Treatment Operator Signature: Pedro J Velazquez

Population Types and Seasons

Completed by: **Pedro Velazquez** Signature: Pedro J Velazquez

Certification of Accuracy: I hereby certify that the information is true, accurate, and complete to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

Service Connections provide water through a pipe or constructed conveyance for human consumption which includes drinking, showering, hand-washing, or cooking. Examples of service connections: single family homes, a metered multi-family dwelling unit, a business building, a mobile home trailer, or camp spigot.

Total Number of Service Connections (Residential and Commercial): 1131

Resident Population is the number of people who live there.

Resident Population: 3600

Non-Transient Population is the number of same people who have regular opportunity to consume the water for six months or more per calendar year, but do not reside there. These are usually students or employees. Regular opportunity is defined as four or more hours per day, for four or more days per week, for six months or more per year.

Non-Transient Population: 75 Season **Jan** (month) to **Dec** (month)

Transient Population is the daily average number of people who have an opportunity to consume the water, but are not residents or non-transients. These are customers, visitors, or seasonal employees

If your transient population varies by season you may specify multiple seasonal populations, otherwise enter January and December for the months.

Average Transients per day in the busiest month is **0** - Busy season **{BegMonth1}** (month) **to {EndMonth1}** (month)

Average Transients per day in the busiest month is **0** - Other season **{BegMonth2}** (month) **to {EndMonth2}** (month)

If you need assistance, please call (303) 692-3556 or visit wqcdcompliance.com.

Definitions of the terms used in this form may be found in 5 CCR 1002-11 (Regulation 11) available at wqcdcompliance.com.

Water haulers please follow the instructions in the operational handbook available at wqcdcompliance.com/forms.

Water Sources Definitions

Water Types

Groundwater (GW) – Any water under the surface of the ground being neither "surface water" nor "groundwater under the direct influence of surface water."

Surface water (SW) – Any water source that is open to the atmosphere and subject to surface runoff.

Groundwater under the direct influence of surface water (GWUDI or GU) – Any water beneath the surface of the ground with significant occurrence of insects or other macro-organisms, algae or large-diameter pathogens such as *Giardia lamblia* or *Cryptosporidium*; or significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity or pH that closely correlate to climatological or surface water conditions.

Purchased water (GWP, SWP or GUP) – Water that you receive (whether or not you purchase it) from another water system or water hauler.

Integration agreement – An agreement between two or more public water systems, one of which is a wholesale/supply system, whose distribution systems are physically connected. The systems agree to operate using a common set of standards that the wholesale system establishes for the purpose of maintaining and protecting drinking water quality. Integrated systems must submit their agreement to the Department for approval.

Availability

Permanent (P) – A primary water facility.

Emergency (E) – A water facility that is used only as the result of extreme circumstances, and is otherwise kept offline. This type of facility is most likely never used. Nitrate and total coliform samples would need to be obtained within 2 days after start-up and the **Department must be notified of start-up within 24-hours**.

Interim (I) – A water facility that is either used as a result of high water demand or out of necessity to maintain water rights. The facility may be used once every few weeks or months or once every few years. Routine Sampling will be required at the Entry Point to the Distribution System.

Seasonal (S) – A water facility that is typically used every year to aid a system in meeting high water demands. While a water system may not know when it will need a seasonal source, it is most often used every year. These also may be referred to as peaking facilities. Routine sampling will be required at the Entry Point to the Distribution System.

Water Source Details

Completed by: **Pedro Velazquez** Signature: Pedro J Velazquez

Groundwater Sources					
Facility ID (Assigned by Department)	Name	Availability (P, E, I, or S)	If seasonal, include months anticipated to be in operation	DNR Permit # - Aquifer Name	Well Depth at Completion
002	WELL NO 210	P		52404-F -	62
006	WELL 214	P		65211-F -	65
007	WELL 217	P		65212-F -	53
008	WELL 206	P		82505-F -	40
009	WELL 211	P		19273-J-R/52 403 -	66

Ground Water Under the Direct Influence of Surface Water Sources (GWUDI)					
Facility ID (Assigned by Dept)	Name	Availability (P, E, I, or S)	If seasonal, include months anticipated to be in operation	DNR Permit # - Aquifer Name	Well Depth at Completion
N/A					

Surface Water Sources			
Facility ID (Assigned by Dept)	Name	Availability (P, E, I, or S)	If seasonal, include months anticipated to be in operation
N/A			

Purchased Water Sources							
Facility ID (Assigned by Dept)	PWSID - Name of Supplying Water System	Availability (P, E, I, or S)	If seasonal, include months anticipated to be in use	Type (GW, SW or GWUDI)	Connection Location cross-streets	Do you receive treated or raw water	Approved Integration Agreement? Yes / No
N/A							

Combined Raw Source Sampling Locations Used when raw sources blend and there is a sample tap that represents multiple blended sources					
Facility ID (Assigned by Dept)	Name	Availability (P, E, I, or S)	If seasonal, include months anticipated to be in use	Combining Sources Facility IDs and Names	Treatment Plant it Flows to
004	CCMD WATER	PERMANENT	N/A	002-WELL 210	

	TREATMENT PLANT			006-WELL 214 007-WELL 217 008-WELL 206 009-WELL 211	

Water Treatment Codes

The codes below are generated by the USEPA for the purpose of standardizing the treatment processes as they are cataloged and tracked within the federal and state database programs. Water systems should have individual process flow diagrams for treatment; from these diagrams, each process should have an associated name. If you struggle to understand the different treatment codes below, please contact the Division's Engineering Section for assistance.

DISINFECTION
GASEOUS CHLORINATION (401)
HYPOCHLORINATION BLEACH (421)
CHLORAMINES (200)
CHLORINE DIOXIDE (220)
ULTRAVIOLET RADIATION (720)
OZONATION (541)
CONTACT TIME PROVIDED (825)

FILTRATION
ANION EXCHANGE (836)
CATION EXCHANGE (835)
FILTRATION, BAG (801)
FILTRATION, BAG - ROUGHING (810)
FILTRATION, CARTRIDGE (341)
FILTRATION, CARTRIDGE - ROUGHING (865)
FILTRATION, MICROFILTRATION (895)
FILTRATION, PRESSURE SAND (344)
FILTRATION, RAPID SAND (345)
FILTRATION, ULTRAFILTRATION (347)
FILTRATION,GREENSAND (343)
NANOFILTRATION (890)
NATURAL OR RIVERBANK FILTRATION (GWUDI) (826)
REVERSE OSMOSIS (640)

PRETREATMENT, COAGULATION AND SEDIMENTATION
AERATION (820)
ACTIVATED CARBON, GRANULATED (121)
ACTIVATED CARBON, POWDERED (125)
COAGULATION (240)
DISSOLVED AIR FLOTATION (880)
FLOCCULATION (360)
HYDRAULIC JET MIXING (831)
IN LINE STATIC MIXING (830)
MICROSCREENING (520)
PERMANGANATE (560)
PRESEDIMENATION (840)
RAPID MIX (600)
SEDIMENTATION (660)
UPFLOW CLARIFIER (845)

OTHER FORMS OF TREATMENT
ACTIVATED ALUMINS (100)
ALGAE CONTROL (160)
BLENDING (896)
FLUORIDATION (380)
INHIBITOR, SILICATE (449)
INHIBITOR/SEQUESTERING AGENT, PHOSPHATE BASED (815)
PEROXIDE (580)
PH ADJUSTMENT - SUPPRESION (847)
PH ADJUSTMENT - ELEVATION (848)
REDUCING AGENT (620)

