Technical Expert Working Group (TEWG) Conference Call

Friday March 2, 2012
10:00 – 11:00 a.m.

CALL SUMMARY

Attendees:

EPA Region 3 and contractors: Bill Arguto, Wendy Gray, Michelle Hoover, Kathy Martel (Cadmus), Karen Sklenar (Cadmus)

The Washington Aqueduct: Tom Jacobus

DC Water and contractors: Maureen Schmelling, Sarah Neiderer, John Civardi (Hatch Mott McDonald)

DC Department of the Environment: Pierre Erville, Collin Burrell

Virginia Department of Health: Bob Edelman

NAVFAC Washington: Tawana Spencer

Joint Base Anacostia Bolling: Nicole Johnson

Virginia Tech: Marc Edwards

Concerned Citizen: Susan Kanen

Parents for Non-Toxic Alternatives: Yanna Lambrinidou

Agenda and Housekeeping Issues

Bill Arguto led the call. He reviewed the meeting agenda that is included as Attachment A to this call summary.

Summary of Discussions by Topic Area

1. Washington Aqueduct Pipe Loop Update

Prior to the call, Mike Chicoine distributed graphs showing total and dissolved lead concentrations for the pipe loops of both of Washington Aqueduct's water treatment plants (WTPs). Graphs for the McMillan WTP pipe loops present data for the period November 2010 to February 2012 and graphs for the Dalecarlia WTP pipe loops present data for the period March 2005 to February 2012.

Tom Jacobus provided an update on the pipe loops and also gave some background information including former and current objectives for operation and monitoring of the pipe loops. The pipe loops for Dalecarlia were initially constructed in 2004 and 2005 to

validate corrosion control chemistry and verify the results of a desktop study. The pipe loops are currently used for background surveillance and are not intended to be used for a scientifically rigorous, controlled experiment. Pipe loop sampling is not required for regulatory compliance but the raw data have value for operations and surveillance. The sampling schedule is fairly regular but samples are not always collected at precise intervals. The Dalecarlia pipe loops have a complex piping arrangement and present continuing difficulties in their operation. Therefore, the Washington Aqueduct intends to rebuild the pipe loops at Dalecarlia similar to the simpler McMillan pipe loops using conditioned lead service lines.

Pierre Erville asked Tom Jacobus to explain the recent elevated lead level observed on the graph for the McMillan S2 pipe loop. Mr. Jacobus said that the lead level for this "spike" was 4 ppb and there was no known explanation, either operational or physical, for this elevated lead level.

Yanna Lambrinidou asked Tom Jacobus to state the purpose and goal of pipe loop sampling at Dalecarlia and to confirm whether improvements would be made to make the loops more reliable. Mr. Jacobus clarified that the Washington Aqueduct is not offering to engage in new scientific experiments. Even though the pipe loops were initially designed for another purpose, they are currently operated because they have value for surveillance. He indicated the purpose of the pipe loops is to try to have a system that is representative of the stagnation and current treatment process. The Washington Aqueduct does not look specifically at each data point outlier but rather looks for data trends that would indicate changes occurring due to the treatment processes. The Washington Aqueduct is not looking to make daily treatment changes on the basis of the lead pipe loop data. The Washington Aqueduct has not noted a trend requiring a change to corrosion control functionality. The pipe loop data are presented to the TEWG to synchronize expectations as it is useful to have similar expectations. He questioned whether there may be mismatched expectations that the Washington Aqueduct is performing scientific studies that the Aqueduct is not intending. Mr. Jacobus offered to send photos of the pipe loops to the TEWG to help illustrate the current piping arrangement and the proposed changes. Ms. Lambrinidou said she understands the pipe loops provide a general understanding and measurement of lead levels, and questioned whether conditions are stable without any red flags. She also questioned whether the study last year on particulate lead had inconclusive results. Mr. Jacobus confirmed that there are no red flags and that the particulate lead study had inconclusive results.

Marc Edwards also asked about the results of the consultant's study on particulate lead. Mr. Jacobus replied that CDM had conducted a study but results generated by this study were inconclusive and the source of particulate lead was not determined. Mr. Edwards offered assistance with review of the inconclusive particulate lead study. Mr. Jacobus accepted Mr. Edward's offer.

Susan Kanen asked whether the Washington Aqueduct has changed loop setup, stagnation time or type of filters during the duration of the Dalecarlia pipe loop observations. Tom Jacobus replied that back in 2004-2005, the seven racks were designed to test different

formulations of corrosion control chemicals, and that after the corrosion control method was selected the Aqueduct has not been actively conducting an experiment with an intended scientific assertion. He also clarified that any sample sent to the lab is analyzed with rigor and reported correctly, and that getting the data at times is not perfect. He clarified that the loop stagnation time are not necessarily in sync for the Dalecarlia loops due to complex solenoid operation. Mr. Jacobus reflected that if the loops had been operational in 2000 that a lead concentration trend change in 2002 likely would have been noted. Mr. Jacobus mentioned there was a pipe loop study to determine the lowest dose of corrosion control that could be added would be without disturbing the distribution system pipe scales and clarified that the orthophosphate dosage was not scaled back and has been left the same indefinitely because they do not want to damage the distribution system pipe scales.

Susan Kanen objected to dismantling the current Dalecarlia pipe loops because they provide a historical continuity and she is questioning whether lead is being generated in the pipe loops. She also expressed concern that new pipe loops constructed similar to the McMillan pipe loops may trap particulate lead.

In discussing pipe loop issues, Susan Kanen requested that Tom Jacobus provide several responses "for the record." Mr. Jacobus indicated the call is not a legal proceeding but a technical discussion. Bill Arguto agreed with Mr. Jacobus and clarified that the work group does not make recommendations and there are no requirements for anyone to act based upon the work group discussions.

2. DC Water Pipe Loop Update

Maureen Schmelling distributed DC Water's latest pipe loop data prior to the call. The graph shows that samples collected in the last three months had lead concentrations of 5 ppb or less. The results are steady and low with no changes other than seasonal variations.

Susan Kanen mentioned her calculations discussed during a previous TEWG call. Maureen Schmelling had no comment on Ms. Kanen's calculations and reiterated that DC Water's pipe loops are used for operational surveillance and not for scientific research. Ms. Kanen asked if the pipe loop water is changed at the same rate over time. Ms. Schmelling said that the water is replaced on the same schedule, on a daily basis during the week and is not changed on the weekends. Ms. Kanen asked if this practice has been the same since installation of the pipe loops and Ms. Schmelling confirmed. Ms. Kanen asked whether soluble lead measurements have been performed in addition to the total lead results reported in the graphs. Ms. Schmelling responded that soluble lead was analyzed for a while and offered to share the results with Ms. Kanen.

3. DC Water Preliminary Lead and Copper Rule Results Update

Ms. Schmelling reported that Lead and Copper Rule sampling for January and February has been completed but no laboratory results are available at this time.

4. Presentation on Particulate Lead

Prior to the call, Susan Kanen sent her presentation to the TEWG. Two members of the group responded to Ms. Kanen via email. In one email, Sarah Neiderer (DC Water) requested that Susan update Slide 11 (DC Water's tips to reduce lead) using DC Water's most recent customer brochure. In the other email, Darren Lytle (EPA Cincinnati) requested information on protocols used to distinguish between particulate and dissolved lead, volume filtered, filtering method, and filter specifications. Mr. Lytle also asked if the same filtering approach was used for each set of particulate lead data discussed in the presentation.

During the call, Ms. Kanen reviewed the presentation slides in which she merged the charts showing particulate and total lead for each set of pipe loops. She described her concern that Dalecarlia is a particulate lead ion generator and that particulate lead is present in the McMillan pipe loops but is not always captured in the pipe loop samples due to sampling procedure and loop design. She questioned whether lead concentration was down due to orthophosphate addition or due to pH change. She raised a concern about Washington Aqueduct's response to particulate lead results in the McMillan loops and questioned sampling practices and the selection of control loop at Dalecarlia. Ms. Kanen also expressed concern about DC Water's customer information on lead and wondered why the warnings have increased over time. She expressed an interest in reviewing lead sampling results from sludge in home water heaters. Ms. Kanen introduced a conceptual lead-free alternative bypass to the lead service line using ¼ inch tubing placed inside the lead service line to reduce customer exposure to lead.

Marc Edwards offered to present results of lead profile samples at customer homes and lead results from water heater samples at the next TEWG call. Mr. Edwards indicated that these sampling results are not alarming. Mr. Edwards agreed that the particulate lead question has been an on-going issue and suggested that a short-term sampling program at both sets of pipe loops may be helpful to further evaluate and determine whether there is an issue. Mr. Edwards surmised that particulate lead may be a bigger issue in other cities.

5. DC Water Update on Posting Data to the Website

Sarah Neiderer provided an update on the posting of lead data to DC Water's website. She has received comments on the draft material from the General Counsel and will next coordinate with information technology staff to upload information to the website. The information includes LCR data with sampling dates and block address, and lead profile sample data with dates and block address. Ms. Neiderer estimated that LCR data will be posted within a few weeks, but lead profile data will be posted in phases as it is not readily

available. Ms. Neiderer said that DC Water would notify the TEWG when the results have been posted.

Ms. Kanen asked if the LCR data will include dates. Ms. Neiderer said yes it will. The data will include all information sent to EPA.

Ms. Kanen asked if the data includes the time between collection of first draw and second draw samples. Maureen Schmelling said no that information is not included. Ms. Kanen asked if that data can be provided to the TEWG. Ms. Schmelling said that a Freedom of Information Act (FOIA) request would be necessary to obtain data on the time between collection of first draw and second draw samples. Yanna Lambrinidou asked for clarification on the need for a FOIA request. Maureen Schmelling indicated that the sample collection timing data are only available in an electronic format for the last two years; in previous years, the data were recorded on a paper form by the customer. The data have not been subjected to a quality assurance review. Significant resources would be required to review, summarize and reformat the data before it is shared.

