usalco®

Webinar:

Control Corrosion and Optimize Coagulation. Confident LCRI Compliance

LEADERS IN CLEAN WATER SOLUTIONS

Agenda

1. Usalco Company Profile
2. LCR Past and LCRI Present
3. Technological Advancements - Monitoring
4. Understanding Corrosion
5. Phosphates and Monitoring their Performance
6. Digital Tools for Managing Corrosion Risk
7. Questions

Zero Incidents. Zero Accidents. Zero Environmental Releases

More than a nice slogan, USALCO has built a systematic framework to clarify our sustainability goals and keep us focused on progress.

This framework encourages us to carefully evaluate each facility, product and workflow in our company – from raw materials through production and delivery. As we track progress, we continue to drive deeper engagement across our company and supply chains.

Our ESG efforts don't stop at our doors.
Our technical teams engage with customers to help them:

- Use our products more efficiently
- Find new ways to improve their efficiency performance
- Reduce our joint environmental impact

VISION

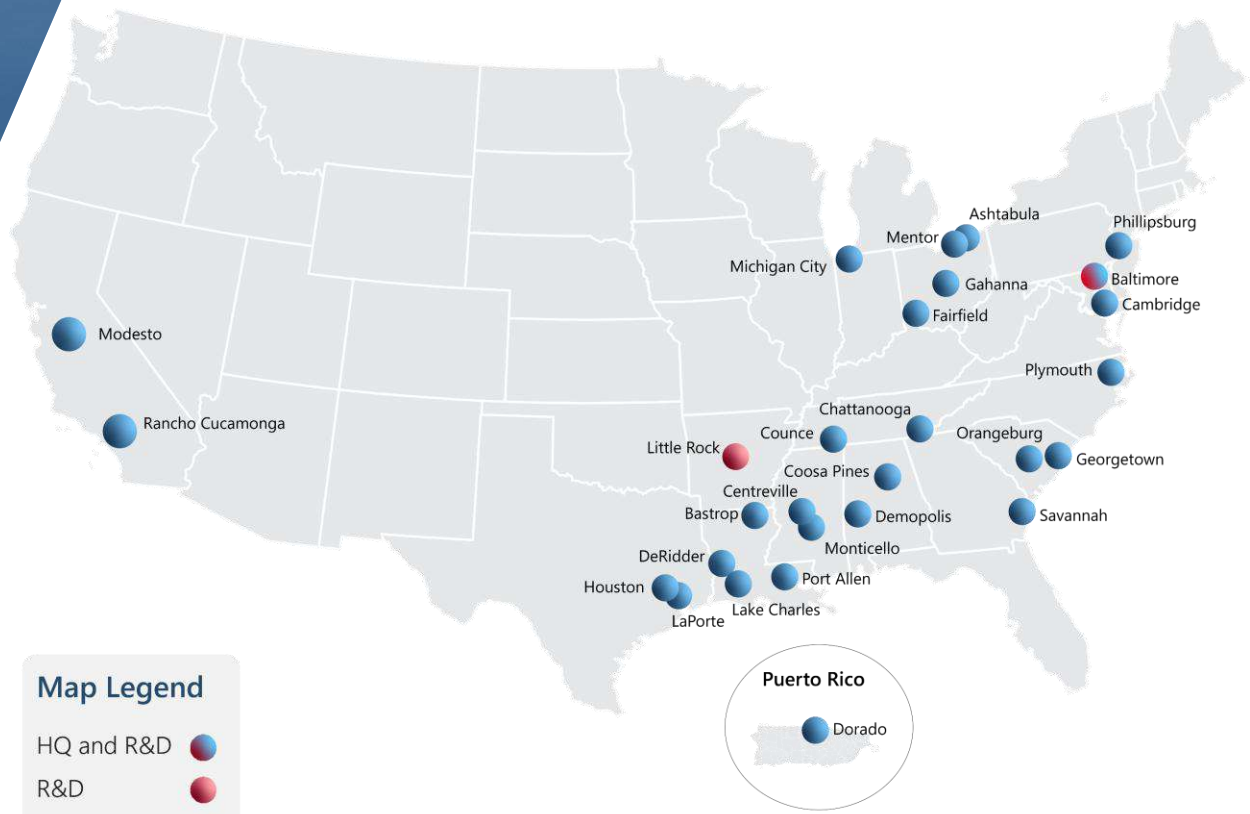
Develop, make, and deliver great water treatment solutions for a cleaner more sustainable future

MISSION

Be a force for good – enrich the lives of our stakeholders and communities by helping to address America's need for clean water

VALUES

Safety, Integrity, Customer-Focus, Teamwork, Innovation, Results, Respect for People



27+7
Locations

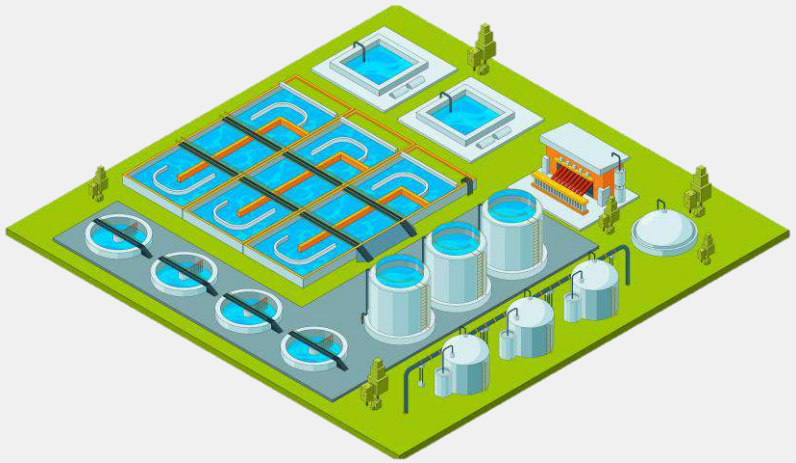
500+
Total associates

130M+
Lives impacted

70,000+
Annual deliveries

Leading Facilities Trust USALCO to Deliver Solutions in Coagulation, Filtration, and Distribution

Wastewater Plant



Key Aspects	USALCO's Offering	Resulting In
Coagulation Filtration	Industry-leading Coagulant Portfolio Filter Media Cleaning	Maximize facility production Lower Maintenance Lower Energy Consumption Lower Sludge Disposal Costs Reduce pH control cost 24/7 Optimal dosing Reduced CO_2 from Freight Fewer deliveries Process Resiliency
Biological Nutrient Removal		
Disinfection		
Chemical Process Control Operating Personnel	CoPilot™ Automated Coagulant Dosing Tank Telemetry Expert Support and Training	

Questions? Email: webinar@usalco.com

The most diverse range of coagulant technology available

Products

- DelPAC® - Polyaluminum Chloride
- Aluminum Chlorohydrate
- Aluminum Sulfate Solution & Dry
- Sodium Aluminate
- Melamine Resins
- Polyamine (epiamines)
- PolyDADMAC
- Ferric Sulfate 10-13%
- Ferric Chloride 40%

Technology

- Decision Blue®
  - Virtual Jar®
  - Virtual Sensor
  - Corrosion Sentry
- Copilot™ Dosing

Services

- Optimization Coaching
- Coagulant Academy
- Distribution System Monitoring
- Telemetry Service

Today's Objectives

Discuss and better understand:

- EPA's Lead and Copper Rule Improvements (LCRI) – updated October 2024
- Corrosion & Best Practices for Optimized Corrosion Control Treatment (OCCT) and System Monitoring required by LCRI
- How the data driven process of Distribution Monitoring and OCCT insulates and protects against fluctuations and increases in Chloride-Sulfate Mass Ratios; and empowers systems to improve TOC capture and enhance PFAS removal in their plants, pre-filter!

