STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: July 18, 2018
SUBJECT: Update on Lead and Copper

COMMITTEE: Water Policy & Oversight

X INFORMATION
___ VOTE

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Carl Leone, Senior Program Manager
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Preparer/Title

David W. Coppes, P.E.
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RECOMMENDATION:

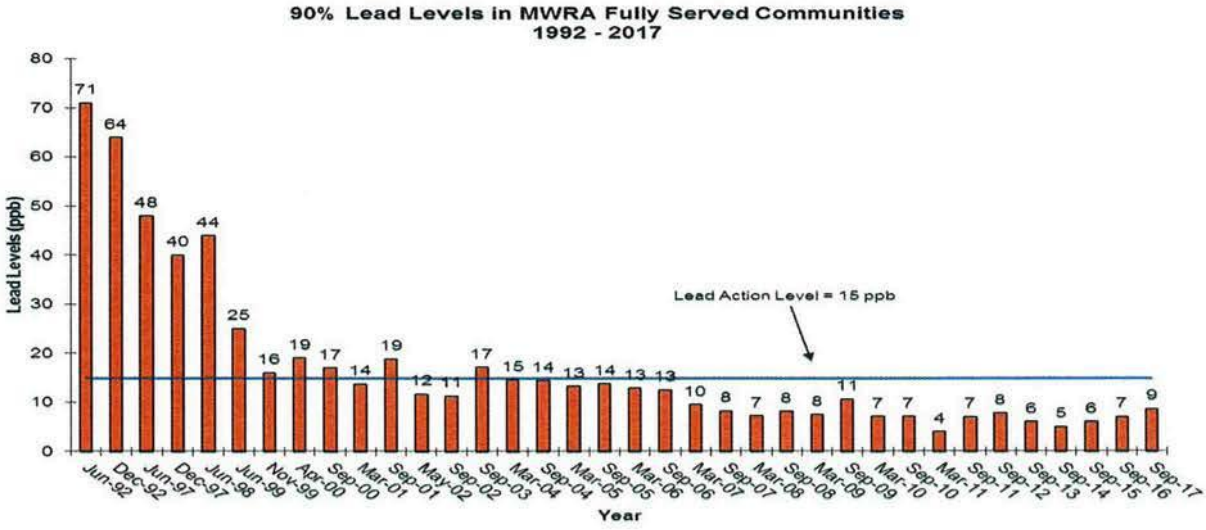
For information only.

DISCUSSION:

This staff summary highlights current activities related to lead in drinking water.

Sampling for those Communities over the Action Level in Fall 2017

Under EPA's Lead and Copper Rule, each year MWRA and every fully-supplied community must collect and test tap water in a sample of homes that are likely to have high lead levels. These are usually homes with lead services or lead solder. EPA requires that nine out of ten of the sampled homes must have lead levels at or below the Action Level of 15 ppb.



In Fall 2017, four communities, Medford, Melrose, Quincy, and Winthrop were above the Action Level. As required by the Massachusetts's Department of Environmental Protection (DEP), all four

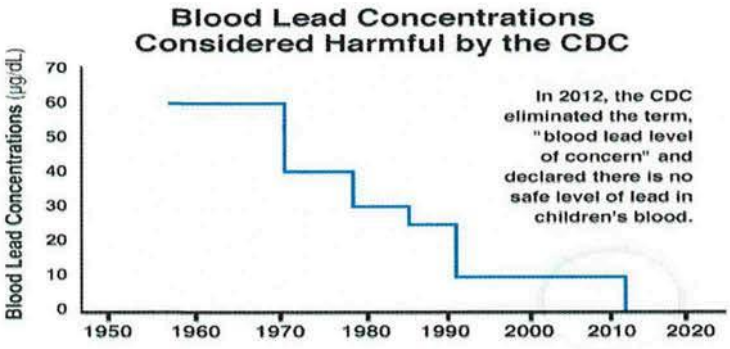
completed sampling in Spring 2018, and all four community's sampling results were back below the Action Level.

