MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Preparing Your School Building's Drinking Water for Students Returning in the Fall

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School Drinking Water Program

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HEALTHY WATER
HEALTHY KIDS

Michigan.gov/SchoolWater

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Agenda

- Introduction
- Drinking water management plan
- EGLE flushing methods
- EGLE assistance
- Discussion

Concerns/Questions

- Will the pandemic precautions continue?
- Will all students be back in the classroom?
- How do we keep the children & staff safe?
- *Is the water healthy to consume?*

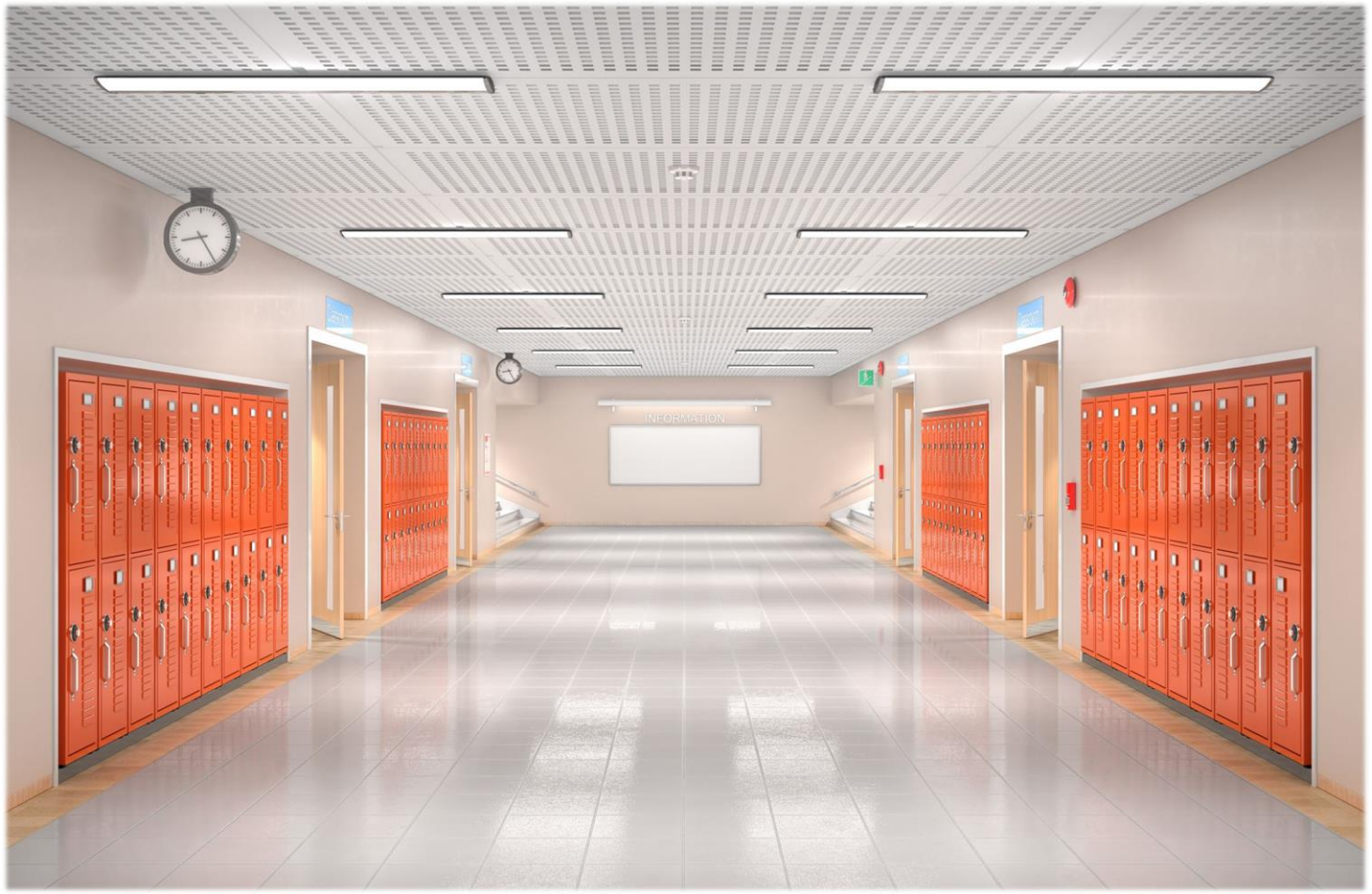
Who

What

Getting the water system up, running & ready for the students

Get stagnant water out and keep it out!

Where



When

Prior to the return of students this fall

Why

All Children Need Healthy Water

Let’s Get Started

A well-maintained plumbing system & water movement preserves healthy drinking water

Extends life of system
Reduces costs

Develop the Water Management Plan

Implement

Review

Update

Repair
Replace
Flush
Clean

Water Management Factors

1. Complexity, materials & condition affects water quality
2. Water use affects water quality
3. Systematic flushing helps remove contaminants
4. Aerators, screens, filter cartridges and water use devices must be kept clean and replaced on schedule

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Summer Requirements

1. Assess the risk of stagnant water & potential contaminants
2. Flush the system in August (EGLE High Velocity Method)
3. “Refresh” drinking & food preparation taps immediately prior to the return of students (EGLE Fresh Tap Method)
4. Replace filter cartridges & maintain devices