Susan Kanen asked if EPA is considering improvements to the LCR and in particular, sampling provisions of the rule. Bill Arguto said yes, EPA is currently evaluating LCR revisions and EPA Region 5 is looking into specific issues. Marc Edwards also acknowledged that the LCR workgroup is evaluating sampling and other issues with the current LCR.

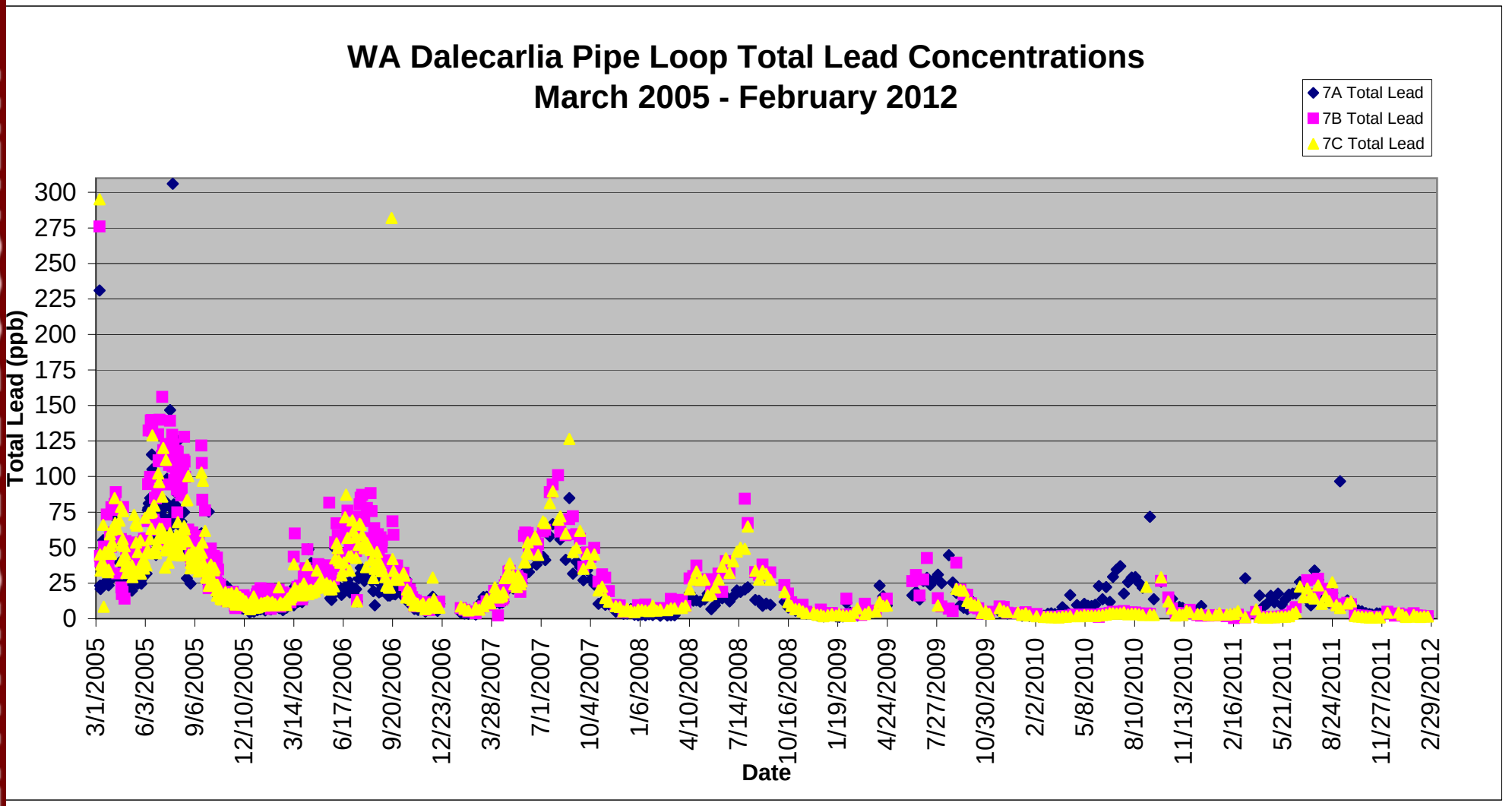
Susan Kanen raised the possibilities that homeowners could refuse to collect LCR samples and that utilities may not report all results, particularly when high lead levels are detected. Maureen Schmelling agreed that sample collection by homeowners can be an issue, and noted that in DC, up to 50 percent of samples are not collected and returned by homeowners. Regarding reporting of sample results, Ms. Schmelling explained that DC Water is required to produce a very detailed report that includes a list of all homes that received a sampling kit; a list of all homes that didn't return samples; all sampling results; and an explanation of any sampling results that were rejected. All laboratory data are reported to EPA even if a sample is invalidated. Ms. Schmelling further noted that other cities may not have such a rigorous reporting procedure as DC, but the other utilities must meet minimum reporting criteria required by the LCR.

6. Wrap-Up

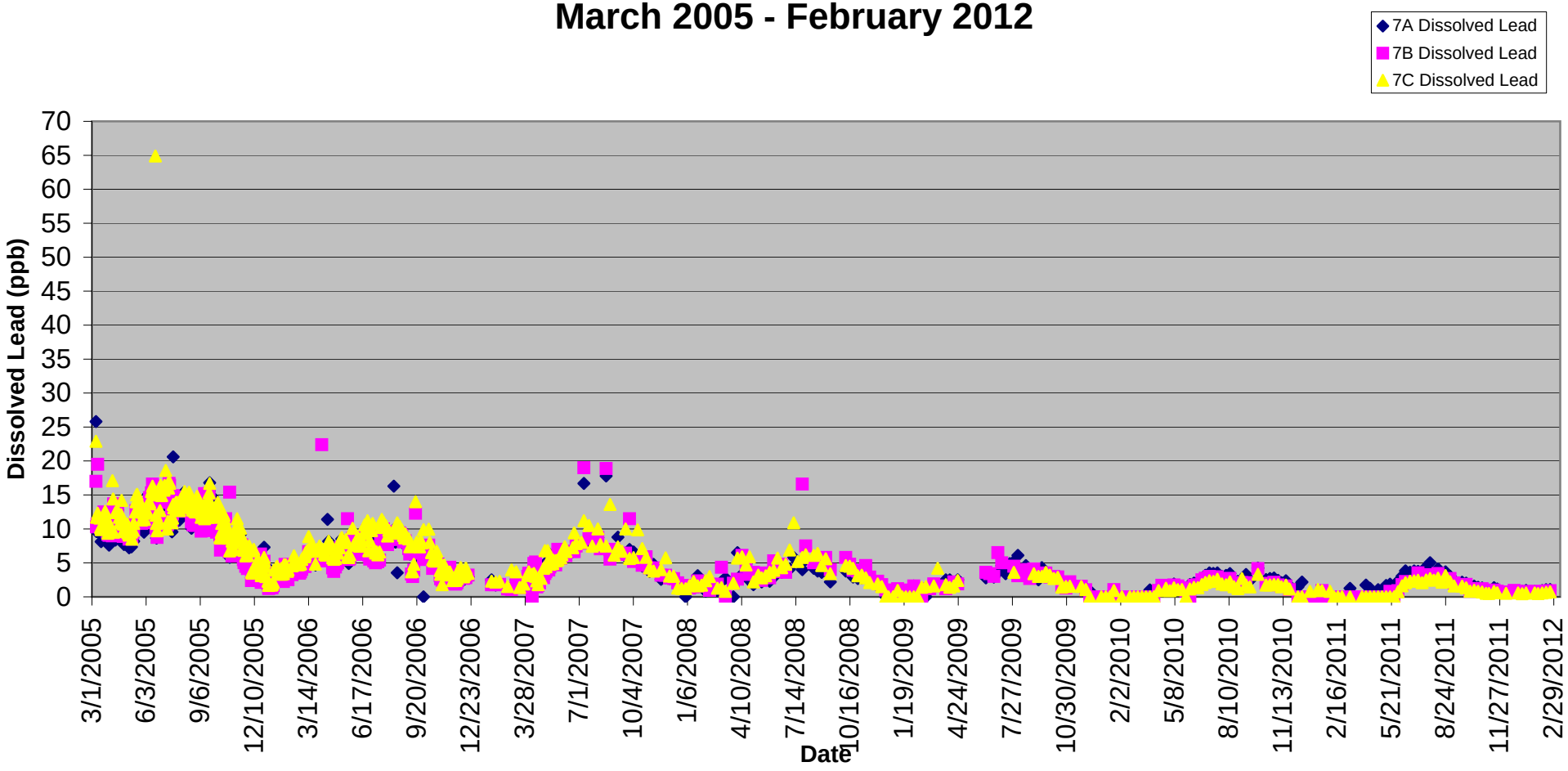
The meeting notes will be prepared and distributed to TEWG members prior to the next call. The next call is scheduled for May 18th at 10:00 a.m. EST. Bill Arguto requested that agenda topics be sent to Wendy Gray.