All four communities are required by DEP regulations to replace lead service lines. Quincy already had an active lead service line replacement program, with funding from MWRA's Lead Service Line Replacement zero-interest loan program, and is continuing to fully remove lead service lines and lead-lined steel service lines (A detailed update is in Attachment A). The other three communities are at various stages of initiating replacement programs under DEP's direction, with the requirement that each replace at least seven percent of their lead services during the current calendar year. MWRA staff have discussed the loan program with each of the communities.

Summary of Children's Blood Lead Levels

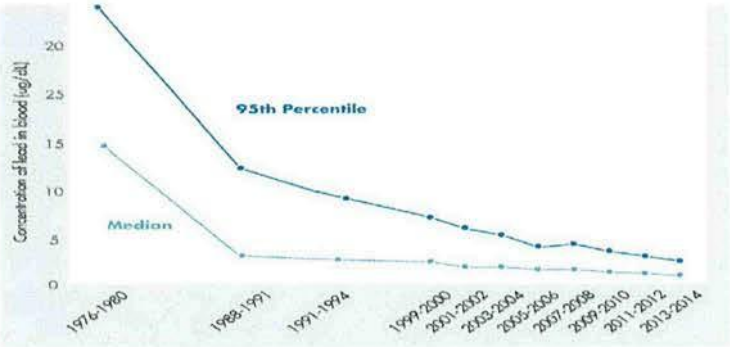
The federal Centers for Disease Control and Prevention (CDC) has continued to lower the blood lead level at which it believes there is a health impact of concern. Since 2012, CDC has stated that "no safe blood lead level in children has been identified," and have redefined lead poisoning in children as a concentration of lead in blood of 5 µg/dL or greater, lowered from 10 µg/dL.

Figure 1 – CDC Level of Concern



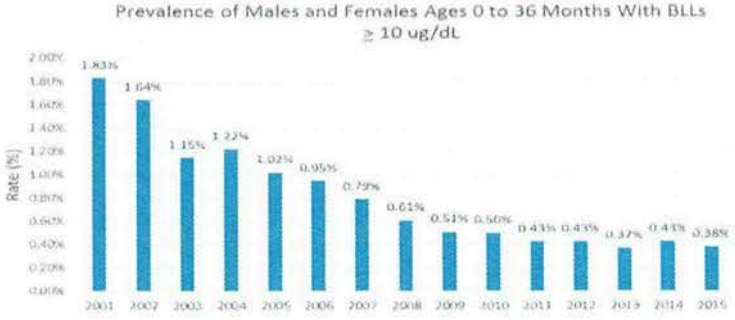
Both nationally and state-wide, children's blood lead levels have dropped dramatically since public health interventions - including taking the lead out of gasoline and the ban on lead in paint - have reduced the amount of lead in the environment. Figure 2 shows the decrease across the nation since the 1970s in median and 95th percentile blood lead levels in children. National trends show a substantially slower rate of decline since 2010.

Figure 2 - National Blood Lead Levels 1976-2014



Massachusetts Department of Public Health (MDPH) has one of the nation's most aggressive children's blood lead level testing programs, with about 75% of children between 1 and 5 years of age tested. Figure 3 shows the decrease in number of children with blood lead levels above 10 ug/dL since 2001, and also shows a recent slower reduction similar to the national levels.

Figure 3 – Massachusetts Blood Lead Levels



The main exposure for children to lead in the environment is through paint and dust. Though lead in paint was banned in 1978, Massachusetts has the fourth oldest housing stock in the country, and therefore chipped paint and lead dust from windows and exteriors in older houses is the most common exposure for children. Also, there are certain higher risk communities, including most of the larger cities in Massachusetts, where a majority of the lead poisoning cases are found.

Update on MWRA Coordination with Massachusetts Department of Public Health

MDPH has continued its partnership with MWRA to sample for lead in the tap water at homes where a child has an elevated lead blood level, and identify if there is a lead service line. Very few lead poisoning prevention programs around the country have collected information on lead in water. MWRA staff assisted in training MDPH field staff on how to perform the sampling. Sample bottles, chain of custody forms, and boxes with return postage are provided to MDPH staff. Residents are provided educational information about the potential for lead in water, as well as actions they can take to reduce levels.