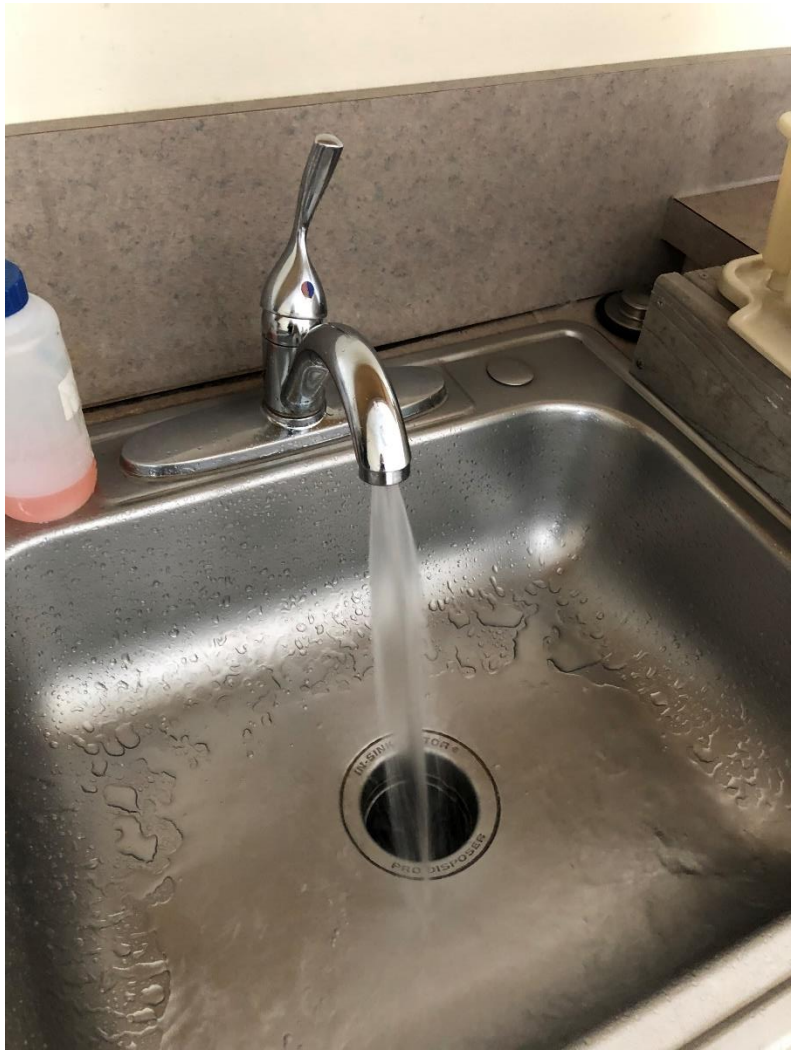
Assess the Risk - Excessive Stagnation

Flush the Plumbing System

- *Pre-determine* flushing zones
- Begin at first zone & open all cold-water fixtures
  - Ensure average of 3 ft/sec flow through meter
  - Start timer & flush for at least 15 minutes
  - Systematically flush toilets
  - Make frequent rounds to monitor water levels in sinks or adjust zone
- Close all fixtures in first zone and proceed to next zone
- Repeat process as needed

High Velocity Flushing Method

Continue to Refresh the Water



Fresh Tap Flushing Method

Other Actions Needed This Summer

- Clean/maintain water use devices & appliances
- Evaluate for cross connections
- Replace filter cartridges
- Test the drinking water

DRINKING WATER MANAGEMENT PLAN

FOR

Dee Elementary School

School Building Code: 12345

School District: Example School District

Date Published: 5/5/2021

Next Update: 5/5/2022

Published by: Holly Gohlke (Name) 517-220-1904 (Contact Phone#)