Water Treatment Plant Details

Completed by: **Pedro Velazquez** Signature: Pedro J Velazquez

Treatment Plants				
Facility ID (Assigned by Department)	**Plant Name**	**Availability** (P, E, I, or S)	**If seasonal, include months anticipated to be in operation**	**Contributing Sources** Facility IDs and Names
004	**CCMD WATER TREATMENT PLANT**	**P**		**002-WELL 210** **006-WELL 214** **007-WELL 217** **008-WELL 206** **009-WELL 211**
Treatment Codes (see previous page for codes)				
421 - Disinfection Through Hypochlorination 344- Pressure Filtration for Manganese Removal				
Provide a Detailed Description of the Water Treatment System (including descriptions of tanks used for disinfection contact time)				
Source water will be provided from wells 210,211,214,217 and 206, and then injected with NaOCl prior to entering the reaction vessel. From the reaction vessel, water is filtered through two 1000 GPM pressure sand filter vessels and enters the 80,000-gal contact tank with 18,000-gal wet well. The water is then boosted to the distribution system and 3.0 MG water storage tank.				

Facility ID (Assigned by Department)	**Plant Name**	**Availability** (P, E, I, or S)	**If seasonal, include months anticipated to be in operation**	**Contributing Sources** Facility IDs and Names
Treatment Codes (see previous page for codes)				
Provide a Detailed Description of the Water Treatment System (including descriptions of tanks used for disinfection contact time)				

Distribution System Definitions

Entry point –A location before or at the first customer which is representative of treated (finished) water. The entry point may represent treated water from multiple treatment plants and/or multiple sources. Sometimes the water treatment plant is the first tap.

Distribution system storage facility – Any treated (finished) water storage tank at the treatment plant or in the distribution system that is not considered part of disinfection contact time (i.e. after the entry point).

Booster treatment facilities – Any chemical booster stations after the first customer (such as disinfection or corrosion control chemical booster stations in the distribution system).

Consecutive connection – A master meter connection from your water system to another water system for purposes of supplying drinking water to the other system.

Integration agreement - An agreement between two or more public water systems, one of which is a wholesale/supply system, whose distribution systems are physically connected. The systems agree to operate using a common set of standards that the wholesale system establishes for the purpose of maintaining and protecting drinking water quality. **Integrated systems must submit their agreement to the Department for approval.**

Pump station – A facility used to pump water or increase water pressure. Pump stations are not used for chemical additions or other treatment and do not need to be reported on this form.

Distribution System Details

Completed by: **Pedro Velazquez** Signature: Pedro J Velazquez

Number of Distribution Systems

How many distribution systems does the system have? **1** If more than one, how are the distribution systems operated? (i.e. are they completely independent of each other or does water flow from one to another through operator-controlled valves, etc.): **{Distribution System Details}**

Entry Points to Distribution System *Residual Disinfectant, Nitrate, Nitrite, Inorganics, Volatile Organics, Synthetic Organics, Radionuclides, Chlorite, Chlorine Dioxide, and Bromate Must be Collected at All Entry Points*	
Facility ID (Assigned by Department)	**Facility Name**
004	CCMD WATER PLANT

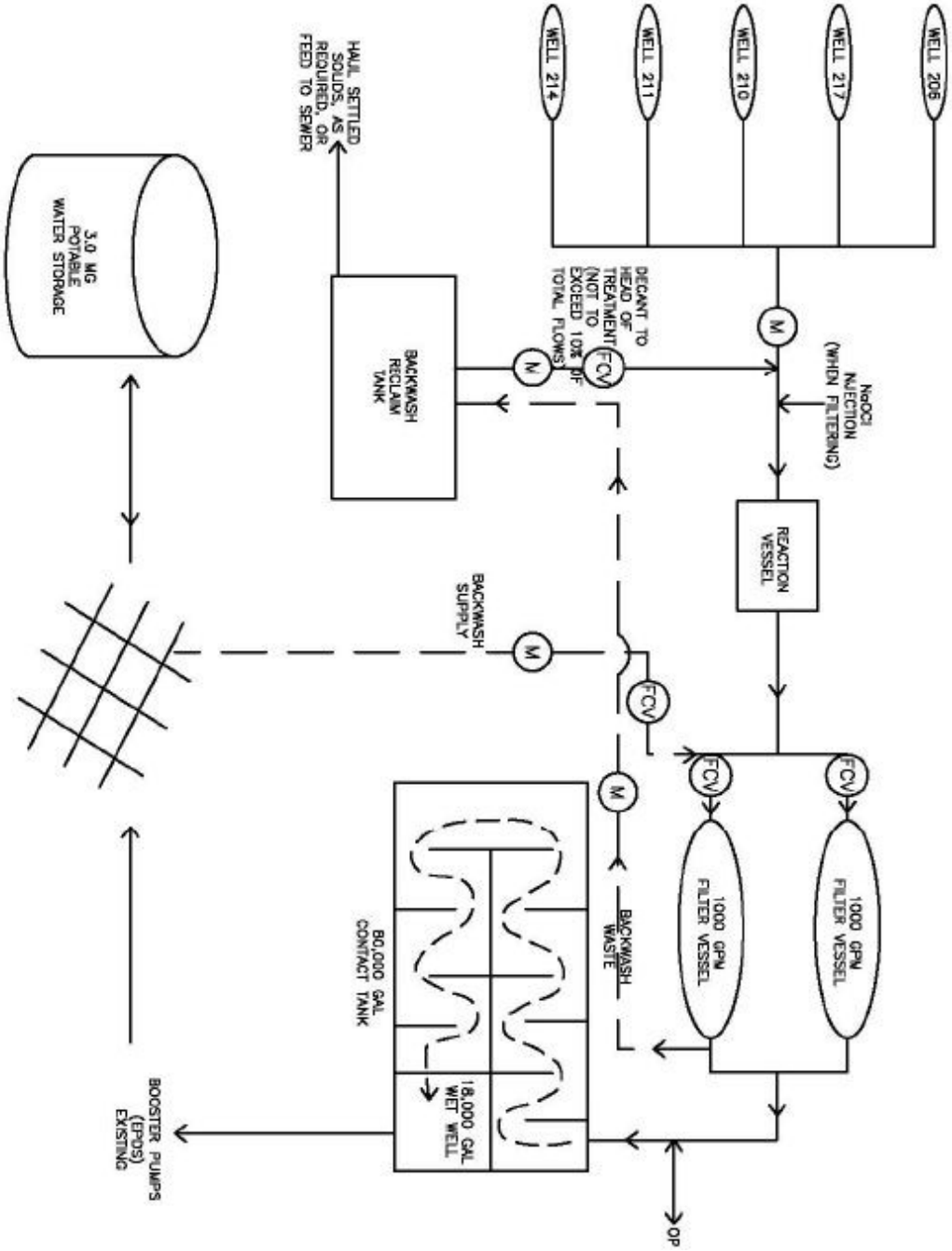
Storage & Other Facilities				
Facility ID (assigned by Department)	**Facility Name**	**After Entry Point (In Distribution)**	**Contributing Treatment Plants (or Sources)**	**Tank Volume** (gallons)
005	3 MG STORAGE TANK	Yes		3000000 GAL