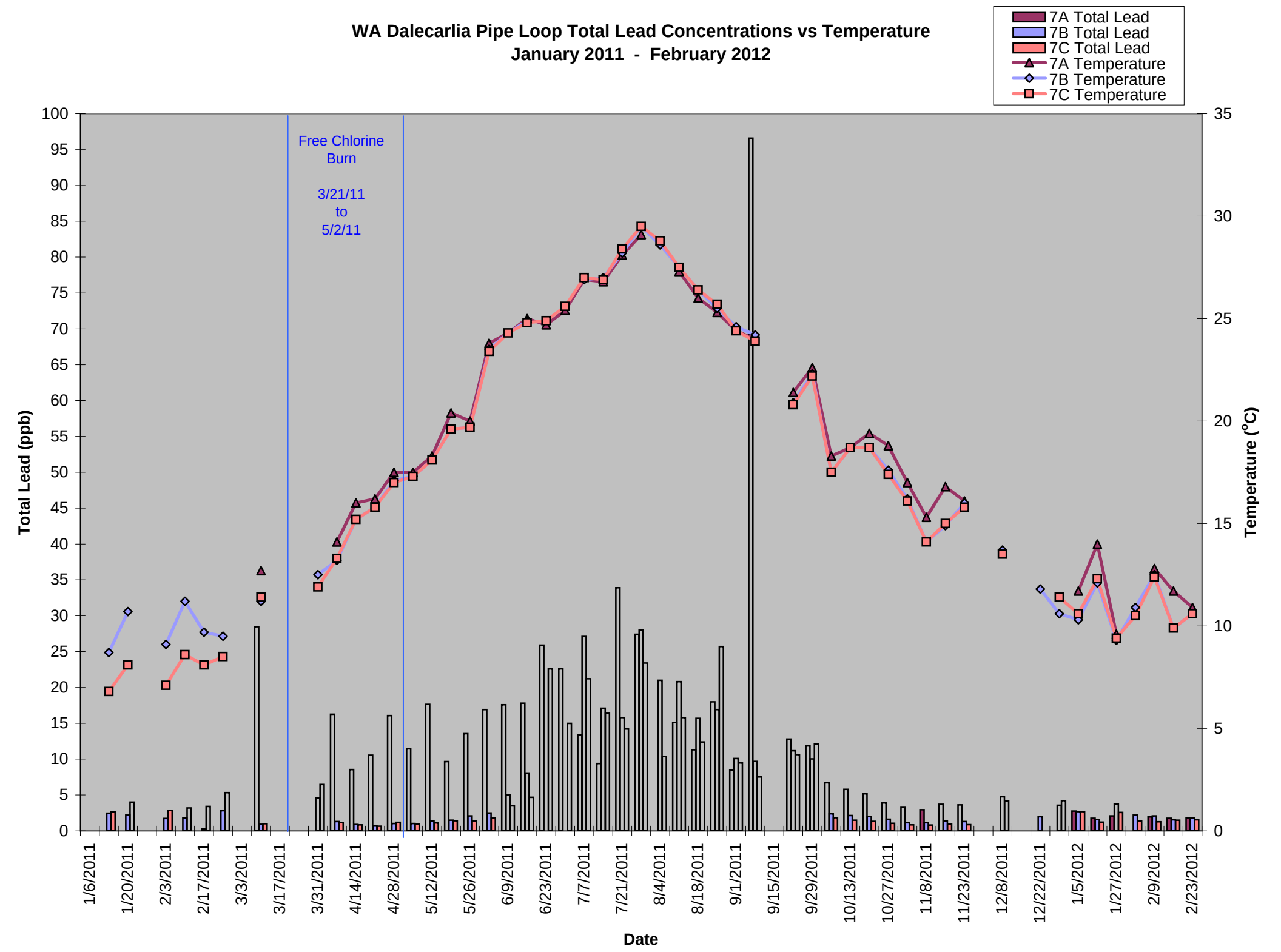
Attachment A: Call Agenda

1. Washington Aqueduct pipe loop update
2. DC Water pipe loop update
3. DC Water preliminary lead and copper rule results update
4. Presentation on particulate lead
5. DC Water update on posting data to website



WA Dalecarlia Pipe Loop Dissolved Lead Concentrations
March 2005 - February 2012




WA Dalecarlia Pipe Loop Total Lead Concentrations vs Temperature
January 2011 - February 2012
7A Total Lead
7B Total Lead
7C Total Lead
7A Temperature
7B Temperature
7C Temperature
Free Chlorine Burn
3/21/11 to 5/2/11
Total Lead (ppb)
Temperature (°C)
Date
1/6/2011
1/20/2011
2/3/2011
2/17/2011
3/3/2011
3/17/2011
3/31/2011
4/14/2011
4/28/2011
5/12/2011
5/26/2011
6/9/2011
6/23/2011
7/7/2011
7/21/2011
8/4/2011
8/18/2011
9/1/2011
9/15/2011
9/29/2011
10/13/2011
10/27/2011
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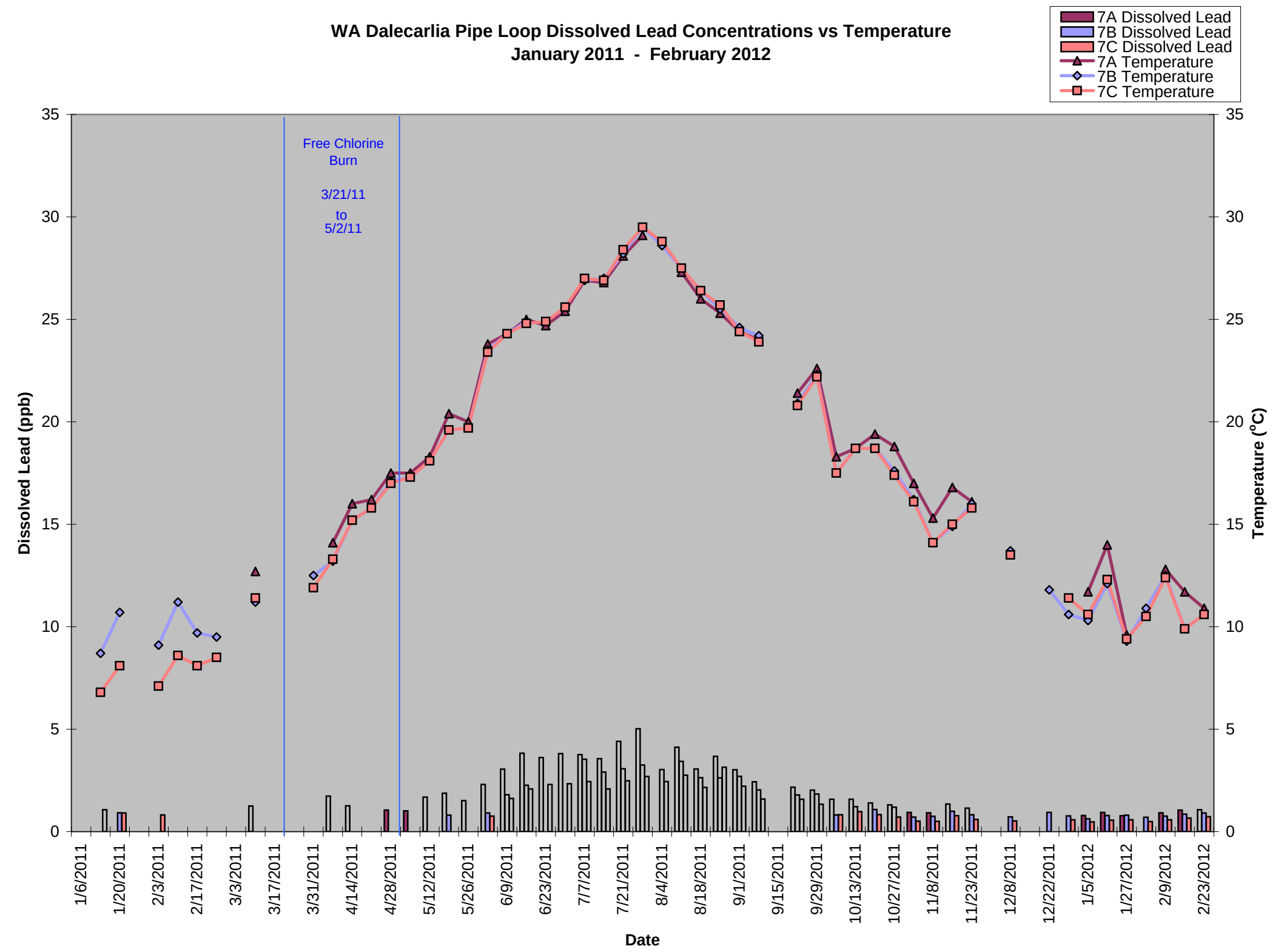
1/27/2012
2/9/2012
2/23/2012


