

Pumper – Need to Know

I. The professional will understand the various techniques and responsibilities for performing tank maintenance.

- A. Underground Tank Locating Techniques
 - 1. Electronic devices
 - 2. Geophysical
 - 3. Plumber's Snake
 - 4. Witching
 - 5. Records
 - 6. Electronics and Camera
 - 7. Probe (would like to phase out due to damage to system)
- B. Removing the Maintenance Hole Cover
 - 1. Locating and removing all access lids/covers
 - 2. Buried Lid – Must pump through manhole and not inspection hole
 - 3. Landscape Protection
 - a. Tarps for soil removal to uncover access
 - b. sod removal
 - 4. Safety Concerns - Blue Stake
 - a. Tools Needed
 - b. Slip and fall
 - 5. Above-ground Lid
 - 6. Concrete Lid
 - a. With Loops
 - b. Without Loops
 - 7. Plastic Lid
 - a. Special Wrench
 - 8. Tools Needed
 - a. Bar/hooks
 - b. Pull/strap/chain
 - c. Tool box with various screwdrivers
 - d. Shovels
- C. Replacing and/or Adding a Manhole Lid
 - 1. Legal Requirement
 - a. New systems
 - b. Existing Systems
 - (1) Requirements apply to non-complying tank?
 - (2) Unsecure lids
- D. Manhole and lid specifications
 - 1. Adding Risers
 - a. Pumper's authority to add risers (AZ current = recommendation only; future = requirement)
 - b. Plastic Risers
 - (1) Advantages

- (2) Disadvantages
- (3) Riser Requirements – strength, height, diameter
- (4) Sealing Tank Lid – Checking for Watertight Seal
- c. Concrete Risers
 - (1) Advantages
 - (2) Disadvantages
 - (3) Riser Requirements – strength, height, diameter
 - (4) Sealing Tank Lid – Checking for Watertight Seal
- E. Inspection Ports on the Tank (for OBSERVATION purposes ONLY)
 - 1. Locating
 - 2. Check for damage
 - 3. Cap/Cleanout
 - 4. (replace more like a repair)
- F. Checking Tank Operation
 - 1. Identify all comparts
 - a. How many
 - b. Condition
 - 2. Checking liquid levels
 - a. Low level and high levels (surging)
 - (1) Identification
 - (a) observation of liquid level below flow line/air-water interface of inlet and outlet
 - observation of liquid level above air space, into riser, or surfacing
 - (2) Significance
 - (a) low level indicates cracks, leakage
 - (b) high levels indicate:
 - (i) high peak instantaneous flow
 - (ii) leaking fixture
 - (iii) hydraulic overload (undersized system)
 - (iv) blocked outlet baffle
 - (v) baffle no longer in place
 - (vi) scum levels too thick
 - (vii) blocked supply pipe (solids, grease, frozen)
 - a. identification
 - b. remedy
 - (viii) supply pipe sloped in wrong direction
 - (ix) tank installed backwards
 - (x) tank not level (outlet higher than inlet)
 - (xi) pump not operating
 - (xii) drainfield ponded and draining back to tank
 - a. check liquid levels in inspection pipes
 - 3. Checking Stratification
 - a. Identification methods
 - (1) Sludge judge
 - (2) Stick w/towel and stick with foot
 - (3) visual evidence of scum layer

Commented [DK1]: More work to come on these

- (4) Identification of toxic substances (odor, color, taste of discharge, factory process water connected to plumbing etc...)
- b. Significance of no stratification
 - (1) toxic substances
 - (2) recently pumped
 - (3) medicine
 - (4) leaks
 - (5) peak flow flushing
 - (6) no baffles
 - (7) hot water discharge
 - (8) water softeners
 - (9) fabric softeners
 - (10) enzymes
 - (11) bath salts
 - (12) paint
- c. Toxic/Hazardous Waste Response
- 4. Checking Baffles
 - a. Identifying and Assessing/Evaluating Baffles
 - (1) Inlet
 - (2) Outlet
 - (3) Interior
 - b. Construction Types
 - (1) Concrete
 - (2) Plastic
 - (3) Wood
 - (4) Other
 - c. Observation Methods
 - (1) Mirror
 - (2) Camera & other technology
 - (3) manhole cover removal
 - (4) inspection pipe observation
 - d. Significance of No Baffles
 - (1) Regulatory
 - (2) Operation
 - e. Repair Baffles
 - (1) Pumper authorized to repair baffle – current: recommend; future: requirement to repair
 - (2) Permit requirements – Dependant on local ordinance
 - (3) Methods of Repairing Baffles
- G. Safety
 - 1. Electrical
 - a. Hazards
 - b. Precautions
 - 2. Pathogens
 - a. Hazards

- b. Precautions
- 3. Gases
 - a. Poisonous
 - (1) Hazards
 - (2) Precautions
 - b. Explosive
 - (1) Hazards
 - (2) Precautions
 - c. Confined Space Entry
- 4. Needles
 - a. Hazards
 - b. Precautions
- 5. Chemicals
 - a. Hazards
 - b. Precautions
- H. Removal of Material
 - 1. Equipment
 - a. Truck
 - (1) Suction/Lift Requirements
 - (a) Backwash capabilities
 - (b) Lift/Distance capabilities
 - (2) Axle Weight/Road Restrictions
 - (a) What are road restrictions/why are they placed?
 - (i) What roads are affected (state, county, township, city streets)
 - (ii) What are the typical limits
 - (iii) Dates typically imposed
 - (iv) How to calculate with the truck
 - 2.
 - 2. Back flush/Complete Removal
 - a. Significance
 - b. Methods
 - 3. Post Cleaning
 - a. Do not disinfect tank
 - b. Do not add starters
 - c. Manufacturer's recommendations
 - 4. Dewatering and return filtered liquid to tank (requires special equipment)
 - 5. Additives
 - 6. Spills
 - a. Reporting requirements
- I. Dosing Chamber
 - 1. Tools Required
 - 2. Manufacturer's recommendation
 - 3.
- J. Other pumping situations
 - 1. Grease traps

Commented [DK2]: Compliance with state department of transportation rules

- 2. Pumping requirements
- K. Disposal requirements