Since the effort began in October 2016, 230 households with a child having elevated lead blood level have returned samples. About one quarter of the samples have had detectable lead, but only one has been above the Action Level. MWRA reports the results back to MDPH which then provides the results to the residents; preserving the required confidentiality under federal health privacy laws. Given the privacy restrictions, MWRA does not have information about the specific circumstances of any of the samples.

MWRA and MDPH staff continue to coordinate on the program, and anticipate an increased number of samples as MDPH will be expanding the definition of "elevated blood lead level."

Update on School Testing Program

MWRA, in coordination with DEP, has continued to work with MWRA communities on testing school fixtures used for drinking or cooking. From April 2016 through the end of May 2018, the MWRA Laboratory performed 35,142 tests on samples from 328 schools in 37 different MWRA communities. Approximately 4.7 percent of all lead samples were above the Action Level. 125 of the 328 schools had one or more samples over the Action Level. All communities and schools with elevated levels have been contacted and technical assistance materials have been provided. Results from schools across the state have been posted by DEP on-line on its new easier-to-use data portal, and a link to the DEP site is on the MWRA website. Many communities also have had local outreach efforts to parents to let them know about the school results.

School systems have used the information to take remedial action at locations where sampling indicated elevated lead levels. These remedial actions included shutting off or removing fixtures (particularly where they were not needed or required, such as individual sinks in classrooms), replacing older fixtures which were contributing excessive lead with new lead-free ones, using bottled water until other actions could be taken, labeling bathroom sinks as for handwashing only, and developing flushing programs to clear stagnant water from plumbing within walls until extensive plumbing alterations can be undertaken.

While MWRA community school sample data did identify many locations which required remedial action, results from MWRA communities were somewhat better than statewide numbers from the

DEP program, likely indicating that MWRA corrosion control is providing substantial benefit at reducing lead corrosivity.

Staff continue to work with DEP at assuring that all data collected on lead levels is provided to the public, and jointly considering outreach and testing approaches for other locations where children might be exposed to elevated lead levels such as playgrounds and child care facilities. Staff have reached out to the Medford, Melrose, Quincy and Winthrop health departments regarding the potential for a pilot program of offering testing to licensed child care providers. MWRA staff have begun work with Medford, who indicated a willingness to participate. Staff will evaluate the approach before continuing the program in other communities.

Revisions to the Federal Lead and Copper Rule

This past spring, EPA announced that the draft revisions to the Lead and Copper Rule would be delayed and they are now expected to be released in February 2019. Recently, Michigan issued new state regulations, due to the situation in Flint, requiring full replacement of all lead service lines statewide by 2040, and lowering the Action Level to 12 ppb.

A particular issue that MWRA staff have been tracking is a concern that EPA and states may be heading towards a "one-size-fits-all" approach to corrosion control treatment requiring most systems to adopt a phosphate-based treatment option. This tendency has already been evident in state primacy agency interactions in several locations, most notably in Denver, where the state regulator mandated orthophosphate treatment even though Denver Water, river advocates, and wastewater treatment agencies all favored a pH approach similar to MWRA's. Locally, MA DEP has required Ashland to add orthophosphate to MWRA water to match the town's local treatment.

MWRA staff will continue to track EPA's efforts, evaluating their potential impact, and will continue to be actively involved along with the water professional associations in commenting as appropriate.

Lead Data Transparency

MWRA has been posting all lead data collected under the Lead and Copper Rule on the MWRA website for over a decade, organized by community and sampling round, but with specific addresses redacted for customer privacy. More recently as part of MWRA's efforts to be sure that our customers have access to all the information available on lead levels, MWRA has added additional information to the MWRA website. In addition to the link to the DEP website for school data, MWRA has posted all recent lead sample data analyzed by our laboratory, including data collected as part of the MDPH project, on www.MWRA.com. Links have also been provided to those local community websites which provide information about local lead programs or maps or databases of lead service line locations. The Annual Water Quality Report mailed to all consumers includes two pages of lead related information.

Update on Lead Service Line Replacement Loan Program

The presence of a lead service line connecting a home to the main in the street can lead to elevated lead levels in tap water, especially if water sits stagnant for an extended period. MWRA's stable water quality and effective corrosion control treatment reduces the risk that a lead service line will

cause elevated lead levels. However, the risk of elevated levels remains as long as lead service lines are in use.

