

# Pre-Season Irrigation System Assessment

No.	Item	Action Needed or Taken	Date
<b><i>Irrigation Pump – Centrifugal</i></b>			
CP1.	Pump casing without: <input type="checkbox"/> Cracks or holes <input type="checkbox"/> Leaks caused by drying gaskets		
CP2.	Cleaned drain hole on the underside of pump		
CP3.	Drain and fill plugs in the pump volute case tightened to prevent air and water leaks <ul style="list-style-type: none"> <li>● Pipe thread compound should be used on all pipe threads.</li> </ul>		
CP4.	Pump shaft (impeller) rotates freely within casing		
CP5.	Belts, chains, and couplings in good condition		
CP6.	Lubricate pump and check oil levels		
CP7.	Pump securely attached to the platform		
CP8.	Intake and discharge piping firmly supported within three feet of the irrigation pump		
CP9.	Pressure gauge installed on the pump discharge line <ul style="list-style-type: none"> <li>● Pressure jolts from filling the pipeline and pressure fluctuations and vibrations while the pump is operating will eventually compromise gauge accuracy, requiring occasional replacement</li> </ul>		
CP10.	Flow meter installed and operating properly		
CP11.	Rodents and/or burrowing animals eradicated from pond site		
CP12.	Control panel <input type="checkbox"/> Shaded to cool thermal breakers <input type="checkbox"/> Mounted on secure poles or foundation <input type="checkbox"/> Holes or missing knockout plugs screened or puttied <input type="checkbox"/> Small hole (3/16-inch) in the bottom of the panel to allow moisture to drain		
<b><i>Irrigation Pump – Turbine</i></b>			
TP1.	Sturdy motor base with motor firmly supported		
TP2.	Pump lubrication <input type="checkbox"/> Using food grade oil <input type="checkbox"/> Oilers working properly		
TP3.	Pressure gauge installed on the pump discharge line <ul style="list-style-type: none"> <li>● Pressure jolts from filling the pipeline and pressure fluctuations and vibrations while the pump is operating will eventually compromise gauge accuracy, requiring occasional replacement</li> </ul>		

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No.	Item	Action Needed or Taken	Date
TP4.	Intake screen <input type="checkbox"/> Clean and properly placed <input type="checkbox"/> Intake not resting on bottom of the pond or water source ▶ Prevent mud and debris from being sucked into the system <input type="checkbox"/> Intake should not be too close to the water surface ▶ Air can be sucked into the irrigation system due to vortexing		
TP5.	Trash screen is clean and placed properly		
TP6.	Discharge pipe firmly supported		
TP7.	Flow meter installed and operating properly		
TP8.	Rodents and/or burrowing animals eradicated from pond site		

## Electric Motor

EM1.	Motor frame clean of: <input type="checkbox"/> Debris and vegetation <input type="checkbox"/> Caked-on dirt and oil <input type="checkbox"/> Rodent or insect nests		
EM2.	Motor ventilation <input type="checkbox"/> Vents open and unobstructed by grass or plant debris <input type="checkbox"/> Vents and case openings protected with ¼-to-½ inch mesh screen (e.g., machine cloth) <input type="checkbox"/> Plant material and debris removed from around motor(s) for unobstructed ventilation flow <input type="checkbox"/> If housed inside a structure or building, ample-sized openings exist for ventilation		
EM3.	Clean out motor drain hole located on the motor base or the motor support base • Prevents water from collecting under the air intake		
EM4.	Motor windings <input type="checkbox"/> Check for rodent and insect entry and damage ▶ If there is evidence of rodent damage, find and then plug or screen the entry point <input type="checkbox"/> Use compressed air to remove dirt, dust, debris, or other foreign material <input type="checkbox"/> Remove excessive grease • If excessively grease covered, confer with a motor repair service		
EM5.	Motor covered for shade and for water protection		
EM6.	Safety shields and access covers <input type="checkbox"/> Protective covers correctly attached to motor and properly functioning <input type="checkbox"/> Access plates and cover dome in-place and secure		