To accomplish these objectives

- Review LCR past and LCRI present with specific focus on the direct benefits of new CCT requirements
- Quick summary of root causes of corrosion and scaling
- Discuss ways USALCO partners with Community Water Systems (CWS) to:
  - Quantify aggressiveness of Distribution System waters
  - Understand basic phosphate chemistry
  - Conduct Distribution System Monitoring and Reporting
  - Optimize CCT Plans
  - Leverage CCT/DSM Data to unlock exponentially greater value to water quality by use of specialty coagulants in the treatment plant

Brief Lead and Copper Rule History

- 1986: Congress banned lead material
- 1991: Lead and Copper Rule first established
  - Limits of 15-ppB on Lead (Pb)
  - Limit of 1.3-ppm on Copper (Cu)

- Jan 15, 2021: LCRR Finalized
- Dec 16, 2021: LCRR became effective
- Oct 8, 2024: EPA issues Final LCRI
- Oct 16, 2024: Compliance deadline for LCRI begins

EPA's Regulatory Revisions to LCR

Jan 2021: EPA finalized Lead and Copper Rule Revisions (LCRR)

- Action Limit changed to 10-ppB on Lead (Pb)
  - Systems with sample > 10-ppB on Lead (Pb) must increase monitoring at more targeted sites
- Lead Tap Sampling changes
  - May not remove screens from faucets
  - Homes with known lead lines must be in sample set
- Systems must create and maintain a Lead Service Line (LSL) inventory
- LSL inventory must be made available to the public
- Strengthened Lead Service Line (LSL) replacement rules
  - Systems may no longer test out

EPA's Regulatory Revisions to LCR

Jan 2021: EPA finalized Lead and Copper Rule Revisions (LCRR) continued…

- Systems must notify occupants of homes with LSL every year, and provide options for mitigating risk, including removal of lines
- Emphasis on Schools and Daycares
- Community Water Systems must conduct lead in drinking water testing at 20% of K-12 schools and licensed childcares in service area every year
- Sample results must be provided to each sampled school/childcare, Primacy Agency and local or State health department

EPA's Regulatory Revisions to LCR

Jan 2021: EPA finalized Lead and Copper Rule Revisions (LCRR) continued…

- Corrosion Control Treatment (CCT) options remove calcium hardness as an option and specifies phosphate inhibitor must be orthophosphate
  - This is a historic change away from Langelier Index
- Those in Trigger Limit (TL) and do not have a CCT must conduct one, if required by the state
- Systems with P90 level >15-ppB with no CCT must complete CCT installation regardless of subsequent P90 levels; those with CCT, must optimize it
- CWS(s) serving ≤ 10,000 persons can select an option other than CCT to address lead

October 2024 EPA's Lead and Copper Rule Improvements

https://www.epa.gov/ground-water-and-drinking-water/lead-and-copper-rule-improvements

October 2024: EPA finalized LCRI

- All 2021 LCRR were rolled forward as minimum standards, some tightened
- Those in Trigger Limit (TL) and do not have a CCT must conduct one.
- Those in TL who have a CCT, must optimize it (State exemption eliminated)
- CWS(s) serving ≤ 3,300 persons can select an option other than CCT to address lead
- Vast majority of water systems are now required to replace all Lead Service Lines (LSL) within next 10-years.
- For sites with lead service lines, water systems are required to collect and analyze the first-liter and fifth-liter and use the higher of the two values when determining compliance with the rule.

October 2024 EPA's Lead and Copper Rule Improvements

https://www.epa.gov/system/files/documents/2024-10/final_lcri_fact-sheet_cct-and-wqp.pdf

October 2024: EPA finalized LCRI cont…

- Systems with CCT (unless deemed optimized) serving >10,000 persons must conduct regular WQP monitoring at entry points and within the distribution system.
- Systems serving ≤10,000 persons and systems without CCT serving >10,000 persons but ≤50,000 persons that exceed the lead and/or copper action level(s) must conduct WQP monitoring until they no longer exceed lead and/or copper action level(s) for 2 consecutive 6-month monitoring periods.
- Systems without CCT serving >10,000 persons but ≤50,000 persons that exceed the lead action level that are required to install CCT, must continue to conduct WQP monitoring.

Preventing Lead and Copper Leaching

Optimized Corrosion Control Treatment Includes:

- Selecting the correct phosphate chemistry
- Inject at the correct feed rate
- Monitoring corrosion results for each season
- Monitoring orthophosphate readings as PO_4 at site specific locations throughout the distribution system
- Monitoring pH, iron, manganese, alkalinity, and temp to track aggressiveness of water in the distribution system
- Making chemical adjustments based on distribution system data
- Flush sequentially and properly at least twice per year

Additional Benefits to OCCT:

- Protection from Lead and Copper Leaching
- Reduce or Eliminate discolored water complaints
- Help maintain chlorine residuals throughout the distribution system
- Reduce chlorine demand
- Reduction in DBPs

OCCT to eliminate CSMR concerns:

- Reduce or Eliminate corrosion from nitrate fluctuations
- Protect the distribution system against regular CSMR fluctuations
- Empower the plant to enhance TOC capture pre-filter by leaving the constraints of a CSMR
- Permit the plant to improve economic efficiencies in PFAS removal

A Ham Story

…that's the way we have always done it?

Technological Advancements

- In 1991 the EPA allowed plants who were feeding the advanced technology of a phosphate, to no longer be obligated to maintain adherence to the calcium carbonate scale formation system known as Langelier Saturation Index (LSI)

- 25-years later, the EPA formally stated that calcium carbonate saturation indices like the LSI should not be used as …a comprehensive indicator of overall corrosion potential.

- 8-additional years later (OCT 2024), the EPA in LCRI removed LSI as an acceptable method for CCT

Technological Advancements

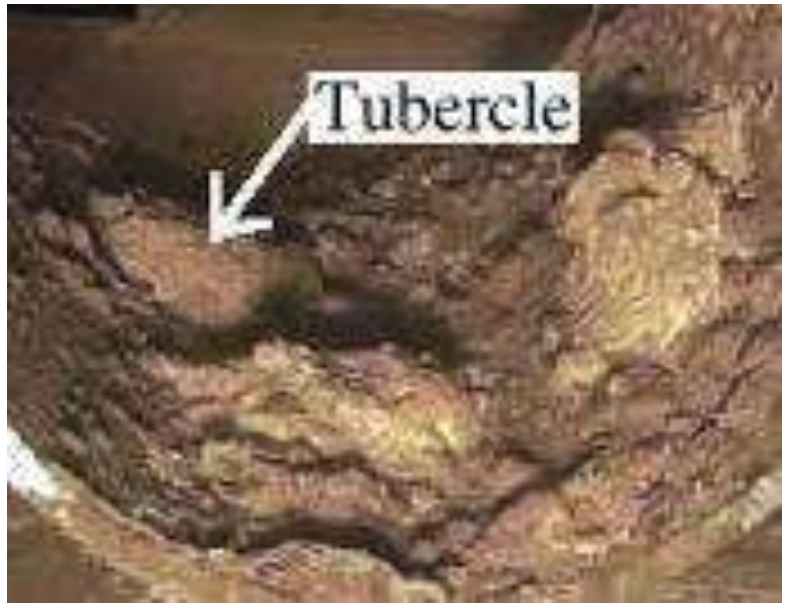
- This history of LSI is highly analogous to the Chloride Sulfate Mass Ratio
- Portable spectrophotomers, digital corrosion test meters, C1010 mild-steel coupons, and 316-L stainless steel coupon analysis programs safely allow systems to no longer be obligated to maintain adherence to the CSMR
- Seasonal distribution system variances in aggressiveness and corrosion rates can be digitally documented, and safely controlled through better chemistry, advanced technology, and effective monitoring.
- Data removes uncertainty and risk
- Distribution System Data confirming corrosion is being safely controlled, allows the plant to focus on additional water quality objectives:
  - i.e. TOC & PFAS

Understanding Corrosion

Corrosion Rates

Corrosion rates increase:

- Low pH waters
- High flow rates
- Higher temps
- Higher oxygen levels are present
- In the presence of suspended solids such as:
  - Sand
  - Sediment
  - Corrosion byproducts,
  - Rust