In March 2016, the Board approved an enhancement to the Local Water System Assistance Program to provide up to $100 million in 10-year interest-free loans to communities for replacement of lead service lines. During the first two years of the program (through June 2018), MWRA has distributed a total of $9 million to seven communities. These loans have helped initiate full removal of lead water services (whether on public or private property) with approximately 390 service line replacements reported as having have been completed and with substantial construction ongoing.

The Lead Loan Program distributions to date include:

- Quincy $1.5 million in FY17;
- Winchester $500,000 in FY17;
- Newton $4.0 million in FY17;
- Marlborough $1.0 million in FY18;
- Revere $195,000 in FY18;
- Winthrop $284,000 in FY18;
- Needham $1.0 million in FY18; and,
- Winchester (second phase) $500,000 in FY18.

Lead Service Line Entering Basement

Each community has developed its own local program, including its individual approach to how to manage the costs of removing the portion of lead service lines on private property. Details are included in Attachment A. The seven communities funded thus far under the Lead Line Program have taken the following approaches:

- Marlborough, Needham, Quincy, and Winthrop will pay full cost of private side lead service line removals. (Framingham also funded the full cost in their program using local funds.)

- Revere will pay full cost of private side lead service line removals via an SRF loan. MWRA funds were distributed for design only.

- Winchester will pay the first $1200 of private side cost of private side lead service line removals and property owner will be billed for the remainder.

- Newton will offer a 10-year interest-free loan to property owners to cover the cost of private side lead service line removals.

Boston Water and Sewer Commission enhanced its long-standing locally funded lead service line program in 2016, to now pay for the first $2,000 of the private side lead service line replacement and recover the remainder over 48 months at no interest.

Attachment B provides a summary of the number of lead services and lead goosenecks in each community. The current data indicates that about 18,000 lead service lines (some full and some partial) remain in local water systems, representing less than four percent of total service lines. If the 22,000 lead goosenecks are also included, about 40,000 services lines have some lead component remaining, representing about eight percent of total service lines.

The replacement of lead service lines has been eligible for MWRA community financial assistance since FY98. From FY98 through FY16, community projects that were funded by MWRA water loans included at least partial replacement of more than 6,000 lead service lines. Beginning in FY17, community participation in MWRA's Lead Service Line Replacement Loan Program requires local projects to fully replace public/private lead service lines.

BUDGET /FISCAL IMPACT:

FY19 CEB has $3,732,720 for corrosion control chemicals ($3.4 million in soda ash costs, and $0.3 million in carbon dioxide costs) at the John J. Carroll Water Treatment Plant.

ATTACHMENTS:

Attachment A - Details on individual community lead service line projects
Attachment B - Community Estimates of Lead Service Lines and Lead Goosenecks

Attachment A - Details on individual community lead service line projects

- Quincy received a $1.5 million loan in December 2016 to fund its program targeting the removal of 141 identified public/private lead services. Quincy is paying the full cost of both public/private lead service line replacements. Quincy removed a majority of the targeted services (both lead services and lead-lined steel services) during the 2017 construction season. During 2018, Quincy is continuing to follow-up with homeowners who have not yet participated and is also removing identified lead goosenecks and additional lead-lined steel service lines.

Sample photo of lead-lined service line as found in Quincy

- Winchester received a $500,000 loan in March 2017 and an additional $500,000 in June 2018 to fund the first and second phases of its program targeting the removal of 240 identified public/private lead services and 668 lead goosenecks. Winchester is paying all costs for replacement of lead pipe on the public portion of services and the first $1,200 in costs on the private portion of services for homeowners who participate. The project began during the 2017 construction season with 160 water services having been worked on; some full replacements, some private side only replacements (where the public side had already been removed), and some that only needed a public side lead gooseneck removed. Few homeowners with a lead service line have refused to participate in Winchester's replacement program. Costs for both engineering and construction are averaging about $7,500 per water service. Winchester is continuing construction work in 2018 and is moving into its second phase program.