# Pre-Season Irrigation System Assessment

No.	Item	Action Needed or Taken	Date
EM7.	Belts do not show deterioration or cracking		
EM8.	Proper shaft alignment with pump and turns freely		
EM9.	Proper belt alignment and tension between motor and pump		
EM10.	Safety switches work property (check manufacturer's manual)		
EM11.	Tighten terminal screws and electrical wire connecting screws <ul style="list-style-type: none"> <li>● Freeze/thaw cycles cause electrical contacts to loosen</li> </ul>		
EM12	Motor runs quietly, free of excess vibration or noise		

## Electrical Service

	Overhead lines clear of tree branches and other physical hazards		
	Service panel <ul style="list-style-type: none"> <li><input type="checkbox"/> Secure and installed properly</li> <li><input type="checkbox"/> Open holes or missing knockout plugs plugged</li> <li><input type="checkbox"/> Interior free of moisture or corrosion</li> <li><input type="checkbox"/> Clean of debris, nests, rodents, and insects</li> <li><input type="checkbox"/> Interlocking door latches work properly</li> <li><input type="checkbox"/> Door seals and/or drop traps intact and secure</li> <li><input type="checkbox"/> Shaded to cool thermal breakers</li> </ul>		
	Service panel electrical connections <ul style="list-style-type: none"> <li><input type="checkbox"/> Replace blown fuses (never use an oversized fuse)</li> <li><input type="checkbox"/> Slowly open and close the disconnect switch to check for alignment of blades and clips</li> <li><input type="checkbox"/> Open and close the disconnect switch several times to clean oxide from contact points</li> <li><input type="checkbox"/> Clean contacts of dust and dirt.                             <ul style="list-style-type: none"> <li>▶ For copper, use very fine sandpaper or a fine file to clean contacts</li> <li>▶ Never file the silver on silver-plated contacts</li> <li>▶ Clean with compressed air</li> <li>▶ Clean relay contacts with a high-quality electrical contact cleaner</li> </ul> </li> </ul>		

## Irrigation Mainline or Laterals

IM1.	Pipelines <ul style="list-style-type: none"> <li><input type="checkbox"/> Cleaned of animal nests and plant debris</li> <li><input type="checkbox"/> Remove end plugs and drains and flush the entire system</li> <li><input type="checkbox"/> No evidence of sink holes along buried pipeline                             <ul style="list-style-type: none"> <li>▶ Indication of pipeline leaks or soil settling</li> </ul> </li> </ul>		
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# Pre-Season Irrigation System Assessment

No.	Item	Action Needed or Taken	Date
IM2.	Pipeline condition should not be or should not have: <ul style="list-style-type: none"> <li><input type="checkbox"/> Bent or flattened</li> <li><input type="checkbox"/> Punctured or breaks</li> <li><input type="checkbox"/> Split seams</li> <li><input type="checkbox"/> Leaky joints, couplers, connections, or valves</li> <li><input type="checkbox"/> Worn, torn, or leaky gaskets</li> <li><input type="checkbox"/> Leaky end plugs</li> </ul>		
IM3.	Mainline protection <ul style="list-style-type: none"> <li><input type="checkbox"/> Sufficient covered if buried</li> <li><input type="checkbox"/> Physical barrier if aboveground</li> </ul>		
IM4.	Flow meter installed and properly operating		
IM5.	Air relief valve(s) or combination valve(s) installed at high point in system to purge trapped air		
IM6.	Vacuum release valves installed at high point in system to purge entrapped air		
IM7.	Pressure relief valve set at 10 psi above operating pressure.		