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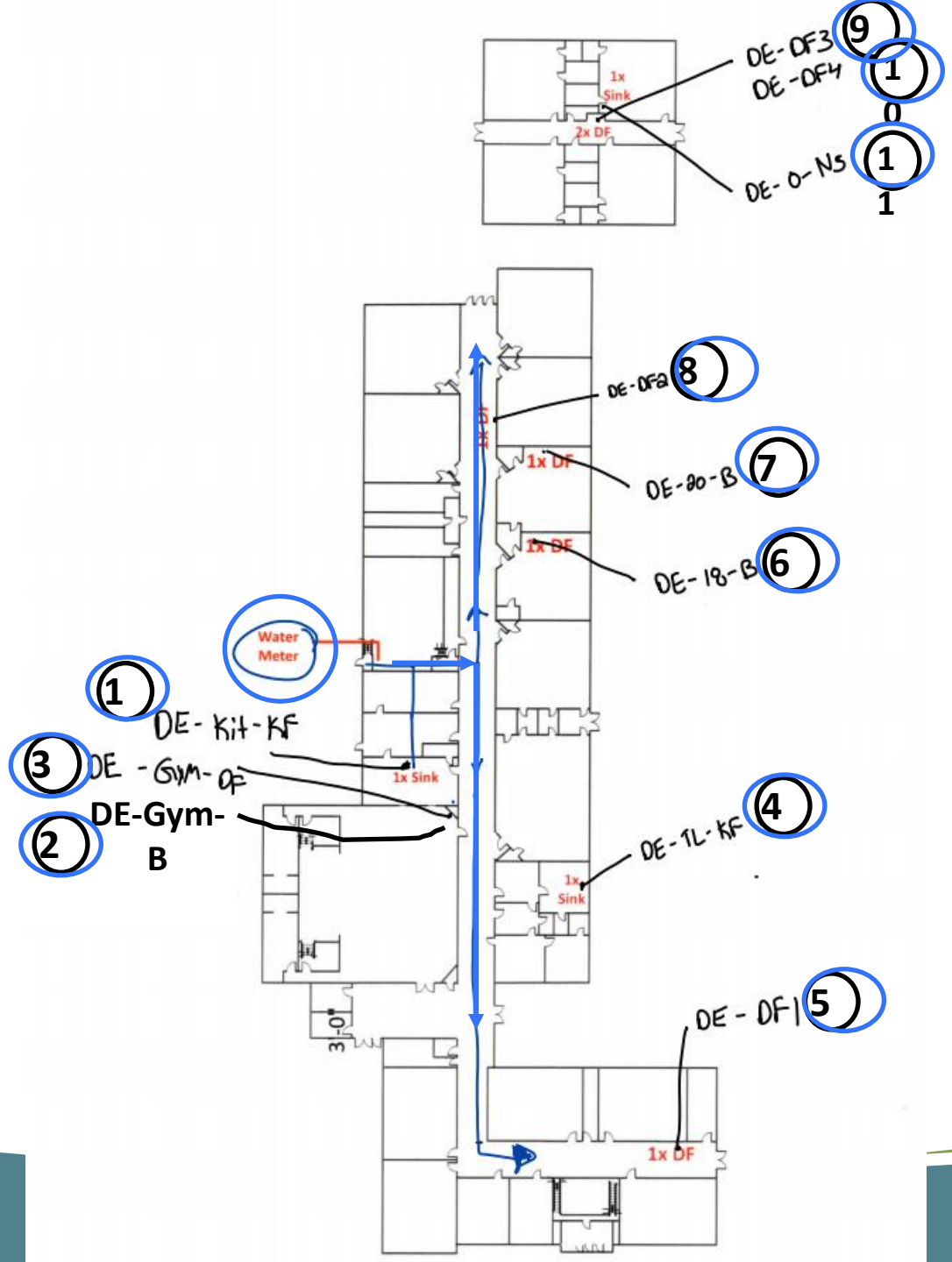
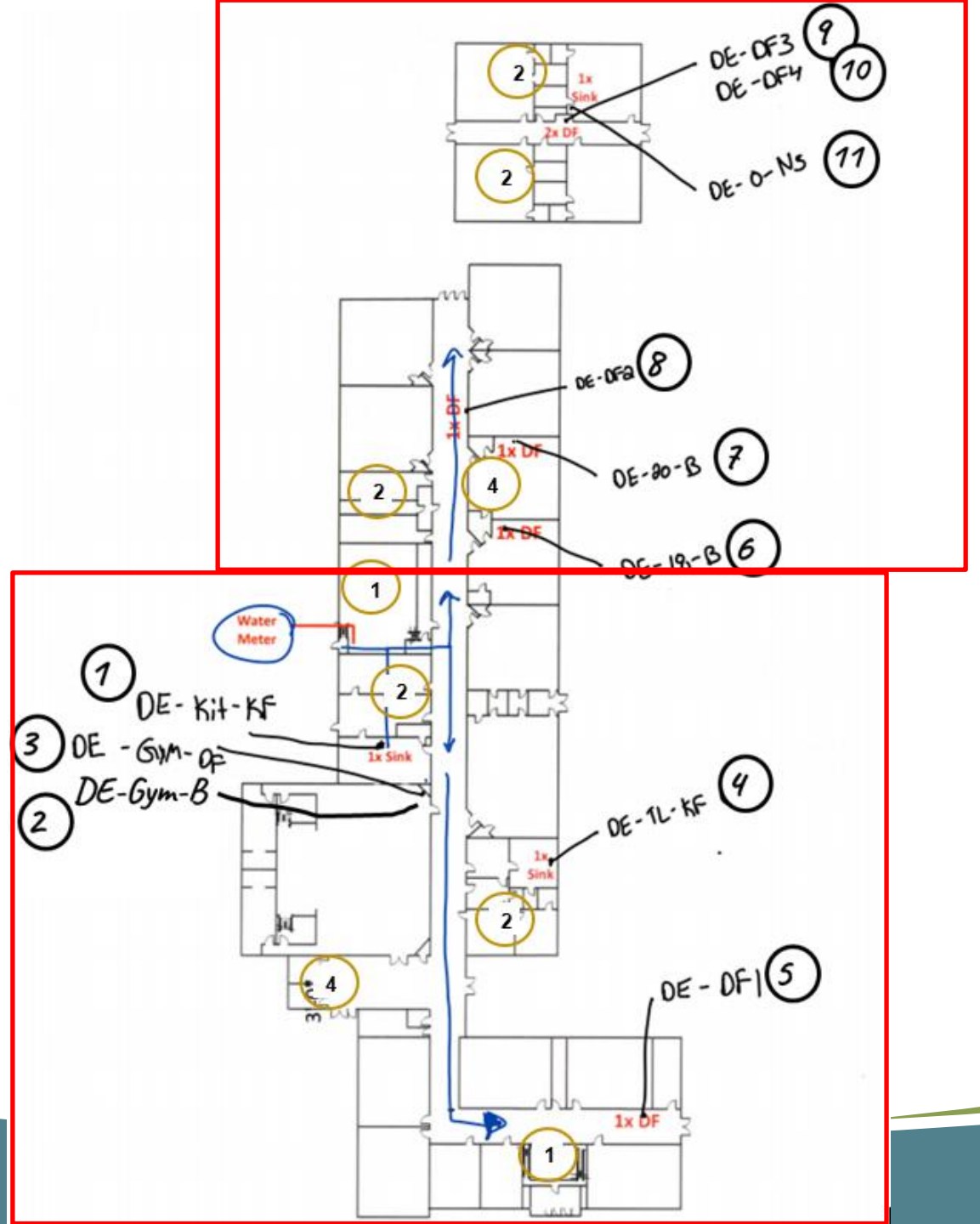
GENERAL WATER AND PLUMBING INFORMATION								
DESCRIPTION								**UNITS**
Location water enters the building	NW corner of the basement in the boiler room.							
How many points of service line entries are there into this building?					1			
Service line material (pipe coming in)	Ductile iron							
Service line diameter (POE pipe)					4.00	Inches		
Length of service line to street or well					50	Feet		
Diameter of pipe from water meter to first ou					0.75	Inches		
Length of pipe from water meter to first outlet					16	Feet		
Calculated volume of service line					**33.0**	Gallons		
Point of entry water treatment								
Water Softener	X		**Phosphate**					
Filtration System			**Chlorine**					
None			**Other**					
Water tanks & heaters **Types**	Boiler							
Locations	Basement							
Cold-water pipe materials (inside building)	Copper							
Lead solder present	Yes							
Water fixture closest to POE	ID#	**Janitor faucet**			Location	**Boiler room**		
First fixture flow rate	Volume of container=	1	Units of measure=	L	Time to fill (sec)=	10	**1.6**	GPM
Amt. of time to flush entire service line						**25.0**	Minutes	
Building regions (may also be zones or parts of zones)								
Number of floors	1							
Number of wings	2							
Connected buildings	0							
Total regions	**3**							
Water fixture furthest point	ID#	**DE-O-NS**			Location	**Nurses Office- Outbuilding**		


