

Irrigation Drainage Time

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It's the time of year again to think about protecting your irrigation system against the damaging freezes of winter.

The deep frost of last winter caused more damage to irrigation systems in the Midwest than any two winters combined in the last 10 years. Frost damage to an irrigation system occurs from the following causes and in the following order of frequency:

1. Low temperature at periods of light or no snow cover.
2. Poor drainage procedure — drain entire system poorly.
3. Incomplete drainage — forgot to drain part of system.
4. Water standing on the ground surface above an open drain valve or sprinkler head.
5. Contraction of piping and ground heave due to temperature change.

"Blowing out" of irrigation systems with an air compressor has gained in popularity in the last five years. Coupled with good procedure, blowing can minimize most of the above causes.

The following sequence for drainage should be followed in order and tailored to your particular installation:

1. Several days or a week before actual draining:
 - A. Locate irrigation drawing.
 - B. Turn off water supply.
 - C. Open drains that flow directly into tile lines, creeks, or ponds.
 - D. Insert sprinklers at the high and low points of the lines to allow air to replace the water as the low head drains.
2. Connect suitably sized air compressor near the source of water.

(Note) A piping system of 3" and less can be blown quickly with 1-125 cfm compressor. Piping systems 4"-8" can be blown faster with less chance for error with 2-125 cfm compressors.
3. Beginning at the pumphouse, open each sprinkler outlet until you get air and no water, then close, on one branch of the main line and follow it to the dead end. Do the same on each branch of the main line until you have air and no water coming from each outlet. **(Note)** Several men "leap frogging" with golf carts makes this quite fast. Be sure to allow compressor to build up pressure so the water will be moved with a large volume of air.
4. Repeat step 3 to check drainage.
5. Starting again at the pumphouse and working toward the end of each lateral, crack the drain

valves slightly to be sure air and no water escapes. Close the drain, wait a minute, and repeat. Water may have collected at the low points. **(Note)** Drains and standing surface water usually occur at low points in the terrain. Closed drains will prevent the surface water from entering the pipe line through the drain valve, along with stones from the drainage sump, and eliminate the drain closing chore during spring turn-on.

The basic piping system is now drained and special attention is needed to properly drain the pumphouse. One small slip at this state of drainage could be very expensive.

6. Pumphouse drainage:
 - A. Starting at the discharge line in the pumphouse wall, trace the flow of water in the piping through gate valves and check valves and open necessary drains.
 - B. Drain pump volutes by removing the bottom plug or opening drainage cock.
 - C. Remove or drain suction drop pipe.
 - D. Remove water from pressure reducing valve covers by blowing out or loosening cover bolts.
 - E. Turn pump motors off and protect windings against possible rodent nesting.
 - F. Drain water from pressure gauges, switches, tank sight glasses, tank air chargers, and other special items subject to freeze in the pumphouse.
7. Program automatic valves to operate once a day for 5 minutes to prevent the solenoid plunger from sticking and reduce the moisture in the solenoid coil and automatic controller contacts.

Before going out and renting an air compressor and blowing your system, take several hours with your blueprint and the above procedure. Write down in sequence the steps you plan to take when you start actual drainage. The steps can be listed by thinking of yourself as entering the pipeline at the source of water and your job is to push the water out on top of the ground as you move through the pipe. What routes will you have to follow to push all of the water out the dead end of every line? What will you do when you come to a branch tee that feeds another fairway or splits and goes both ways at the front of a green? When do you get to the end of the line when the system is looped? The same routes you took entering the pipes at the source to get to the dead ends must be followed by the wall of air you will put into the system when blowing out.

Frost damage repairs have got to rate near the top of the bad job list. In addition, they occur at a critical time of year from a manpower standpoint, and can cause several weeks of anguish if the dirt is not properly flushed after the repair is made. Now is the time to think about any necessary pump and sprinkler repair required for next year's operation. Get the necessary part on order and make the repairs conveniently in the winter rather than wait for the spring rush.

Good luck in your drainage this fall. The old adage "you make your own luck" was never truer.