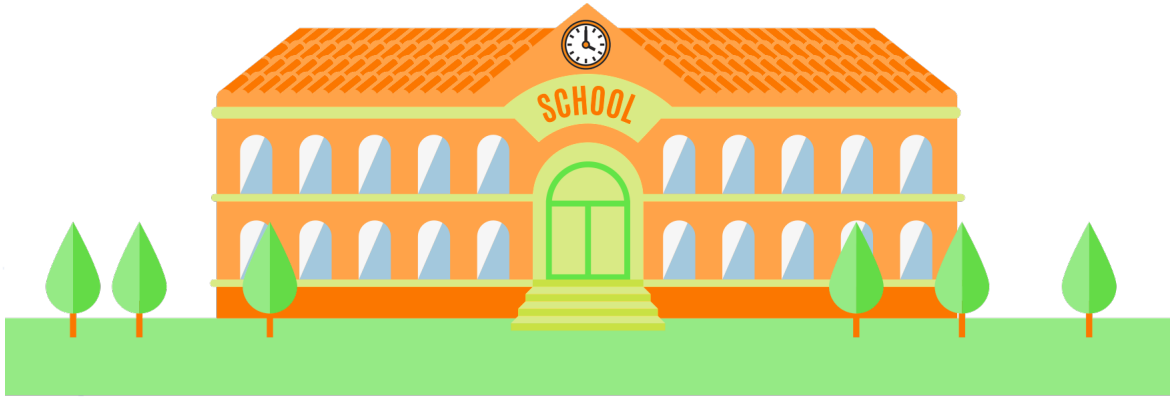
Lead In Drinking Water at Schools and Childcare Facilities



Informational Webinar
October 18, 2021

Hosted by

RCAP Solutions

MassDEP Drinking Water Program & UMass Amherst

University of Massachusetts Amherst BE REVOLUTIONARY™

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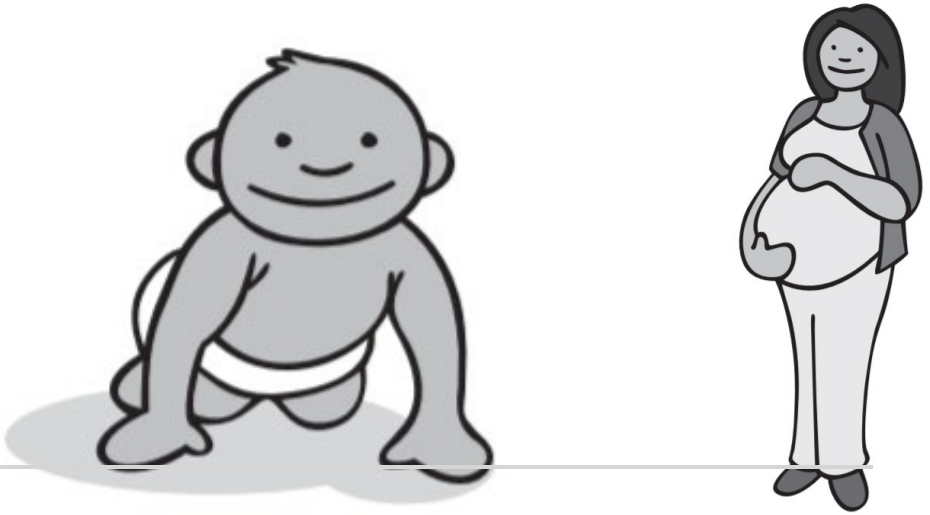
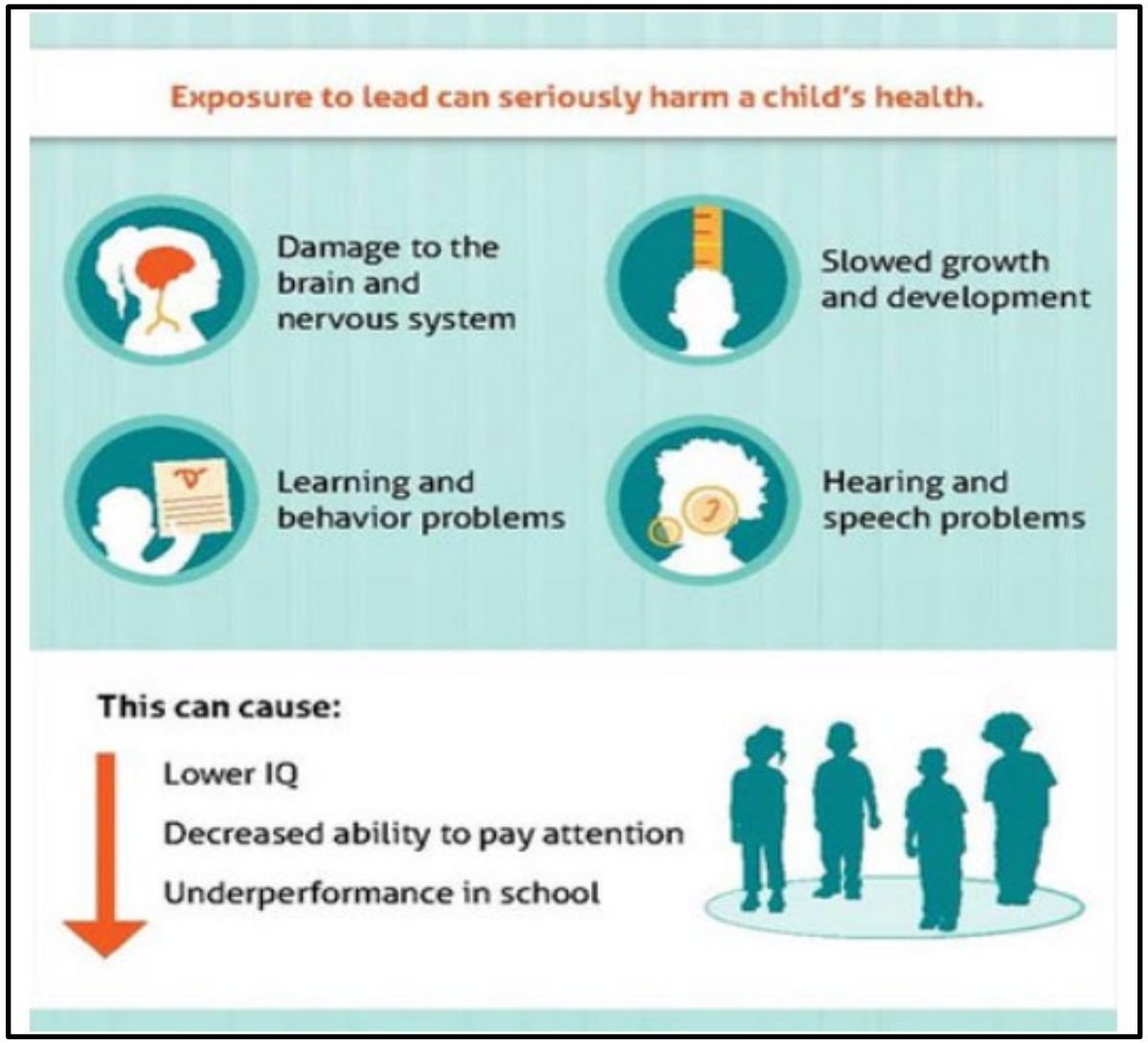
Lead: The Basics

- Lead is a <u>dangerous</u> and <u>toxic</u> metal
- It has no taste or odor
- Had a lot of industrial and consumer uses over the years- many of which are now illegal
- The health of young children, infants, and pregnant women are the most impacted by lead



How Lead Affects Children



- **There is <u>no</u> safe lead level for children**
- **Even low levels of lead can negatively affect a child's development**
- **There are often <u>no</u> signs or symptoms of lead exposure**

