**Objective:**

To establish the standard Operating procedures for the WSP

**Policy:**

Smooth & Effective Operations of the WSP

**Responsibility:**

WSP operator / Shift Engineer

**Procedures:**

1. Check water level in raw water tank
2. Check healthy power supply available in the electrical panel in all phases.
3. Check controls and valves of sand filter and all other valves of the system.
4. Start filter feed pumps and check pressure drop in the filters, if media found packed. agitate system with air or back wash the media till media is activated for an adequacy of filtration.
5. Check quality of water from softener.
6. Recharge softener with brine solution
7. Start liquid chlorine dosing
8. Test water for adequacy of ph value, free chlorination level and softening quality for cooling tower parameters.
9. Start treated water pumps and check the pressure.
10. Monitor the level of water being filled in the overhead tanks through level sensors/ manually. Ensure no spillage of water from the overhead tanks.
11. Stop the treated water pumps when the level of water is full in overhead tanks.
12. Record parameters in the log sheet

**Regeneration mode:**

1. Prepare Brine tank by making 26% concentration. For ex. For 10kg of salt water to be added 10/0.26= 38.46 lts.
2. **BACKWASH**( Step Time : 10 min):-

* Open wash outlet valve fully.
* Very slowly, open wash inlet valve and adjust it such that level of water in the drain sump is up to the wash marker.
* After 10 min or when is cleaner(same as that of inlet water), close Wash inlet valve fully.
* Backwash is now complete.

1. **BRINE INJECTION**( 20 to 30 min):-

* Open Rinse out let valve fully.
* Open ejector Suction valve fully.
* Open and adjust ejector Power Water valve such that level of water in the Drain sump comes to INJ mark on the V- notch board.
* Now the brine injection has started. Continue this step till complete brine solution from the tank is injected.

1. **SLOW RINSE** (20 to 30 minutes):-

* After the brine gets completely injected, close Ejector Suction valve fully. Rinse outlet valve and ejector Power water vales are open from previous step. Further open ejector Power Water valve to re-adjust the level of water in the drain sump to INJ marker. Now the SLOW Rinse step operation has started. Slow rinse is continuation of Regeneration (injection) step only as the remnant brine in the vessel is displaced by slow rinse water and regeneration takes place completely.
* After about 20 min, close all the open valves. This completes Slow Rinse step.

1. **FAST RINSE** (20 to 30 min):-

* Open Rinse Outlet valve fully.
* Open Inlet valve and adjust till level in drain sump V- notch board reaches to “Rinse” marker. After about 20 min, check quality of water from the sample point at Outlet by opening valve. If the total hardness is found to be commercially zero, close both the valve (in case, the quality of the water is not achieved yet, continue the fast rinse step till quality is achieved). The unit is now ready for service.

**TAKING THE FLEXI- BE IN SERVICE;-**

1. **REFILL** :-
   * Open Inlet Valve and Air Release Valve.
   * When water starts coming out Full Bore from Air Release pipe, close air Release Valve.
   * This completes Refill (Air Release) operation.
2. **SERVICE:-** 
   * Open Outlet valve fully. Open and adjust Inlet Valve such that the service flow is achieved.

**Service Mode:**

1. Close the inlet Valve of the water line.
2. Select the handle position to service mode on the softener tank.
3. Open the inlet water valve & set the water pressure to 2 bar by adjusting the valve & switching the primary pump ON.
4. Keep the MCB on the control panel to ON position.
5. Check for the operation of water pump.
6. Measure the PPM of water at the inlet of tank, ensure the PPM should b less than 5.

**Manual operation (STOP)**

1. Press Stop push button on the WSP Panel.
2. Records stop timings.

# Safety Precautions

1. Check and ensure all the safeties are intact.
2. No unwanted material is kept in Pump Room.
3. Check and ensure the power supply is cut off while filling Antiscalent chemical in the WSP.
4. Tag out / lock out electrical supply from the incoming cable before filter cleaning.
5. Adjust the position of the motor while replacing the damaged “V” belts.

**Revision Guide:**

Any change in the system needs review of SOP.