Water Research Foundation®

Celebrating 50 Years
1966–2016

Review of key lead research issues addressed by WRF

March 29, 2016

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Celebrating 50 Years
1966–2016

Jonathan Cuppett
Research Manager
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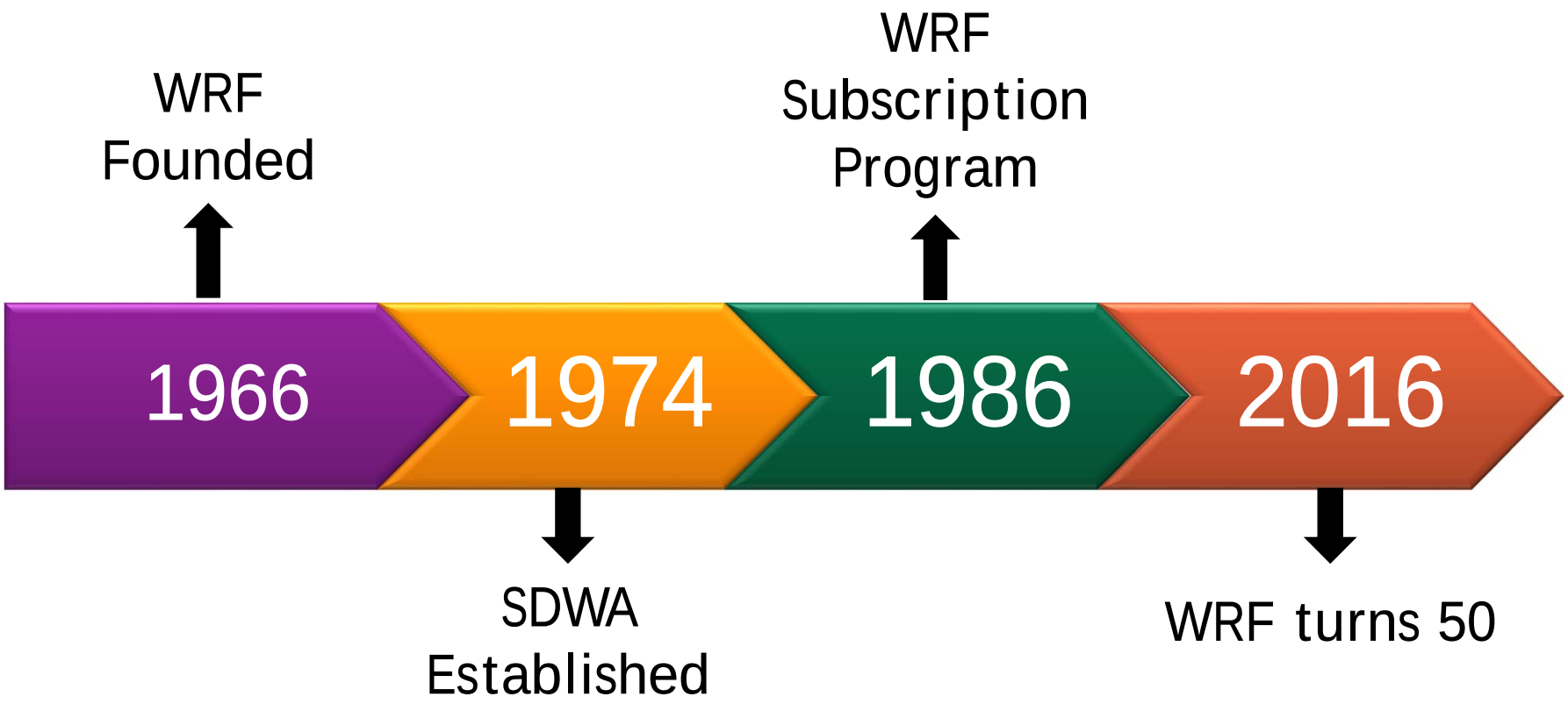
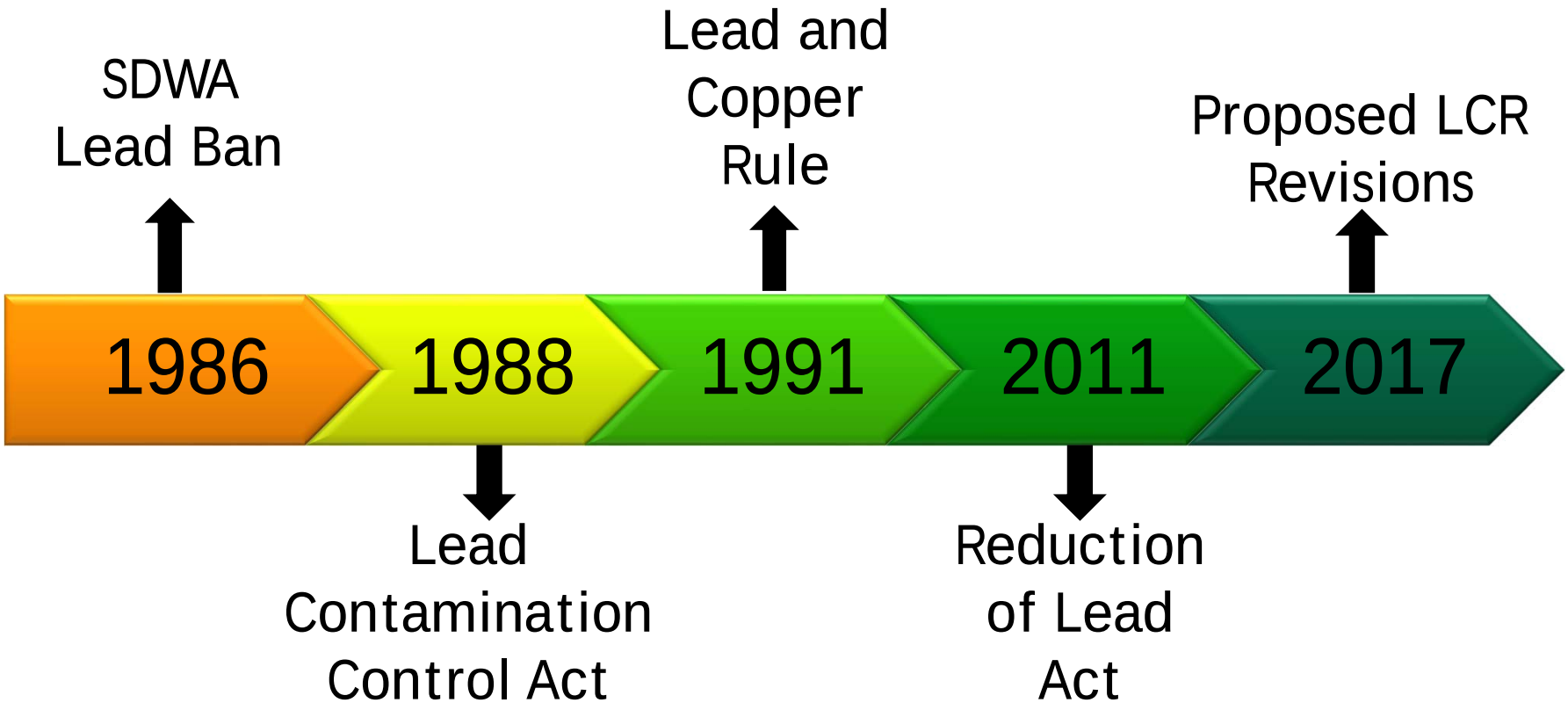
50 years of water research