Sources of Lead Exposure

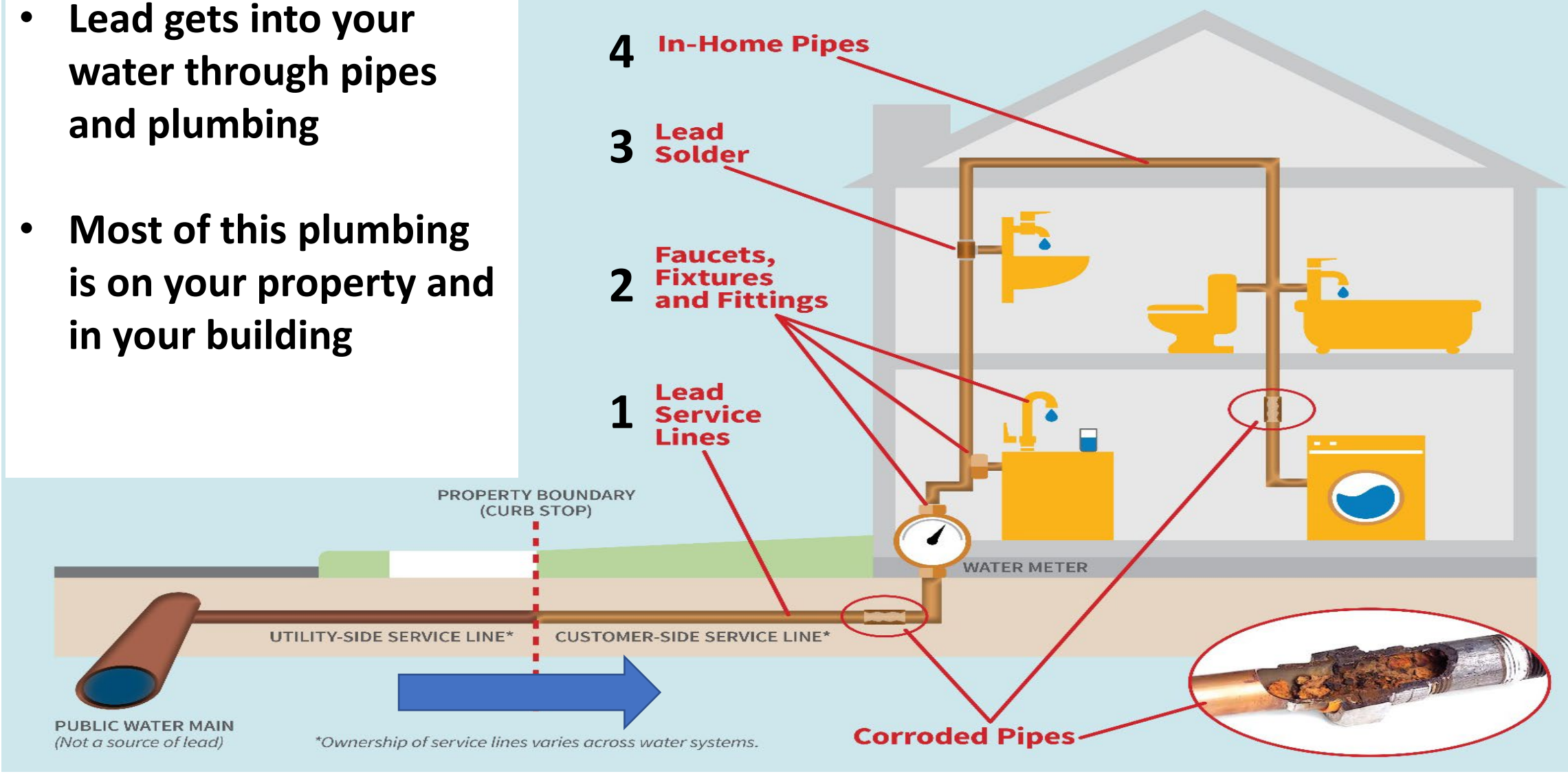
EPA estimates that drinking water can account for 20%+ of total exposure.

Infants on mixed formula can receive 40-60% of their exposure to lead from drinking water.

How Lead Gets Into Drinking Water

CLEAN WATER ACTION
CLEAN WATER FUND

- **Lead gets into your water through pipes and plumbing**
- **Most of this plumbing is on your property and in your building**



Your School or Childcare Facility's Water Source and Sampling for Lead in Drinking Water

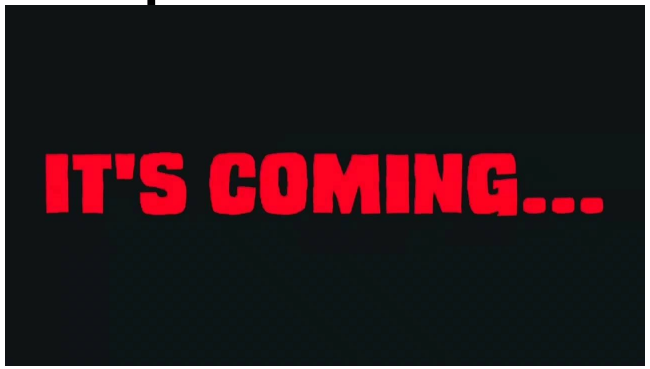
In most cases, a school, childcare facility or home is served by a community water system (a city/town water department).

At these locations, right now, NO testing of the water at the school of childcare facility is required.*

***Limited testing by the community water system may occur as part of separate required testing.**

Testing Requirements Are Coming!!!

- The federal government has proposed requiring testing at elementary schools and childcare programs/facilities (home programs included)
- Timeline: Beginning in 2024 or 2025 and over the next 5 years, the community water systems will have to test all schools and daycare facilities/programs they serve
- Biden Administration put it on hold for further review



MassDEP Assistance Program for Lead in School and EECF Drinking Water

- **Initiated May 2016 by Governor Charlie Baker**
- **Voluntary program for schools and large public EECFs**
- **Phase 1 and 2, during 2016 – 2018 primarily**
  - **Sampled ~ 985 school building in 190 municipalities**
  - **~70,000 samples collected (~63,000 analyzed by commercial labs), cost of $1.8 M (lead and copper for all samples)**

MassDEP Expanded Assistance Program
January 2020 – June 2022 (or longer)

HERE TO HELP!

FREE testing and assistance for schools and all childcare facilities (group and family, public and private)

- We provide bottles
- We provide lab testing
- We provide results and what they mean
- We provide guidance on follow-up actions, if any
- We post this information on our website

MassDEP Education and Training

Informational Guide for Parents

Informational Magnet

- Hold webinars
- Distribute information on building flushing and water testing

School Water Improvement Grant (SWIG) Program

- MA Clean Water Trust offers $3,000/station grants to public schools for the purchase and installation of filtered water bottle filling stations.
- Stations replace drinking water locations in schools that have levels of lead above 1 ppb.
- <u>Expanding soon to include large group childcare facilities in disadvantaged communities.</u>

MASSACHUSETTS
CLEAN WATER TRUST

Links for Online Resources

- MassDEP Assistance Program website:

www.mass.gov/assistance-program-for-lead-in-school-drinking-water

- School and Childcare Facility test results database:

https://eeaonline.eea.state.ma.us/portal#!/search/leadandcopper

- Clean Water Trust SWIG Program:

www.mass.gov/school-water-improvement-grants

- Massachusetts Department of Public Health's Childhood Lead Poisoning Prevention Program:

www.mass.gov/orgs/childhood-lead-poisoning-prevention-program

Poll Break!

- Has your facility participated in the MassDEP voluntary Assistance Program? (Yes, No, I don't know, Not Applicable)

- Has your facility had sampling and analysis for lead outside of the MassDEP program? (Yes, No, I don't know, Not Applicable)

Now some details! Assistance Program Components/Steps

Forms and information materials (on DEP DWP Website)

- **1) Application by school system or EECF**
- **2) Initial Outreach to School/EECF/Community**
  - **emails & phone calls from UM staff (Technical Assistance Provider or TAP)**
- **3) Sample Plan/Fixture Map**
  - **Web-Based LCCA Program Management Tool**
  - **Sample bottle labels and Chain of Custody form created, provided**
- **4) Sampling**
- **5) Laboratory Analyses**
- **6) Reporting of Lab Results: DEP, Schools/EECFs, Public**
- **7) Follow-up Steps: Communication and Remediation if needed**

1. Complete Online Application Form

- **Web link:**
  - **https://www.mass.gov/service-details/technical-assistance-for-lead-in-school-and-child-care-center-drinking-water**
  - **Click on "Program Application" to go to application form**

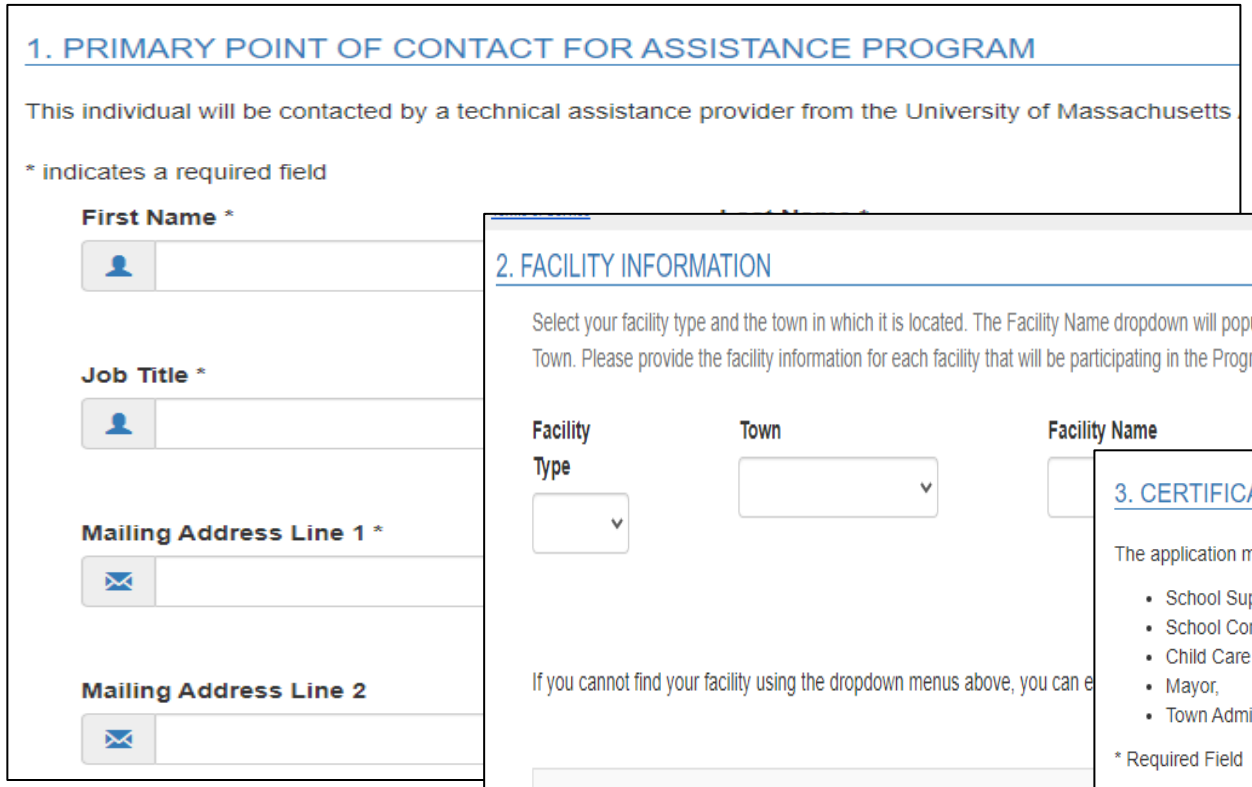
- **Forms available in English and Spanish**