Booster Treatment Facilities (Post Entry-Point Treatment)		
Facility ID (Assigned by Department)	**Facility Name**	**Treatment Description (use treatment codes)**

Active and Proposed Consecutive Connections Serving Another Water System *Please do not include these in your population counts				
Receiving System PWS ID and Name	**Availability** (P, E, I, or S)	**Do you supply treated or raw water?**	**Receiving System Total Population**	**Integrated Agreement? Yes / No**
N/A				

Schematics and Maps

Sketch of Facility Flows

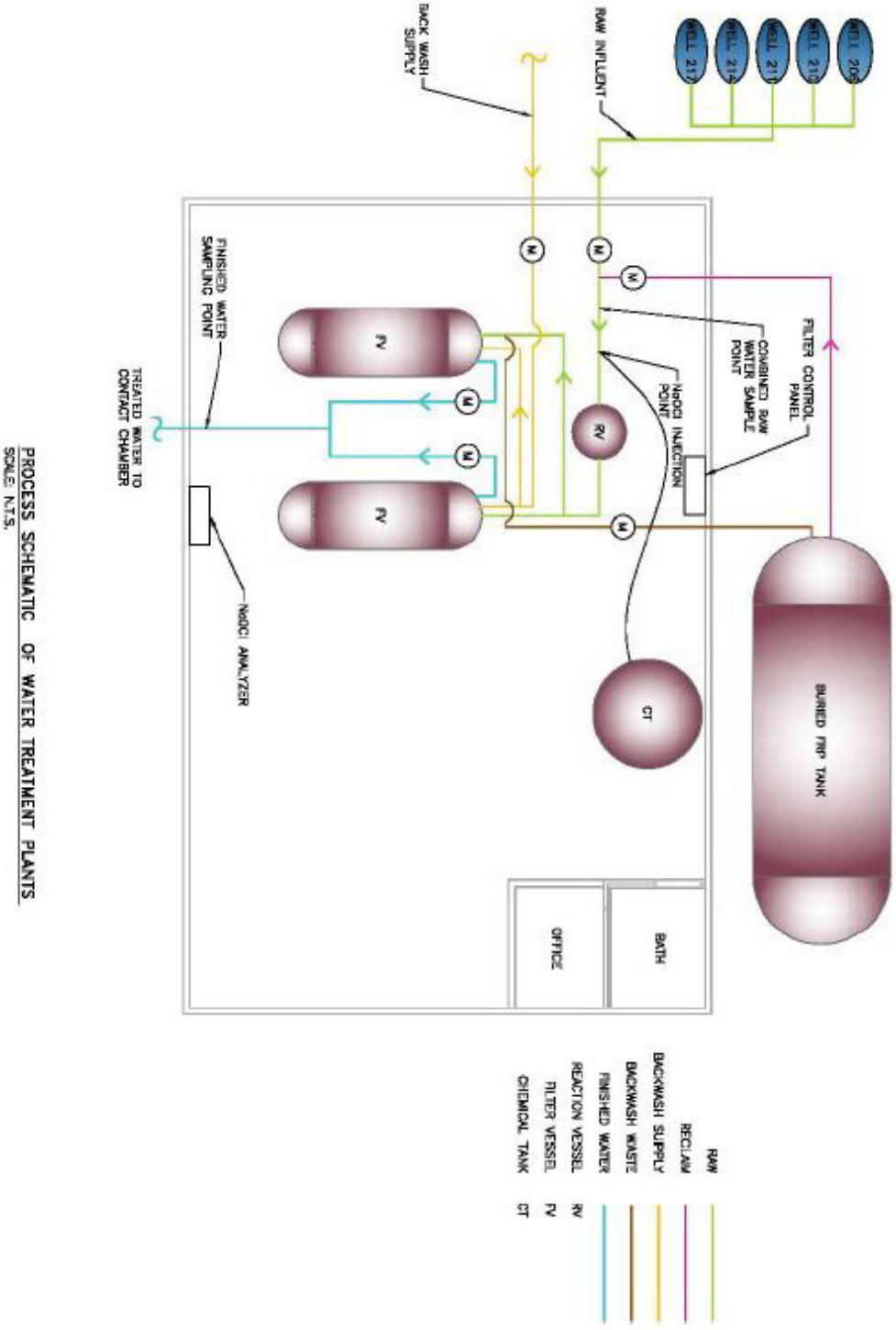


LEGEND

EPDS – ENTRY POINT TO DISTRIBUTION SYSTEM SAMPLE LOCATION
FCV – FLOW CONTROL VALVE
OP – OPERATIONAL CONTINOUS Cl_2 RESIDUAL

SKETCH OF FACILITY FLOWS
SCALE: N.T.S.

Process Schematic of Water Treatment Plants



PROCESS SCHEMATIC OF WATER TREATMENT PLANTS
SCALE: N.T.S.

Map of Distribution System

Provide a map of the distribution system showing locations of all storage facilities, booster treatment facilities, consecutive connections and entry points as well as all applicable sample sites described below. You may provide this detail all in one map or in several different maps. Clearly indicate if there are multiple distribution systems and if those distribution systems are connected to each other. If applicable, include an evaluation and description of the extent to which zones of influence from each source overlap.

Total Coliform Sample Sites

Attach a map of the distribution system showing locations of all total coliform sample sites. Hand drawn schematics or aerial maps (Google Maps) are acceptable.

