

Tiering Criteria and Sampling Pool



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

All systems sampling in 2019 should do the following...

- Review the revised tiering criteria
- Review your existing sampling pool
 - Retain sites that meet the new tiering criteria
 - Replace sites that are no longer the highest tier
- Develop a larger sampling pool
 - 1st priority - # of sites needed for compliance
 - 2nd priority - # of sites needed for standard monitoring
 - 3rd priority – 1.5x # of sites needed for standard monitoring

Tiering Criteria





Tiering Criteria

- Tiering Criteria has both the Tier and Category
 - Tiers - based on potential risk for lead exposure
 - Categories - distinctions between different configurations within a Tier
- Rule designates three tiers of sampling locations
 - Tier 1
 - Tier 2
 - Tier 3
 - Other

Tiering Criteria – Rule requirements

- Systems shall sample Tier 1, unless insufficient Tier 1
 - Tier 1 – Primarily focuses on single family residential locations, with a caveat for multi-family residential locations, that have a source of lead
 - Lead service line, lead interior plumbing
- Revisions to the Rule help focus sampling on sites with lead service lines or lead interior plumbing.

Previous Tiering Criteria

Site	Sample Category	
Tier 1	A	Single family residence with a lead service line*.
	B	Single family residence with copper plumbing with lead solder installed after 1982 and before 1989.
	C	Single family residence with lead interior plumbing.
	D	Multiple family residence (MFR) with either a lead service line*, copper plumbing with lead solder installed after 1982 and before 1989, or lead plumbing. Note: Only when MFR comprise at least 20 percent of the total service connections for the system.
Tier 2	E	Multi-family residences or other buildings with a lead service line*.
	F	Multi-family residences or other buildings with copper plumbing with lead solder installed after 1982 and before 1989.
	G	Multi-family residences or other buildings with lead interior plumbing.
Tier 3	H	Single family residence with copper plumbing with lead solder installed before 1983.
Other		If no Tier 1, 2, or 3 sites available, sample sites that use plumbing materials commonly found at other locations in the water supply.
*Priority should be placed on sites with full LSLs, followed by partial LSLs, followed by lead goosenecks.		

Tiering Criteria Changes

Site	Sample Category	
Tier 1	A	Single family residence with a lead service line*.
	B	Single family residence with copper plumbing with lead solder installed after 1982 and before 1989.
	C	Single family residence with lead interior plumbing.
	D	Multiple family residence (MFR) with either a lead service line*, copper plumbing with lead solder installed after 1982 and before 1989 , or lead plumbing. Note: Only when MFR comprise at least 20 percent of the total service connections for the system.
Tier 2	E	Multi-family residences or other buildings with a lead service line*.
	F	Multi-family residences or other buildings with copper plumbing with lead solder installed after 1982 and before 1989.
	G	Multi-family residences or other buildings with lead interior plumbing.
Tier 3	H	Single family residence with copper plumbing with lead solder installed before 1983. before 1988.
Other		If no Tier 1, 2, or 3 sites available, sample sites that use plumbing materials commonly found at other locations in the water supply.
*Priority should be placed on sites with full LSLs, followed by partial LSLs, followed by lead goosenecks.		

Current Tiering Criteria

Site	Sample Category	
Tier 1	A	Single family residence with a lead service line*.
	B	Single family residence with lead interior plumbing.
	C	Multiple family residence (MFR) with either a lead service line*, or lead plumbing. Note: Only when MFR comprise at least 20 percent of the total service connections for the system.
Tier 2	D	Multi-family residences or other buildings with a lead service line*.
	E	Multi-family residences or other buildings with lead interior plumbing.
Tier 3	F	Single family residence with copper plumbing with lead solder installed before July 1988.
Other		If no Tier 1, 2, or 3 sites available, sample sites that use plumbing materials commonly found at other locations in the water supply.
*Priority should be placed on sites with full LSLs, followed by partial LSLs, followed by lead goosenecks.		