## Stationary System

SS1.	Sprinkler nozzle size or sprayhead orifice size are the same along the length of the lateral		
SS2.	Correct lateral spacing along mainline		
SS3.	Risers <ul style="list-style-type: none"> <li><input type="checkbox"/> In-place and unbroken</li> <li><input type="checkbox"/> Properly oriented with ground</li> <li><input type="checkbox"/> Correctly spaced along the lateral</li> <li><input type="checkbox"/> Sufficiently long so sprinklers will not be obstructed foliage</li> </ul>		
	Pressure gauges installed on the laterals <ul style="list-style-type: none"> <li>• Monitor pressure drop and variation from pump site</li> <li>• Pressure jolts from filling the pipeline and pressure fluctuations and vibrations while the pump is operating will eventually compromise gauge accuracy, requiring occasional replacement</li> </ul>		

## Impact Nozzles and Sprayheads (e.g., Rotators and Spinners)

NS2.	Sprayheads (e.g., rotators or spinners) <ul style="list-style-type: none"> <li><input type="checkbox"/> No plugged orifices</li> <li><input type="checkbox"/> Rotators or spinners rotate freely throughout rotation</li> <li><input type="checkbox"/> Orifices properly sized for irrigation system operating pressure</li> <li><input type="checkbox"/> Orifices not excessive worn (refer to In-Season checklist)</li> </ul>		
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## Pre-Season Irrigation System Assessment

No.	Item	Action Needed or Taken	Date
NS1.	Impact nozzles <input type="checkbox"/> No plugged nozzles <input type="checkbox"/> Nozzles rotate freely throughout the preset arc ▶ Swing impact arm 4-inches to the right and release. Head should freely and fluidly move several inches. Repeat. Amount of rotation should be consistent each time the impact arm is released. <input type="checkbox"/> Plastic nozzles: No cracks, chips, or wear patters <input type="checkbox"/> No bent head arms <input type="checkbox"/> No weak or broken springs <input type="checkbox"/> Undamaged base gaskets (i.e., not cracked or torn) <input type="checkbox"/> Orifices properly sized for irrigation system operating pressure <input type="checkbox"/> Orifices not excessive worn (refer to In-Season checklist)		
NS3.	Pressure at each sprinkler is within manufactures operating range ● Use a Pitot tube to measure water pressure at nozzle orifice		

### Pollution Prevention Measures (Overspray and Drift Prevention)

PP1.	Endgun operation <input type="checkbox"/> Arc adjusted correctly <input type="checkbox"/> Bearings and brake inspected for wear ▶ Endguns operating in partial circles tend to unevenly wear bearings, affecting speed of rotation <input type="checkbox"/> Azimuth settings for activation/deactivation of solenoids correctly set		
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# In-Season Irrigation System Assessment

No.	Item	Action Needed or Taken	Date
<b><i>Irrigation Pump – Centrifugal</i></b>			
CP1.	Suction pipe <input type="checkbox"/> Screening device and connections clean of moss, plant debris, or trash <input type="checkbox"/> Inlet submerged adequately to prevent entrance of air and eddying of water <input type="checkbox"/> Free of air leaks		
CP2.	Pump case checked for cracks or holes		
CP3.	Inspect bearings for signs of wear, repack or replace as necessary		

<b><i>Irrigation Pump – Turbine</i></b>			
TP1.	Pump lubrication <input type="checkbox"/> Using food grade oil <input type="checkbox"/> Oilers working properly		
TP2.	Intake screen <input type="checkbox"/> Clean and properly placed <input type="checkbox"/> Intake not resting on bottom of the pond or water source ▶ Prevent mud and debris from being sucked into the system <input type="checkbox"/> Intake should not be too close to the water surface ▶ Air can be sucked into the irrigation system due to vortexing		
TP3.	Inspect bearings for signs of wear, repack or replace as necessary		
TP4.	Trash screen is clean and properly placed		

<b><i>Electric Motor</i></b>			
EM1.	Motor ventilation <input type="checkbox"/> Vents open and unobstructed by grass or plant debris <input type="checkbox"/> Vents and case openings protected with ¼-to-½ inch mesh screen (e.g., machine cloth) <input type="checkbox"/> Plant material and debris removed from around motor(s) for unobstructed ventilation flow <input type="checkbox"/> If housed inside a structure or building, ample-sized openings exist for ventilation		
EM2.	Motor covered for shade and for water protection		
EM3.	Safety shields and access covers <input type="checkbox"/> Protective covers correctly attached to motor and properly functioning <input type="checkbox"/> Access plates and cover dome in-place and secure		
EM4.	Belts do not show deterioration or cracking		