1x Sink
2x DF
DE-DF3
DE-DF4
9
1
0
DE-O-NS
1
1
DE-DF2
8
1x DF
DE-80-B
7
1x DF
DE-18-B
6
Water Meter
1
DE-Kit-KF
3
DE-Gym-DF
DE-Gym-B
2
1x Sink
DE-1L-KF
4
1x Sink
DE-DF1
5
3'-0"
1x DF

DRINKING & FOOD PREPARATION FIXTURE INVENTORY

SEQUENCE #	FIXTURE ID CODE	FIXTURE LOCATION	TAP TYPE CODE	BRAND MAKE/MODEL #	CHILLER UNIT?	BRASS VALVES?	FILTER?	AERATOR OR SCREEN?	MOTION ACTIVATED?	FIXTURE WORKS?	CORROSION?	DISCOLORED WATER?	LEAKING?	COMMENTS
1	DE-KIT-KF	Kitchen	KF	Delta	No	No	No	No	No	Yes	No	No	Yes	Older faucet - need to replace
2	DE-GYM-B	Gym	B	Elkay	Yes	No	Yes	No	Yes	Yes	No	No	No	
3	DE-GYM-WC	Gym	WC	Elkay	Yes	No	Yes	No	No	Yes	No	No	No	
4	DE-TL-KF	Teachers Lounge	KF	Moen	No	Yes	Yes	Yes	No	Yes	No	No	No	
5	DE-18-B	Room 18	B	Delta	No	Yes	No	Yes	No	Yes	Yes	Yes	No	Orange color
6	DE-20-B	Room 20	B	Delta	No	Yes	No	Yes	No	No	No	No	No	Broken
7	DE-DF2	Hallway by Room 20	DF	Halsey Taylor	No	No	No	No	No	Yes	No	No	No	
8	DE-DF1	Hallway by Room 1	DF	Halsey Taylor	No	No	No	No	No	Yes	Yes	Yes	No	Orange color
9	DE-DF3	Outbuilding	DF	Halsey Taylor	No	No	No	No	No	Yes	No	No	No	
10	DE-DF4	Outbuilding	DF	Halsey Taylor	No	No	No	No	No	No	No	No	Yes	Shut off due to leaks
11	DE-O-NS	Outbuilding Nurse	NS	Delta	No	No	No	Yes	No	Yes	No	No	No	


2
1x Sink
2x DF
2
DE-DF3
DE-DF4
9
10
DE-O-NS
11
1x DF
DE-DF2
8
1x DF
2
4
DE-BO-B
7
1x DF
DE-19-B
6
1
Water Meter
1
DE-Kit-KF
2
3
DE-Gym-DF
1x Sink
2
DE-Gym-B
DE-TL-KF
4
1x Sink
2
4
DE-DF1
5
1x DF
1

HIGH VELOCITY FLUSHING ZONE

Reference: EGLE Pre-Flushing Event Guidance for School Plumbing & EGLE Guidance for Flushing School Plumbing (High Velocity Method)

Please read the guidance documents prior to conducting the pre-flushing and flushing tasks.

Steps to Determing Zones

Step	Action
1	Conduct a building walk-through to determine flow of cold water to each fixture & map on floor plan
2	Look at floor plan for "visual zones" such as # of floors, wings, additions, room groupings, etc.
3	Conduct a trial run to see if you get 3 ft/sec through the meter by opening fixtures for each zone. Adjust zones as needed.
4	Attach the map of the school building with each flushing zone color coded and numbered (see example in reference document)

ZONE #1

Water fixture closest to POE in this zone	ID#	**Janitor faucet**	Location	**Boiler room**
Water fixture furthest point in this zone	ID#	**DE-DF1**	Location	**Hallway by Room 1**

Total number of **faucets including classroom, laboratory faucets, teacher lounge, office & nurses** in this zone	2
Total number of **classroom bubblers** in this zone	2
Total number of **kitchen faucets** in this zone	2
Total number of **restroom handwashing faucets** located in this zone	12
Total number of **shower heads** in this zone	0
Total number of **toilets** located in this zone	12
Total number of **janitor faucets** located in this zone	2
Total number of **non-refrigerated drinking fountains** located in this zone **without** a filter	2
Total Number of FAUCETS, OTHER OUTLETS, & NON-REFRIGERATED DRINKING FOUNTAINS in this Zone	**34**
Total number of **non-refrigerated** drinking fountains located in this zone **with** a filter	0
Total number of **refrigerated** drinking fountains located in this zone **with** a filter	1
Total number of **refrigerated** drinking fountains located in this zone **without** a filter	0
Total Number of FILTERED Drinking Fountain Taps in this Zone	**1**

HIGH VELOCITY FLUSHING METHOD PROCEDURES

This flushing method involves moving the water in zones at all water fixtures including toilets, handsinks, etc.

Procedure is to open all the taps in a zone letting the water run for 15 minutes then moving to the next zone & repeating the process.

Reference: *EGLE Guidance for Flushing School Plumbing (High Velocity Method)* ***READ THOUGHLY BEFORE CONDUCTING FLUSHING**

Use the building floor plan and zone map(s) to assist in this process.