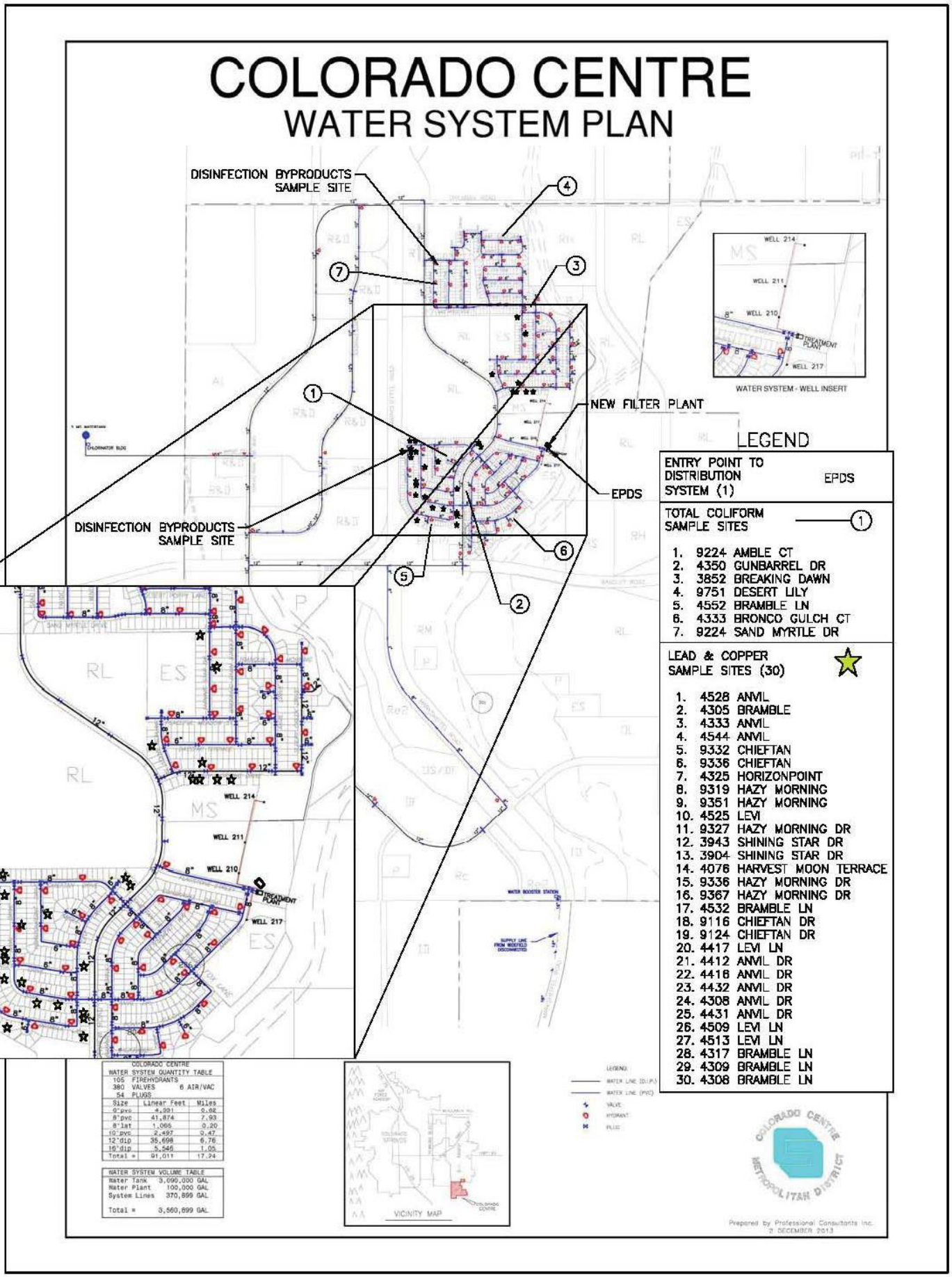
Lead and Copper Sample Sites

Attach a map of the distribution system showing locations of all lead and copper sample sites. Hand drawn schematics or aerial maps (Google Maps) are acceptable.

Disinfection Byproducts (TTHM/HAA5 and Chlorite) Sample Sites

Attach a map of the distribution system showing locations of all disinfection byproduct sample sites as well as treatment plants and distribution storage tanks. Hand drawn schematics or aerial maps (Google Maps) are acceptable.

Note: The supplier may use one schematic if it includes all of the required elements.


COLORADO CENTRE
WATER SYSTEM PLAN
DISINFECTION BYPRODUCTS SAMPLE SITE
DISINFECTION BYPRODUCTS SAMPLE SITE
NEW FILTER PLANT
EPDS
WELL 214
WELL 211
WELL 210
WELL 217
TREATMENT PLANT
WATER SYSTEM - WELL INSERT
LEGEND
ENTRY POINT TO DISTRIBUTION SYSTEM (1) EPDS
TOTAL COLIFORM SAMPLE SITES 1
1. 9224 AMBLE CT
2. 4350 GUNBARREL DR
3. 3852 BREAKING DAWN
4. 9751 DESERT LILY
5. 4552 BRAMBLE LN
6. 4333 BRONCO GULCH CT
7. 9224 SAND MYRTLE DR
LEAD & COPPER SAMPLE SITES (30)
1. 4528 ANVIL
2. 4305 BRAMBLE
3. 4333 ANVIL
4. 4544 ANVIL
5. 9332 CHIEFTAN
6. 9336 CHIEFTAN
7. 4325 HORIZONPOINT
8. 9319 HAZY MORNING
9. 9351 HAZY MORNING
10. 4525 LEVI
11. 9327 HAZY MORNING DR
12. 3943 SHINING STAR DR
13. 3904 SHINING STAR DR
14. 4076 HARVEST MOON TERRACE
15. 9336 HAZY MORNING DR
16. 9367 HAZY MORNING DR
17. 4532 BRAMBLE LN
18. 9116 CHIEFTAN DR
19. 9124 CHIEFTAN DR
20. 4417 LEVI LN
21. 4412 ANVIL DR
22. 4416 ANVIL DR
23. 4432 ANVIL DR
24. 4308 ANVIL DR
25. 4431 ANVIL DR
26. 4509 LEVI LN
27. 4513 LEVI LN
28. 4317 BRAMBLE LN
29. 4309 BRAMBLE LN
30. 4308 BRAMBLE LN
COLORADO CENTRE WATER SYSTEM QUANTITY TABLE
105 FIREHYDRANTS
380 VALVES 6 AIR/VAC
54 PLUGS
Size | Linear Feet | Miles
0"pvc 4,391 0.82
8"pvc 41,874 7.93
8"lnt 1,065 0.20
10"pvc 2,497 0.47
12"dip 35,698 6.76
16"dip 5,545 1.05
Total = 91,011 17.24
WATER SYSTEM VOLUME TABLE
Water Tank 3,090,000 GAL
Water Plant 100,000 GAL
System Lines 370,899 GAL
Total = 3,560,899 GAL
VICINITY MAP
COLORADO CENTRE METROPOLITAN DISTRICT
Prepared by Professional Consultants Inc.
2 DECEMBER 2013

Records Locations

Completed by: **Pedro Velazquez** Signature: Pedro J Velazquez

These records must be made available for inspection for Department staff during site visits.

Type of Record	Location Address	Retain no less than…
Total Coliform (TCR) and Fecal Coliform/*E. coli* results AND distribution system residual disinfection monitoring results	9696 Flagstone St, Colorado Springs, CO 80925	5 years
Revised TCR (RTCR) assessment forms or corrective actions as a result on an assessment, or other available summary documentation of the sanitary defects and corrective actions	9696 Flagstone St, Colorado Springs, CO 80925	5 years after completion of the assessment or corrective action
Chemical analyses results	9696 Flagstone St, Colorado Springs, CO 80925	10 years
All lead and copper rule documents and results	9696 Flagstone St, Colorado Springs, CO 80925	12 years
Violations of Regulation 11, including corrective action	9696 Flagstone St, Colorado Springs, CO 80925	3 years after corrective action is completed
Sanitary surveys, including any written reports, summaries or correspondences	9696 Flagstone St, Colorado Springs, CO 80925	10 years
Variances or exemptions granted by the Department	9696 Flagstone St, Colorado Springs, CO 80925	5 years after expiration
Public notices and consumer confidence reports, including certification	9696 Flagstone St, Colorado Springs, CO 80925	3 years
Individual rule sampling plans	9696 Flagstone St, Colorado Springs, CO 80925	10 years
Turbidity monitoring results	9696 Flagstone St, Colorado Springs, CO 80925	5 years
Recycle flows information Copy of original recycle notification and information submitted to Department List of all recycle flows and frequency with which they are returned Average and maximum backwash flow rate Average and maximum backwash duration Typical filter run length and how it is determined Treatment provided for the recycle flow (including chemicals and doses) Physical dimensions of the equalization/treatment units Typical and maximum hydraulic	9696 Flagstone St, Colorado Springs, CO 80925	Indefinitely