- Newton received a $4.0 million loan in May 2017 to fund the replacement of up to 584 public/private services that contain lead (lead service lines, lead gooseneck connections, lead fittings, etc.). The City has offered private homeowners the option of a 10-year interest-free loan to finance the cost of lead service line replacement on private property. The project began during the 2017 construction season with 272 water services and goosenecks having been worked on (approximately 63 service line replacements) at a cost of about $5,200 per water service for both engineering and construction. The construction project is continuing in 2018.

- Marlborough received a $1.0 million loan in September 2017 to fund the replacement of approximately 250-300 lead service lines. This is the first phase of a large project targeting all of the city's 1,350 lead service lines and expected to cost $5 million. Marlborough is paying the full cost of both public/private lead service line replacements. The start of construction was delayed to spring 2018 due to an extended bidding process.

- Revere received a $195,000 loan in November 2017 to fund the design portion of their lead service line replacement project. The design phase was recently completed and the construction phase is scheduled to follow. Revere has obtained State Revolving Loan Funds (SRF) funding for the construction project that will remove up to 282 lead service lines. Revere is paying the full cost of both public/private lead service line replacements.

- Winthrop received a $284,000 loan in December 2017 to fund the replacement of 20 full and 17 private-side only lead service lines (where the public side had already been replaced). This work is Winthrop's first phase of lead service line removals associated with a specific water main construction project (local Contract 5 that received MWRA Local Water System Assistance Program funding). Winthrop is paying the full cost of both public/private lead service line replacements. This initial project is complete and Winthrop is planning a future expanded program to remove an estimated 780 public/private and 583 private-side only lead service lines.

- Needham received a $1.0 million loan in June 2018 targeting removal of 157 identified public/ private lead services and 1044 lead goosenecks. Needham is paying the full cost of both public/ private lead service line replacements. Construction is scheduled to begin in the summer 2018.

- Medford is beginning a pilot public/private side lead service line replacement project using previously distributed MWRA Local Water System Assistance Program loan funds.

- Reading is developing a lead service line replacement program and a financial assistance application is likely during FY19.

Staff anticipate that applications under the Lead Loan Program are likely to be phased and ramp up as communities enhance existing lead service inventories, engage individual customers via outreach and education, and show success with initial phase construction. Community decision making to identify the most appropriate community contribution for private side lead service line replacement is a key aspect of local implementation. Future EPA requirements may stimulate lead service line removal work over the next few years.

Attachment B – MWRA Community Lead Service Line Estimates Updated June 2018

Information based on community responses to September 2016 MA DEP survey and updated with current information as available from communities.

Community	Number of Services	Estimated Lead Services	Estimated Lead Goosenecks
Arlington	12,585	100	300
Bedford	4,613	0	0
Belmont	7,745	1	15
Boston	87,638	5,013	
Brookline	10,527	25	
Canton	7,162		
Chelsea	5,100	96	
Dedham/Westwood	13,304		446
Everett	8,126	1,349	
Framingham	18,147	0	0
Lexington	14,145	0	
Lynnfield WD	1,427	0	36
Malden	11,815	2,917	
Marblehead	8,065	0	0
Marlborough	10,303	1,350	
Medford	14,706	2,231	
Melrose	8,200	574	
Milton	8,473	0	4,200
Nahant	1,634	0	0
Needham	10,192	157	1,044
Newton	25,071	372	
Northborough	4,234	0	0
Norwood	8,649	36	
Peabody	13,539	0	1,600
Quincy	23,750	11	696
Reading	7,992	300	1,580
Revere	12,000	282	
Saugus	9,331	0	0
Somerville	14,423	1,874	
Southborough	3,210	0	0
Stoneham	6,250	13	0
Stoughton	7,387	0	2,500
Swampscott	5,485	0	0
Wakefield	8,410	0	
Waltham	13,732	0	8,100
Watertown	9,165	0	1,100
Wellesley	8,324	1	
Weston	3,613	0	100
Wilmington	7,469	0	
Winchester	7,215	80	663
Winthrop	4,480	1,343	
Woburn	11,447	2	30
Chicopee	16,527	0	0
South Hadley FD 1	4,827	0	0
Wilbraham	3,347	0	0
TOTAL	503,784	18,127	22,410