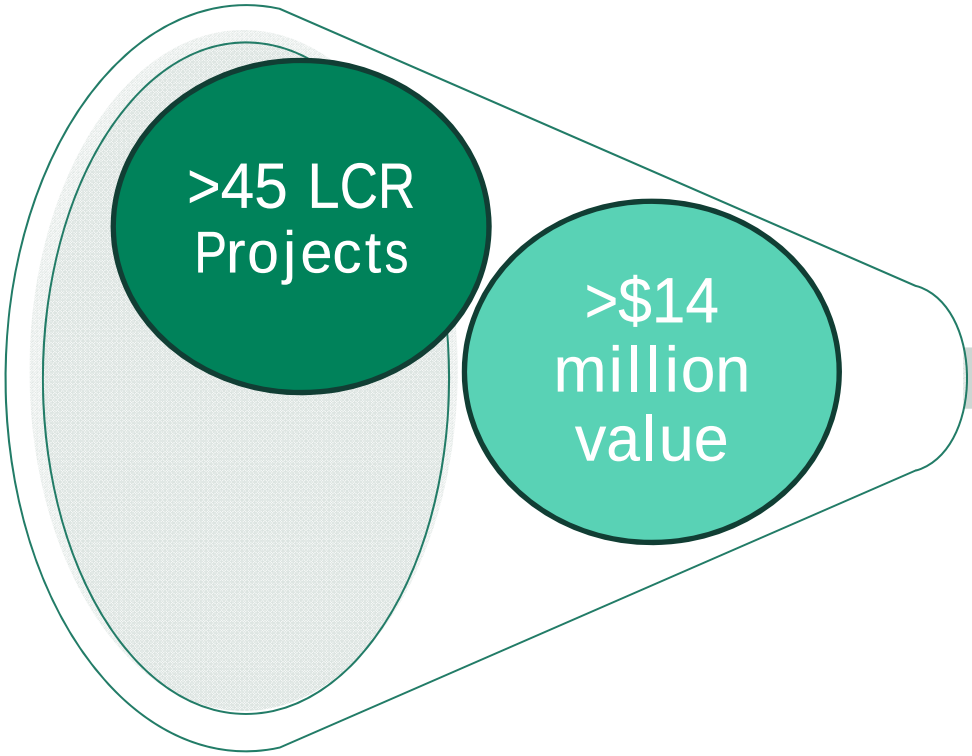
Presentation Overview

WRF LCR research

History of SDWA Lead Regulation



WRF Lead Research since late 1980's



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The Foundation

lead

You've seen this result before

Lead and Copper Rule:

✓ Special Report: Lead and Copper Corrosion: An Over
www.waterrf.org/pages/PublicSpecialReports-detail.aspx?ItemID=9

✓ Project: Lead,Copper Corrosion Control in New Cons
www.waterrf.org/Pages/Projects.aspx?PID=4164

✓ Project Paper: Research Review on Galvanic Corrosi
www.waterrf.org/pages/PublicProjectPapers-detail.aspx?ItemID=3

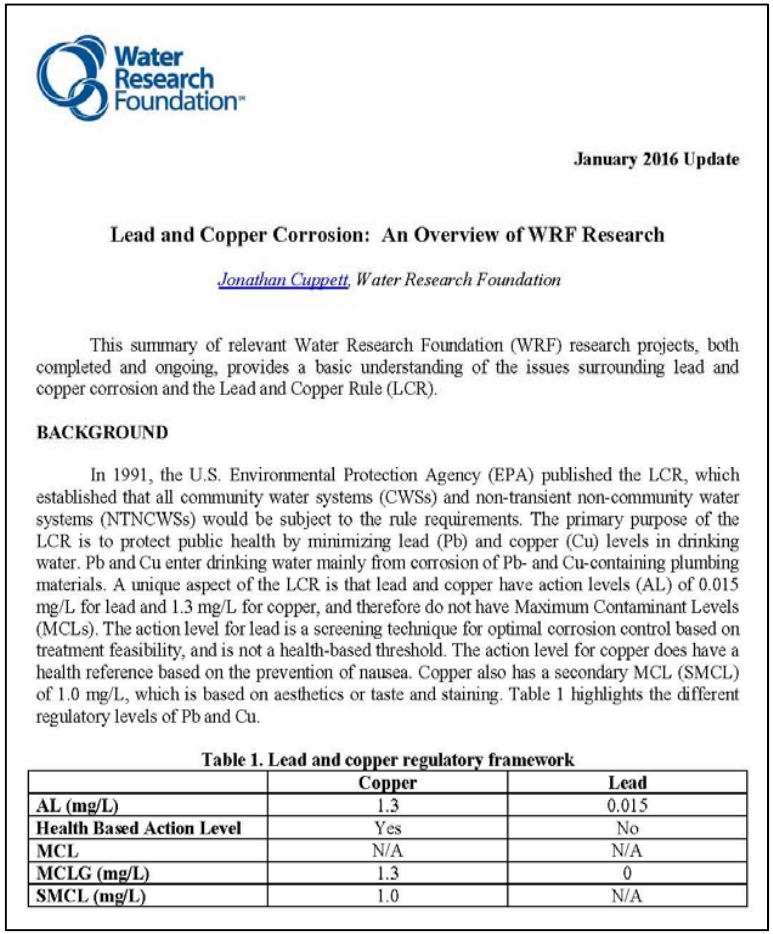
PDFs for "lead"