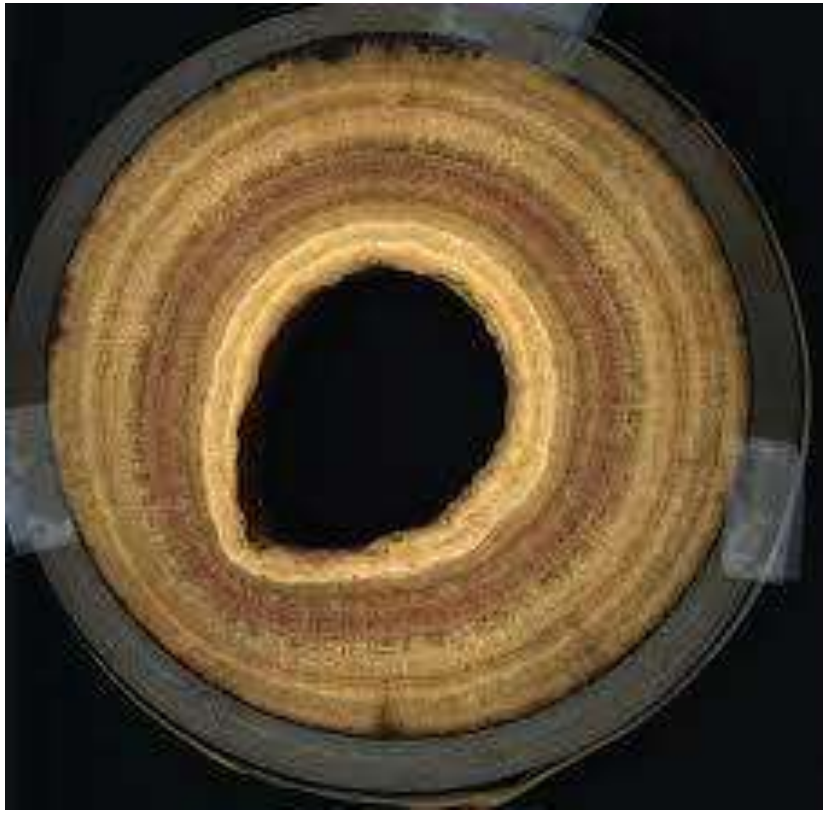


Uncontrolled Corrosion Spirals into Higher Corrosion Rates

Corrosion Breaks Down Structural Walls of Pipes

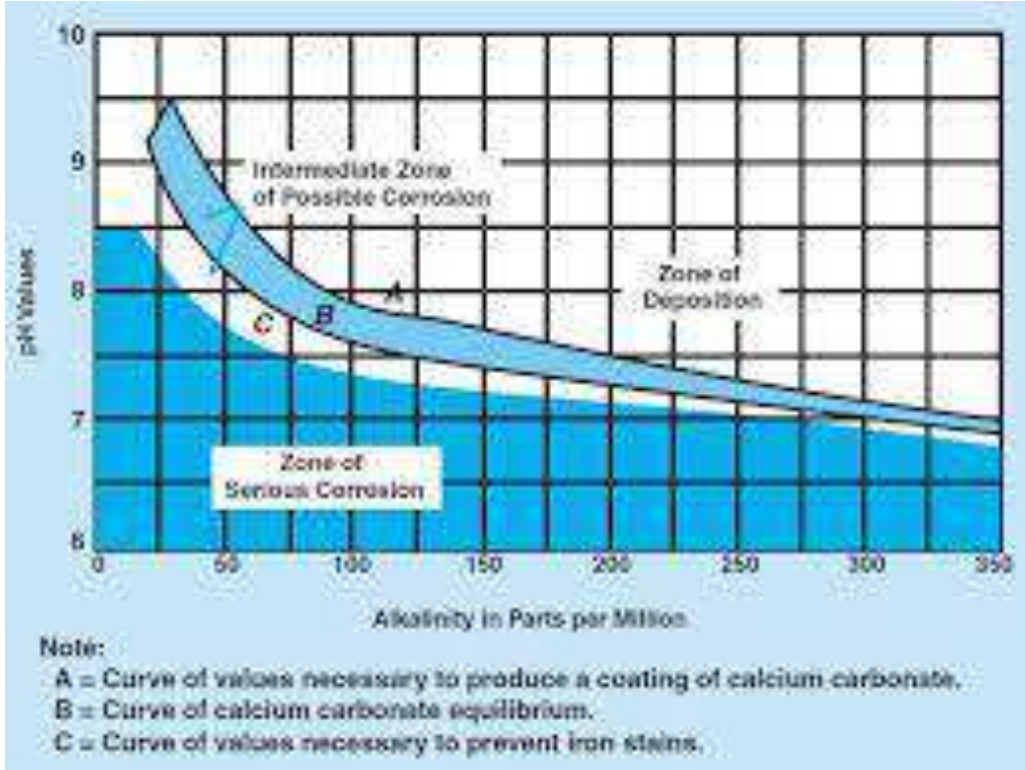
Understanding Scaling

Scale – Layering



Corrosion and Scale

Determining Aggressiveness – Old way of attempting to control corrosion

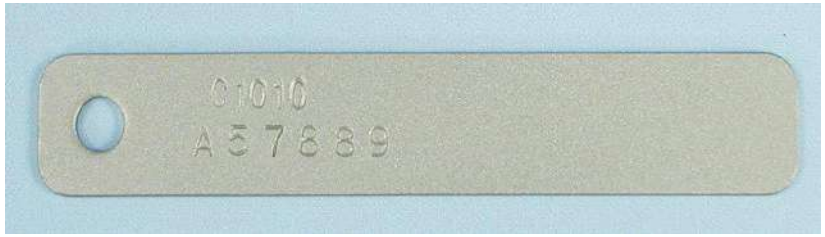


Wilford Langelier 1936

Determining Aggressiveness w/ New Technology and Accurate Methods

Data to Quantify Corrosion & Scaling

- Uncontrolled Corrosion is leading cause of lead and copper leaching
- C1010 Mild Steel



- 316-L Stainless Steel Scaling Coupons

Keys to Correct Phosphate Selection

For both Filter Effluent & the Distribution System:

- Iron (Fe)
- Manganese (Mn)
- pH
- Alkalinity
- Hardness
- Orthophosphate as PO_4
- Plant History

LCRI: Water Quality Data

Exhibit D.3: Water Quality Data – Distribution System

Exhibit D.3 Water Quality Data - Distribution System													
Source Name (If more than one source, copy this section and complete for each source)													
Source ID													
Source Type													
Parameter	**Required Monitoring under LCR**			**Recommended Data Collection**			**System Data**						
	No. of Samples	**Frequency**	**Duration of Sampling**	**No. of Sites**	**Frequency**	**Duration of Sampling**	**No. of Sites**	**No. of Samples**	**Date Range When Samples Were Collected**		**Minimum Value**	**Maximum Value**	**Average Value**
									Start (dd/mm/yyyy)	**End (dd/mm/yyyy)**			
pH				12[3]	monthly	1 year							
Alkalinity (mg/L as $CaCO_3$)				6	monthly	1 year							
Orthophosphate (mg/L as P)				12[3]	monthly	1 year							
Hardness (mg/L as $CaCO_3$)				6	monthly	1 year							
Temperature (°C)				12[3]	monthly	1 year							
Calcium (mg/L as Ca)				6	monthly	1 year							
Total Dissolved Solids (mg/L)[1]				6	monthly	1 year							
Conductivity (as µmho/cm at 25 °C)[1]				12	monthly	1 year							
Disinfectant Residual[2]													
Total Chlorine (mg/L as Cl_2)				12[3]	monthly	1 year							
Free Chlorine (mg/L as Cl_2)				12[3]	monthly	1 year							
Chloride (mg/L)				4	quarterly	1 year							
Sulfate (mg/L)				4	quarterly	1 year							
Iron (mg/L)				4	quarterly	1 year							
Manganese (mg/L)				4	quarterly	1 year							
Silica (mg/L as SiO_2)				4	quarterly	1 year							

[1] Either total dissolved solids or conductivity can be measured.
[2] Both total and free chlorine should be measured.
[3] Select a combination of sites at various distances from the entry point.