## In-Season Irrigation System Assessment

No.	Item	Action Needed or Taken	Date
EM5.	Proper shaft alignment with pump		
EM6.	Proper belt alignment and tension between motor and pump		
EM7.	Electrical connections <input type="checkbox"/> Terminal screws and electrical wire connecting screws tight, tighten and re-tape, if necessary ► Normal heat and temperature fluctuations tend to loosen terminal screws and wire connectors		
EM8.	Motor bearings properly lubricated and no signs of wear, repack or replace as required		
EM9.	Good water drainage away from motor base to prevent ponding		
EM10.	Motor runs quietly, free of excessive vibration or noise		

### Irrigation Mainline or Laterals

IM1.	Pipeline condition should not be or should not have: <input type="checkbox"/> Bent or flattened <input type="checkbox"/> Punctures or breaks <input type="checkbox"/> Leaky joints, couplers, connections, or valves <input type="checkbox"/> Leaky end plugs <input type="checkbox"/> Worn or leaky gaskets		
IM2.	Flow meter properly operating		
IM3.	Valves and gaskets not leaking		
IM4.	Drain plugs properly seal under pressure		
IM5.	No evidence of sink holes, indicating pipeline leaks or soil settling		

### Stationary System

SS1.	Correct lateral spacing along mainline		
SS2.	Sprinkler nozzle size the same along the length of the lateral		
SS3.	Risers <input type="checkbox"/> In-place and unbroken <input type="checkbox"/> Properly oriented with ground <input type="checkbox"/> Correctly spaced along the lateral <input type="checkbox"/> Sufficiently long so sprinklers will not be obstructed foliage		
SS4.	Pressure at beginning and end of laterals within proper operating range ● Use Pitot tube to measure water pressure at nozzle orifice		

# In-Season Irrigation System Assessment

No.	Item	Action Needed or Taken	Date
<b>Impact Nozzles and Sprayheads (e.g., Rotators and Spinners)</b>			
NS1.	Impact nozzles <ul style="list-style-type: none"> <li><input type="checkbox"/> No plugged nozzles</li> <li><input type="checkbox"/> Nozzles rotate freely through the preset arc                             <ul style="list-style-type: none"> <li>▶ General rule: 1 to 2 revolutions per minute</li> </ul> </li> <li><input type="checkbox"/> No bent head arms</li> <li><input type="checkbox"/> No worn out springs</li> <li><input type="checkbox"/> Base gaskets in good condition</li> <li><input type="checkbox"/> Nozzle orifice size appropriate for irrigation system operating pressure</li> <li><input type="checkbox"/> Do not lubricate sprinkler heads either for storage or for operation</li> </ul>		
NS2.	Sprayheads <ul style="list-style-type: none"> <li><input type="checkbox"/> No plugged nozzles</li> <li><input type="checkbox"/> Rotators or spinners rotate freely throughout rotation</li> <li><input type="checkbox"/> Orifice size appropriate for irrigation system operating pressure</li> </ul>		
NS3.	Checking impact nozzle wear <ul style="list-style-type: none"> <li>● Verify diameter using shank end of a drill bit as a gauge</li> <li>● Insert shank end into the nozzle opening. It should be snug. If the bit can be wobbled sideways – even slightly, the nozzle is worn and should be replaced.</li> </ul>		
NS4.	Replacing impact nozzles <ul style="list-style-type: none"> <li>● Box-end wrench used to prevent damage to nozzle</li> <li>● Threads wrapped with Teflon plumbers tape                             <ul style="list-style-type: none"> <li>▶ Petroleum-based compounds cause deterioration of rubber washers</li> </ul> </li> </ul>		
NS5.	Pressure at each sprinkler is within manufactures operating range <ul style="list-style-type: none"> <li>● Use a Pitot tube to measure water pressure at nozzle orifice</li> </ul>		
NS6.	Visual inspect distribution pattern of each sprinkler for uniform application pattern <ul style="list-style-type: none"> <li>● Donut patterns</li> <li>● Dry or overly wet areas</li> </ul>		
<b>Pollution Prevention Measures (Overspray and Drift Prevention)</b>			
PP1.	Impact nozzles <ul style="list-style-type: none"> <li><input type="checkbox"/> Arc adjusters and trip pins are properly set to prevent overspray</li> <li><input type="checkbox"/> ¼ or ½ turn nozzles placed along perimeter laterals and, if necessary, at end of laterals</li> </ul>		
PP2.	Sprayheads (e.g., rotators and spinners) <ul style="list-style-type: none"> <li><input type="checkbox"/> Deflection shields in-place</li> </ul>		