Lead and Copper Corrosion: An Overview of WRF Research
Table 1. **Lead** and copper regulatory framework Copper **Lead** AL (mg/L) 1.3 0.015 Health Based ... In **lead** service lines, the **lead**-surface-area-towater-volume ratio is similar to that in a ...
www.waterrf.org/resources/.../LeadCorrosion.pdf

When water utility customers complain about their drinkin...
Advancing the Science of Water: WRF and Research on ... Taste and Odor in Drinking Water ... In addition to making sure the water at customers' taps is safe to drink, water providers must ...
www.waterrf.org/resources/.../TasteandOdorResearch.pdf

Lead and Copper Corrosion: An Overview of WRF Research

1. Project Summaries
2. Summary of Common Themes
3. Ongoing Projects
4. List of all Projects



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January 2016 Update

Lead and Copper Corrosion: An Overview of WRF Research

Jonathan Cuppett, Water Research Foundation

This summary of relevant Water Research Foundation (WRF) research projects, both completed and ongoing, provides a basic understanding of the issues surrounding lead and copper corrosion and the Lead and Copper Rule (LCR).

BACKGROUND

In 1991, the U.S. Environmental Protection Agency (EPA) published the LCR, which established that all community water systems (CWSs) and non-transient non-community water systems (NTNCWSs) would be subject to the rule requirements. The primary purpose of the LCR is to protect public health by minimizing lead (Pb) and copper (Cu) levels in drinking water. Pb and Cu enter drinking water mainly from corrosion of Pb- and Cu-containing plumbing materials. A unique aspect of the LCR is that lead and copper have action levels (AL) of 0.015 mg/L for lead and 1.3 mg/L for copper, and therefore do not have Maximum Contaminant Levels (MCLs). The action level for lead is a screening technique for optimal corrosion control based on treatment feasibility, and is not a health-based threshold. The action level for copper does have a health reference based on the prevention of nausea. Copper also has a secondary MCL (SMCL) of 1.0 mg/L, which is based on aesthetics or taste and staining. Table 1 highlights the different regulatory levels of Pb and Cu.