Two General Types of Phosphates

- Polyphosphate
- Orthophosphate

Polyphosphates

- Sequester Soluble Metals
- Prevent Calcium Bridging, hence prohibits calcium scale formation
- Break down and slake away existing Calcium scale
- Create a smooth coating as it removes tubercles
- Smoothing reduces surface area in the pipe and likely will reduce chlorine demand
- Adheres (bonds) well to ductile iron and cast iron
- Forms a microscopic film over the metal walls of the distribution system providing a layer of corrosion protection
- Strengthens existing orthophosphate bonds
- Reverts to Orthophosphate over time (and temp), which is its most basic state, and thus provides additional COATING

Orthophosphates

- Coat the walls of the distribution system

- How do the orthophosphates coat:
  - Forms a microscopic film over the metal walls of the distribution system
  - Reacts with lead and copper to form stable, solid compounds like lead phosphate and copper phosphate, which passivate the system
  - Passivation acts as a barrier between the water and the pipe material, thereby reducing the leaching of metals into the water

Zinc

- Strengthens the chemical bond of both the polyphosphate and/or the orthophosphate to walls of the distribution system
- Inhibits the cathodic reaction on the copper surface
- Enhances corrosion resistance, especially on ductile iron piping

POLYPHOSPHATE Drawbacks

- Can interfere with the formation of a protective lead-phosphate layer on pipe surfaces
- This interference and complex formation can lead to higher lead solubility and increased lead levels in the water, especially at higher polyphosphate concentrations
- Overfeed will scour scale from distribution system wall faster than new coating can be laid down, which may result in discolored water
- Scouring the distribution system too quickly may release trapped organics faster than chlorine can accept… possible Bac-T outbreak

ORTHOPHOSPHATE Drawbacks

- Weak coating
- Slakes away easily with rapid changes in flow rates
- Does not adhere well to metal walls without the presence of polyphosphate or zinc or calcium carbonate scale
- If overfed in calcium carbonate rich environments, can provide a new chemical wall for additional scale growth – causing layering

Zinc Orthophosphate

- Mixed inhibition: The combination of zinc and orthophosphate is believed to provide synergistic benefits, with orthophosphate passivating the anode and zinc inhibiting the cathodic reaction

- Has been shown to reduce lead leaching from lead solder and copper pipe joints, which are susceptible to galvanic corrosion, especially when the CSMR is high

- Interface between anode and cathode typically most intense, causing galvanic corrosion. Zinc Orthophosphate preferentially precipitates at copper-solder interface. Hence, providing better protection against PB & Cu leaching.

2017 Case Study

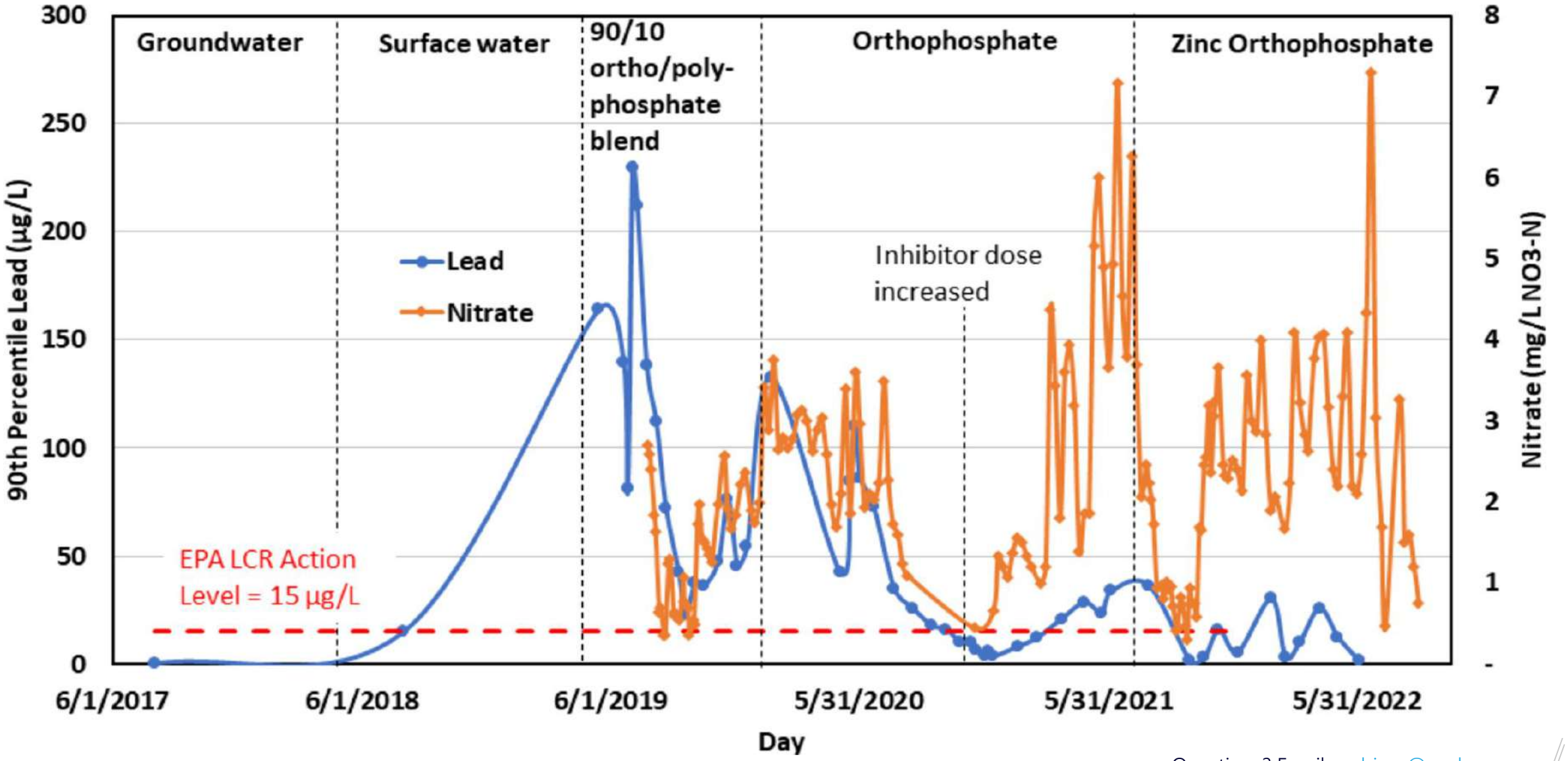
In 2017, the utility switched from Ground Water Source:

- high alkalinity (340 mg/L $CaCO_3$)
- low CSMR (0.14)
- pH 7.8 groundwater

To Surface Water Source:

- lower alkalinity (31 mg/L $CaCO_3$)
- higher CSMR (0.53 to 0.79)
- pH of 7.5

Source Water Change & CSMR change from 0.14 to 0.79



2017 Case Study Conclusions

- 90th percentile lead in the affected case study community returned below the 15 µg/L lead action level within a year after zinc orthophosphate was added to the system, and less spallation was observed in samples monitored during Lead and Copper Rule testing in consumer homes.
- Zinc orthophosphate's performance improves with time and is affected by the zinc dose
- The highest levels of both zinc and phosphate occurred at distances within 0.5 mm of the anode–cathode interface. This result suggests a novel mechanism of **mixed inhibition** that results from the localized formation of a protective zinc orthophosphate scale at the interface where galvanic corrosion is typically most intense, and the solder spallation originates

2018 Virginia Tech Master's Thesis

https://vtechworks.lib.vt.edu/items/729ee52f-9e54-4acc-bf7d-c23d51c519a1/full

Bench-scale experiments were completed with water from two utilities to look at the effectiveness of zinc orthophosphate, orthophosphate, and zinc alone…

… in the presence of an increased chloride-to-sulfate mass ratio (CSMR), …

…the combination of zinc orthophosphate reduced lead leaching by 54-99% (compared to the control without inhibitors) if alkalinity was above about 55 mg/L as $CaCO_3$.

Monitoring

Currently feeding a phosphate?

Is it working?

How do you know?

“In God we trust, all others must bring data”

W. Edwards Deming

Distribution System Monitoring & Water Quality Testing

Professional Distribution System Monitoring Services for OCCT to LCRI

Multi-site testing, analysis, and monitoring:

- Iron (Fe);
- Manganese (Mn);
- Orthophosphate (PO_4);
- Chlorine;
- pH;
- Corrosion (C1010);
- Scaling (316-L);

Control CSMR corrosion with **UltraGuard**

Prevent Pb & Cu leaching with **UltraGuard**

Distribution Site-specific CCT testing, analysis, monitoring, and seasonal tracking of:

- Corrosion in MPY
  (C1010 Mild Steel)
- Scaling
  (316-L Stainless)
- Orthophosphate Residuals (PO4)

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Baltimore, MD 21226

Distribution System Monitoring: Technical Summary with Recommendations

March 3, 2025

Attn: Water Quality Director
Anon E. Mous Utility District
123 River Road
Anytown, USA

Re: Distribution System Monitoring Results 11-8-24 through 2-18-25

Water Quality Director,

The following report summarizes and details the results of our corrosion monitoring, scale monitoring, and distribution system water quality data from **November 8th, 2024, to February 18th, 2025**. New C1010 Coupons have been installed and will be removed in May. The 316L coupons have been reinstalled and will be continually monitored for scaling.

Corrosion Control Monitoring

The table below details the laboratory results from the C1010 Mild Steel coupons.

