

A Safe Workplace

A Workplace Safety and Health Manual for Your Community

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		Approved By: Harvey Bostrom
Subject: G-18	Pump Maintenance	Effective: December 30, 2005
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Council must ensure that all employees are appropriately protected from hazards associated with servicing pumps. Electrical work shall only be performed by those who are certified to do so.

PPE Required: Steel-toe boots, hardhat, safety glasses, gloves and coveralls

Tools Required: appropriately sized pipe wrenches, multi - meter, voltage indicator, grease gun, screw drivers, open end wrenches and socket set clean, dry rags

Preparation:

1. Inform council and residents of any expected water or sewer service disruptions.
2. Read and understand the pump's manual.
3. Refer to the following Safe Work Procedures and Safe Work Practices if required:
 - *Lockout Procedure* (section III-C, G-11)
 - *Pipefitting Procedure* (section III-C, G-3)
 - *Confined Space Procedure* (section III-C, G-9)
 - *Manual Lifting* (section III-F, SWP-1)

General:

1. Lockout procedure must be performed prior to any pump service work.
2. Only a certified electrician may service electrical motors.
3. Have a plan in place for loss of pump service; include back up pumps, alternate source of water delivery, spare parts, list of suppliers, etc..

Maintenance Procedures:

1. Grease the pump as specified in the owner's manual.
2. Listen for variations in the pump's operation.
 - a grinding noise indicates cavitation (usually resulting from inadequate water supply to the pump). Ensure intake valves are fully open - you may need to temporarily throttle (partially close) a discharge valve to balance the system.
 - water hammer (banging pipes during pump on-off cycling) is caused by a sudden increase or decrease in water pressure. Consider having a flexible coupling installed on the discharge side of the pump and check the operation of the pressure relief valves.

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3. Look for water leaks and change in water pressure.
 - water leaks between the pump and motor indicate a worn mechanical seal. As the replacement usually requires the removal of the pump motor, a certified electrician is required.
 - a decrease in water pressure indicates leakage somewhere in the system. If no leaks are detected in the plant, visually inspect the pipeline route and ensure that all unoccupied houses have their water service turned off. Isolate the damaged section of pipe and repair using *G-3, Pipefitting* (section III-C, G-3).
 - Check the rotation of the pump - a counter-clockwise rotation indicates a flow reversal and is caused by a failed check valve.

- 4 Carefully feel the pump and motor case for heat. Excessive heat usually indicates:
 - Inadequate lubrication. Lubricate as required.
 - Worn parts. If a spare pump or motor is not available, order a replacement.
 - Loss of prime. Prime pump and ensure full intake pipe flow - check reservoir level. After priming, some pumps require backpressure to operate - throttle the discharge valve until the pressure builds to normal operating range and slowly open until the pressure stabilizes at full open.
 - Undersized pump or motor. Consult with your assigned Technical & Public Works Consultant.
 - An increase in backpressure from throttled valves. Ensure all discharge valves are fully open.