WA Dalecarlia Pipe Loop Dissolved Lead Concentrations vs Temperature
January 2011 - February 2012
7A Dissolved Lead
7B Dissolved Lead
7C Dissolved Lead
7A Temperature
7B Temperature
7C Temperature
Free Chlorine Burn
3/21/11
to
5/2/11
Dissolved Lead (ppb)
Temperature (°C)
Date
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1/6/2011
1/20/2011
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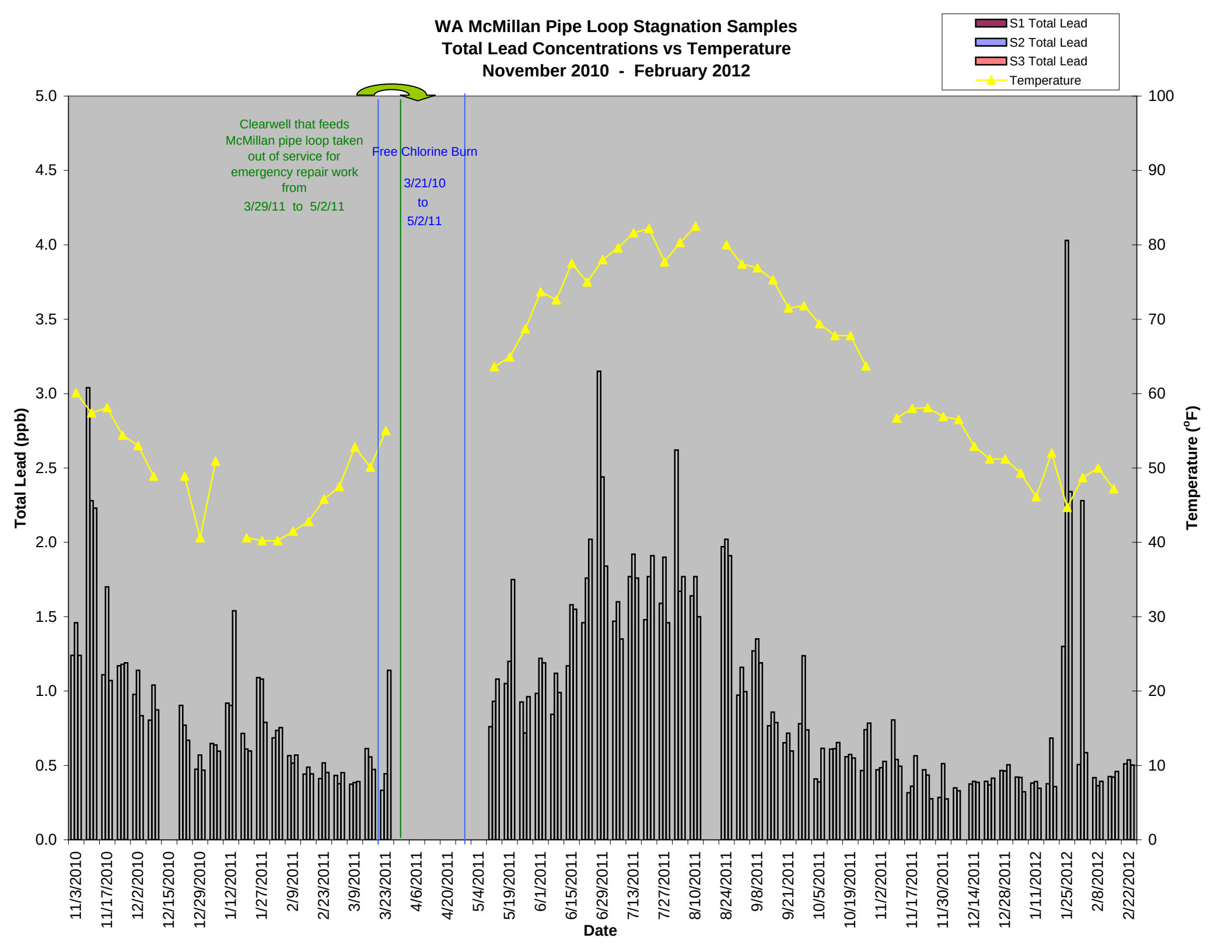
WA McMillan Pipe Loop Stagnation Samples
Total Lead Concentrations vs Temperature
November 2010 - February 2012
S1 Total Lead
S2 Total Lead
S3 Total Lead
Temperature
Clearwell that feeds McMillan pipe loop taken out of service for emergency repair work from 3/29/11 to 5/2/11
Free Chlorine Burn
3/21/10 to 5/2/11
Total Lead (ppb)
Temperature (°F)
Date
0.0
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2.0
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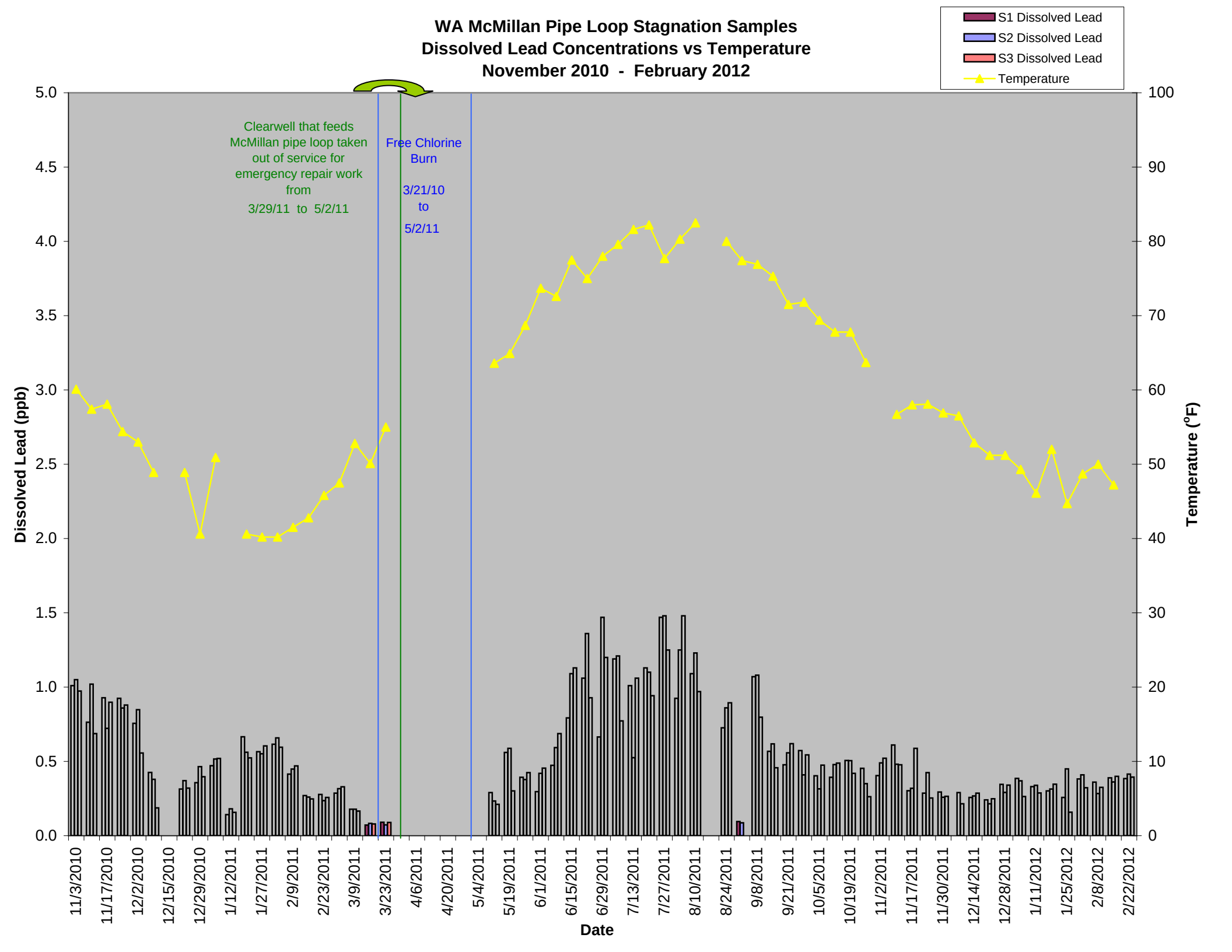
WA McMillan Pipe Loop Stagnation Samples
Dissolved Lead Concentrations vs Temperature
November 2010 - February 2012
S1 Dissolved Lead
S2 Dissolved Lead
S3 Dissolved Lead
Temperature
Clearwell that feeds McMillan pipe loop taken out of service for emergency repair work from 3/29/11 to 5/2/11
Free Chlorine Burn
3/21/10 to 5/2/11
Dissolved Lead (ppb)
Temperature (°F)
Date
5.0
4.5
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11/17/2010
12/2/2010
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2/23/2011
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3/23/2011
4/6/2011
4/20/2011
5/4/2011
5/19/2011
6/1/2011
6/15/2011
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7/13/2011
7/27/2011
8/10/2011
8/24/2011
9/8/2011
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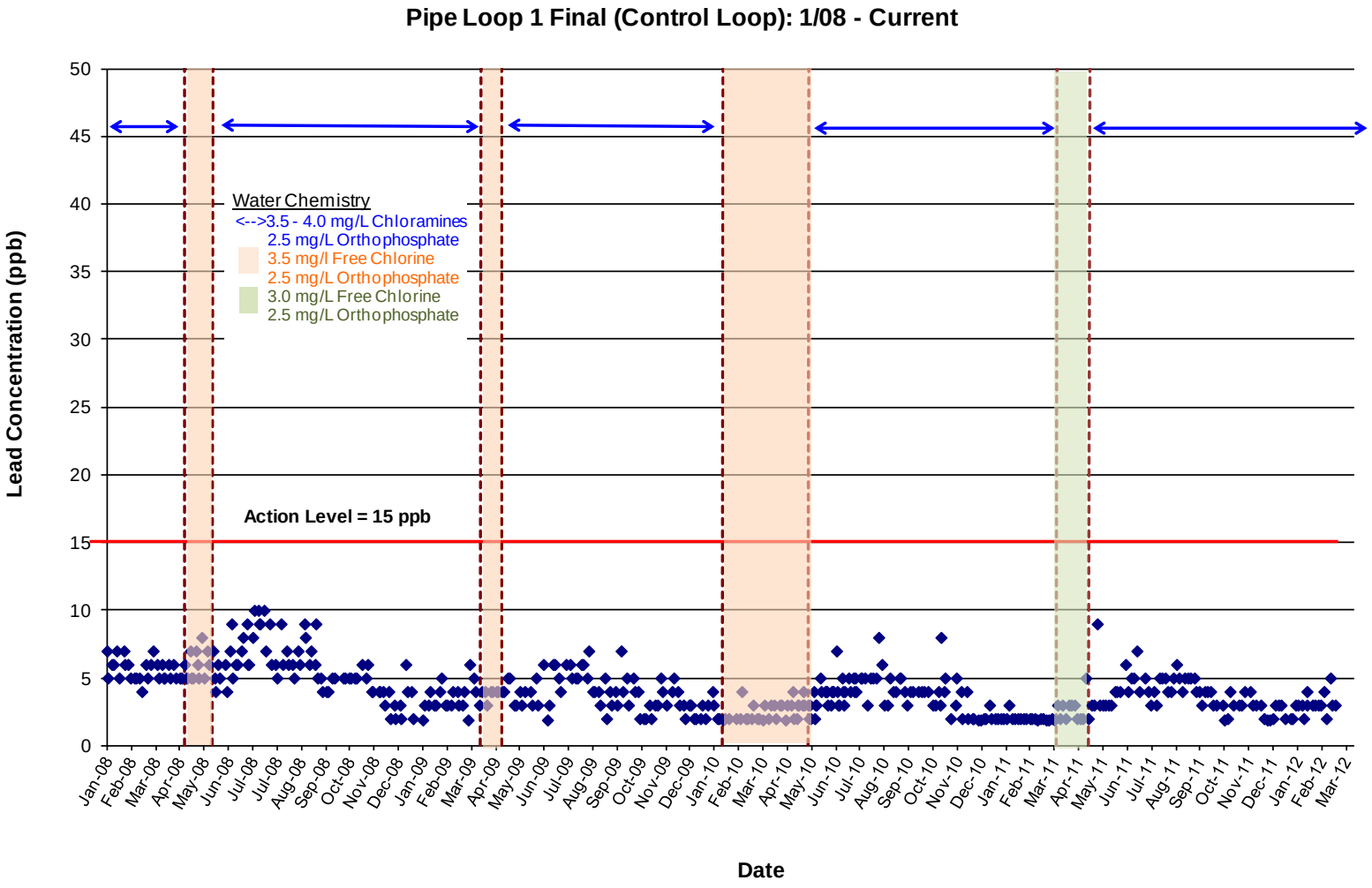