Coupon Number	Location	Chlorine Residual (mg/L)	pH	Fe (mg/L)	Mn (mg/L)	PO_4 Residual	MPY (mils per year)
G47860	WEST Pump Station	1.66	7.7	0.12	0.051	**0.97**	**7.53**
G47859	SOUTH Pump Station	1.50	7.7	0.09	0.066	**1.09**	**8.32**
G47861	EAST Pump Station	1.77	7.7	0.05	0.042	**0.95**	**6.77**
G47862	Water Plant	1.32	7.7	0.09	0.060	**1.17**	**6.22**

All FOUR (4) sites demonstrated corrosion rates that are much HIGHER than our "less than 5-MPY" goal. That being said, EACH of the FOUR (4) sites achieved LOWER corrosion rates than they did in the Fall. These results are now the FOURTH time that ALL FOUR (4) PO_4 residual levels are at or above 1.0-mg/L, our baseline.

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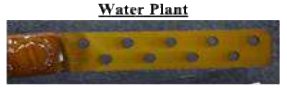
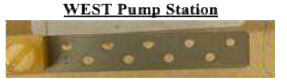
Scaling Monitoring

These pictures continue to prove that we have no appreciable scale formation at ANY of the FOUR (4) sites. The distribution system is not scaling. These same 316L coupons have been re-installed and will continue to be monitored.

Water Plant



WEST Pump Station



EAST Pump Station

NORTH Pump Station

Observations, Conclusions, and Recommendations:

1. First good news…
   a. Corrosion rates came DOWN,
      i. Residual ORTHO-phosphate of 1-mg/L as PO_4 is *almost* sufficient for the winter months. Certainly, less will be needed in winter with these lower corrosion rates versus summer and fall.
   b. Our decision to reduce POLY-phosphate content continues to be confirmed correct:
      i. Soluble iron is still well below secondary standard of 0.30-mg/L
2. Manganese levels continue to be close to, or just above the secondary standard of 0.05-mg/L as Mn, even at the water plant site.
   a. There is visible discoloration/staining on the scaling coupons at the water plant and at EAST. This is likely from soluble manganese sneaking through the filter.
   b. Improved oxidization of soluble manganese pre-filter appears to be needed.
3. We will be recommending an increase in ORTHO-phosphate residual in late spring/early Summer as we enter the more aggressive waters.

I look forward to discussing these results and next steps with you on our next visit.

Thank you,
Sam & Zac

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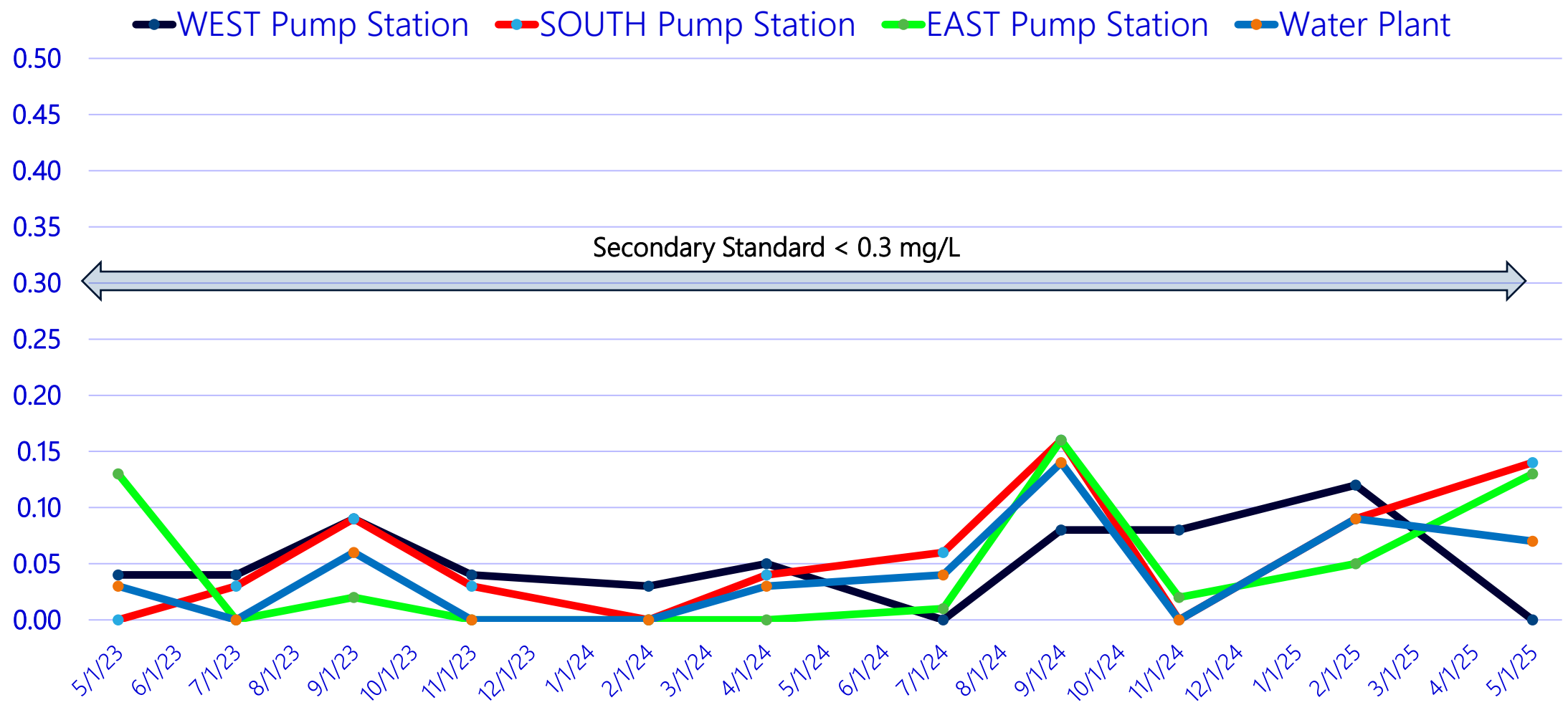
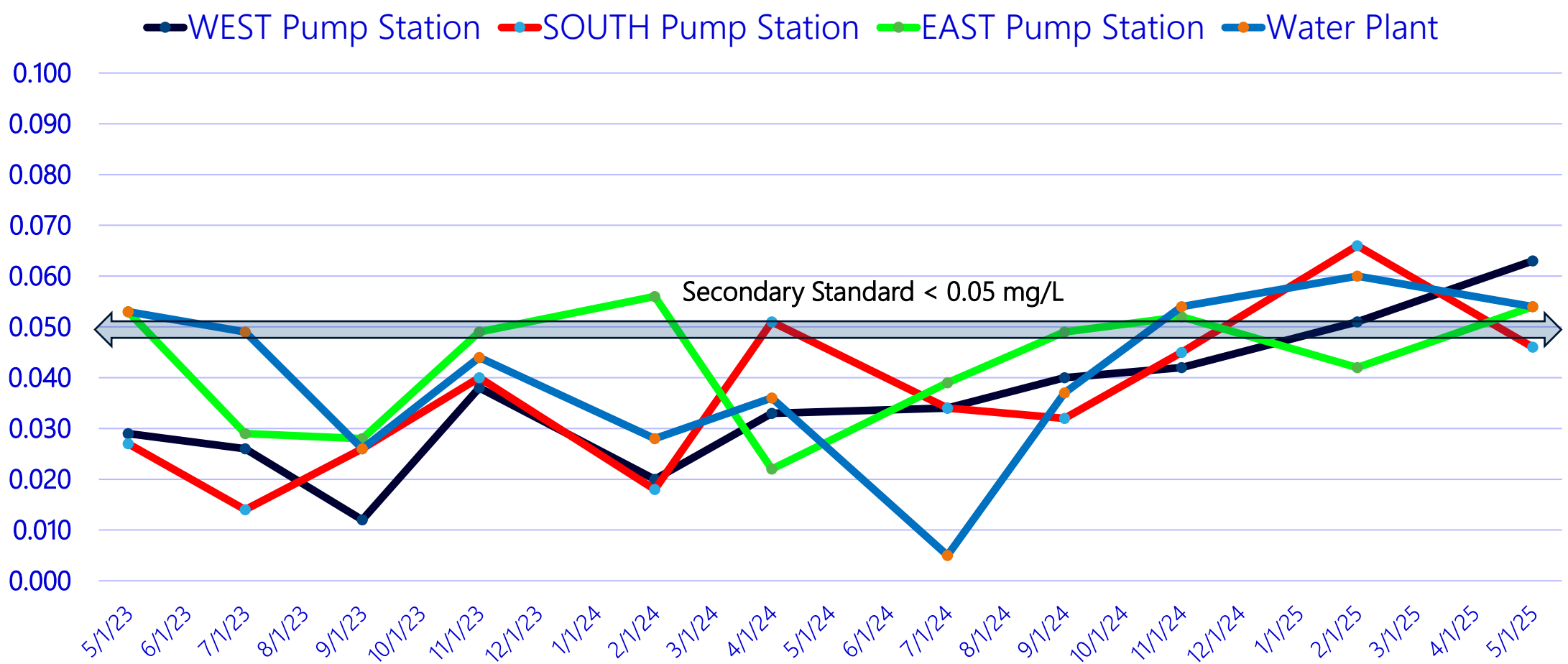
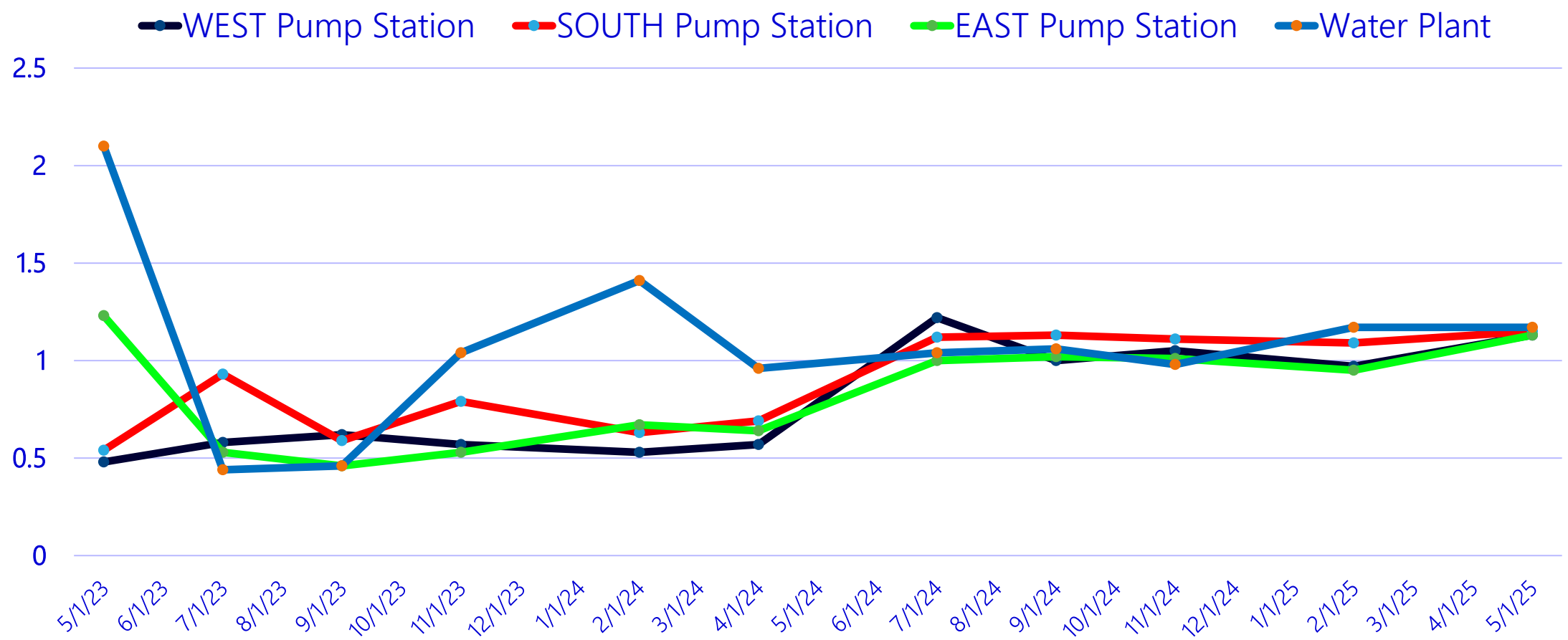
Distribution System Monitoring: Anon E. Mous Utility District: Tracking Iron (Fe)