- **Provide key information about your childcare facility, how to contact you**

- **Information saved, DEP reviews, if accepted, contact from UMass staff occurs next**

Expanded Assistance Program- Simple Online Application

1



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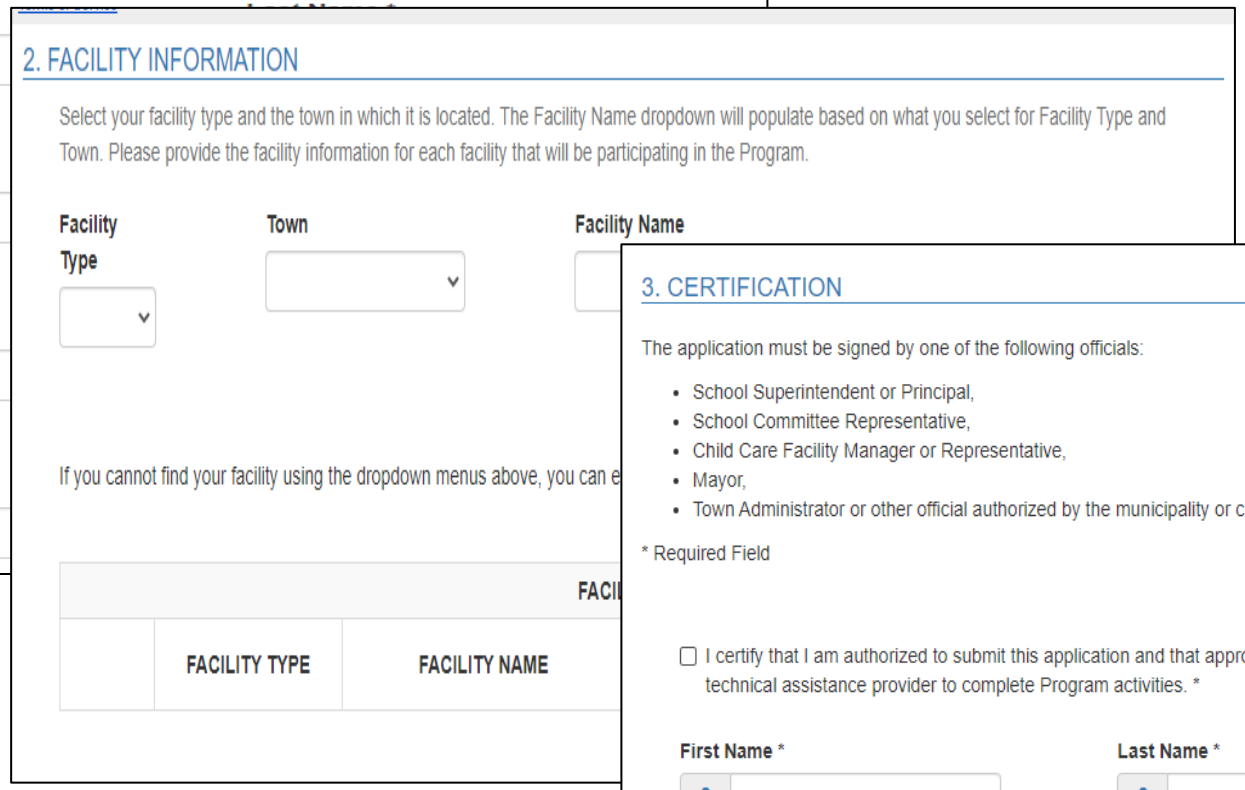

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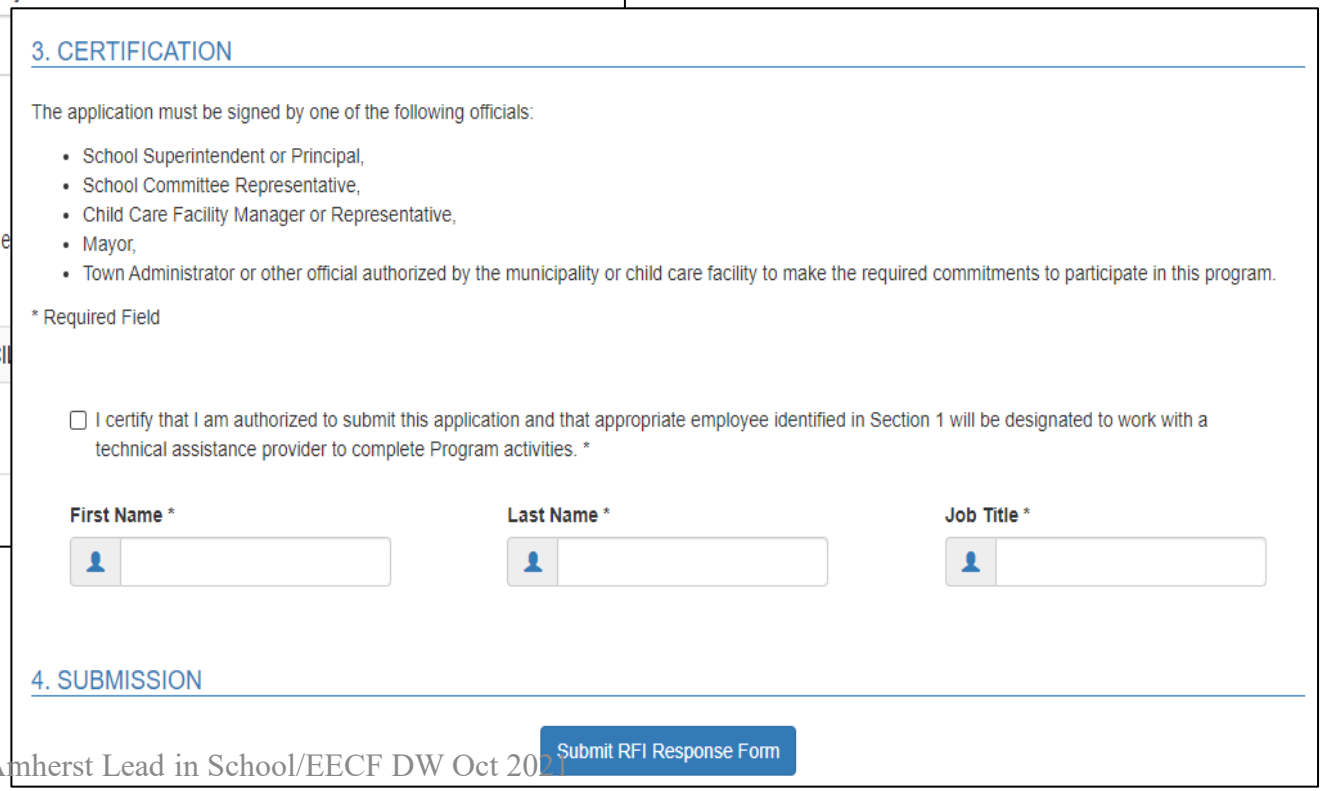
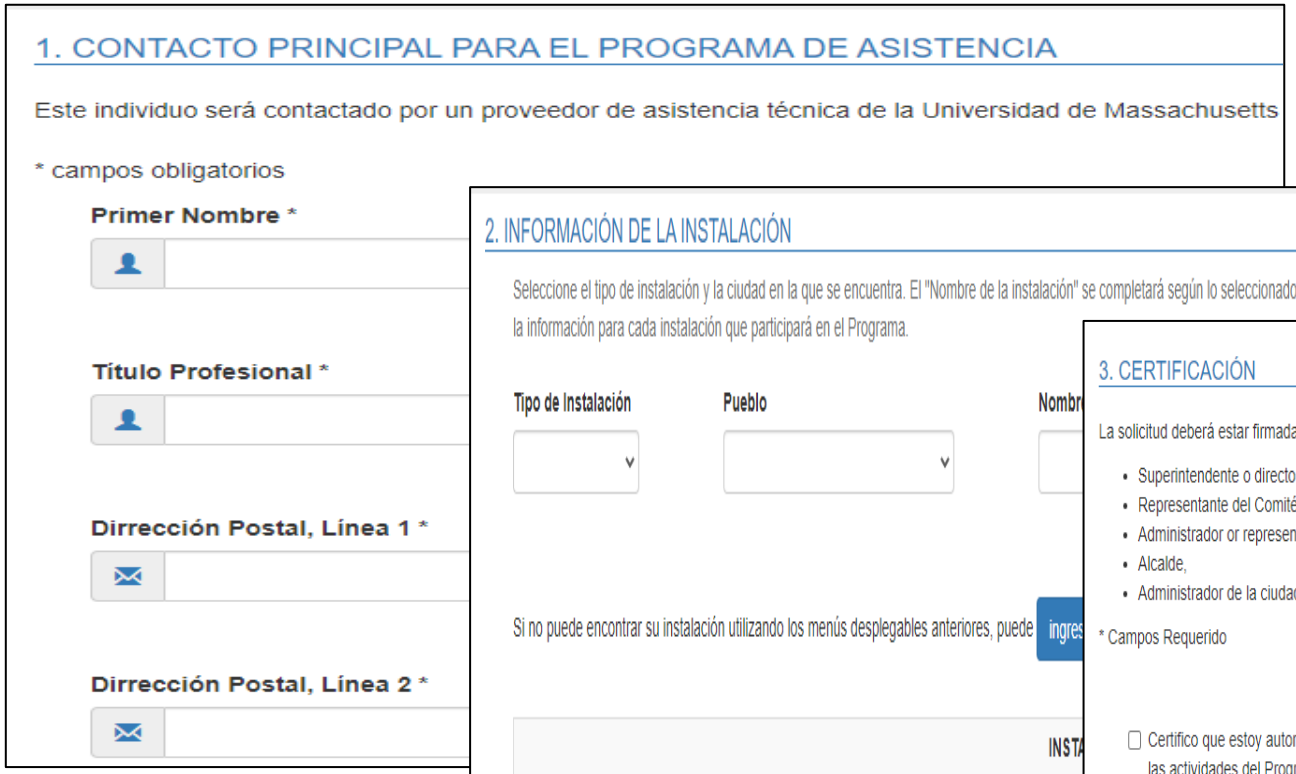


