DRAMMwater Operations Maintenance Schedule

Category	Item	Daily	Wkly	Mnthly	Qrtrly	Bi-Ann	Ann	Bienn	As Needed	NOTES:
Pump	Verify specified outlet pressure of each pump in system		■							See system startup records for specified output pressures of pumps
	Inspect pump impeller							■		Confirm there is no pitting, chipping or breakage of the impeller blades
	Check bearings and replace if noisy							■		Refer to pump owner's manual
	Lubricate Pump				■					Apply specified lubricant to points indicated in owner's manual
	Verify voltage and amperage draw						■			Verify that voltage and amperage draw match those listed on motor plates
	Observe normal operating noises and listen for changes	■								Listen for any change in tone, knocking, or louder than normal operation
Filter	Verify specified inlet and outlet pressures and pressure drop		■							Confirm with start up documentation, but typical readings are 30 PSI minimum at the filter manifold inlet, 15 PSI maximum pressure drop before a backwash cycle, & 5 PSI minimum pressure drop after a backwash
	Verify adequate backwash frequency					■				Do not allow the pressure drop to exceed 15 PSI
	Inspect backwash discharge for content					■				Discharge several gallons into a white bucket and visually inspect for abnormal amounts (or types) of filter particulate
	Rebuild filter backwash valves							■		May not be necessary if they are functioning well - check pressures to confirm
	Confirm media depth, and add or replace as necessary									Top of media level should be 65 to 70% of the vessel height - refill as needed if at or below 60%
Back flow preventer	Verify specified compound pressure gauge reading	■								This O2 feed gas pressure should be neutral to slightly negative - report if more than 5 psi above or below neutral
	Verify optical sensor is working and clean sight tube			■						Confirm it is free of water on the inside and dust on the outside - If any water inside, shut down and call Dramm
	Preventative replacement of check valve						■			These specialty check valves may fail in the ozone environment so preventatively replace annually
	Verify shut off solenoid is functioning					■				Confirm valve opens and closes without hesitation
Venturi Injector	Verify specified inlet and outlet pressures and pressure drop	■								Confirm the pressure drop across the inlet and outlet is within the normal operating range of 25 to 35 PSI
	Clean venturi suction port and ball check assembly					■			■	Preventatively clean every 6 months, more often if necessary. Low ORP and/or gas flow is a key indicator of a clogged injector inlet
	Replace suction port ball check valve						■			Confirm check valve is in place and preventatively replace
	Visually inspect injector pump impeller						■			Look for pitting, indicating cavitation, or the chipping of blades

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Venturi Injector	Lubricate as needed				■					See owner's manual for details
	Verify injector pump voltage and amperage draw					■				Confirm that voltage supply and amperage draw match motor plate ratings
Oxygen Concentrator	Check and clean air inlet filters		■							Blow out, wash and dry completely before reinstalling to be sure that the oxygen concentrator receives adequate fresh air
	Check and adjust output volume			■						Confirm the volume matches what is shown on the startup specification sheet
	Verify output pressure	■								Confirm that the pressure matches what is shown on the startup specification sheet
	Test oxygen purity					■				Use an oxygen purity tester and report any purity reading below 88%
	Verify dew point level						■			Should be at or above -150F
	Visually inspect for sieve bed breakdown					■				Check and report if fine white powder deposits are seen on surfaces inside concentrator cabinet
	Compressor rebuilt kit						■			Rebuild required every 8,000 to 11,000 hours (see manual) or every 12 months - takes 2 hours - order kit from Dramm
	Solenoid Replacement						■			The four solenoids should be replaced or rebuilt annually and are part of compressor rebuild kit
	Observe normal operating noises and listen for changes	■								Listen for any change in tone, knocking, or louder than normal operation
Compressor	Verify output pressure		■							Confirm it is at manufacturer's rated output or the pressure specified on your startup sheets
	Verify output volume		■							Confirm it is at manufacturer's rated output or the volume specified on your startup sheets
	Inspect automatic drain valve in receiver		■							Weekly inspection to make sure no water is present -install automatic blow down valve if needed
	Verify no water in receiver tank		■							Confirm receiver tank is always dry
	Clean/replace air inlet filters			■						Blow out and/or wash and dry well before re-installing
	Lubrication					■				See owner's manual for lubrication details
	Clean/replace oil filters			■						Refer to owner's manual for details - call Dramm for any parts needed
	Clean/replace water separator and filters			■						Refer to owner's manual for details - call Dramm for any parts needed

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	Observe normal operating noises and listen for changes	■								Listen for any change in tone, knocking, or louder than normal operation
Ozone Generator	Verify specified ozone cell pressure	■								Confirm it is within specifications provided on startup sheets
	Verify specified output volume	■								Confirm it is within specifications provided on startup sheets
	Verify fittings on all gas lines are tight				■					Call Dramm if you suspect a leak, and a packet of Potassium Iodide will be sent to help verify
	Visually inspect inside cabinet			■						Make sure no water or excess dust is present, and that there are no indications of burning
	Clean ozone cells						■			Call Dramm to discuss before attempting - may require a service visit
	Clean/replace cooling filters			■						Turn off equipment before cleaning to ensure no dirt is pulled into cabinet - dry the filters well before re-installing
	Clean/replace inline filters		■							Turn off equipment before cleaning to ensure no dirt is pulled into tubing - dry the filters well before re-installing
	Check ORP Controller set point & readings	■								Calibrate immediately if required - replace probe if calibration does not hold
Ozone Reaction Vessel	Check & clean Gas Relief Valve on top of tank		■							If relief valve is clogged with iron deposits or debris the tank will empty and the system will not function properly
	Check inside of tank for buildup or debris and clean as needed						■			Precipitated solids may accumulate and present extra ozone demand, decreasing system efficiency
	Check water level in ozone destruct unit		■							Keep the tube full of water - will not work when dry - ensure unit is free of foam and debris and does not overflow
Sensors	Check and clean ORP probe			■	■					Swirl in distilled water and/or cleaning solution and wipe with soft cloth - never use a hard bristled brush of any kind
	Calibrate ORP sensor				■					Report to Dramm if the sensor no longer holds calibration - it may be time to replace
	Replace ORP probe						■			Must be replaced approximately once per year, or more, depending on the source water quality
	Check and clean Dissolved Oxygen probe				■					If reading seems low check to see if the probe or membrane is fouled, or electrolyte solution needs to be replaced
	Calibrate DO probe				■					See Manual for details
	Check and adjust flow sensor					■				See Manual for details
	Replace Ambient Ozone Sensor (annual)							■		Regulations require this be done once per year - pull ozone feed tube off and hold under sensor to confirm it is working