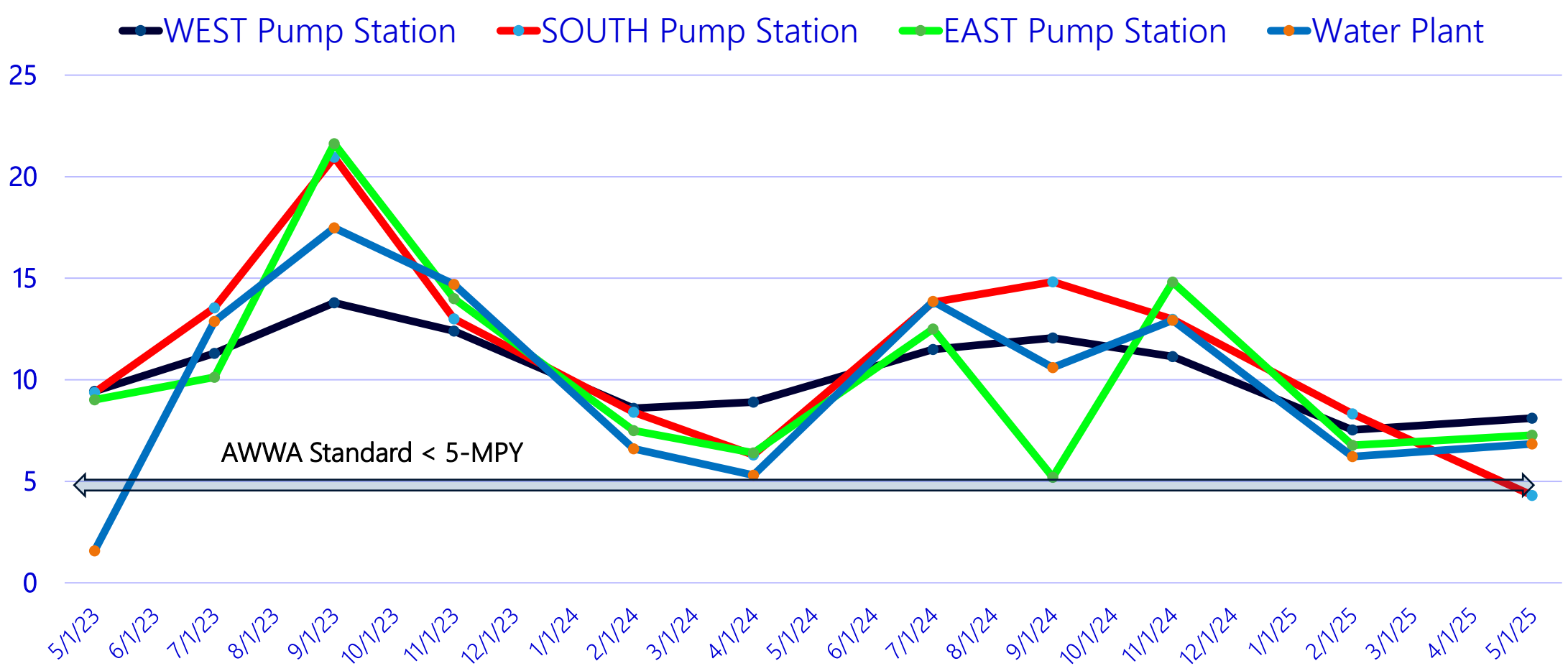
Distribution System Monitoring: Anon E. Mous Utility District: Tracking Manganese (Mn)



Distribution System Monitoring: Anon E. Mous Utility District: Orthophosphate Residual (PO4)



Distribution System Monitoring: Anon E. Mous Utility District: Corrosion Rate (MPY)



USALCO Professional Distribution System Monitoring Service

UltraGuard Phosphates:

- Reduce DBPs
- Prevent Lead & Copper leaching
- Optimize Corrosion Control
- Eliminate discolored water

Multi-site testing, analysis, & monitoring:

- Iron (Fe)
- Manganese (Mn)
- Phosphate (PO4)
- pH & Cl2
- Corrosion (C1010)
- Scaling (316-L)

- Detailed Quarterly Reports
- Tracking corrosion control and scaling
- Technical analysis
- Consultative recommendations