Tier 1 Criteria Highlights

- Focuses Tier 1 on finding sites with lead
- No longer copper w/ lead solder in Tier 1
 - Removed SFR/MFR copper '83-'88
 - No 50% LSL and 50% copper w/ lead solder
 - **Now 100%** LSL or lead interior plumbing
 - Systems may have to find new single family residential sites with LSLs or lead interior plumbing
- Priority should be placed on full LSL, then partial LSL and finally lead goosenecks

Acronym Legend

SFR – single family residential

MFR – multi-family residential

BLDG – other building

LSL – lead service line

Tier 2 Criteria Highlights

- Focuses Tier 2 on finding sites with lead
- No copper w/ lead solder in Tier 2
 - Removes MFR/BLDG copper '83-'88
 - No 50% LSL and 50% copper w/ lead solder
 - **Now 100%** LSL or lead interior plumbing
 - Systems will have to find new MFR or BLDG sites with LSLs or lead interior plumbing
- Priority should be placed on full LSL, then partial LSL and finally lead goosenecks

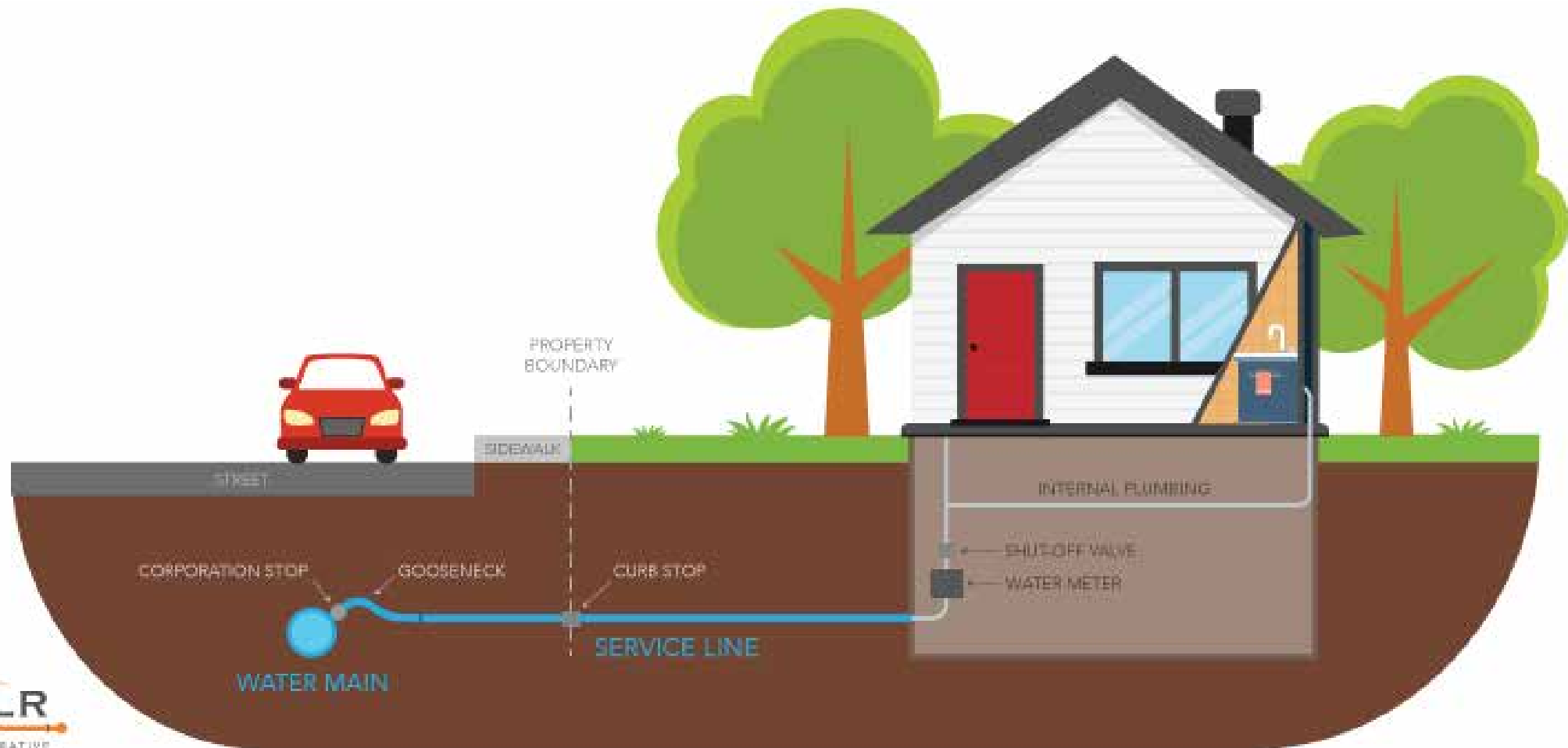
Acronym Legend

SFR – single family residential
MFR – multi-family residential
BLDG – other building
LSL – lead service line

Service Line Review

- **Service Line** – means the pipe from the discharge of the corporation fitting to customer site piping or to the building plumbing at the first shut-off valve inside the building, or 18 inches inside the building, whichever is shorter.
- **Lead Service Line (LSL)** – means either a service line which is made of lead or any lead pigtail, lead gooseneck, or other lead fitting that is connected to the service line, or both.