loading rates Frequency of solids removal		
Individual filter turbidity monitoring results AND entry point residual disinfection monitoring results	9696 Flagstone St, Colorado Springs, CO 80925	3 years
Disinfection profiling results, including raw data and analysis	9696 Flagstone St, Colorado Springs, CO 80925	Indefinitely
Disinfection benchmark, including raw data and analysis	9696 Flagstone St, Colorado Springs, CO 80925	Indefinitely
Source water monitoring for Long Term 2 Surface Water Treatment Rule	9696 Flagstone St, Colorado Springs, CO 80925	3 years after bin classification
Notification to the Department that system meets criteria to avoid source water monitoring for Long Term 2 Surface Water Treatment Rule	9696 Flagstone St, Colorado Springs, CO 80925	3 years
Treatment monitoring associated with microbial toolbox options for Long Term 2 Surface Water Treatment Rule	9696 Flagstone St, Colorado Springs, CO 80925	3 years
Initial distribution system evaluation (IDSE) report submitted for the Stage 2 Disinfectants and Disinfection Byproducts Rule	9696 Flagstone St, Colorado Springs, CO 80925	10 years after report submitted
Corrective actions taken for the Groundwater Rule	9696 Flagstone St, Colorado Springs, CO 80925	10 years
Invalidation of fecal indicator-positive groundwater source samples for the Groundwater Rule	9696 Flagstone St, Colorado Springs, CO 80925	5 years
For consecutive systems, documentation of notification to the wholesale system(s) of total coliform-positive samples	9696 Flagstone St, Colorado Springs, CO 80925	5 years
For systems conducting compliance monitoring for the Groundwater Rule Department-specified minimum disinfectant residual	9696 Flagstone St, Colorado Springs, CO 80925	10 years
For systems conducting compliance monitoring for the Groundwater Rule Lowest daily disinfectant residual, date and any failure to maintain the Department-specified minimum disinfectant residual for a period of more than 4 hours Department-specified compliance requirements for membrane filtration, date and duration of any failure to meet those requirements for more than 4 hours	9696 Flagstone St, Colorado Springs, CO 80925	5 years
Storage Tank Rule – for each completed tank inspection, the inspection summary	9696 Flagstone St, Colorado Springs, CO 80925	10 years
Backflow Prevention and	9696 Flagstone St, Colorado Springs, CO	3 years

Cross-Connection Control Rule – for Community Water Systems Testing, inspection and maintenance records for backflow prevention assemblies and methods. Each annual BPCCC program report	80925	
Backflow Prevention and Cross-Connection Control Rule – for Non-Community Water Systems Testing, inspection and maintenance records for backflow prevention assemblies and methods. Each annual BPCCC program report	9696 Flagstone St, Colorado Springs, CO 80925	5 years
Water Hauler Rule Water Hauler Operational Guide and associated required records	9696 Flagstone St, Colorado Springs, CO 80925	Indefinitely

Revised Total Coliform and Groundwater Rule - Portal

Completed by: **Pedro Velazquez** Signature: Pedro J Velazquez

Certification of Accuracy: I hereby certify statements below are true, accurate, and complete to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

- The drinking water portal (wqcdcompliance.com/login) is being used to maintain the **sites**.
- The sample sites, status, and any additional information is kept up-to-date.
- When site information changes the drinking water portal is updated immediately.

Total Coliform Site Information
Identify how the supplier will sample for total coliforms in the distribution system. The routine samples must represent the entire distribution system and should be rotated to different locations within the system if possible. This method allows for coverage of the distribution system without increasing the need for additional samples. Describe how the supplier will meet this requirement: **{Coliform Site Sampling}**
Identify how the supplier will sample for total coliforms in the distribution throughout the sampling period (if applicable). A supplier must collect samples at regular time intervals throughout the month, unless otherwise allowed by the regulations. Describe how the supplier will meet this requirement: **{Coliform Site Sampling Intervals}**

Distribution System Residual Disinfectant Monitoring	
The residual disinfectant must be measured at the same time and the same location as each total coliform bacteria sample. Measurements must be conducted in the field by a certified operator or under the direction of the certified operator and must be written on each total coliform chain of custody when it is submitted to the laboratory.	
Disinfectant used in the distribution system:	**Chlorine Measured as Free Chlorine**
Residual disinfectant quality assurance/quality control (QA/QC) – explain the exact procedures to be followed to ensure that the field test measurement will be accurate. This may be found in the manufacturer's literature: **{Residual Disinfectant QA/QC}**	

SEASONAL SYSTEMS ONLY – STARTUP PROCEDURES AND PRE-OPENING SAMPLES Seasonal suppliers are required to use Department approved start-up procedures before serving water to the public and collect a pre-opening total coliform sample.	
Using Department-approved start-up procedures?	**Identify where and when the pre-opening sample will be collected**

FOR SYSTEMS WITH GROUNDWATER SOURCES Suppliers that use a groundwater source and have a TC+ in the distribution system must collect a raw water sample from each groundwater source that was in use at the time of the TC+ sample.		
Identify where the raw water sample(s) will be collected	**Does the raw water sampling site(s) represent more than one source? If so, describe the raw sources that combine**	**If the supplier is a consecutive system, describe how the supplier will notify its wholesaler within 24 hours of being notified of a TC+ sample:**
WELL NO 210 (002) WELL 214 (006) WELL 217 (007) WELL 206 (008) WELL 211 (009)		

TTHM/HAA5 Stage 2 Disinfection Byproduct Sample Sites - Portal

Completed by: **Pedro Velazquez** Signature: Pedro J Velazquez

Certification of Accuracy: I hereby certify statements below are true, accurate, and complete to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

- The drinking water portal (wqcdcompliance.com/login) is being used to maintain the sites.
- The sites, status, and any additional information is kept up-to-date.
- When site information changes the drinking water portal is updated immediately.

Community Lead and Copper Materials Evaluation Summary

Completed by: **Pedro Velazquez** Signature: Pedro J Velazquez

Materials Evaluation Summary by Tier Level

Note: This is **not** a summary of the lead and copper sample pool. This is a summary of **all sites in the distribution system** that the supplier believes meets each of the criteria below.

Tier 1 Sites - Single family structures, currently being used as either a residence or place of business	**Number of Site Locations**
Containing copper pipe with lead solder installed after 1982 and before 1988	171
Are served by a lead service line (no year restriction)	0
Containing lead pipes, goosenecks, or pigtails (no year restriction)	0
Tier 2 Sites - Multiple-family residences and buildings	**Number of Site Locations**
Containing copper pipe with lead solder installed after 1982 and before 1988	4
Are served by a lead service line (no year restriction)	0
Containing lead pipes, goosenecks, or pigtails (no year restriction)	0
Tier 3 Sites - Single-family structures	**Number of Site Locations**
Containing copper pipes with lead solder installed before 1983	0
Representative Sample Sites – Structures	**Number of Site Locations**
With plumbing material typically found throughout the distribution system	956
Describe the representative plumbing material: **{Representative Plumbing}**	

Additional Information
Please describe the verification process, if any, that was used to provide the information above: Records review

Additional Information - Tier 1
If no Tier 1 sites were indicated above, please provide an explanation: {Tier 1 Info}

Lead and Copper Sample Sites - Portal

Completed by: **Pedro Velazquez** Signature: Pedro J Velazquez

Certification of Accuracy: I hereby certify statements below are true, accurate, and complete to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

- The drinking water portal (wqcdcompliance.com/login) is being used to maintain the sites.
- The sites, status, and any additional information is kept up-to-date.
- When site information changes the drinking water portal is updated immediately.