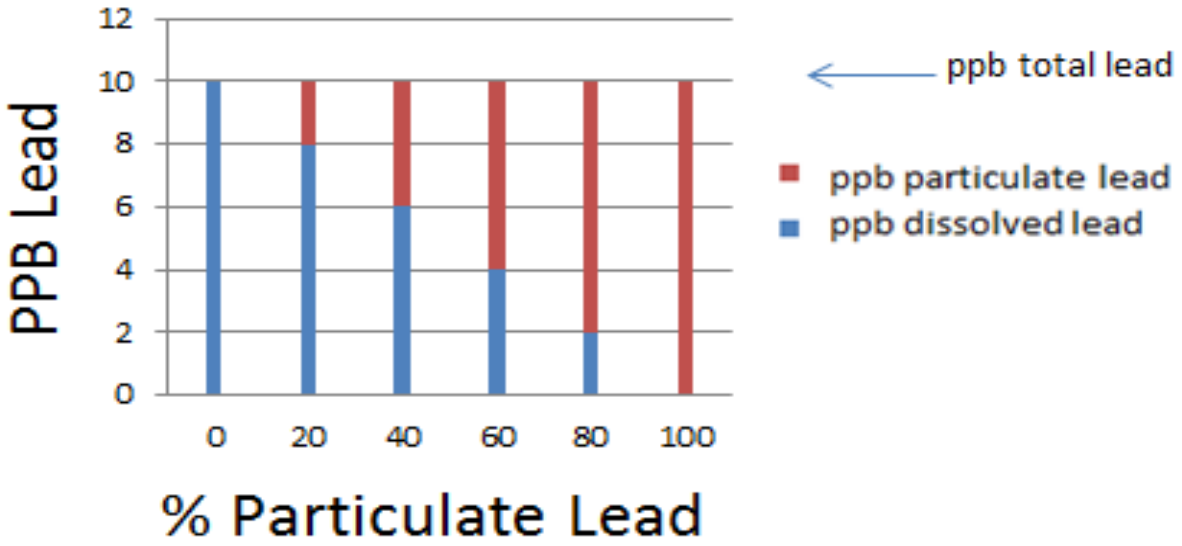
Particulate Lead

DC Drinking Water Research

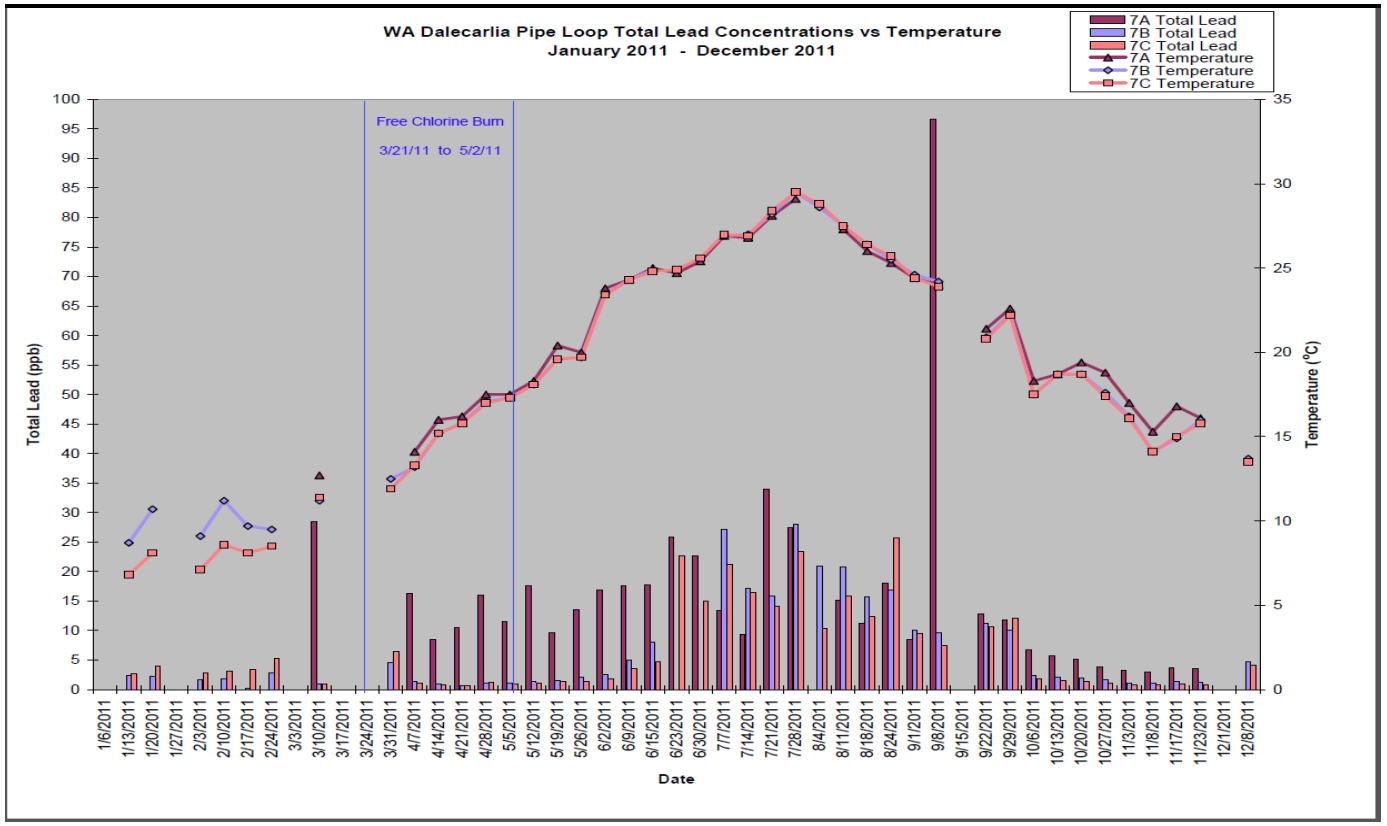
Susan Kanen
March 2, 2012
TEWG Call

Particulate Lead 101

Particulate lead = Total lead –Dissolved Lead



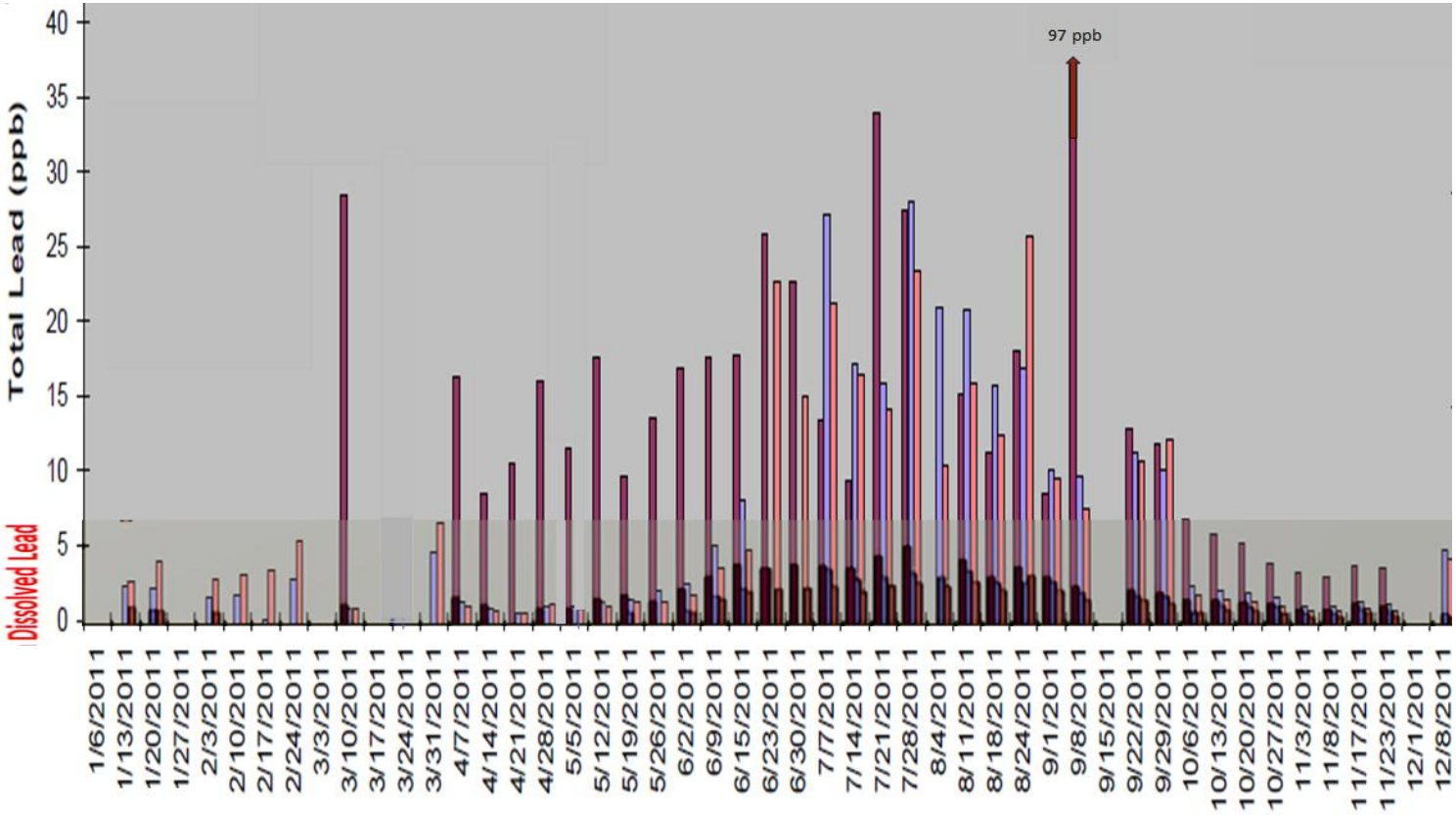
2011 Dalecarlia Total Lead Concentration Presented to TEWG 12/16/2011