Zone Flushing	**Total Number of Zones:**	2	Estimated Total Flush Time(minutes):	30

STEP	ACTION (More than one person required)
1	Start flushing hot water tank(s) in utility room (flush until cold water comes out of tank)
2	Go to first zone (closest to the service line)
3	Remove any aerators, strainers, or screens
4	Fully open the cold water side of fixtures
5	Systematically flush all toilets
6	Record initial reading at the meter
7	Time one minute and record a second reading at the meter
8	If flow rate is close to or equal to 3 ft/sec through the meter start the flushing timer for this zone
9	Flush this zone for 15 minutes. Monitor flow rate at least 3 times during flush period.
10	Adjust zone size if needed - if flow rate is below 3ft/sec, open more fixtures; if above 3 ft/sec, close some fixtures
11	Close all fixtures in this zone (clean and replace aerators, strainers, and screens)
12	Go to next zone, repeat steps 3-11 until all zones are flushed

NOTE: Keep a record of the calculated flow rates obtained during the flushing process for each zone, time of zone flushing & problems noted

Do not use filtered bottle fill drinking fountains or other inline filtered drinking fountains as a flushing point.

FRESH TAP FLUSHING METHOD PROCEDURE

The fresh tap flushing method involves bringing fresh cold water to every fixture used **for drinking or food preparation**.

The procedure is to open the tap one at a time and letting the water run for a specified time to get fresh cold water to the tap.

Reference: *EGLE School Building Flushing Best Practices (Fresh Tap Method)* for detailed information. ***READ THOUGHLY BEFORE CONDUCTING FLUSHING**

Use the building floor plan with fixture locations to assist in this process and make sure every drinking/food prep tap is flushed.

STEP	ACTION				
1	Go to fixture closest to POE	ID#	**Janitor faucet**	Location	**Boiler room**
2	Remove aerator or screen				
3	Fully open the cold water side of fixture				
4	Run cold water for	25	minutes		
5	Turn off fixture				
6	Clean and replace aerator or screen & re-install				
7	Go to fixture farthest from POE	ID#	**DE-O-NS**	Location	**Nurses Office- Outbuilding**
8	Remove aerator or screen				
9	Fully open the cold water side of fixture				
10	Run cold water for	**30**	minutes (can determine precise amount of time based on calculation of lenth of pipe and flow rate of this tap)		
11	Turn off fixture				
12	Clean and replace aerator or screen & re-install				
	If multiple floors and/or wings, conduct steps 7-12 on each				
13	Working your way back to the POE, flush every **consumptive fixture** *except for* the non-filtered refrigerated fountains one at at time for:	30	seconds		
14	Flush **non-filtered refrigerated** water fountains for 15 minutes				
15	Run water through appliances connected to the water supply such as pop machines, coffee machines, etc.				