COLORADO CENTRE MD
Calendar Year 2026 Monitoring Schedule
Mailing Address: 9686 FLAGSTONE ST COLORADO SPRINGS, CO 80925

Public Water System ID	Water System Name	Federal System Type	State Source Type	Service Connections	Population
CO0121140	COLORADO CENTRE MD	Community	Groundwater	1131	3675
Primary County	**Minimum Certification for Treatment Operator**	**Minimum Certification for Distribution System Operator**	**Last Inspection**	**Seasonal**	**Water Hauler**
EL PASO	C	2	03/24/2023	No	No

Contact Information
All public water systems are required to maintain an Administrative Contact, Treatment Operator (if applicable), Distribution System Operator (if applicable), and Owner. If the information below is incorrect or blank please send us a contact update form. This form and operator certification information is available by visiting wqcdcompliance.com/forms.

Administrative Contact	Treatment Operator	Distribution System Operator	Owner
PEDRO VELAZQUEZ	PEDRO VELAZQUEZ	PEDRO VELAZQUEZ	COLORADO CENTRE MD

General Information
*Samples must be collected at the location specified in the **Monitoring Plan or Record of Approved Waterworks.***

- Schedules are updated every Wednesday evening. Please contact your specialist with questions cdphe.colorado.gov/wqcdcompliance#Contacts or call us at 303-692-3556.
- **Use Online Water System Search to view system info, online records, contacts, violations, and sample results.**
- Please contact us with any accessibility issues.
- Laboratory sample results must be analyzed by a certified laboratory using a certified method. **The requirements listed below are the minumum. Additional sample results (i.e. any and all) collected at a compliance sampling location and analyzed by a certified laboratory using a certified method must be submitted using the Online Portal wqcdcompliance.com/login, fax, or mail.**
- Please identify the **Facility ID and Sample Point ID** (listed below) when submitting sample results. Facility and Sample Point IDs are used to identify general sample site locations.
- All systems on a **3 year Lead and Copper** schedule must sample during the **calendar year and months specified** in the 'Lead and Copper Sample Schedule' under the 'Distribution System Sample Schedules' section.
- All systems that treat groundwater with a chemical disinfectant must monitor residuals at the entry point(s) to the distribution system **at least once per week**. The entry point residual must not be below 0.2 mg/L for more than 72 hours. When groundwater is treated with surface water or is 4-log approved the system must comply with the monitoring requirements in the 'Non-Distribution System Sample Schedules' section and the disinfectant residual level requirements in the 'Facility Specific Levels' section.

Monitoring Information

Distribution System Sample Schedules

Facility ID	Facility Name	Facility Type
DS001	DISTRIBUTION SYSTEM	Distribution System

Microorganisms and Disinfectants

TOTAL COLIFORM BACTERIA (TCR) Sample Schedule:

Collection Period:

4 sample(s) **per Month** during the collection period

January 1, 2026 to December 31, 2026

Use the Facility ID and Sample Point ID listed at the end of this monitoring schedule.

FREE CHLORINE Sample Schedule:

Measure **every time** you collect a TOTAL COLIFORM BACTERIA (TCR) sample

Disinfection Byproducts

TTHMs and HAA5s (Stage 2) Sample Schedule:

Collection Period:

1 dual sample(s) **per sample point** for a **TOTAL of 1 dual sample(s) per Year**

July 1, 2026 to September 30, 2026

****Collection Restriction:*** Sample(s) **must be collected between July 1 and September 30***

State Sample Point ID(s) (System Location ID(s)):
DBP001 (BRAMBLE LN)

Lead and Copper

LEAD AND COPPER Sample Schedule:

Collection Period:

20 sample(s) **must be collected every 3 Years**

June 1, 2027 to September 30, 2027

****Collection Restriction:*** Sample(s) **must be collected between June 1, 2027 and September 30, 2027***

SAMPLES MUST BE COLLECTED FROM THE HIGHEST RISK SITES LISTED IN THE LEAD AND COPPER SAMPLE POOL INFORMATION AT THE END OF THIS MONITORING SCHEDULE.

Each sample must be reported with a State Assigned Sample Point ID (LCR###).

To ensure timely processing of results, please have the certified lab report all results electronically in CSV data format. Do NOT submit paper or PDF copies of lab reported data.

Non-Distribution System Sample Schedules

Facility ID	Facility Name	Facility Type	Sample Point ID	Sample Point Name	Sample Point Type
004	CCMD WATER PLANT	Treatment Plant	004	ENTRY POINT	Entry Point

One Time Schedules

PFAS GROUP Sample Schedule:

Collection Period:

2 sample(s) **during the collection period**

June 25, 2024 to April 26, 2027
NOTE: Will not cross off and show as received when results submitted.

****Collection Restriction:*** Samples **must be collected within a 12-month period and 5 to 7 months apart**. Previously collected sample(s) from January 1, 2019 to June 24, 2024 may be used but samples must be 5 to 7 months apart regardless of the year.

For more information on PFAS initial monitoring requirements visit https://cdphe.colorado.gov/dwpfas.*

Non-Distribution System Sample Schedules

Facility ID	Facility Name	Facility Type	Sample Point ID	Sample Point Name	Sample Point Type
004	CCMD WATER PLANT	Treatment Plant	004	ENTRY POINT	Entry Point

Quarterly Schedules

COMBINED RADIUM (-226 & -228) Sample Schedule:

1 sample(s) **per Quarter** during the collection period

Collection Period:

January 1, 2026 to December 31, 2026

Compliance Check:
1st Quarter
2nd Quarter
3rd Quarter
4th Quarter

COMBINED URANIUM Sample Schedule:

1 sample(s) **per Quarter** during the collection period

Collection Period:

January 1, 2026 to December 31, 2026

Compliance Check:
1st Quarter
2nd Quarter
3rd Quarter
4th Quarter

FLUORIDE Sample Schedule:

1 sample(s) **per Quarter** during the collection period

Collection Period:

January 1, 2026 to December 31, 2026

Compliance Check:
1st Quarter
2nd Quarter
3rd Quarter
4th Quarter

GROSS ALPHA, WITHOUT RADON & URANIUM Sample Schedule:

1 sample(s) **per Quarter** during the collection period

****Collection Restriction:*** Sample(s) **must** be collected at the **same time** as the COMBINED URANIUM sample(s)*

Collection Period:

January 1, 2026 to December 31, 2026

Compliance Check:
1st Quarter
2nd Quarter
3rd Quarter
4th Quarter

INORGANICS GROUP Sample Schedule:

1 sample(s) **per Quarter** during the collection period

Collection Period:

January 1, 2026 to December 31, 2026

Compliance Check:
1st Quarter
2nd Quarter
3rd Quarter
4th Quarter

NITRATE Sample Schedule:

1 sample(s) **per Quarter** during the collection period

Collection Period:

January 1, 2026 to December 31, 2026

Compliance Check:
1st Quarter
2nd Quarter
3rd Quarter
4th Quarter

Non-Distribution System Sample Schedules

Facility ID	Facility Name	Facility Type	Sample Point ID	Sample Point Name	Sample Point Type
004	CCMD WATER PLANT	Treatment Plant	004	ENTRY POINT	Entry Point

Quarterly Schedules

SYNTHETIC ORGANICS GROUP Sample Schedule:

1 sample(s) **per Quarter** during the collection period

Collection Period:

January 1, 2026 to December 31, 2026

Compliance Check:
1st Quarter
2nd Quarter
3rd Quarter
4th Quarter

VOLATILE ORGANICS GROUP Sample Schedule:

1 sample(s) **per Quarter** during the collection period

Collection Period:

January 1, 2026 to December 31, 2026

Compliance Check:
1st Quarter
2nd Quarter
3rd Quarter
4th Quarter

Yearly Schedules

NITRITE Sample Schedule:

1 sample(s) **per Year**

Collection Period:

January 1, 2026 to December 31, 2026

Compliance and Public Notice Schedules

LCRR Compliance Schedule
Visit wqcdcompliance.com/lcr for more information

Activity Name	Activity Due Date	Activity Completion Date
SUBMIT LEAD SERVICE LINE INVENTORY	October 16, 2024	June 8, 2023

CCR Compliance Schedule
Your 2026 *DRAFT* CCR will be posted at wqcdcompliance.com/ccr in March

Activity Name	Activity Due Date	Activity Completion Date
SUBMIT CCR REPORT TO STATE	June 30, 2026	Activity Not Completed

Facility Specific Levels

Facility ID	Facility Name	Facility Type
DS001	DISTRIBUTION SYSTEM	Distribution System

Analyte Name	Level	Level Type
FREE CHLORINE	0.2 mg/L	Minimum
FREE CHLORINE	4.0 mg/L	Maximum

Backflow Prevention and Cross-connection Control (BPCCC) Reminders:

- Annual BPCCC Reports need to be completed by May 1, 2026 for activities completed in 2025.
- The required survey compliance ratio is 1.0, unless you have a CDPHE-approved alternate ratio.
- The required Backflow Prevention Annual Compliance Ratio (assemblies + methods) ratio is 0.90.
- The supplier must ensure that no backflow prevention assembly is present for more than two consecutive calendar years without being tested, service being suspended to the customer, or the cross-connection being removed.
- Annual BPCCC reports should only be submitted to us if a violation occurred. Reports and supporting calculations will be reviewed during your next sanitary survey, however, we can request this information at any time.
- For more information regarding the requirements and how to compile a report please visit wqcdcompliance.com/forms or submit specific questions to cdphe_wqcd_fss_questions@state.co.us.

Storage Tank Reminders:

All storage tanks downstream of the entry point must be inspected twice per year unless an alternative storage tank inspection schedule has been established and included in the written inspection plan. An alternative storage tank inspection schedule is subject to our review and revision, generally during a sanitary survey, but alternative inspection schedules can be requested by us at any time.

All storage tanks downstream of the entry point are required to undergo a comprehensive tank inspection at least every five calendar years. For example, if a storage tank last had a comprehensive inspection in 2019, the next comprehensive inspection must be completed before the end of 2024.

Facility Information				Sample Point Information	
Facility ID	**Active Status**	**Facility Name**	**Facility Type**	**Sample Point ID**	**Sample Point Name**
002	A	WELL NO 210	Well	002	RAW
004	A	CCMD WATER PLANT	Treatment Plant	004	ENTRY POINT
005	A	3 MG STORAGE TANK	Storage	005	DIST TANK
006	A	WELL 214	Well	006	RAW
007	A	WELL 217	Well	007	RAW
008	A	WELL 206	Well	008	RAW
009	A	WELL 211	Well	009	RAW
DS001	A	DISTRIBUTION SYSTEM	Dist System/Zone	DBP001	BRAMBLE LN
				DBP002	BREAKING DAWN ST
				RPDN	REPEAT DOWNSTREAM
				RPOR	REPEAT ORIGINAL
				RPOT	REPEAT OTHER
				RPUP	REPEAT UPSTREAM
				RTOR	ROUTINE ORIGINAL
				TCR001	GUNBARREL DR
				TCR002	AMBLE CT
				TCR004	9751 DESERT LILY

DS001	A	DISTRIBUTION SYSTEM	Dist System/Zone	TCR007	SAND MYRTLE DR
				TCR008	GUNBARREL DR
				TCR009	GUNBARREL DR
				TCR010	LEVI LN
				TCR011	LEVI LN
				TCR012	BREAKING DAWN ST
				TCR013	BREAKING DAWN ST
				TCR014	DESERT LILY CR
				TCR015	DESERT LILY CR
				TCR019	SAND MYRTLE DR
				TCR020	SAND MYRTLE DR
				TCR021	4548 BRAMBLE LN
				TCR022	9332 CHIEFTAN DR
				TCR023	9420 SETTING MOON CT
				TCR024	9428 DEW DROP CT
				TCR025	3812 BREAKING DAWN ST
				TCR026	4528 BRAMBLE LN
				TCR027	4568 BRAMBLE LN
				TCR028	9312 CHIEFTAN DR
				TCR029	4313 LEVI LN
				TCR030	4059 ANVIL DR
				TCR031	4027 ANVIL DR
				TCR032	3852 BREAKING DAWN ST
				TCR033	3919 BREAKING DAWN ST
				TCR034	9328 CHIEFTAN DR
				TCR035	4019 ANVIL DR
				TCR036	3951 ANVIL DR
				TCR037	4316 BRONCO GULCH CT
				TCR038	9509 PONY GULCH WAY
				TCR039	9440 PONY GULCH WAY
001	I	PURCHASED WIDEFIELD 121900 SW	Consecutive Connection	NO ACTIVE SAMPLING POINT	NO ACTIVE SAMPLING POINT
003	I	WELL NO 211A	Well	003	RAW

Lead and Copper Sample Pool Information

The supplier must collect lead and copper samples from different **Department - approved** sample sites below until the minimum number of samples required is collected. Contact your compliance specialist if there are questions about unapproved sites. The supplier can **view details, add, manage, or inactivate unavailable sample sites on the Data Portal at wqcdcompliance.com/login under My…Sample Sites.** Sites have been grouped by sampling priority based on tier level:

- If present, **Tier 1** sites must be sampled unless reported as an unavailable high risk site.
- If present, **Tier 2** sites must only be sampled after all Tier 1 sites have been sampled or have been reported as an unavailable high risk site.
- If present, **Tier 3** sites must only be sampled after all Tier 1 and 2 sites have been sampled or have been reported as an unavailable high risk site.
- If present, **Non-Tier, Representative** sites must only be sampled after all Tier 1, 2, and 3 sites have been sampled or have been reported as an unavailable high risk site.

Unavailable high risk site reporting form is available at wqcdcompliance.com/lcr

TIER 1 - HIGHEST RISK SITES

State Assigned Sample Site ID (Required on Lab Chain of Custody)	Current Status
LCR001	Active - Sampling - Approved
LCR002	Active - Sampling - Approved
LCR003	Active - Sampling - Approved
LCR004	Active - Sampling - Approved
LCR005	Active - Sampling - Approved
LCR006	Active - Sampling - Approved
LCR007	Active - Sampling - Approved
LCR008	Active - Sampling - Approved
LCR009	Active - Sampling - Approved
LCR010	Active - Sampling - Approved
LCR011	Active - Sampling - Approved
LCR012	Active - Sampling - Approved
LCR013	Active - Sampling - Approved
LCR014	Active - Sampling - Approved
LCR015	Active - Sampling - Approved
LCR016	Active - Sampling - Approved
LCR017	Active - Sampling - Approved
LCR018	Active - Sampling - Approved
LCR019	Active - Sampling - Approved

Lead and Copper Sample Pool Information

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- If present, **Non-Tier, Representative** sites must only be sampled after all Tier 1, 2, and 3 sites have been sampled or have been reported as an unavailable high risk site.