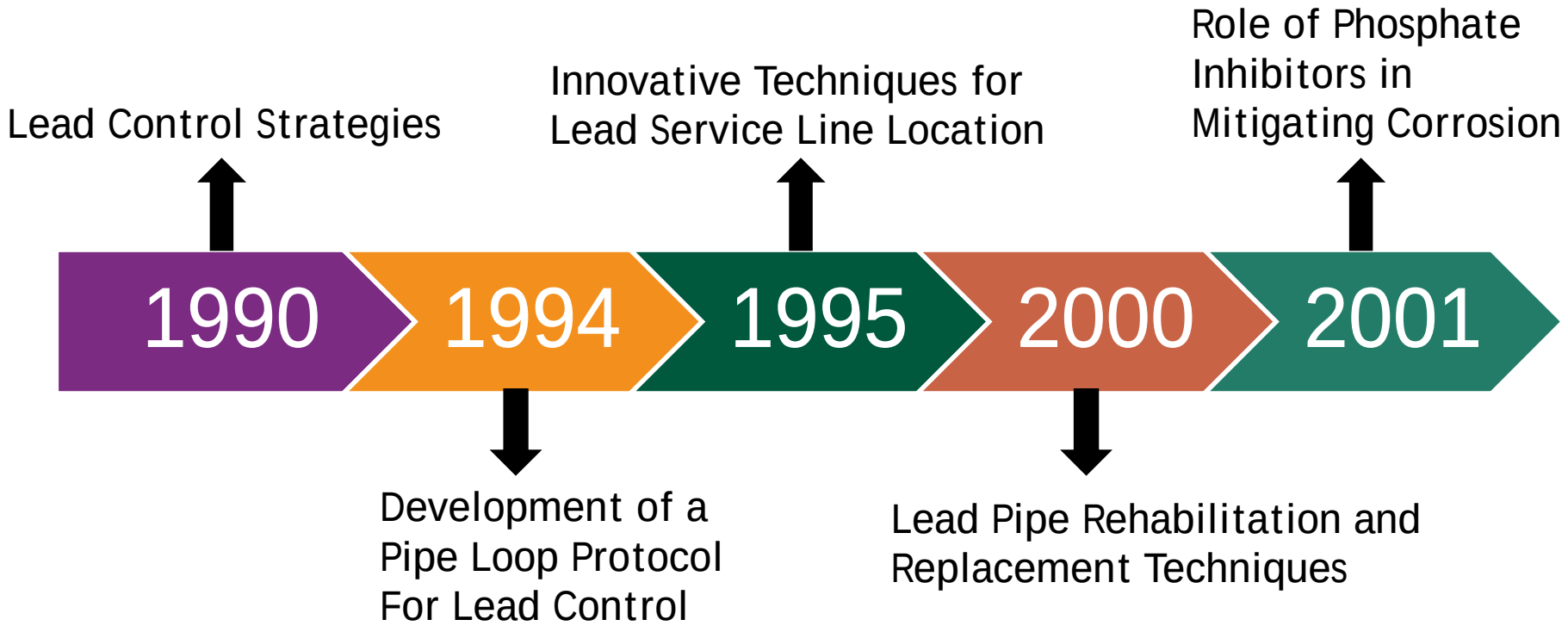
Table 1. Lead and copper regulatory framework

	Copper	Lead
AL (mg/L)	1.3	0.015
Health Based Action Level	Yes	No
MCL	N/A	N/A
MCLG (mg/L)	1.3	0
SMCL (mg/L)	1.0	N/A