Trusted OCCT and Distribution System Monitoring Data Opens Doors

- Meet Optimized Corrosion Control Treatment requirements in new LCRI
- Eliminate fears / concerns over a potentially higher CSMR with hard, reliable DATA from the system
- Confidently optimize TOC removal in the treatment plant, pre-filter with DelPAC® and Delta-Floc® Specialty Coagulants… to reduce DBPs post filter
- Capture Economic Efficiencies of PFAS removal

DelPAC® and Delta-Floc® Solutions

- When used as a coagulant DelPAC® and Delta-Floc® products will provide reciprocal benefits to corrosion control throughout distribution system:
  - Reduce and/or eliminate the need for alkali pH adjustment, which allows the use of an UltraGuard Zinc Orthophosphate for improved corrosion control & greater protection against lead and copper leaching
  - Better pH & alkalinity control for a more stable distribution system
  - Which leads to better Chlorine control
  - Which leads to better DBP control

DelPAC® and Delta-Floc® Solutions

TOC + Cl2 = DBP

- ¯ Cl2 = ¯DBP
- (reduce pH, use phosphate)

- ¯TOC = ¯DBP
- (change from commodity to specialty coagulant)

DelPAC® and Delta-Floc® Solutions

Specialty coagulants will:

- Enhance the removal of suspended and dissolved matter, such as organics, in the treatment plant
- Reduced TOC pre filter leads to a greater reduction in DBPs throughout the distribution system

Specialty coagulants will also:

- Reduce chemical sludge in the treatment plant
- Extend filter run hours
- Improve overall water quality

As specialty coagulants enhance turbidity capture and reduce organics loading on Granular Activated Carbon filters, the Economic Efficiencies of PFAS removal are realized and are significant!

Summary

October 2024 EPI announced and formally implemented LCRI

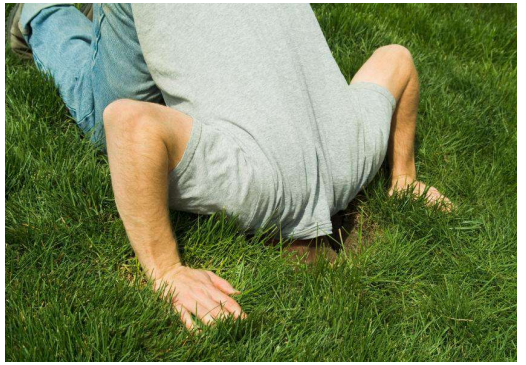
- Trigger limits reduced to 10-ppB with more public notification required
- Requirements for Optimized Corrosion Control Treatment (OCCT) and Distribution System Monitoring

Increased understanding of basic phosphate chemistry, how it works in your distribution system, and ways to gather trusted data to continually confirm it is performing as expected.

Summary

OCCT and Our Professional Distribution System Monitoring provides:

- Compliance to LCRI
- The needed DATA to know what is happening throughout the system in each season of the year



How DATA collection removes the fear / uncertainty of a potentially higher chloride-sulfate mass ratio (CSMR)

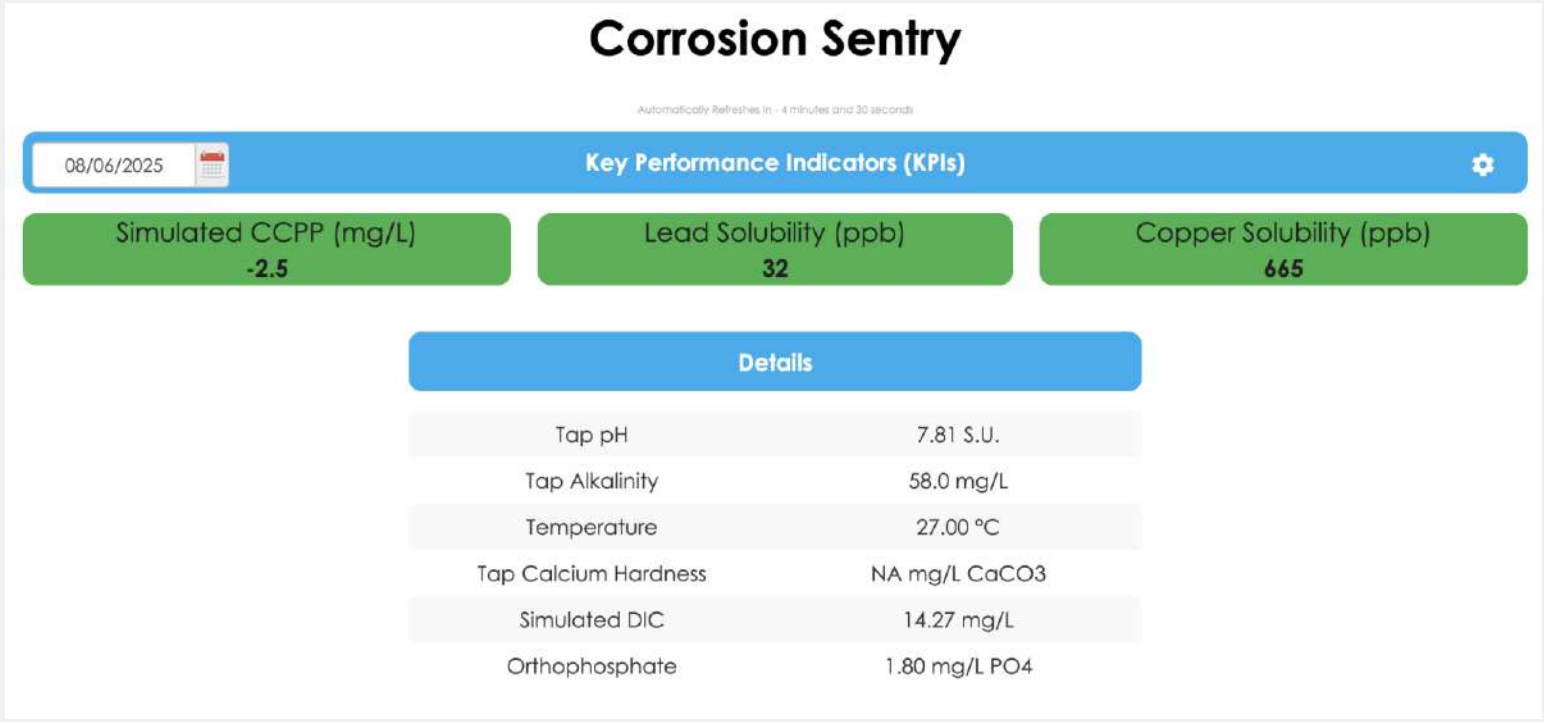
Summary

Trusted Distribution System Monitoring opens doors to advanced, innovative coagulant technologies in the treatment plant.

DelPAC® and Delta-Floc® Specialty Coagulants will:

- Enhance TOC and Turbidity Capture
- Reduce DBP formation
- Extend Filter Run hours
- Improve Water Quality pre-filter and post-filter with significant benefits to corrosion control, lead and copper control, and
- Allow the plant to realize economic efficiencies with PFAS removal

Corrosion Sentry: Tool for Monitoring Lead & Copper Risk



Water Quality Inputs

Details	
Tap pH	8.70 S.U.
Tap Alkalinity	47.1 mg/L
Temperature	25.23 °C
Tap Calcium Hardness	174.0 mg/L CaCO3
Simulated DIC	10.93 mg/L
Orthophosphate	0.76 mg/L PO4

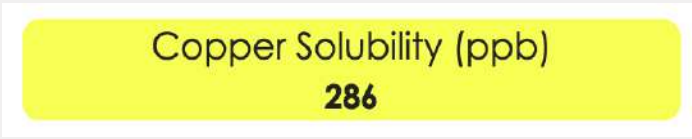
- 4 – 5 key finished water quality parameters updated as often as you'd like
  - pH
  - Alkalinity
  - Temperature
  - Hardness/Calcium Hardness
  - Orthophosphate Dose

Key Performance Indicators

Stability - Calcium Carbonate Precipitation Potential (CCPP)