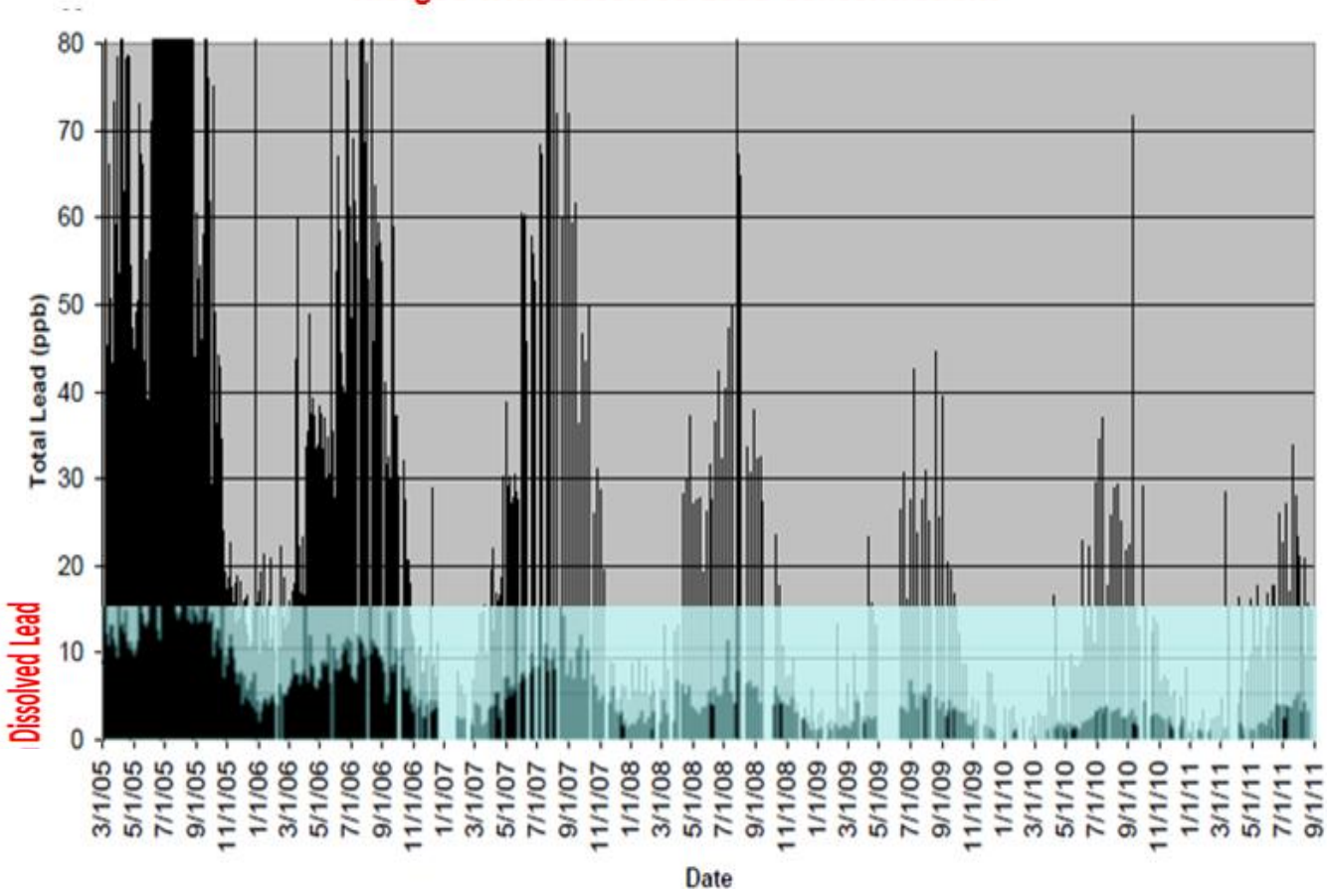
WA Dalecarlia Pipe Loop Total Lead Concentrations

January 2011 - December 2011

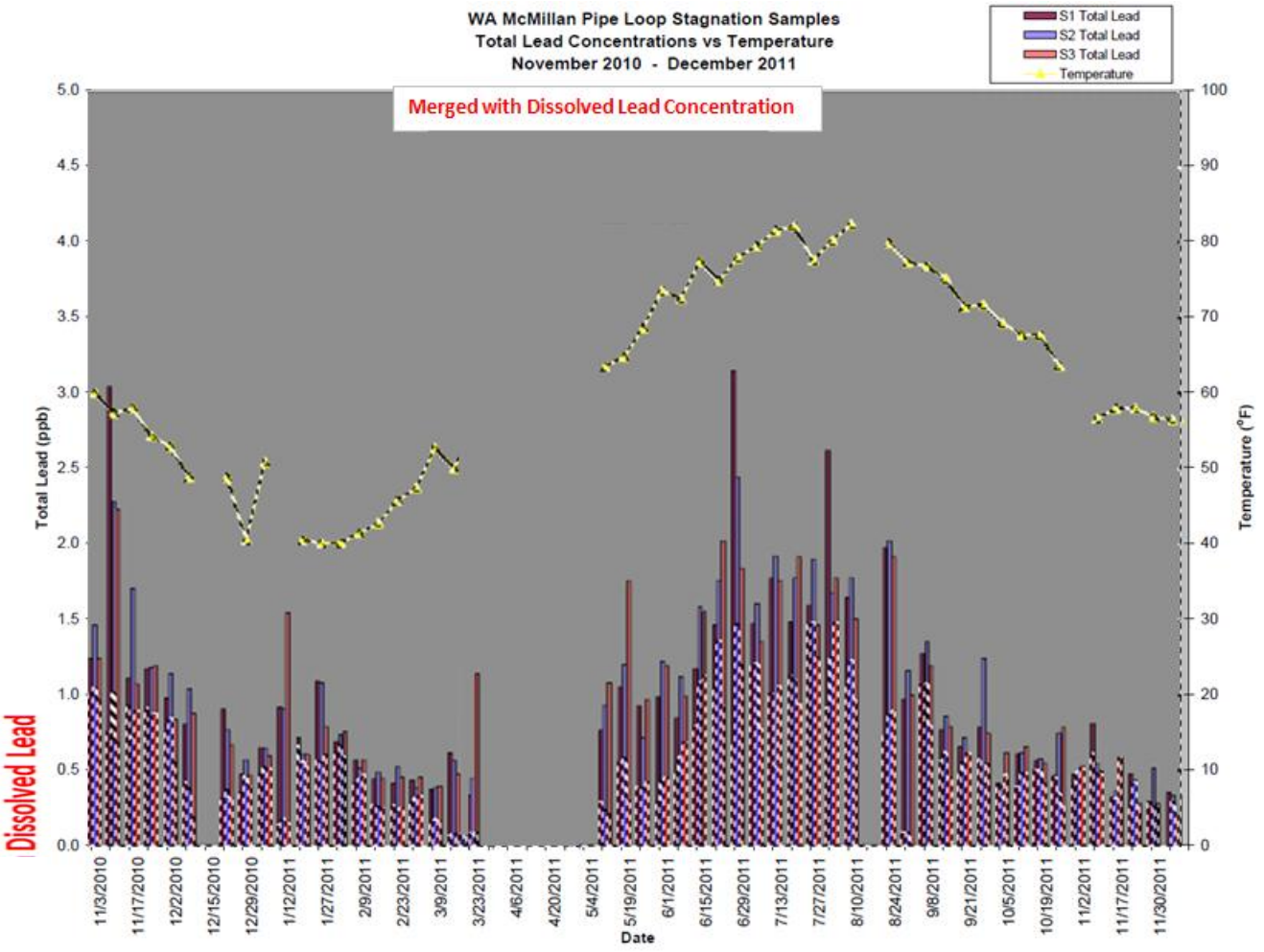
Merged with Dissolved Lead Concentrations