DETERMINING TOTAL FLUSHING EVENT TIME

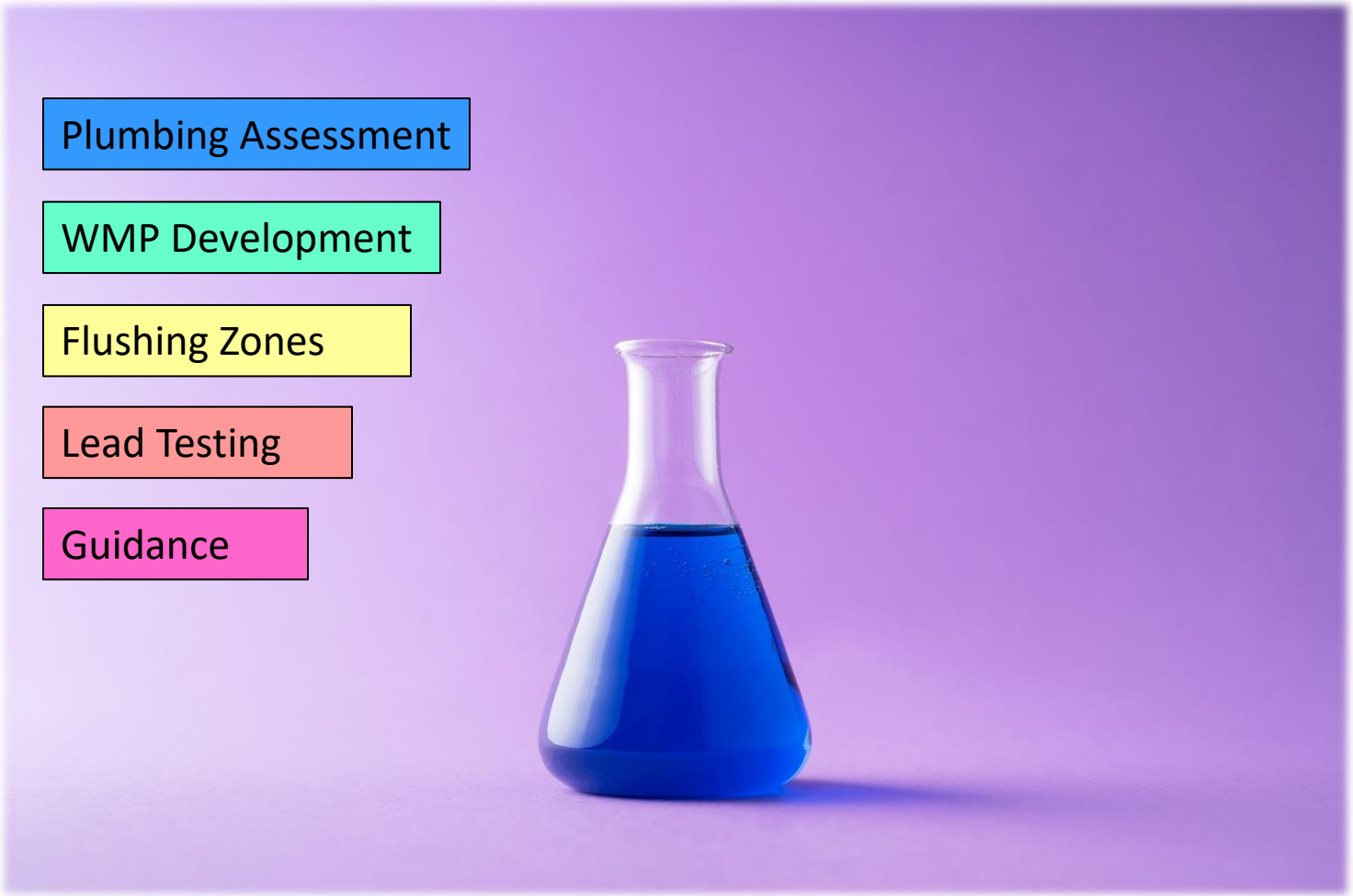
	Number of consumptive fixtures (not including refrigerated/filtered):				**43**	
	Time to flush all consumptive fixtures:	**22**	minutes			
	Number of **non-filtered** refrigerated drinking fountains:		**1**	Time to flush:	**15**	minutes
	Total flushing event time	**91**	minutes	*Note: Include about 5 minutes for aerator removal/replacement at each fixture*		
	Estimated time to walk to each fixture during the process		**30**	minutes		
	Estimated time from beginning to end including walk time		**121**	minutes	Time in hours:	**2.0**

Do not use filtered refrigerated bottle fill drinking fountains for a 15 minute flushing point.

Note: Be aware not to overload wastewater drains during tap flushing. Record event on the Flushing Log (see FlushingLog tab).

EGLE's School Drinking Water Program

- Plumbing Assessment
- WMP Development
- Flushing Zones
- Lead Testing
- Guidance



Lead Testing Grant

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Summary

- Implement a drinking water management, flushing and testing plan
- Conduct a high velocity flush this summer to remove stagnant water and contaminants
- Freshen up the water immediately prior to student return
- Replace filter cartridges
- Sample the water to determine if the process is a success!

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HEALTHY KIDS

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Time to Discuss!

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