Programa de Asistencia Extendida- Aplicacion en Linea Simple

1



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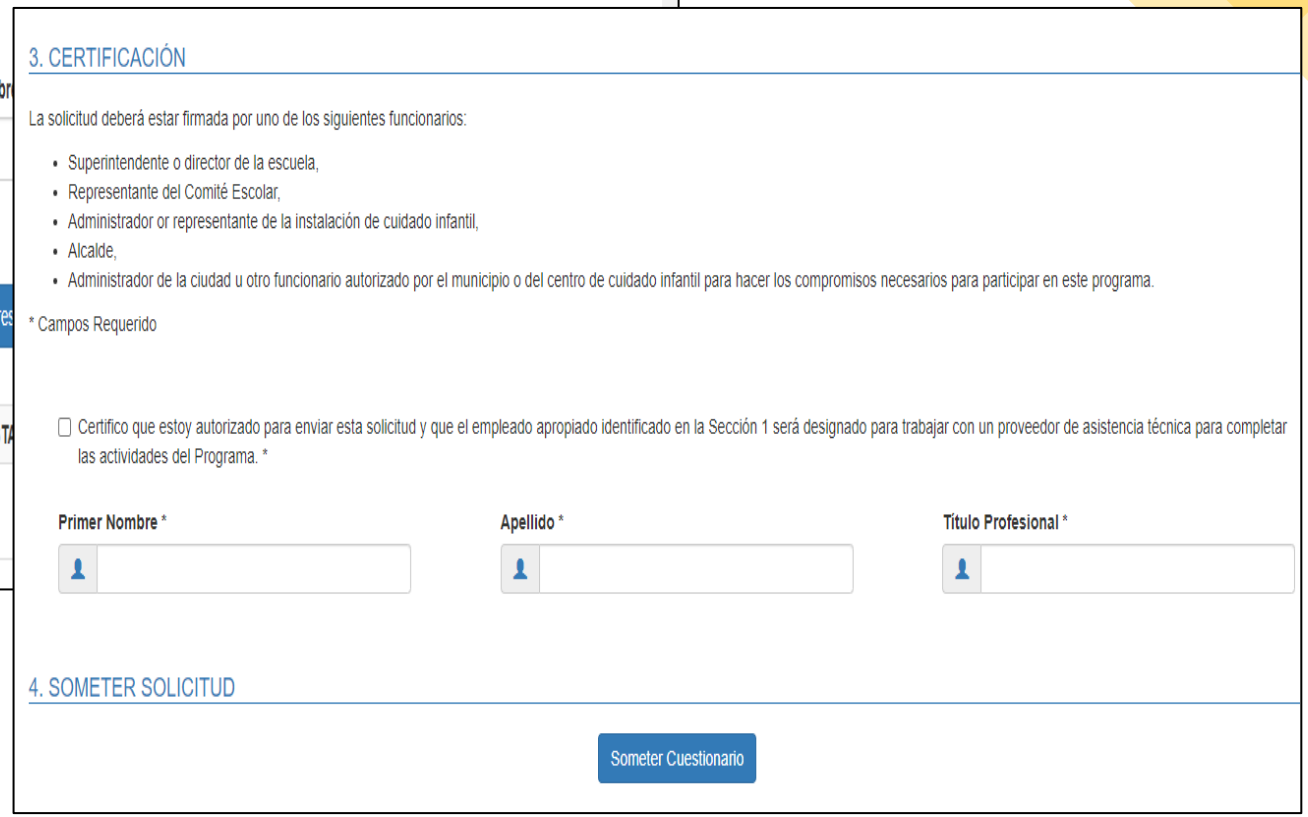
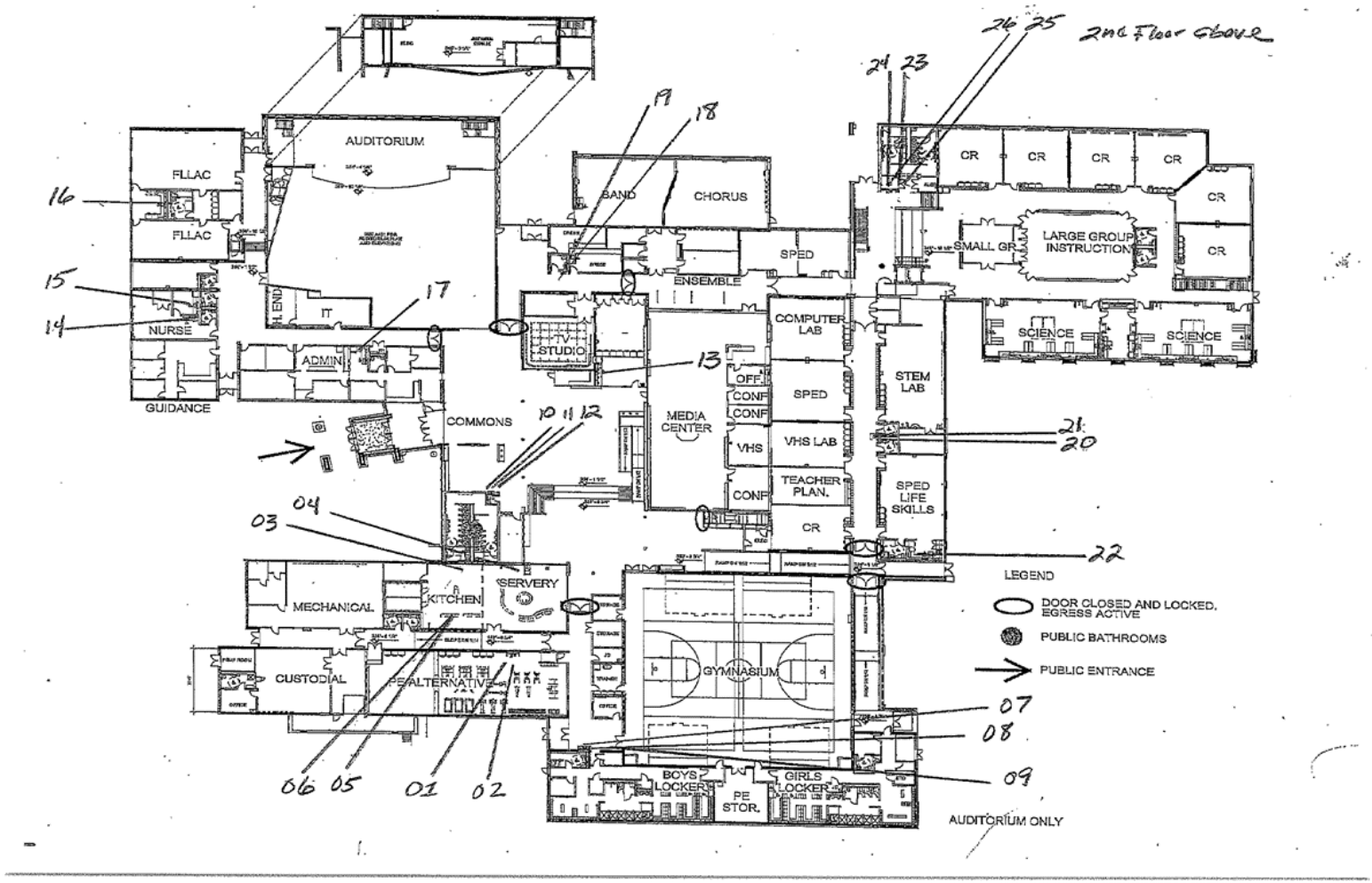


2) Initial Outreach From Program

- **Call and/or email from UMass technical assistance provider (TAP) – Rick, Kate, Gene, Bob…**
  - **Explains where and how samples are taken, sampling process, interaction with laboratory**
  - **Request information to be sent by School/EECF provider or arrange for on-site visit**
  - **Sampling locations determined, number of sample bottles needed, laboratory is selected and contacted to provide sample bottles**

3) Sample Plan, Fixture Location Map

- Identifies/labels all LCCA fixtures for sampling (all water sources for drinking or food preparation)
- Unique, sequential code for labelling locations
- Generally begin where water enters the building if a Large Group or a School