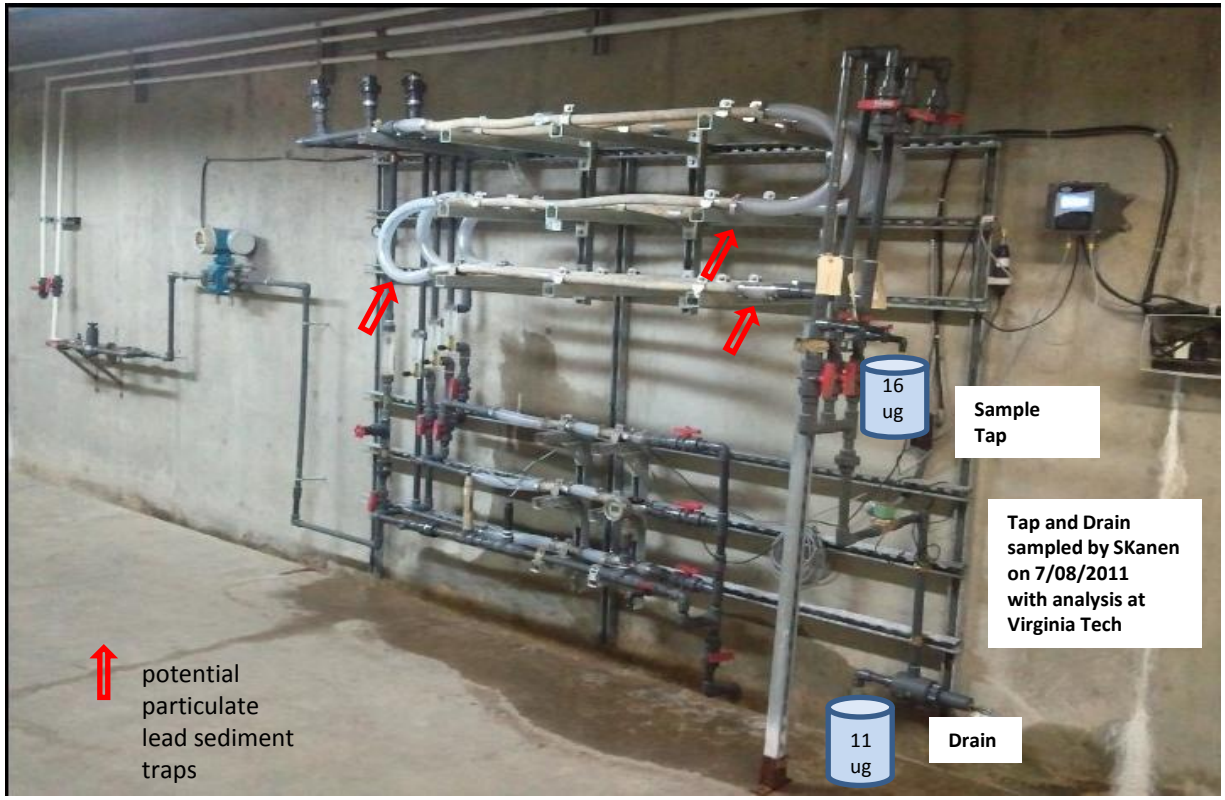
Dalecarlia Pipeloops, 7 years



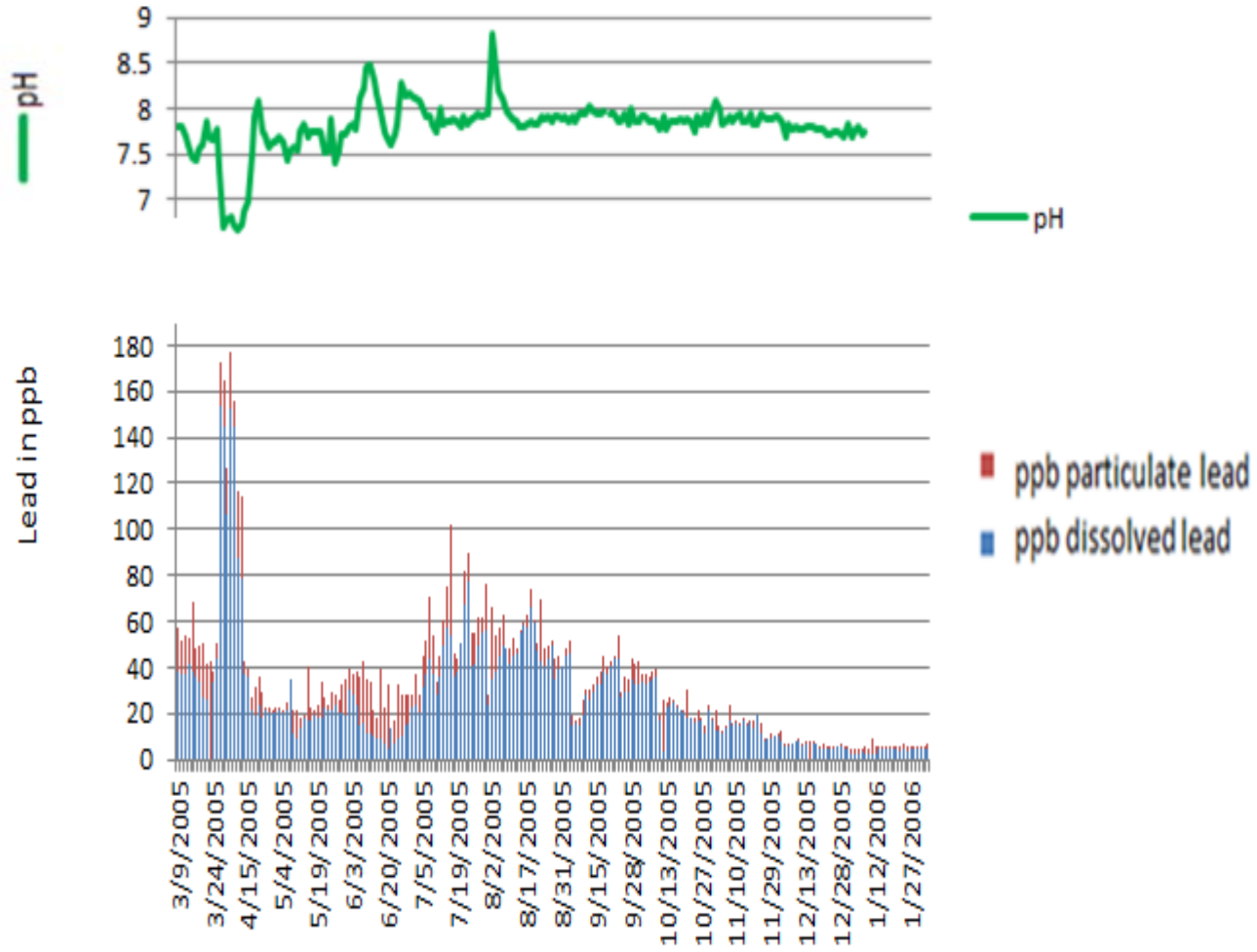
McMillan Pipeloops



McMillan Pipeloops



Dalecarlia Loop 4A No Phosphate Added



MEMORANDUM

Washington Aqueduct – Pipe Loops Study

Summary Memo for TEWG Meeting

TO: TEWG

FROM: Nicolle Boulay/CH2M HILL

DATE: April 21, 2005

This memo is intended to provide a brief overview and update of operations issues as well as observations of the data trends in relation to the Washington Aqueduct Pipe Loops Study. The memo will be discussed along with several charts at the monthly TEWG meeting.

- The pipe loop conditioning phase began on January 7, 2005. During this phase, the pipe loops were exposed to Washington Aqueduct finished water;
- On March 7, the pipe loops were put in automatic mode and were fed chemically-conditioned water, according to the Pipe Loop Plan.
- In the first few weeks after the "official" start-up of the pipe loops on March 7, there were a few operational challenges that impacted our control of pH and chloramines. However, these challenges have since been overcome and we now have very good control of these parameters.
- Data trend observations:
  - It should be noted that we only have data for the first three weeks of operation, so it is probably tough to draw conclusions at this point.
  - Most of the Pipe Racks (except for Rack #1) have "settled" to some extent at a lead concentration less than 50 ppb.
  - Pipe Rack 4 (no corrosion inhibitor) has higher lead concentrations than Pipe Racks 2, 3, 5, and 6.
  - It appears that the lead concentrations from the Pipe Rack with no corrosion inhibitor (Rack #4) is mostly dissolved lead, while the lead concentrations from the racks with corrosion inhibitor have a higher percentage of particulate lead.

On the Record

TEWG Minutes 9/17/2010

4. The discrepancy between WA and DC Water pipe loop results have existed for several years. Should the pipe loop investigations be given a higher priority?

Lloyd Stowe responded that the high particulate lead levels in the WA pipe loops are not a concern and are not representative of actual lead levels in the water distribution system.

TEWG Minutes 8/28/2009

Anne Speisman indicated that WA's pipe loop results follow a seasonal pattern. WA is trying to eliminate variables associated with nonrepresentative particulate lead.

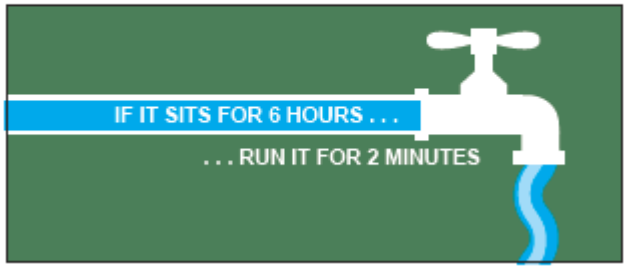
Pierre (Erville of DC DOE) asked which of the pipe loop studies reflects real world data.

AWWA Conference 6/10/2008

Marc Edwards said he considers particulate lead the bigger problem. **"Our sampling is currently missing** the worst of the lead," he said, noting that sampling procedures in the LCR were not designed to accurately measure particulate lead. In sampling, he said, everything affects the results—use of the cold water tap only, the shape of the sampling bottle, the rate of flow to fill the bottle and flushing procedures.

DCWater tips to reduce lead

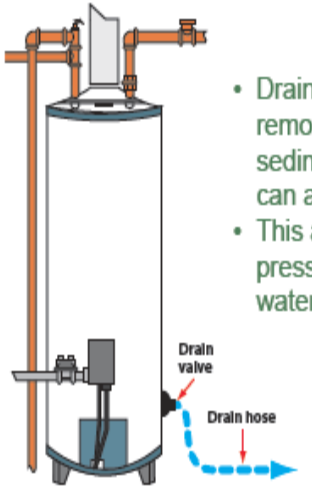
RUN THE COLD TAP WATER WHEN IT HAS NOT BEEN USED FOR SEVERAL HOURS



USE FILTERED TAP WATER IF YOU ARE PREGNANT OR HAVE YOUNG CHILDREN

- If you have lead service lines and you are pregnant and/or have children under the age of six, you should drink filtered tap water and use filtered tap water to prepare infant formula or concentrated juices.

