Attachment B

General Flushing Strategies for Returning Buildings to Regular Use after Extended Periods of Reduced Use

The purpose of flushing is to replace all water inside building piping with fresh water. The following outlines a general strategy for moving water through a supply system. Flushing plans should generally be developed specific to a building water systems' characteristics including flow rate, configuration, and operation. Flushing is most effective when a target contaminant is identified and considered. Where possible, facilities should develop flushing procedures in consideration of such factors. This strategy highlights a one-time flushing event and not a routine flushing procedure.

I. Prepare for Flushing Fixtures

These steps should be completed prior to starting flushing activities.

1. To ensure safety while flushing, appropriate training and PPE should be considered. You can find guidance on worker safety for *Legionella* control and prevention on the OSHA website.
2. Follow water treatment equipment manufacturer's recommendations prior to restarting treatment equipment (e.g. filters, softeners, etc.) and assess if treatment should be bypassed when flushing.
3. Remove faucet aerators, disinfect or discard, and replace after flushing is completed. Aerator removal increases flowrate and limits the amount of sediment to become trapped during flushing.
4. Override automatic (hands-free) and metered faucets to ensure flushing is not disrupted by timed shut-offs.
5. Remove shower hoses, wands, and heads, disinfect or discard and replace them after flushing.
6. Note: The number of outlets that can be flushed simultaneously will depend on the capacity of the water heater and the flow capability of the system; flushing many fixtures at once may reduce in pressure loss.

II. Step-by-Step Procedure

1. Find the fixture closest to the point of entry into the building. Make sure the aerator has been removed. Turn the cold water on and let run for as much time as necessary to clear out the building's service line. This time will vary depending on several factors: pipe size and length of service line, water pressure, and flow rate for the fixture used. This fixture should be flushed for approximately 20-60 minutes or until temperature stabilizes.
2. Drain water heaters and other water storage tanks.
    a. It may be necessary to shutoff isolation valves to prevent draining the entire hot water system. Isolation valves must be reopened prior to operating water heater.
    b. Make sure that your water heater is set to at least 120°F. Higher temperatures can further reduce the risk of *Legionella* growth. Prior to increasing temperatures, ensure your DWV materials can handle the selected water temperature.
3. Ensure all actions in Part I have been completed, and begin flushing at the fixtures or points of use nearest to the point of entry (where the water enters the building from the water supply) and continue outward to the distal fixtures until all fixtures have been flushed.
4. Showers, sink faucets, and bathing tubs. These fixtures are frequently used during normal operations and are most likely to expose people to potentially contaminated water and should be prioritized in flushing efforts.
    a. Run **cold** water until temperature stabilizes at full flow. If possible, confirm that that fresh water is being delivered by measuring residual disinfectant at representative points of use. Generally, this takes between 1-5 min. at each fixture but may take longer based on design.
    b. Run **hot** water until temperature stabilizes at reduced flow. The goal is to sustain hot water temperature through the outlet and avoid exceeding the capacity of the hot water system to

maintain water temperature. Generally this takes between 1-5 min. at each fixture but may take longer based on design.

5. Drinking Fountains and beverage dispensers. Run **cold** water for at least 5 minutes.
6. Ice machines: Prior to use, discard ice from all ice machines. Clean and sanitize ice machines in accordance with manufacturer's recommendations. Ice machines should be run through at least 3 cycles with ice discarded after each cycle.
7. Dishwashers and Washing Machines: Run an empty cycle of all dishwashers and washing machines to ensure fresh water is present and prevent any potential staining of items.
8. Other appliances: Drain, flush, and disinfect all other plumbing appliances as appropriate.
9. Toilets. Flush each toilet twice after faucets, bathing tubs, and showers have been flushed.

III. Establish Routine Flushing Procedures

A one-time flushing event is unlikely to bring building water quality back to normal operations. IDPH and CDC recommend establishing and implementing a routine flushing program to maintain water quality after water systems have been returned to operation. Routine flushing programs should consider incoming water quality, flow rates, plumbing system design, and feasibility of implementation. Appropriate flushing duration and frequency will be depending on these factors.

When water quality concerns include lead, facilities should consider applicable guidance including the U.S. Environmental Protection Agency's guidance for schools and day care facilities, 3Ts Flushing Best Practices.

IV. Document Flushing Activities

Documentation is necessary to verify that flushing activities are occurring according to your flushing plan and procedures. Those completing flushing activities, either start-up or routine, should document that flushing has occurred and any observations/concerns from flushing and corrective actions taken. Documentation should include the date of the activity, name or initials of the individual completing the activity, any observations or concerns that may require corrective actions, and corrective actions if taken.

V. Validating Actions with Water Quality Testing

Where possible, facilities should measure water quality parameters including disinfectant and temperature to validate that flushing activities are effective at maintaining water quality. Facilities can determine this by understanding the water quality coming into the supply system and determining if there is significant loss of residual disinfectant or temperature at outlets.

Recommissioning actions can also be validated by collecting water samples from appropriate points and testing for heavy metals (e.g. lead and copper) and harmful organisms (e.g. *Legionella)*. The decision to perform environmental sampling should be based on a variety of factors including a risk assessment of the water system (building occupancy, function, and source of exposure) and water quality data.