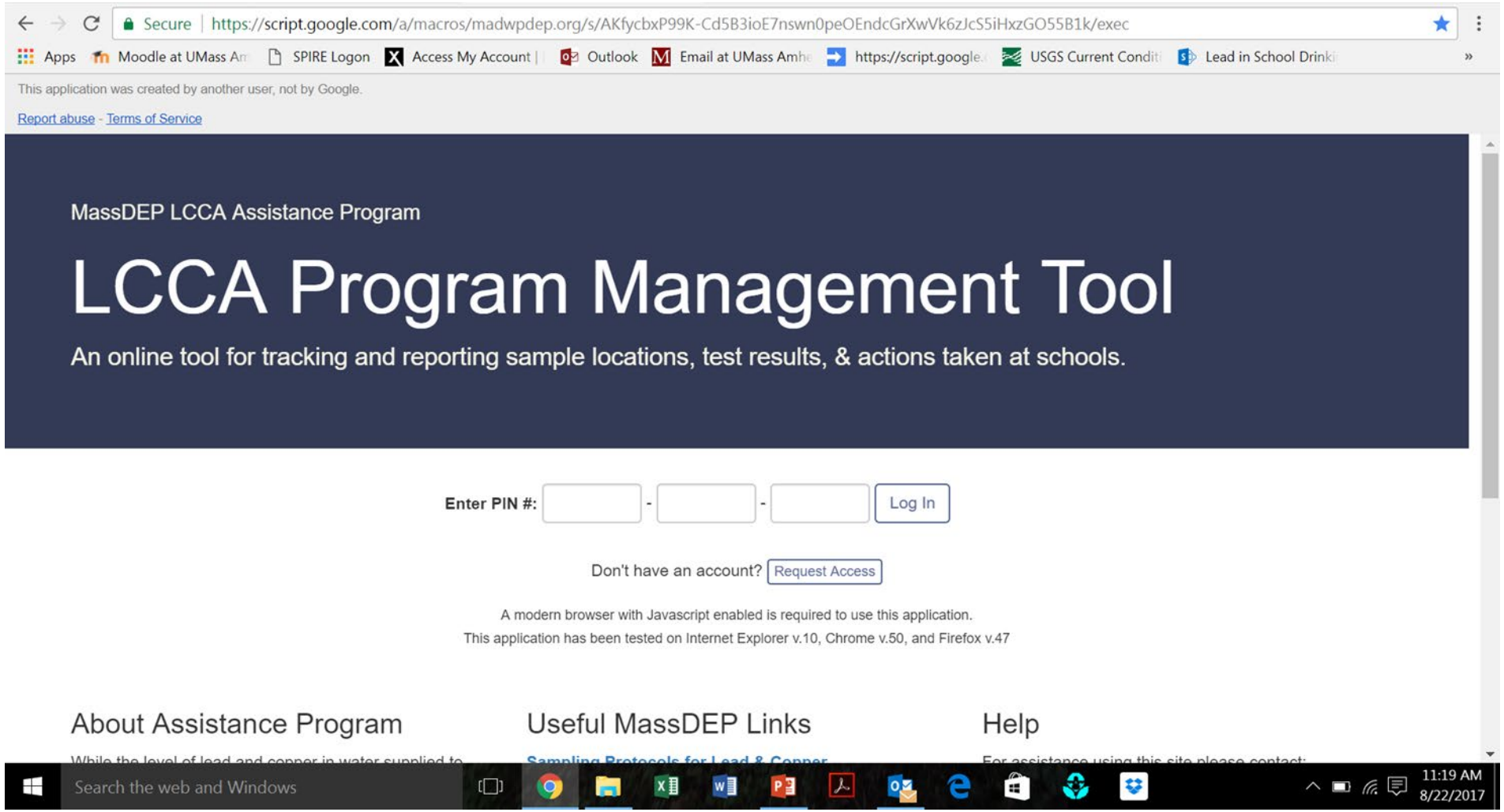


- Most common school fixture: classroom sink with both a faucet and a bubbler for drinking
- Common childcare fixtures: food prep sink, refrigerator tap
- Other fixtures: kitchen kettles, produce wash sinks, ice machines, hallway bubblers, bottle fill stations, nurse's office sink

Example: sinks in a class/care room

LCCA Program Management Tool

- **Web-based online application created by DEP**
- **TAP will facilitate use**
- **Functions of the "Tool" include**
  - **Entry & creation of sampling location record (the sample plan)**
  - **Download forms (chain of custody (CoC), sample bottle labels file, sampling plan);**
  - **Upload documents (sample location map, field CoC)**
  - **View sample analysis results;**
  - **Report remediation actions taken**
- **Each facility/system is assigned a unique PIN code for access to the Tool**


Secure | https://script.google.com/a/macros/madwpdep.org/s/AKfycbxP99K-Cd5B3ioE7nswn0peOEndcGrXwVk6zJcS5iHxzGO55B1k/exec
Apps
Moodle at UMass Am
SPIRE Logon
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Outlook
Email at UMass Amhe
https://script.google.
USGS Current Conditi
Lead in School Drinki
This application was created by another user, not by Google.
Report abuse - Terms of Service
MassDEP LCCA Assistance Program
LCCA Program Management Tool
An online tool for tracking and reporting sample locations, test results, & actions taken at schools.
Enter PIN #:
Log In
Don't have an account?
Request Access
A modern browser with Javascript enabled is required to use this application.
This application has been tested on Internet Explorer v.10, Chrome v.50, and Firefox v.47
About Assistance Program
Useful MassDEP Links
Help
Search the web and Windows
11:19 AM
8/22/2017

Scheduling sample collections

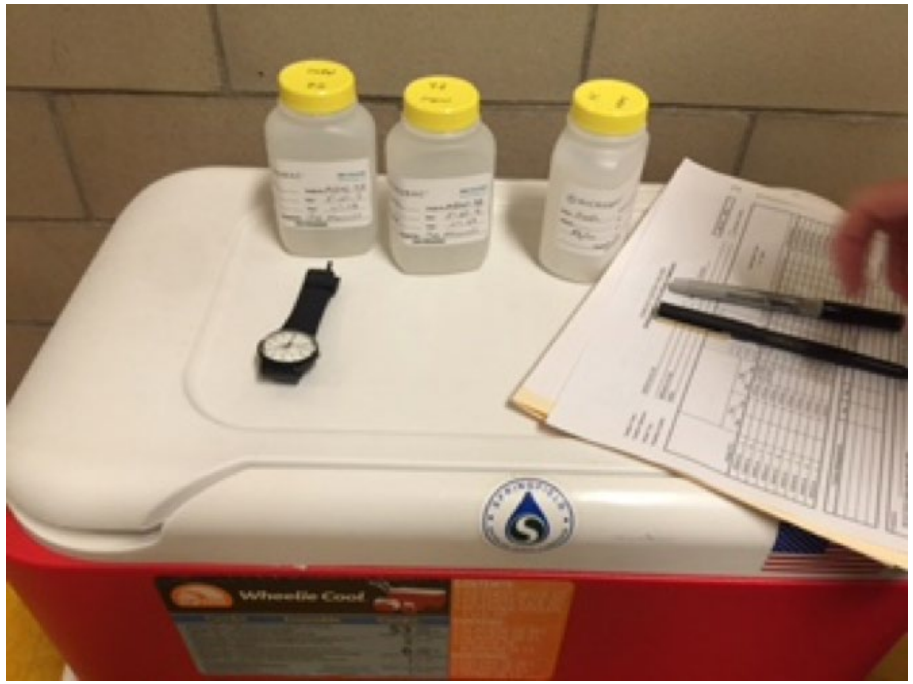
1. **Prior to sample collections at a facility:**
   a. **Sample plans and maps – entered in Reporting Tool**
   b. **Labels and chain of custody forms created and printed**
2. **Lab assignment: TAP does this**
   a. **Estimate number sample bottles required and coordinate drop off and pick up of bottles (or done by TAP)**
3. **Sampling is scheduled (bottles sent to provider or TAP plans on-site visit**

4) Collecting Water Samples

Sampling Guidance

- **Must be representative of actual conditions:**
  - **Taps being sampled should be inactive for at least 8 hours (overnight is best)**
  - **BUT do not sample after any day when the facility was not in use (e.g. weekends, holidays or vacations since water will be stagnant too long).**
- **Primary Sample- First Draw – Focuses on whether fixture itself (or immediately adjacent plumbing connected to the fixture) is a contributing factor to elevated lead concentrations.**
- **Flush Sample- Second Draw- after 30 Second Flush**
- **Second Draw –Focuses on whether the source of elevated lead concentrations is nearby in the plumbing system.**
  - **For this Program - Do not clean screens/aerators before second draw as discussed in the Sampling Fact Sheet.**

What is needed to collect samples:

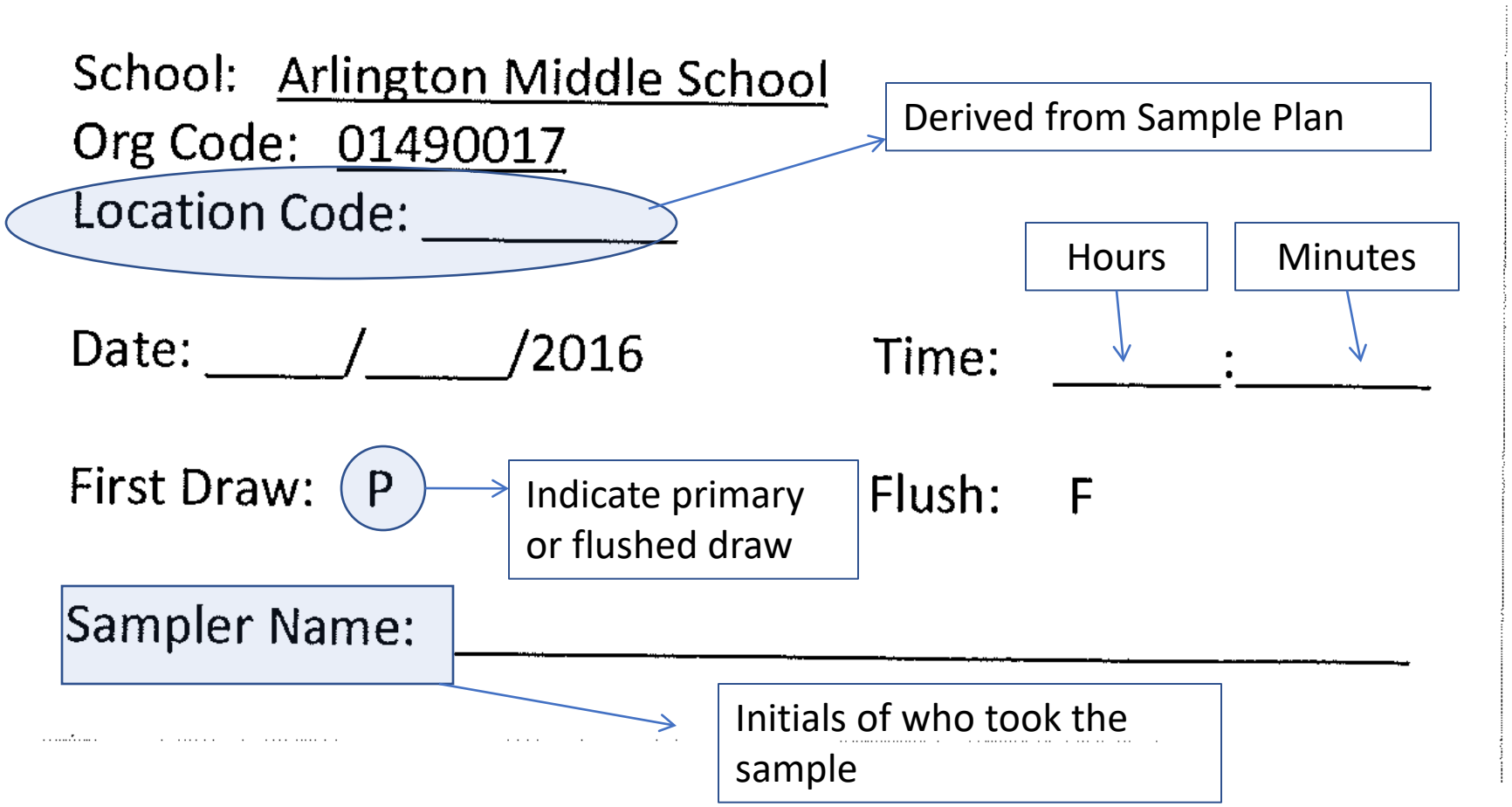


- 250 ml sample bottles provided by the assigned lab (may be in a cooler)
- Clip board
- Pen
- Watch or timer on cell phone
- Sharpie/black permanent marker
- Program and school specific Chain of Custody form (Provided by TAP or lab)
- Program/school specific labels(Provided by TAP or lab)

Collecting Samples

- Each location (tap) typically requires two bottles, but may only require one if no flush sample is collected (see later slide)
- Write the location code on the top of each bottle just before sample collection (001P or 001F).
- Collect water sample XXXP and record time on chain of custody.
- Conduct 30 second flush.
- Collect water sample XXXF and record time on chain of custody.
- Fill out the labels entirely and affix label to the bottle with the corresponding location code on top.

Labeling Samples



Chain of Custody

- This is a legal document that Tracks sample from collection through sample results to ensure integrity of the sample and thereby the data.
- Printed copy completed/filled out during sampling, goes to lab.
- One person should be designated the sampler and have their name and initials on the form and labels.
- The program chain of custody must include the Organization Code assigned by the MA Department of Elementary and Secondary Education or the Massachusetts Department of Early Education and Care.
- Location Code corresponds with Map of LCCA Taps and Sampling Plan
- The Location Code must be followed by a P or F after it to identify if the sample was Primary (first) or Flushed (second) draw.
- All information on the Sample Label and the Chain of Custody form must be the same.

Chain of Custody (cont.)

MassDEP Drinking Water Expanded Lead Assistance Program Chain Of Custody Page _____ of _____

Lab Job #:		Report Information Data Deliverables:	eDEP Upload	Date Received in Lab:	
TA Provider Information		**Project Information**		**Turn-Around Time**	
Client:		Facility Org Code #:	291012	Standard	X
Address:		Facility Name:	Giggle Garden's, Inc.	Rush (requires pre-approval)	
				Due Date:	
Phone:		Facility Address:	Giggle Garden's, Inc. 627 STATE ST SPRINGFIELD, MA 01109	**Sampler's Name**	**Initials**
Fax:					
Email:					

Other Project Specific Requirements / Comments / Detection Limits:

The LCCA Project requires laboratories to report results to the MassDEP Drinking Water Program using the eDEP Bulk Upload tool. For more information about the eDEP Bulk Upload tool please visit https://www.mass.gov/info-details/water-quality-monitoring-reports-frequently-asked-questions

Sample Filtration:	None	Preservation:	None in field (at lab)						
Lab ID (Lab Use Only)	**Location Code ****	**Location Type [1]**	**Flush Time [2]**	**Location Name**	**Collection Date and Time**	Sampler's Initials	Sample Matrix	ANALYSIS **LEAD**	Finished Water	Total # Bottles
	001P	KC		Main kitchen sink next to dishwasher			DW	X	X	1
	001F	KC		Main kitchen sink next to dishwasher			DW	X	X	1
	002P	CF		Classroom faucet LLfirst on the right			DW	X	X	1
	002F	CF		Classroom faucet LLfirst on the right			DW	X	X	1
							DW	X	X	1
							DW	X	X	1
							DW	X	X	1
							DW	X	X	1
							DW	X	X	1
							DW	X	X	1
							DW	X	X	1
							DW	X	X	1

** Location Code Logic:
Number the sites within a facility sequentially 001, 002, 003, etc. Append "P" for First Draw sample and "F" for Flush Sample.

Container Type: P

[1] Location Type:
DW = Drinking Water Bubbler, **WC** = Water Cooler (chiller unit), **CF** = Classroom Faucet, **KC** = Kitchen Faucet Cold, **KK** = Kitchen Kettle, **KI** = Kitchen Ice Maker, **EC** = Home Economics Room Cold, **BF** = Bathroom Faucet, **NS** = Nurse's Office Sink, **SC** = Service Connector, **OT** = Other Location

Preservative: A

[2] Flush Time: Indicate length of time flushed, 0 or 30 | Container Type Code: **P** = Plastic | Preservative: **A** = None | LCCC-P3 revision 2/11/2020

Relinquished By	**Date/Time**	**Received By**	**Date/Time**

Sampler Certification

By signing below I certify that I collected the samples according to the MassDEP procedure for the collection of drinking water samples for lead as described at https://www.mass.gov/guides/sampling-for-lead-and-copper-at-schools-and-childcare-facilities

Print Name _____ Signature _____ Date _____

Print Name _____ Signature _____ Date _____

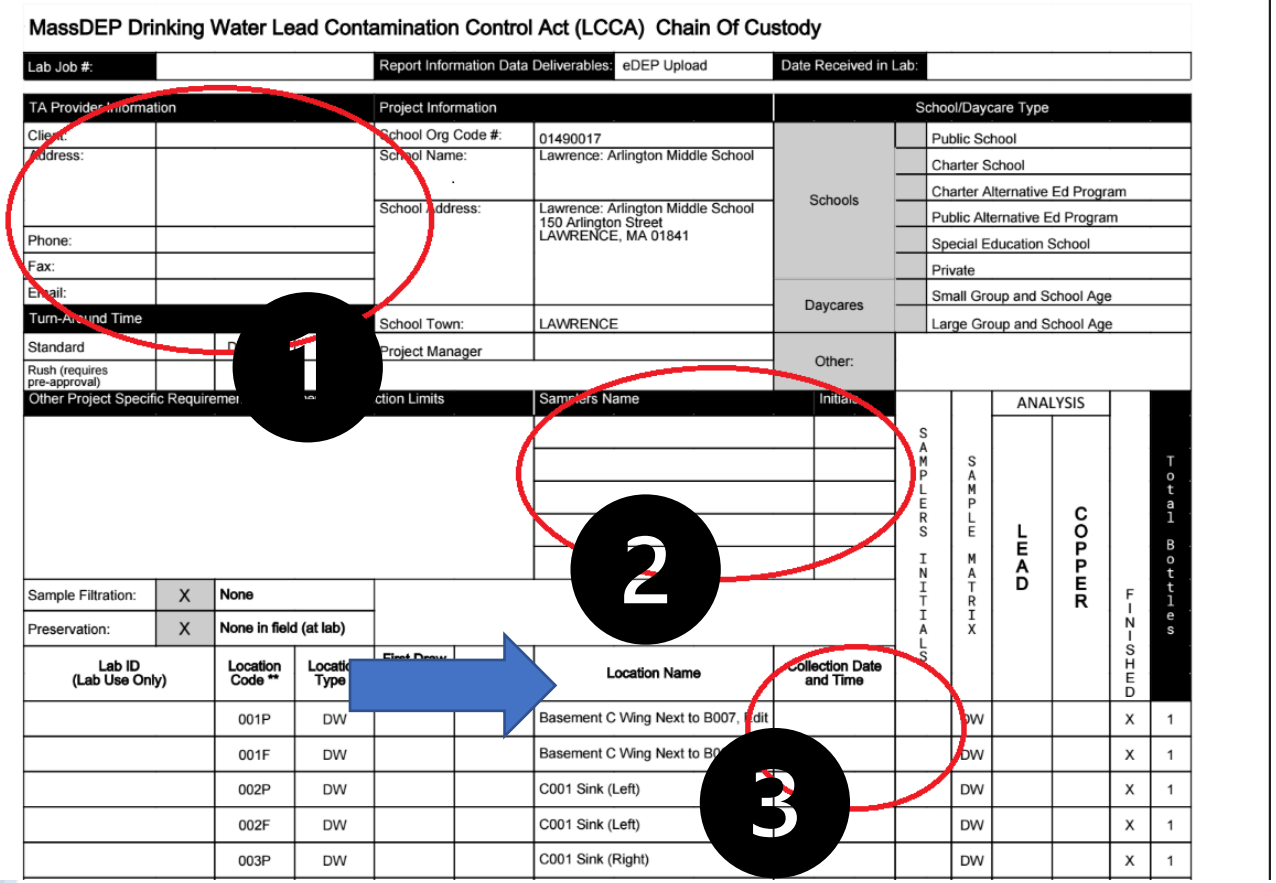
Top of Chain of Custody

Bubble 1- Put "UMASS" as client.