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TIER 1 - HIGHEST RISK SITES

State Assigned Sample Site ID (Required on Lab Chain of Custody)	Current Status
LCR020	Active - Sampling - Approved
LCR021	Active - Sampling - Approved
LCR022	Active - Sampling - Approved
LCR023	Active - Sampling - Approved
LCR024	Active - Sampling - Approved
LCR025	Active - Sampling - Approved
LCR026	Active - Sampling - Approved
LCR027	Active - Sampling - Approved
LCR028	Active - Sampling - Approved
LCR029	Active - Sampling - Approved
LCR030	Active - Sampling - Approved
LCR031	Active - Sampling - Approved
LCR032	Active - Sampling - Approved
LCR033	Active - Sampling - Approved
LCR034	Active - Sampling - Approved
LCR035	Active - Sampling - Approved
LCR036	Active - Sampling - Approved
LCR037	Active - Sampling - Approved
LCR038	Active - Sampling - Approved

Lead and Copper Sample Pool Information

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- If present, **Tier 3** sites must only be sampled after all Tier 1 and 2 sites have been sampled or have been reported as an unavailable high risk site.
- If present, **Non-Tier, Representative** sites must only be sampled after all Tier 1, 2, and 3 sites have been sampled or have been reported as an unavailable high risk site.

Unavailable high risk site reporting form is available at wqcdcompliance.com/lcr

TIER 1 - HIGHEST RISK SITES

State Assigned Sample Site ID (Required on Lab Chain of Custody)	Current Status
LCR039	Active - Sampling - Approved
LCR040	Active - Sampling - Approved
LCR041	Active - Sampling - Approved
LCR042	Active - Sampling - Approved
LCR043	Active - Sampling - Approved
LCR044	Active - Sampling - Approved
LCR045	Active - Sampling - Approved
LCR046	Active - Sampling - Approved
LCR047	Active - Sampling - Approved
LCR048	Active - Sampling - Approved
LCR049	Active - Sampling - Approved
LCR050	Active - Sampling - Approved
LCR051	Active - Sampling - Approved
LCR052	Active - Sampling - Approved
LCR053	Active - Sampling - Approved
LCR054	Active - Sampling - Approved
LCR055	Active - Sampling - Approved
LCR056	Active - Sampling - Approved
LCR057	Active - Sampling - Approved

Lead and Copper Sample Pool Information

The supplier must collect lead and copper samples from different **Department - approved** sample sites below until the minimum number of samples required is collected. Contact your compliance specialist if there are questions about unapproved sites. The supplier can **view details, add, manage, or inactivate unavailable sample sites on the Data Portal at wqcdcompliance.com/login under My…Sample Sites.** Sites have been grouped by sampling priority based on tier level:

- If present, **Tier 1** sites must be sampled unless reported as an unavailable high risk site.
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Unavailable high risk site reporting form is available at wqcdcompliance.com/lcr

TIER 1 - HIGHEST RISK SITES

State Assigned Sample Site ID (Required on Lab Chain of Custody)	Current Status
LCR058	Active - Sampling - Approved
LCR059	Active - Sampling - Approved
LCR060	Active - Sampling - Approved
LCR061	Active - Sampling - Approved
LCR062	Active - Sampling - Approved
LCR063	Active - Sampling - Approved
LCR064	Active - Sampling - Approved
LCR065	Active - Sampling - Approved
LCR066	Active - Sampling - Approved
LCR067	Active - Sampling - Approved
LCR068	Active - Sampling - Approved
LCR069	Active - Sampling - Approved
LCR070	Active - Sampling - Approved
LCR071	Active - Sampling - Approved
LCR072	Active - Sampling - Approved
LCR073	Active - Sampling - Approved
LCR074	Active - Sampling - Approved
LCR075	Active - Sampling - Approved
LCR076	Active - Sampling - Approved

NO TIER 2 - SECOND HIGHEST RISK SITES HAVE BEEN IDENTIFIED

NO TIER 3 - THIRD HIGHEST RISK SITES HAVE BEEN IDENTIFIED

NO NON-TIER, REPRESENTATIVE - FOURTH HIGHEST RISK SITES HAVE BEEN IDENTIFIED

Time Period Definitions		
Time Period	**Start Date**	**End Date**
First Quarter	January 1, 2026	March 31, 2026
Second Quarter	April 1, 2026	June 30, 2026
Third Quarter	July 1, 2026	September 30, 2026
Fourth Quarter	October 1, 2026	December 31, 2026
First 6 Months	January 1, 2026	June 30, 2026
Second 6 Months	July 1, 2026	December 31, 2026
Year	January 1, 2026	December 31, 2026

Analyte Group Definitions		
Analyte Group Name	**Analytes in Group**	**Number of Analytes in Group**
INORGANICS GROUP	ANTIMONY | ARSENIC | BARIUM | BERYLLIUM | CADMIUM | CHROMIUM | MERCURY | NICKEL | SELENIUM | SODIUM | THALLIUM	11
PFAS GROUP	HFPO-DA | PERFLUOROBUTANE SULFONIC ACID (PFBS) | PERFLUOROCTANE SULFONIC ACID (PFOS) | PERFLUOROCTANOIC ACID (PFOA) | PERFLUOROHEXANE SULFONIC ACID (PFHxS) | PERFLUORONONANOIC ACID (PFNA)	6
SYNTHETIC ORGANICS GROUP	1,2-DIBROMO-3-CHLOROPROPANE | 2,4,5-TP | 2,4-D | ATRAZINE | BENZO (A)PYRENE | BHC-GAMMA | CARBOFURAN | CHLORDANE | DALAPON | DI(2-ETHYLHEXYL) ADIPATE | DI(2-ETHYLHEXYL) PHTHALATE | DINOSEB | DIQUAT | ENDOTHALL | ENDRIN | ETHYLENE DIBROMIDE | HEPTACHLOR | HEPTACHLOR EPOXIDE | HEXACHLOROBENZENE | HEXACHLOROCYCLOPENTADIENE | LASSO | METHOXYCHLOR | OXAMYL | PENTACHLOROPHENOL | PICLORAM | SIMAZINE | POLYCHLORINATED BIPHENYLS (PCB) | TOXAPHENE	28
VOLATILE ORGANICS GROUP	1,1,1-TRICHLOROETHANE | 1,1,2-TRICHLOROETHANE | 1,1-DICHLOROETHYLENE | 1,2,4-TRICHLOROBENZENE | 1,2-DICHLOROETHANE | 1,2-DICHLOROPROPANE | BENZENE | CARBON TETRACHLORIDE | CHLOROBENZENE | CIS-1,2-DICHLOROETHYLENE | DICHLOROMETHANE | ETHYLBENZENE | O-DICHLOROBENZENE | P-DICHLOROBENZENE | STYRENE | TETRACHLOROETHYLENE | TOLUENE | TRANS-1,2-DICHLOROETHYLENE | TRICHLOROETHYLENE | VINYL CHLORIDE | XYLENES (TOTAL)	21