- Positive = stable/depositing
- Near zero = neutral
- Negative = corrosive

Risk of Lead Solubility

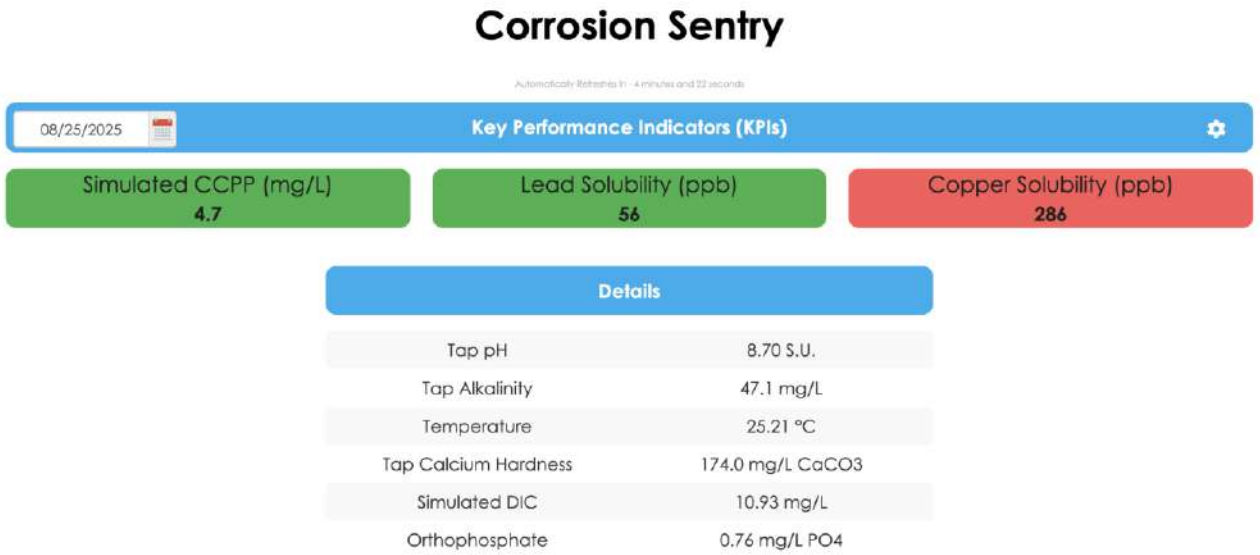


Risk of Copper Solubility

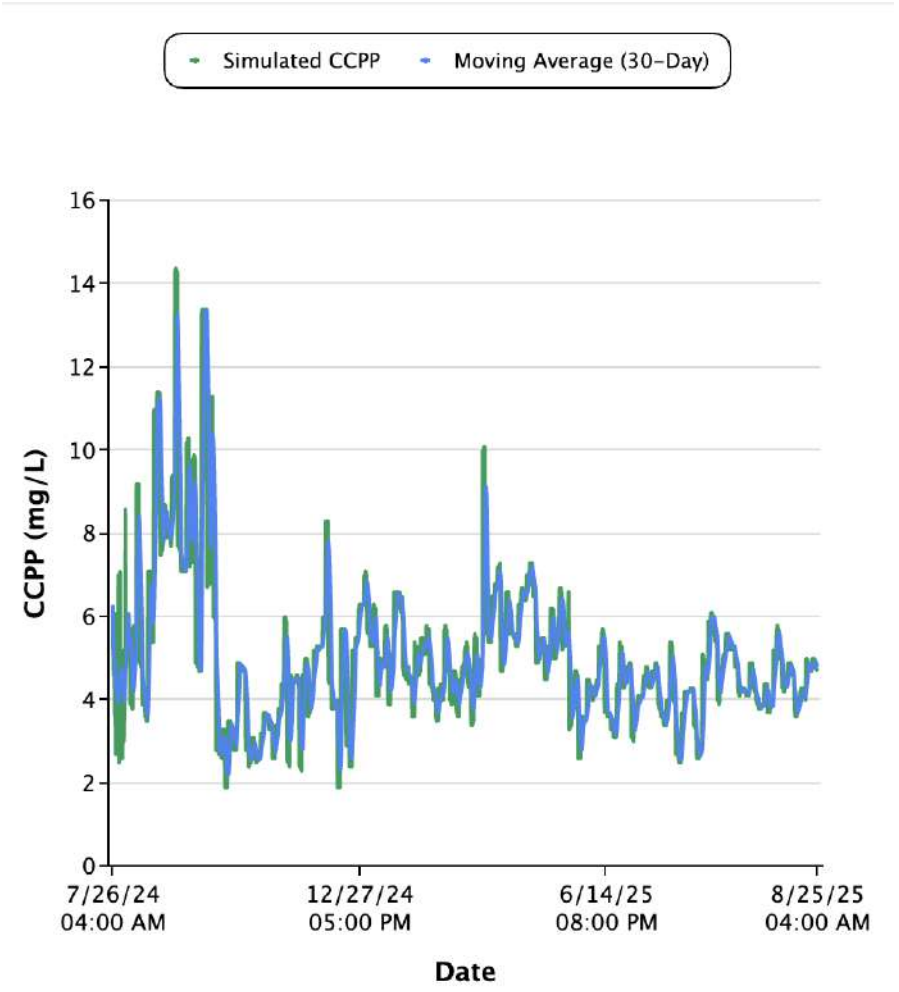
- Measure of how much metal dissolves into water at equilibrium.
- Higher solubility = higher potential release

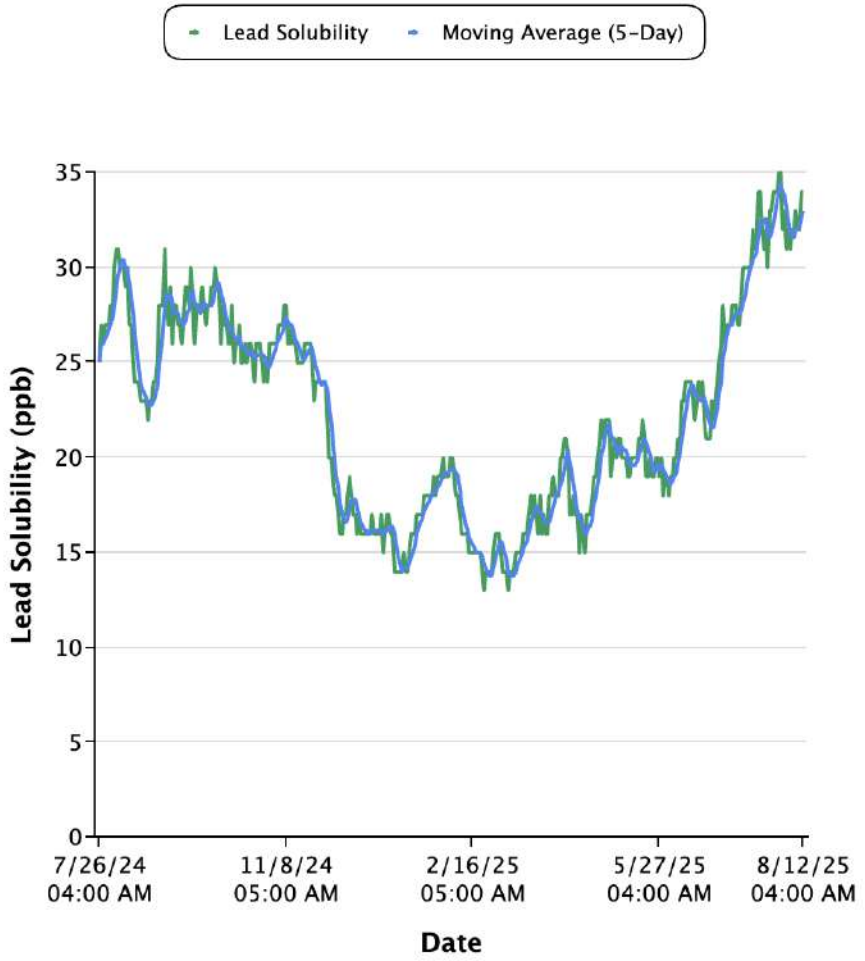
Corrosion Monitoring in Action

- Data refreshes as often as utilities want (daily, hourly, or real-time).
- Clear KPI dashboard highlights CCPP, lead, and copper solubility.
- Customizable color-coded thresholds highlight risk levels: safe, caution, or concern.
- Fully integrated into Decision Blue — a digital platform for treatment optimization



Trend charts show how risks evolve over time.





Value for Utilities

- Proactive protection: identify risks before they impact compliance.
- Adaptable: works for both pH/alkalinity and orthophosphate treatment.
- Decision support: connects water quality data to operational KPIs.
- Regulatory confidence: continuous monitoring supports LCR compliance.

Digital Tools help utilities stay ahead of risk — with clarity, simplicity, and confidence.

Thank You for Tuning In!

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