Bubble 2 – List the Samplers Name and initials.

Bubble 3- track the time sample was collected and initial.

** I list the Date once in the larger box (See arrow) so I do not have to write the date and time in the small area shown in Bubble 3.



MassDEP Drinking Water Lead Contamination Control Act (LCCA) Chain Of Custody

Lab Job #:		Report Information Data Deliverables:	eDEP Upload	Date Received in Lab:	

TA Provider Information		Project Information		School/Daycare Type		
Client:		School Org Code #:	01490017	Schools		Public School
Address:		School Name:	Lawrence: Arlington Middle School			Charter School
		School Address:	Lawrence: Arlington Middle School 150 Arlington Street LAWRENCE, MA 01841			Charter Alternative Ed Program
Phone:						Public Alternative Ed Program
Fax:						Special Education School
Email:						Private
Turn-Around Time		School Town:	LAWRENCE	Daycares		Small Group and School Age
Standard		Project Manager				Large Group and School Age
Rush (requires pre-approval)				Other:		

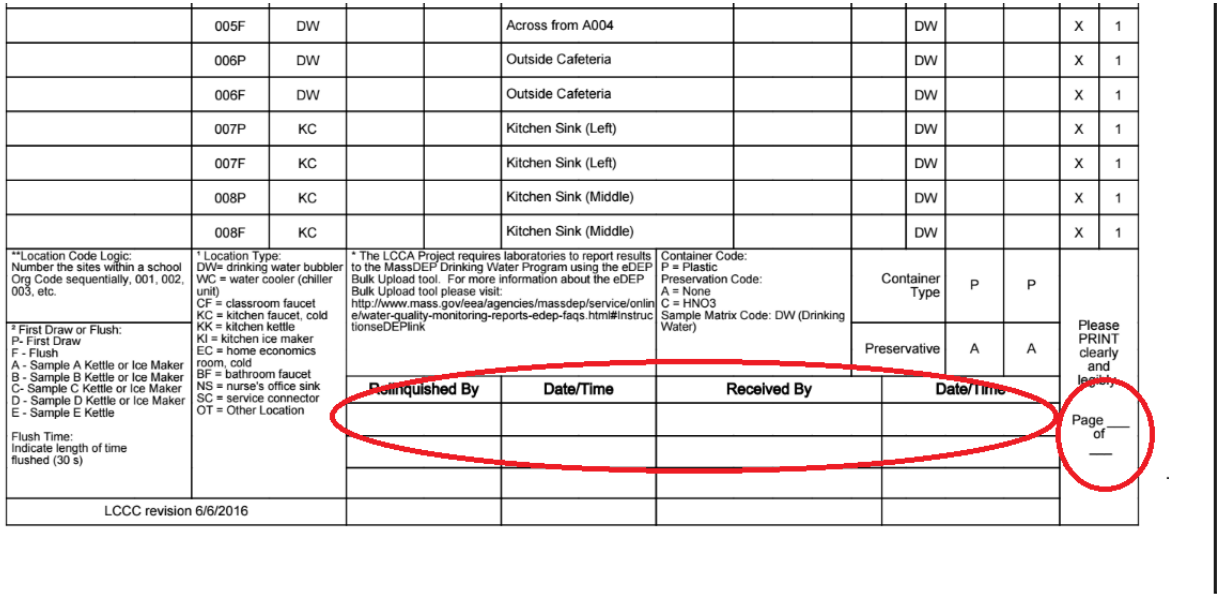
Other Project Specific Requirements	Action Limits	Samplers Name	Initials

Sample Filtration:	X	None
Preservation:	X	None in field (at lab)

Lab ID (Lab Use Only)	Location Code **	Location Type	First Draw		Location Name	Collection Date and Time	SAMPLERS INITIALS	SAMPLE MATRIX	ANALYSIS LEAD	ANALYSIS COPPER	FINISHED	Total Bottles
	001P	DW			Basement C Wing Next to B007, Edit			DW			X	1
	001F	DW			Basement C Wing Next to B0			DW			X	1
	002P	DW			C001 Sink (Left)			DW			X	1
	002F	DW			C001 Sink (Left)			DW			X	1
	003P	DW			C001 Sink (Right)			DW			X	1

Bottom of Chain of Custody

Sign to Relinquish and number the pages please.



	005F	DW			Across from A004			DW			X	1
	006P	DW			Outside Cafeteria			DW			X	1
	006F	DW			Outside Cafeteria			DW			X	1
	007P	KC			Kitchen Sink (Left)			DW			X	1
	007F	KC			Kitchen Sink (Left)			DW			X	1
	008P	KC			Kitchen Sink (Middle)			DW			X	1
	008F	KC			Kitchen Sink (Middle)			DW			X	1

**Location Code Logic: Number the sites within a school Org Code sequentially, 001, 002, 003, etc.	¹ Location Type: DW= drinking water bubbler WC = water cooler (chiller unit) CF = classroom faucet KC = kitchen faucet, cold KK = kitchen kettle KI = kitchen ice maker EC = home economics room, cold BF = bathroom faucet NS = nurse's office sink SC = service connector OT = Other Location	* The LCCA Project requires laboratories to report results to the MassDEP Drinking Water Program using the eDEP Bulk Upload tool. For more information about the eDEP Bulk Upload tool please visit: http://www.mass.gov/eea/agencies/massdep/service/online/water-quality-monitoring-reports-edep-faqs.html#InstructionseDEPlink	Container Code: P = Plastic Preservation Code: A = None C = HNO3 Sample Matrix Code: DW (Drinking Water)	Container Type	P P	Please PRINT clearly and legibly
² First Draw or Flush: P- First Draw F - Flush A - Sample A Kettle or Ice Maker B - Sample B Kettle or Ice Maker C- Sample C Kettle or Ice Maker D - Sample D Kettle or Ice Maker E - Sample E Kettle Flush Time: Indicate length of time flushed (30 s)				Preservative	A A	

Relinquished By	Date/Time	Received By	Date/Time	Page ___ of ___

LCCC revision 6/6/2016

What to Sample (From DEP UMass Sampling Training Document)

P-P-F

Paired drinking water bubblers and some classroom sinks share a main water pipe that splits to provide water to two or three fixtures.

A primary (P) sample is taken from all fixtures (each fixture has its own location code) but only one flush (F) sample is taken.

P-P-F

What to Sample (continued)

Hallway Water Cooler (sometimes two water coolers side-by-side, each gets Primary and Flush samples)

Nurse's Office Sink (cold only)

Teacher's Lounge Sink (cold only)

all are P-F

S

Filtered Fountain & Bottle Filling Station

MA SWIG Program providing grants ($3000/fixture, installed) for schools to replace fountains with Pb > 1 ppb based on appropriate testing procedures

What NOT to Sample!

Custodial Washing Sinks

Bathroom Sinks (If posted, "For Hand Washing Only")

Sample Pick up

- **If the facility has coolers (or other storage container; samples are not refrigerated):**
  - **Samples collected go back into the cooler with the proper labels and chain of custody for pick up by the lab at a previously determined place and time (or taken by the TAP to the lab).**

***Note- There's no required treatment for the samples. However, they are only viable for 28 days.**

What if…?

- What if there's a sink they forgot or one that is not on the chain of custody form?
  - Simply add the location to the end of the chain of custody.
  - Flush samples for a location that only has a primary sample on the Chain of Custody can be added to the bottom of the page so long as all the information is present with the sampler's initials.
- What if a sampling plan location is not available. (water shut off, etc.)
  - Simply cross off that location and label "not in use", initial and date the entry.
- What if I do not have enough bottles?
  - Complete as many samples as you are able and alert your Technical Assistance Provider as soon as you are able.

5) Laboratory Analysis & 6) Result Reporting

- **Laboratories report all LCCA analytical results electronically to MassDEP (eDEP system)**
  - **Performed only by Massachusetts DEP-certified laboratories that were e-DEP compliant**
- **UMass emails the analytical results (attached Excel file) to EECF or school system (one to several schools at a time) along with DEP contacts, information links, and template letters for parents**
- **DEP transfers the Sampling Results to the online LCCA Management Tool**
- **DEP posts results on public website ~ 2 weeks after sending to schools (see website below for all MA LCCA data)**
  (https://eeaonline.eea.state.ma.us/Portal/#!/search/leadandcopper)

- **MassDPH followed-up with an email with information about Pb and Cu and health and additional guidance**

Example of Results file sent to an EECF

MassDEP LCCA Extended Assistance Program Water Sample Analysis Results

Location:	**Amherst**
Name of Facility:	**The Cottage Garden**
Facility Type:	**FCC**
Org Code:	**7027845**
Sample Date:	**2/25/2021**
Sampler Name:	**Celia Riahi**
Laboratory:	**Con-Test**
Analytical Method:	**EPA 200.8**
Method Detection Limit (MDL):	**0.0005**
Units of Measurement:	**mg/L**

Location Type Code	Location Type
DW	Drinking Water Bubbler
WC	Water Cooler (chiller unit)
CF	Classroom Faucet
KC	Kitchen Faucet, Cold
KK	Kitchen Kettle
KI	Kitchen Ice Maker
EC	Cold
BF	Bathroom Faucet
NS	Nurse's Office Sink
SC	Service Connector
OT	Other Location

NOTE:

'First Draw' means a 250 mL volume sample collected after an 8-18 hour stagnation period and prior to any other use of the fixture.