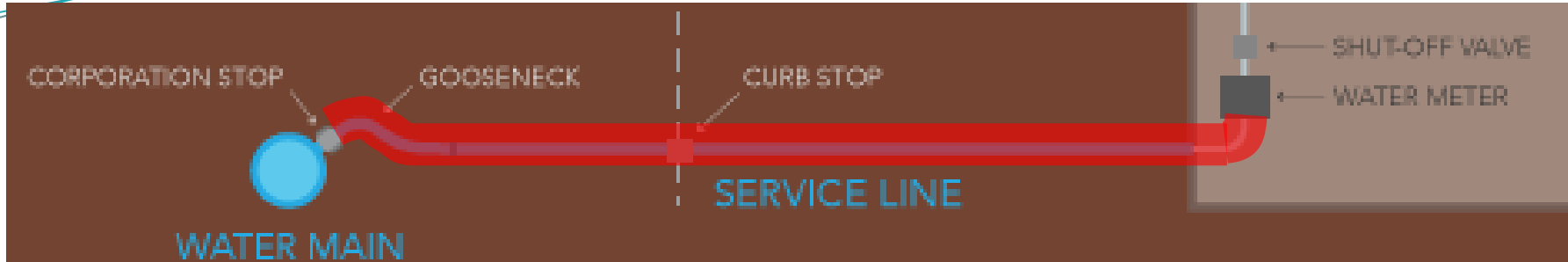
Service Line Diagrams



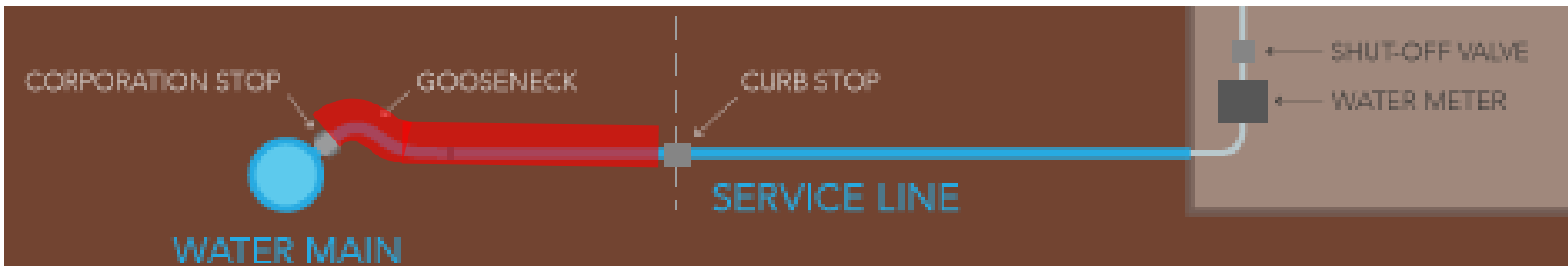
Examples of LSLs

Lead

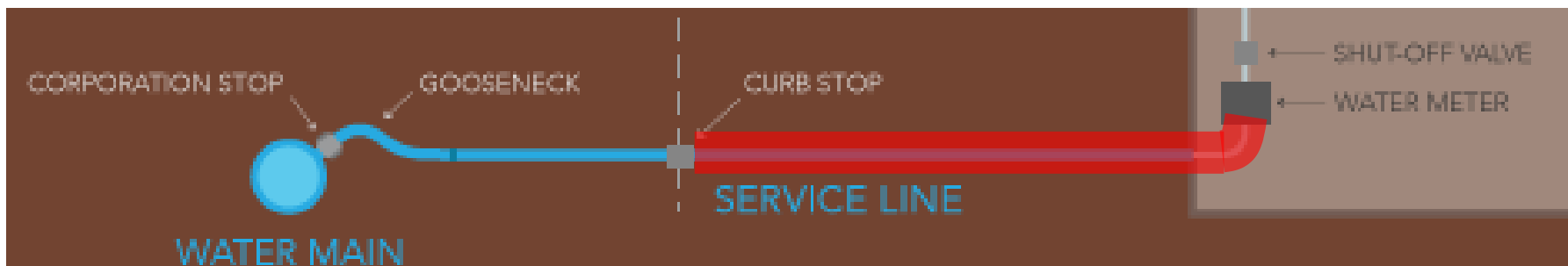
Copper or Plastic



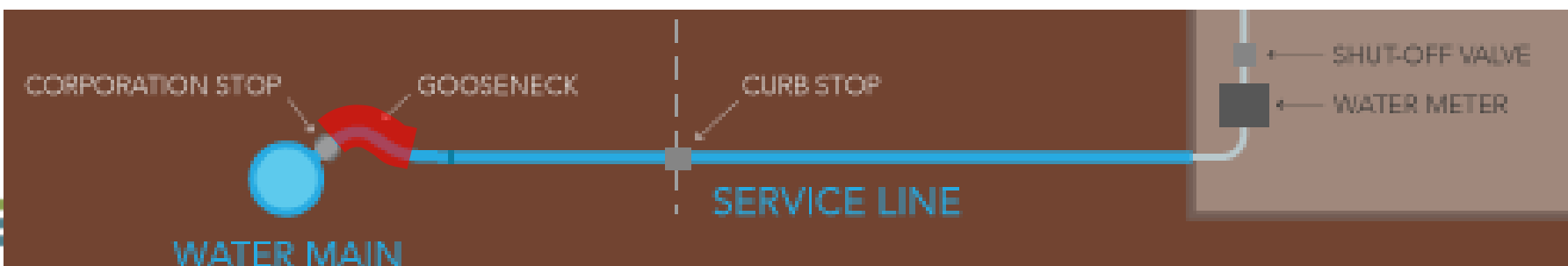
Full LSL



Partial LSL



Partial LSL



Lead gooseneck

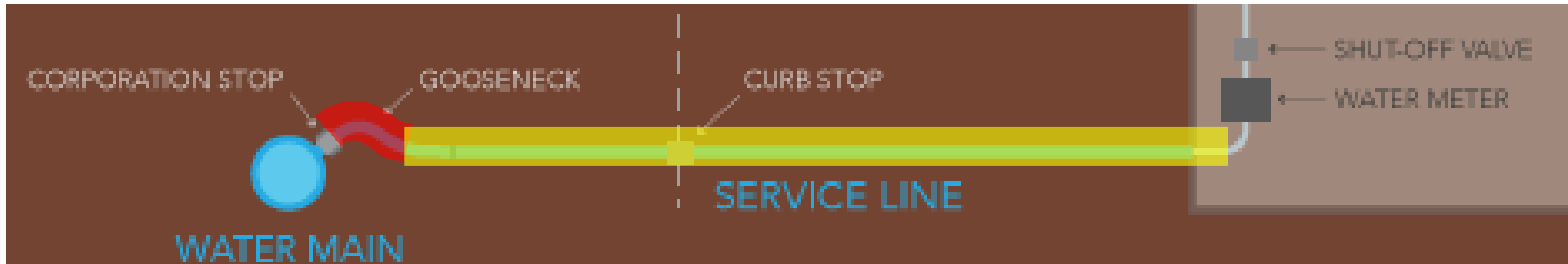
Tiering Criteria Highlights

Galvanized service lines

Lead

Galvanized

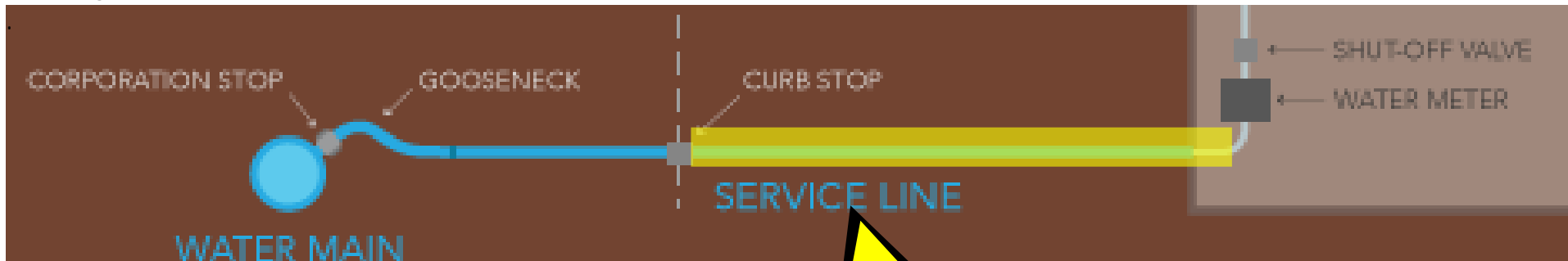
Lead gooseneck connected to a galvanized service line.



Lead Service Line

Tier 1 or 2