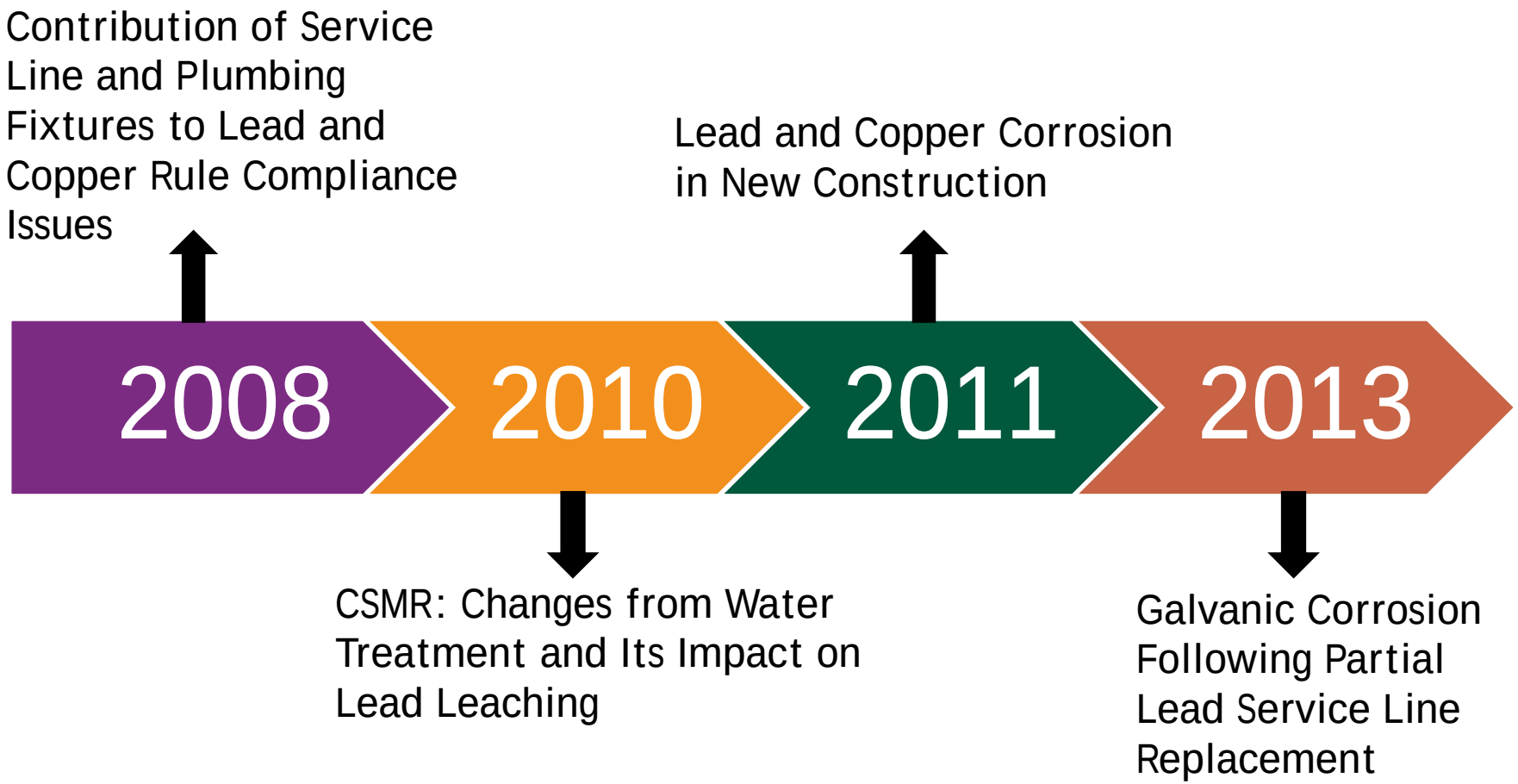
WRF Lead Research

Past, Present, Future

Notable Past WRF Projects

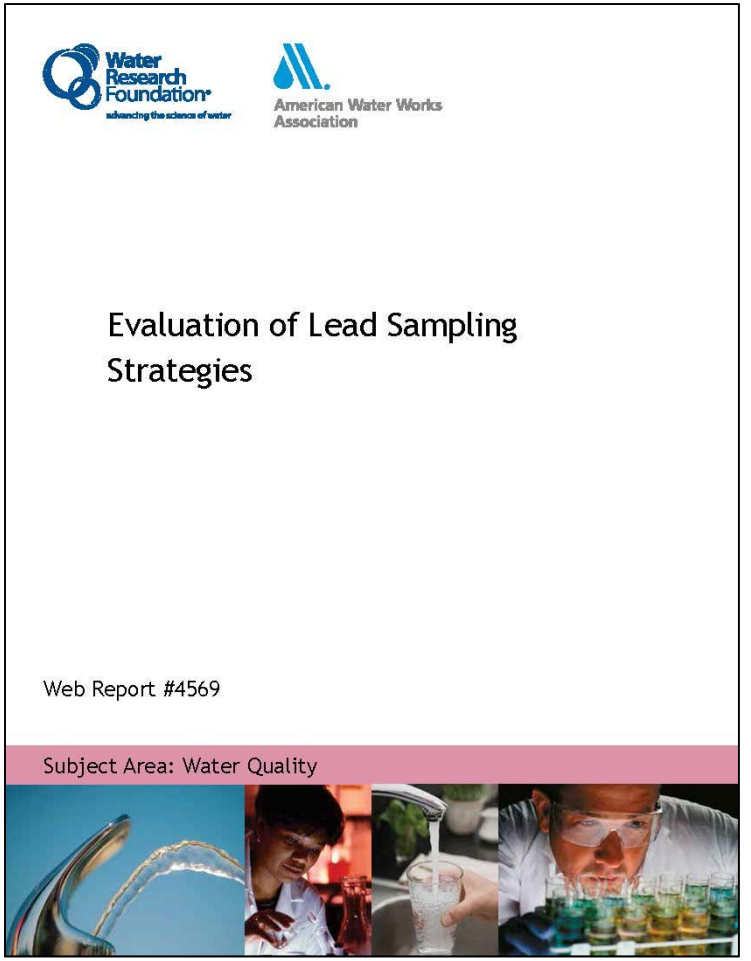


Notable Past WRF Projects



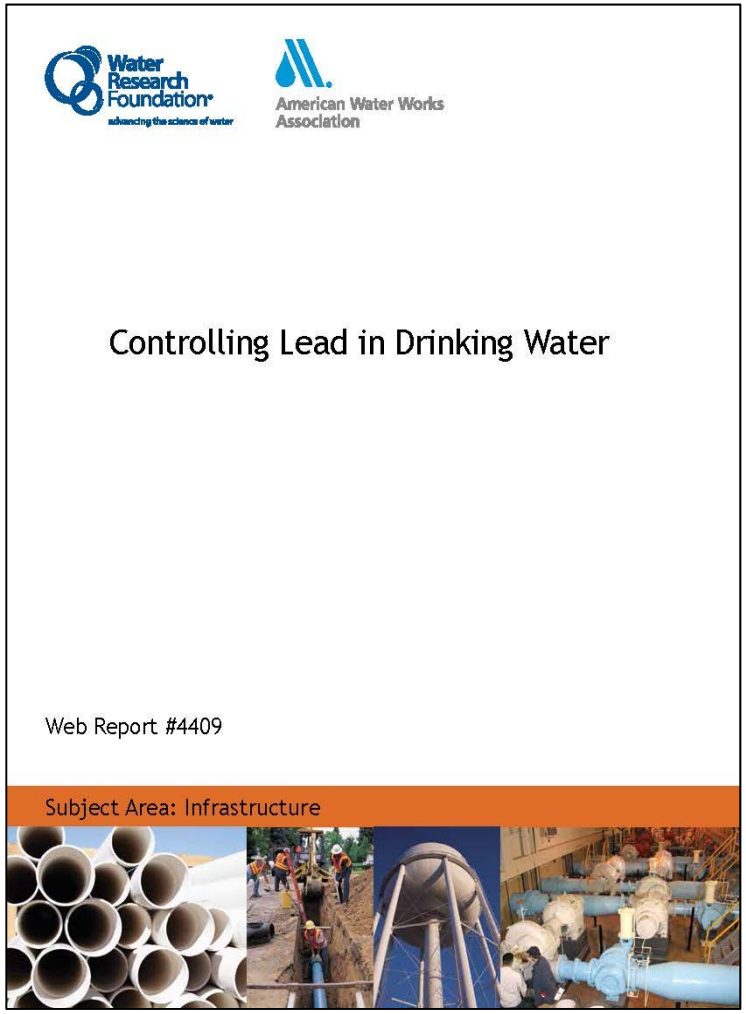
Project Spotlight

- 2015 publication “4569”
- WRF – AWWA collaboration
- Response to attention to profile sampling
- Highlighted challenges with customers performing profiles
- No sampling method was particularly proficient at finding the peak lead level compared to doing a full profile for each sampling event
- Webcast available
- JAWWA publication forthcoming



Project Spotlight

- 2015 publication “4409”
- WRF – AWWA collaboration
- Overview of Lead in drinking water and corrosion chemistry
- Lead service line replacement strategies
- 6 – OCCT Case Studies



Present LCR Projects

2016

- Evaluation of Lead Service Line Lining and Coating Technologies
- Evaluation of Flushing to Reduce Lead Levels