'Flush' means a 250 mL volume sample collected from the flowing tap 30 seconds after the First Draw sample is collected.

'MDL' is the minimum detection level that is reportable by the laboratory.

'ND (Non Detects)' means a concentration less than the MDL.

'Not Sampled' implies flush sample not collected because of common feed plumbing with adjacent fixture.

Results highlighted in red are concentrations greater than or equal to 0.0155 mg/L

Results highlighted in orange are concentrations between 0.0015 mg/L and 0.0154 mg/L

Number of samples with lead concentration > or = 0.0015 mg/L	**1**	**0**

Sample Location ID	Location Type	Location Description	Method Detection Limit	Lead First Draw (P)	Lead Flush (F)
001	KC	Kitchen Right	0.0005	**ND**	**ND**
002	KC	Kitchen Left	0.0005	**ND**	**ND**
003	BF	Bathroom	0.0005	**0.0015**	**ND**
004	OT	Outside Faucet	0.0005	**ND**	**ND**

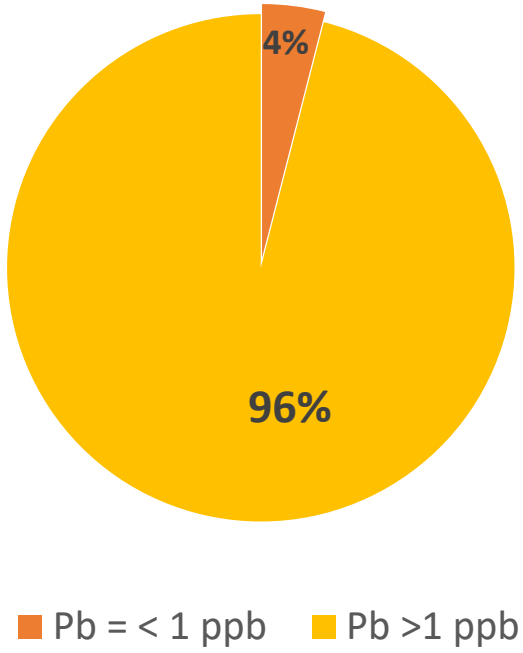
MassDEP Free Testing - What Did We Find?

2016-2018: Tested 992 school/EECF buildings (mostly schools)

DEP guideline level is 1 part per billion (ppb)

Almost All Buildings Have Detections

Buildings with at least on sample with Lead Detected > 1 ppb



But, many (most really) of individual samples have low lead levels:

- 48% of first draw < 1 ppb
- 68 % of flush < 1 ppb

Some Results from the Extended Assistance Program

- **Results for about 85 EECF & 3 schools:**
  - **33 facilities (38%) had all samples, first draw and flush, at 1 ppb or less for lead – Excellent!**
  - **66 facilities (75%) had all flush samples at 1 ppb or less**
  - **Almost all facilities have at least one tap with lead less than 1 ppb after flushing**

- **So, flush faucet for 30 seconds prior to taking water for drinking or cooking if no other action taken**

7a) Follow-Up: Communication

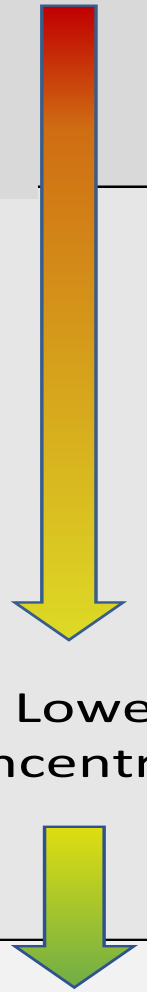
- **Notify consumers (public) immediately**
  - **Include results and short-term and long-term next steps**
  - **Utilize letters and other outreach mechanisms (website, Twitter, etc.)**
  - **Explore engagement from local health officials**
- **Tools to assist schools/EECFs**
  - **Template outreach letters from MassDEP**
  - **Fact Sheet(s) on Lead and Copper in Schools from Mass Department of Public Health (DPH)**

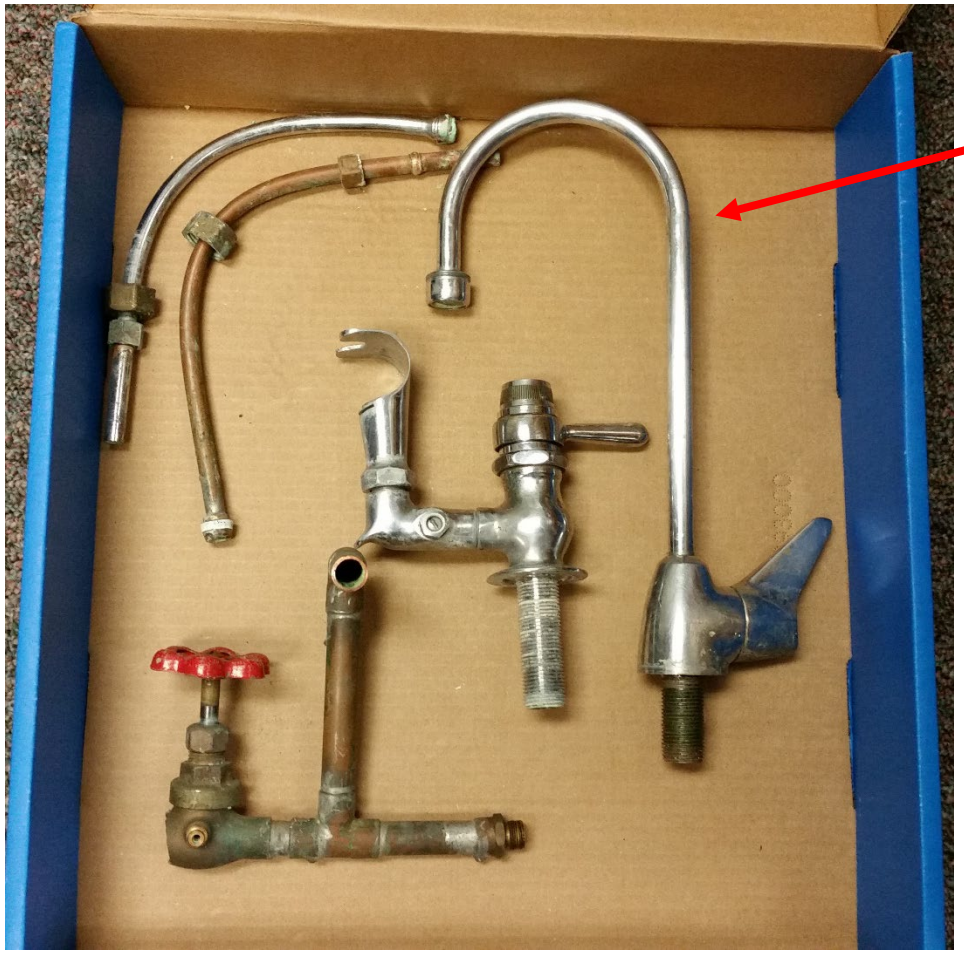
7b) Follow-Up: Remedial Actions by Schools/EECFs

- **MassDEP has these recommendations:**
- **Contact Local Public Water System and MassDEP Drinking Water Program for assistance**
- **Immediate Measures**
  - **Shut Off Problem Fixtures**
  - **Implement a Flushing Program (track via Manual Flushing Log) (this is a temporary measure, helpful, not a solution)**
- **Conduct Outreach to Staff and Parents**
  - **Transparency is critical**
- **Determine if the source of the contamination is the fixture or the plumbing**
  - **Check Plumbing Profile**
  - **Possibly replace plumbing**
  - **Install POU lead removal treatment (focus of SWIG program)**
  - **Follow-up Sampling & Analyses**
- **Develop Plan of Permanent Measures**
- **Report remedial actions taken on the MassDEP online LCCA Management Tool**

Remediation Actions

Lead Level Result at the Tap or Fixture	Follow-up Actions Chart
15 ppb => 15 ppb	Taps and fixtures with lead levels over 15ppb should be taken out of service until testing indicate that the problem has been addressed.
Lowest concentration 1 ppb	Short Term steps: ○ Flushing ○ Post signs ○ Bottled water Long term- Permanent steps: ○ Replace taps/fixtures, plumbing material ○ Install filters ○ Use only cold water for food and beverage preparation Routinely test all taps/fixtures
< 1 ppb	Lead was not detected.





Old school fixtures

New ("Pb free") school fixtures
(NSF/ANSI 372 since 2014)

How to decrease lead Levels at your facilty

- **Best: removal/elimination of all water system materials that contain lead**
  - **May be very challenging due to cost, but significant progress has been made, and more needs to be done**
- **Source water treatment to minimize corrosion of materials containing Pb (and Cu) – YES, very important, done by your public water supplier**
  - **pH, alkalinity (DIC), phosphate, oxidants, chloride/sulfate, etc.**
  - **Use optimal corrosion control treatment (OCCT)**
- **Flushing of water fixtures prior to consumption, only drawing cold water for consumption – YES, but requires user education; unknown duration of effective impact; not a long-term solution**
- **Point of use (POU) treatment for Pb removal: significant implementation (e.g., Flint, MI; schools; other), O&M**
  - **Under sink filters**
  - **Pitcher filters**
  - **Built-in refrigerator filters**
- **DEP, DPH, US EPA guidance reflects all these measures**

Any Questions? Enter in Chat please

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