Lead gooseneck has been removed. Galvanized service line remains.



NOT a Lead Service Line

Tier 3 or Other

Galvanized portion must still remain on DSMI and removed as part of 5% LSLR activities.

Tier 3 Criteria Highlights

- Tier 3 sites are SFR locations
 - Tier 3 is now all copper with lead solder before July '88
- Other sites (if no Tier 1, 2, or 3)
 - Representative of plumbing materials commonly found at other locations in the water supply.

Acronym Legend

SFR – single family residential
MFR – multi-family residential
LSL – lead service line
BLDG – other building

Tiering Criteria Highlights

- Business, municipal buildings, and other buildings should only be sampled if...
 - No other Tier 1 sites are available
 - They have a LSL
 - They have lead interior plumbing

Acronym Legend

SFR – single family residential

MFR – multi-family residential

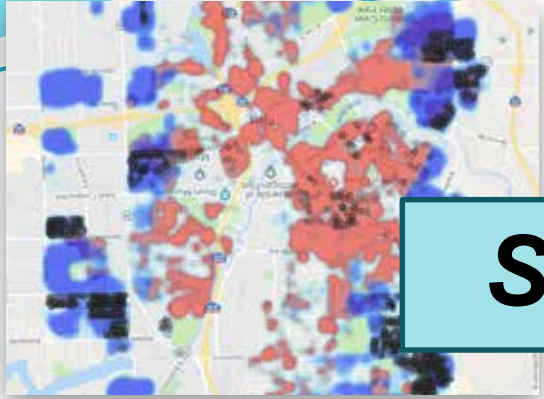
LSL – lead service line

BLDG – other building



Sampling Pool





Sampling pool

- Identifies high priority sites for sampling
- Provides alternate sampling locations
- Must be updated as necessary
 - Sufficient reason and documentation