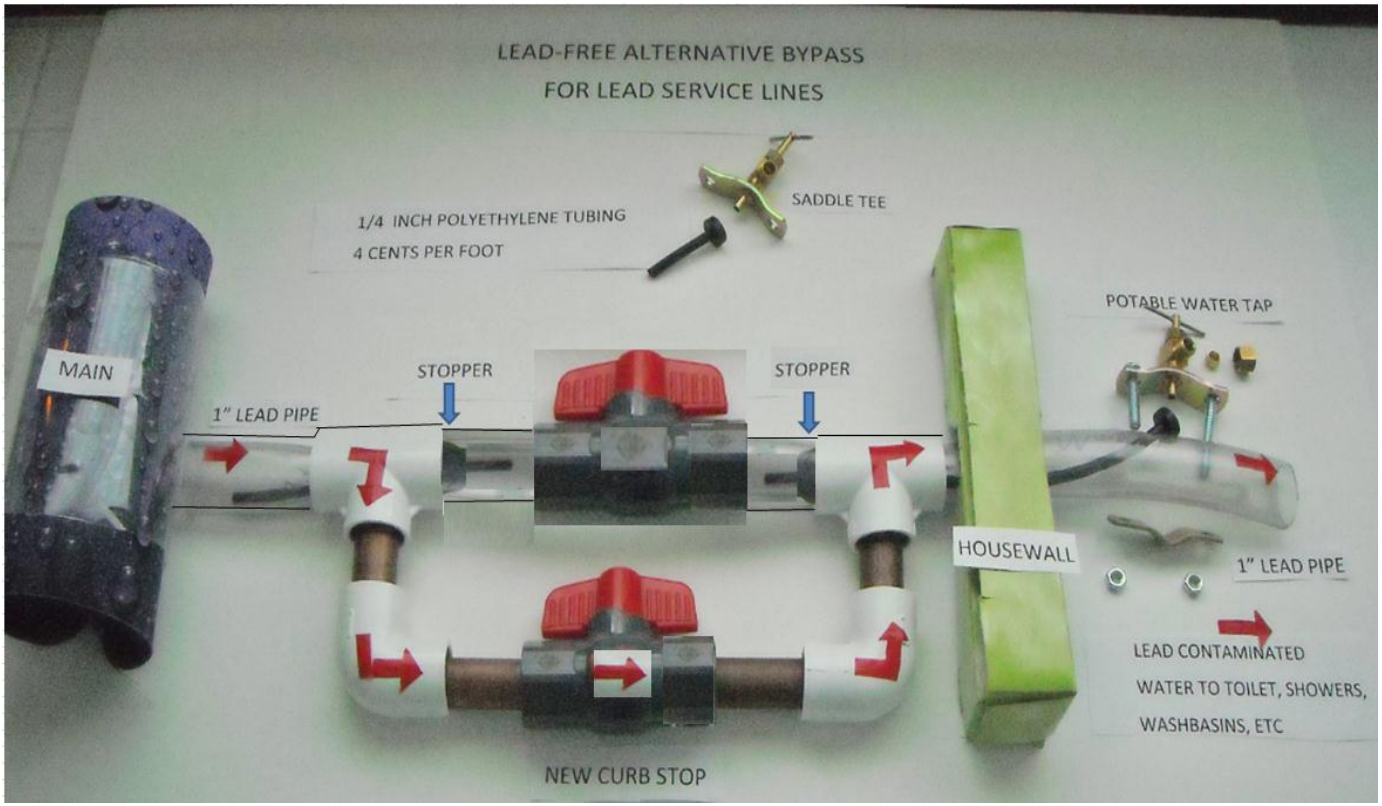
DRAIN YOUR HOT WATER HEATER ANNUALLY



- Draining the hot water heater removes any unnecessary sediment and metals that can accumulate over time.
- This also prevents low water pressure and clogging of hot water pipes.

http://www.dcwater.com/lead/reduce_lead_tips.pdf

Lead-free Alternative Bypass



Tips to Reduce Lead in DRINKING WATER

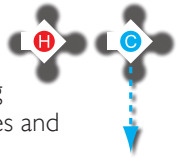
dc water is life

LEAD CAN BE A SIGNIFICANT RISK TO YOUR HEALTH, ESPECIALLY FOR PREGNANT WOMEN AND CHILDREN UNDER AGE SIX.

Run the cold water tap for two minutes before using it for drinking and cooking

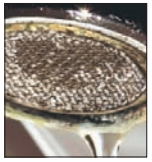
- Lead and other metals can dissolve in water when it sits in pipes for a few hours.

Do not use the hot water tap for drinking and cooking



- Always use cold tap water, including water used for making ice, beverages and infant formula.
- Hot tap water can cause a greater amount of lead to release from plumbing and may contain metals and bacteria that build up in the water heater.

Remove and clean faucet aerators



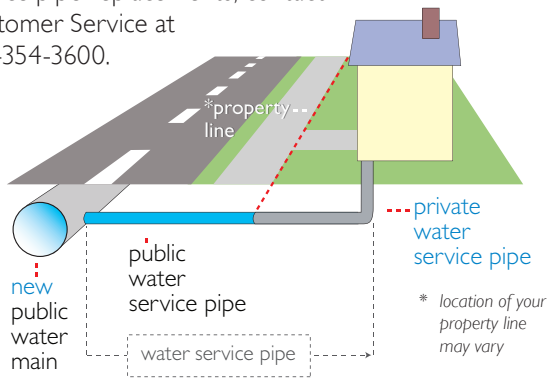
- Lead particles and sediment can collect in the aerator screen located at the tip of your faucet.
- Aerators should be replaced once a year and are available at local hardware stores.

Install lead-free plumbing fixtures

- Install fixtures and fittings that contain 0.25 percent lead or less

Replace lead service pipes

- Replace a lead service pipe with copper pipe.
- If you replace your lead service pipe on private property, DC Water will replace the portion of the pipe in public space. To learn more about lead service pipe replacements, contact Customer Service at 202-354-3600.



Replace household galvanized plumbing

- When lead is released from a lead service pipe and passes through galvanized pipes, lead can build up on the inside, corroded walls of this plumbing and release lead in household water.
- Contact a licensed plumber about replacing household plumbing.

Flush cold water taps after installing new household pipes or fixtures

- New plumbing can release metals after installation.
- Flush cold water taps for five minutes at a high flow rate once a day for three days, especially before using water for drinking and cooking.

Use filtered tap water

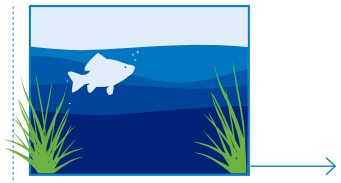
- If you are pregnant or have children under age six, use cold, filtered tap water for drinking and cooking until all lead sources are removed. This includes water used for making infant formula, beverages and ice.
- Select a filter certified to meet NSF Standard 53 for lead. The filter package should specifically list the device as certified for removing the contaminant "lead."
- Routinely replace filter cartridges according to the manufacturer's instructions.

Drain your water heater annually

- Over time, metals, sediment and bacteria can build up in your water heater.
- For instructions on how to drain your water heater, visit dcwater.com/waterheater.

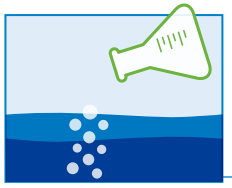
OUR DRINKING WATER

1. Where does drinking water come from?



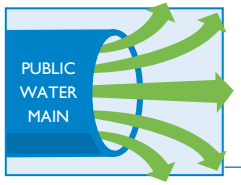
The District of Columbia's drinking water is drawn from the Potomac River by the Washington Aqueduct, a federal agency.

2. Who treats drinking water?



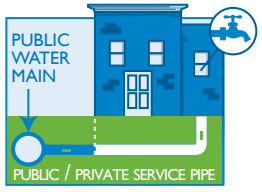
The Washington Aqueduct is responsible for water treatment and adds orthophosphate (a food-grade chemical) to minimize the release of lead from service pipes and household plumbing.

3. Who distributes drinking water?



DC Water distributes the water to homes and businesses through 1,300 miles of pipes in the District.

4. Where can lead be found?



1-3 ESSENTIALLY NO LEAD FOUND

POSSIBLE LEAD

Lead can enter your water if you have a lead service pipe or household plumbing with lead. Orthophosphate can reduce lead release from these sources.

Lead in drinking water can affect each home in the District differently. Drinking water is essentially lead free in the distribution system and prior to entering your individual water service pipes.

SOURCES OF LEAD

A lead service pipe

- The pipe that connects the water main in the street to your household plumbing. The material of water service pipes can vary, and some households still have lead service pipes. Lead service pipes were installed until the mid 1950s.

Lead solder

- Connects pipes in household plumbing. Lead solder was used in plumbing prior to 1987.

Brass faucets, valves or fittings

- Almost all faucets, valves and fittings have brass components. Until 2014, brass faucets and fittings sold in the United States that are labeled lead free can contain up to eight percent lead.

Galvanized iron pipes

- Old, corroded pipes that can release lead in water if you have, or once had, a lead service pipe. Galvanized pipes were installed in many homes prior to the 1960s.

Additional Information

Drinking Water Division

202-612-3440

drinkingwater@dcwater.com

dcwater.com/drinkingwater

dc water is life

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY

George S. Hawkins, General Manager

TIPS TO REDUCE LEAD in DRINKING WATER

LEAD CAN BE A SIGNIFICANT RISK TO YOUR HEALTH, ESPECIALLY FOR PREGNANT WOMEN AND CHILDREN UNDER AGE SIX.

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