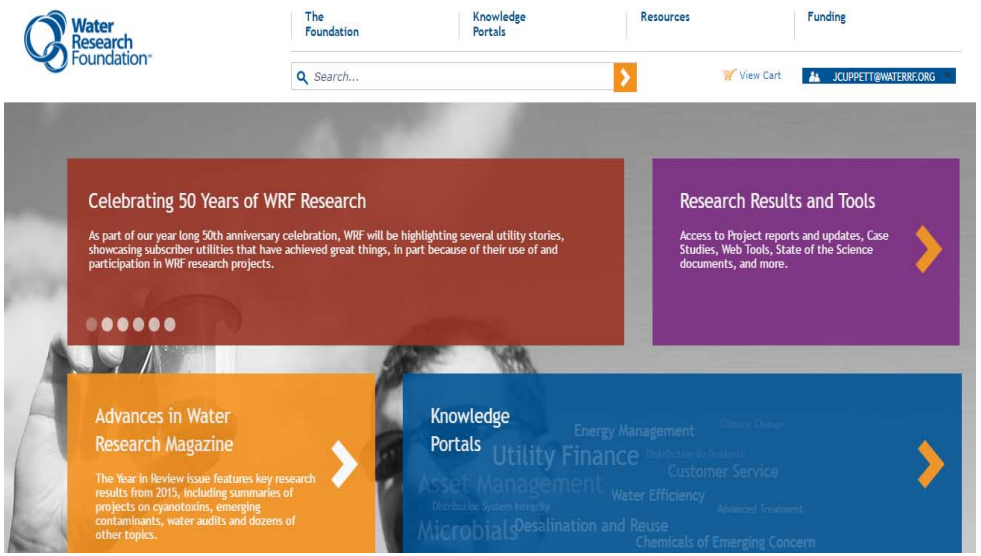
2017

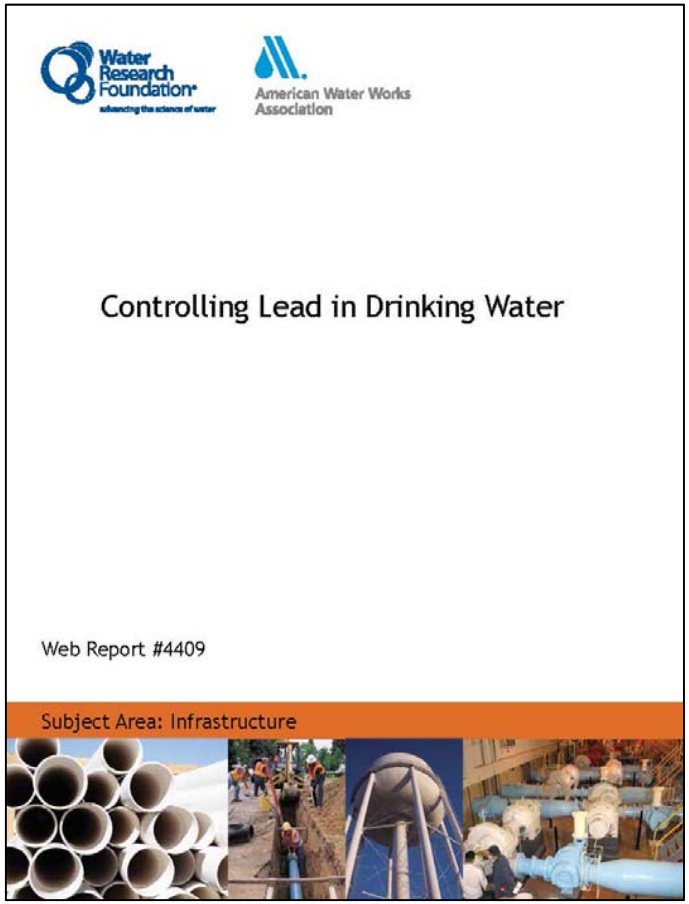
- Optimization of Phosphorus-Based Corrosion Control Chemicals and Flushing for Lead and Copper Control
- Corrosion of Nonleaded Pump Impeller Alloys in Chlorinated Potable Water

Future of WRF LCR Research

- Expert Symposium
- LCR Focus Area request in 2016
- Potential Research Needs
  - Service line material identification
  - Water corrosive to copper
  - Communication Issues

Get Involved!





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Comments or questions, please contact:

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For more information visit:

www.waterrf.org

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