Sampling Pool – Rule Requirements

- Sampling sites shall be Tier 1, unless no Tier 1 available
 - All higher tier options must be exhausted before including a lower tier (Tier 2, 3, or Other) in your sampling pool.
 - Sampling pool must be updated if higher tier sites are found or if existing sites no longer meet criteria.
- Every supply must complete and submit
 - Sampling pool due by January 1, 2020
 - Similar to RTCR Sampling Site Plan

Number of Sampling Sites

- Required number of sample sites are determined by water supply system population served.

Supply Size (# of People Served)	Number of Sites (Standard Monitoring)	Number of Sites (Reduced Monitoring)
More than 100,000	100	50
10,001 - 100,000	60	30
3,301 – 10,000	40	20
501 – 3,300	20	10
101 - 500	10	5
Fewer than 101	5	5

- Standard Monitoring – Six Month Monitoring
- Reduced Monitoring – Annual or Triennial Monitoring

2018 Monitoring Schedule

ABC Water Utility

WSSN: 12345

Collect samples early in the monitoring period. This schedule reflects your expected routine monitoring and is subject to change. To receive credit for monitoring, include the **WSSN, Site Code, and County** on your request for analysis form. Collect Bacteriological and Automated Partial Chemistry samples close to the shipping time and send overnight delivery. Send all sample results to your Department of Environmental Quality (DEQ) district office unless you use the DEQ laboratory. Test codes, sample units, and costs are listed to help you complete the DEQ laboratory form. Prices are subject to change without notice. The DEQ laboratory is closed on state holidays.

Location: Plant Tap (Well No. 1 and 2)

Collect these samples at the entry point to the distribution system (after treatment, if applicable.)

Sample Type	# Samples/ Frequency	Collect Before	Site Code	Fee	Unit Number	Test Code
Automated Partial Chemistry	This DEQ lab scan includes nitrate, nitrite, fluoride, and sodium whose monitoring frequency requirements differ from one another. Before requesting analyses from a laboratory other than the DEQ laboratory, check with your DEQ district staff for the specific monitoring requirements.					
	1/12 months	09/30/2018	CH500	\$18.00	32	R
Volatile Organic Compounds	1/36 months	09/30/2020	CH500	\$100.00	36VO	CXVO
Complete Metals	1/108 months	09/30/2020	CH500	\$102.00	36ME	CMET2
Arsenic	Included in Metals	Included in Metals	CH500	\$18.00	36ME	CAS
Cyanide	1/108 months	09/30/2020	CH500	\$25.00	36CN	CCN
SOC – Pesticides	1/36 months	09/30/2020	CH500	\$125.00	36PT	CXPT
SOC – Herbicides	1/36 months	09/30/2020	CH500	\$120.00	36HB	CXHB
SOC – Carbamates	1/36 months	09/30/2020	CH500	\$120.00	36LP	CXLP
Gross Alpha (Radiological)	1/108 months	09/30/2024	CH500	Not performed at the DEQ Laboratory. A list of certified labs is at www.michigan.gov/DEQ . Select Water, Drinking Water, Community Water Supply, then Certified Labs under Programs and Activities.		
Radium 226 & Radium 228	1/72 months	09/30/2021	CH500			