## In-Season Irrigation System Assessment

No.	Item	Action Needed or Taken	Date
PP4.	Backflow devices installed and operating properly <input type="checkbox"/> Irrigation mainline check valve <input type="checkbox"/> Vacuum relief valve <input type="checkbox"/> Low pressure drain <input type="checkbox"/> Inspection port <input type="checkbox"/> System interlock (i.e., pressure switch, flow meter, hydraulic or electric solenoids)		

# Post-Season Irrigation System Assessment

No.	Item	Action Needed or Taken	Date
<b><i>Irrigation Pump – Centrifugal</i></b>			
CP1.	All water is drained from pump, especially prior to freezing weather <ul style="list-style-type: none"> <li>● Remove the lowest plug on pump and drain casing</li> </ul>		
CP2.	Open petcock and drain diaphragm-type hand primer		
CP3.	Suction tube and discharge piping removed where ice is a problem		
CP4.	Cover any exposed metal, such as the shaft, with a protective lubricant to prevent corrosion		
CP5.	Cover oil- or grease-lubricated bearings with a lubricant to prevent moisture-induced rust or pitting		
CP6.	Lubricate the shaft		
CP7.	Remove tension from belts		
CP8.	Close ball valve on pressure gauge riser, remove gauge, and store inside		
CP9.	Seal openings, including suction, discharge, and primer, with duct tape as a barrier against rodents, insects, and foreign material		
CP10.	Coat rubber parts with a rubber preservative <ul style="list-style-type: none"> <li>● Rubber seat on discharge primer valve</li> <li>● Flexible coupling connecting the pump to the driver</li> </ul>		
CP11.	Cover pump with a waterproof tarp		

<b><i>Irrigation Pump - Turbine</i></b>			
TP1.	Remove all exterior dirt and grime that may trap moisture		

<b><i>Electric Motor</i></b>			
EM1.	Motor covered with a breathable water-resistant tarp		
EM2.	Control panel (boxes): <ul style="list-style-type: none"> <li>● Move switches in the “Off” or “Open” position</li> <li>● Lock panel in the off position</li> <li>● Remove fuses to prevent corrosion &amp; accidental startup</li> <li>● Protect exposed boxes with waterproof tarp</li> </ul>		
EM3.	Remove all exterior dirt and grime that may trap moisture		
EM4.	Screen all motor openings to keep rodents, insects, and foreign material out		

## Post-Season Irrigation System Assessment

No.	Item	Action Needed or Taken	Date
EM5.	Lubricate all bearings		
EM6.	Spray electrical contacts with contact cleaner to displace dirt and moisture and prevent corrosion		
EM7.	Check level of oil in the reservoir and change if it is discolored		
EM8.	Replace panel door seals if hard or broken to keep moisture, insects, and dust out		

### *Irrigation Mainline or Laterals*

IM1.	Drain water from all pipelines and completely open valves		
IM2.	Remove end plugs and empty water, debris, and sediment		
IM3.	Replace end plugs as a barrier to rodents, insects, and foreign material		
IM4.	If possible, remove the flow meter and pressure gages and cover the holes		

### *Impact Nozzles and Sprayheads (e.g., Rotators and Spinners)*

NS1.	Impact Nozzles <input type="checkbox"/> Place tape over nozzle to keep out foreign material, such as insects, rodents, dirt, and debris		
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