Location: Distribution System

Sample Type	Collect Samples According to the ...	# Samples/ Frequency	Collect	Site Code	Fee	Unit Number	Test Code
Bacteriological – coliforms	TCR Sampling Site Plan	1/Monthly	Monthly	DIST	\$16.00	30	BPTC
Lead Copper for Corrosion Control	Lead and Copper Sampling Pool	5/36 months	Between 06/01 and 9/30/2018	DIST	\$26.00	36CC	CCUB

Number of Sites in Sampling Pool

- At least # of standard sites
- Preferably 1.5x the standard sites

Example: System with 20,000

- Standard = 60 sites
- Reduced = 30 sites
- Pool should be 60-90 sites

Example: System with 2,000

- Standard = 20 sites
- Reduced = 10 sites
- Pool should be 20-30 sites

Sampling Plan

EGLE MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

SAMPLING PLAN – LEAD AND COPPER

Issued under authority of 1976 PA 309 and Administrative Rules, as amended. Administrative Rule R 325.10710a requires a water supply to monitor for lead and copper according to a pool of targeted sampling sites in accordance with designated site selection criteria. Complete and submit to:

Water Supply Information

Supply Name _____

Address _____

City, State, Zip _____

Contacts – Water Supply

Name/Title _____ E-mail _____

Name/Title _____ E-mail _____

Name/Title _____ E-mail _____

MICHIGAN COMMUNITY WATER SUPPLY LEAD AND COPPER TAP SAMPLING POOL

>>> REVIEW INSTRUCTIONS ON PAGES 4 AND 5 BEFORE COMPLETING FORM BELOW <<<

WSSN: _____ Supply Name: _____ Page _____ of _____

Standard Number of Sites Required: _____ Reduced Number of Sites Required: _____

Site No.	Address	Tier Level	Category	Structure Type	Service Line Material	Interior Plumbing Material	Site Validation Method
00	Ex: 0000 Any Street – Any Town, MI	1	A	SFR	L	C	
01							
02							
03							
04							
05							
06							
07							

Using the Same Sampling Sites

Same sampling locations should be used.

- A robust sampling pool should minimize need for “new” sampling locations.
- Acceptable reasons to use an alternate location
 - Homeowner refuses
 - Vacant
 - Change in tier criteria
 - Installation of softener, filter or reverse osmosis device that cannot be bypassed, removed or avoided by using an alternate kitchen or bathroom tap.

Updating a Sampling Pool

Pools should be routinely evaluated and updated if necessary

Examples of when to update your sampling pool:

- ü Entire lead service line replaced
- ü Major home remodel
- ü System using Tier 3 sites found
- ü Watermain project found lead goosenecks
 - ↳ Meter replacement found lead service line
 - ↳ Meter replacement found lead interior plumbing

Review and Examples



All systems sampling in 2019 should do the following...

- Review the revised tiering criteria
- Review your existing sampling pool
 - Retain sites that meet the new tiering criteria
 - Replace sites that are no longer the highest tier
- Develop a larger sampling pool if needed
 - 1st priority - # of sites needed for compliance
 - 2nd priority - # of sites needed for standard monitoring
 - 3rd priority – 1.5x # of sites needed for standard monitoring

Example – System with copper

- For systems that have copper with lead solder plumbing installed between '83-'88
 - These sites are no longer Tier 1
 - All copper with lead solder before 1988 à Tier 3
 - If no higher tier is available, sampling sites should not change

Example – System with LSLs and copper

- For systems that previously collected 50% LSLs and 50% copper '83-'88
 - Sites with LSLs are still Tier 1 or 2
 - Sites with Copper '83-'88 are now Tier 3
 - If available, system needs to find more LSLs to replace copper sampling sites

Example – System with “Other” sampling sites

- For systems with plastic, ‘89 or newer copper or galvanized service lines
 - There is no tiering change
 - “Other” sampling locations are representative locations
 - Samples must be collected from taps that are used for consumption
 - Kitchen or bathroom (residential)
 - Drinking fountain or breakroom (non-residential)