BAKKAVOR CUCINA SANO,

BOSTON

WASTEWATER TREATMENT & RECYCLING PLANT

OPERATION AND MAINTENANCE MANUAL

OPERATING PROCEDURES

Plant Area: **Raw Effluent Pumping**

Procedure: **Start-Up/Shut-Down Procedures**

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1.0 SAFETY

The Raw Effluent Pumping System involves the following safety issues:-

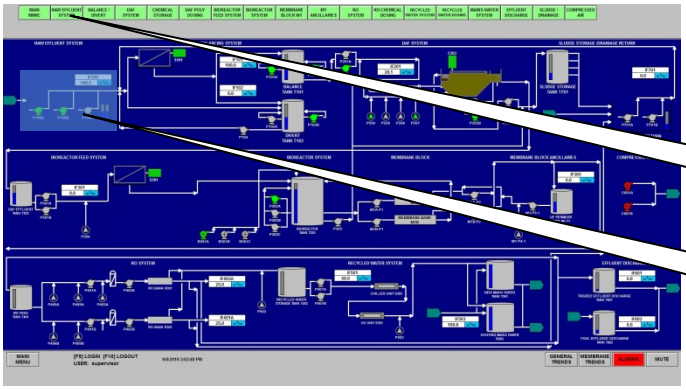
CAUTION: AUTOMATIC OPERATION OF DRIVES

Danger is present from the automatic operation of the pumps. Local isolators must always be switched OFF (and preferably locked OFF) prior to any maintenance work on the drive.

REFER TO SECTION OM03 HEALTH & SAFETY, FOR FURTHER SAFETY INFORMATION.

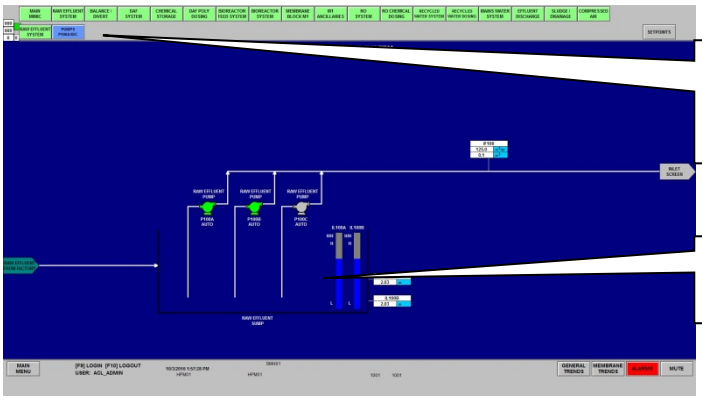
2.0 SCADA NAVIGATION

The equipment associated with the Raw Effluent Pumping System is accessed at the SCADA PC as shown below:-



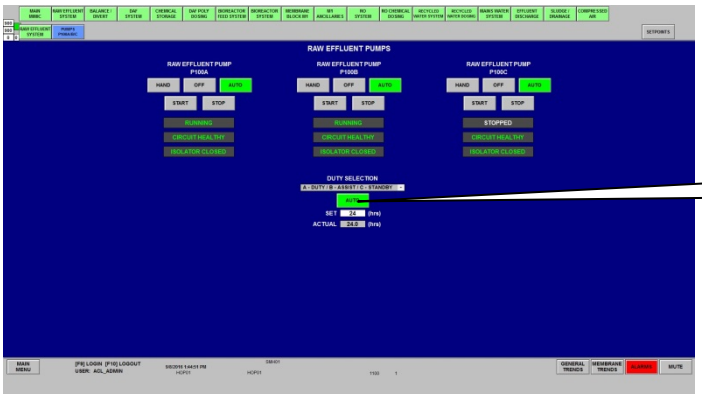
Main Mimic

Raw Effluent Pump T100



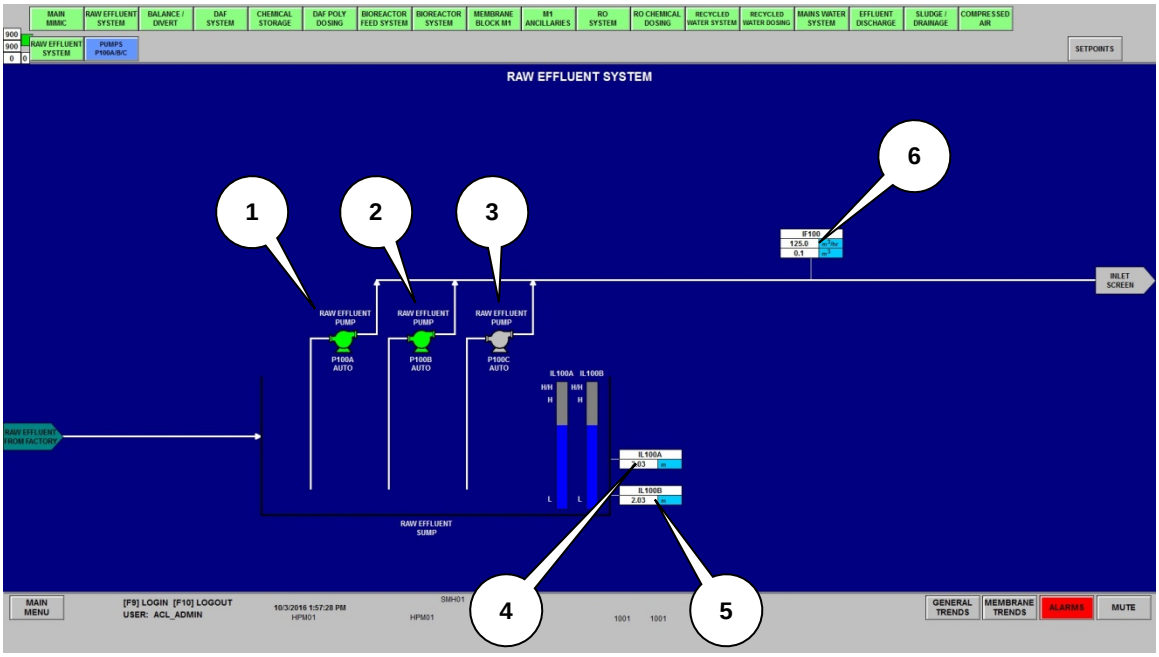
Raw Effluent Pumping System mimic.

Raw Effluent Pumps P100A/B/C.



Raw Effluent Pumps Control Operation Page.

Explanation of Raw Effluent Pumping System Mimic Page



No.	Item
1	Raw Effluent Pump P100A
2	Raw Effluent Pump P100B
3	Raw Effluent Pump P100C
4	Raw Effluent Sump Level Transmitter IL100A
5	Raw Effluent Sump Level Transmitter IL100B
6	Raw Effluent Flow Transmitter IF100

3.0 START-UP PROCEDURE

To start-up the Raw Effluent Pumps, the following procedures apply:-

NOTE:

THE PROCEDURES GIVEN IN THIS SECTION ASSUME THAT THE ASSOCIATED PLANT IS READY TO START-UP AND THAT ALL ASSOCIATED EQUIPMENT AND VALVES HAVE BEEN CHECKED PREVIOUSLY FOR CORRECT OPERATION AND SET-UP. IF THE ASSOCIATED EQUIPMENT HAS BEEN SHUTDOWN FOR MAINTENANCE OR IF THERE IS ANY DOUBT REFER TO THE PRE START-UP CHECKS IN SECTION 5.0.

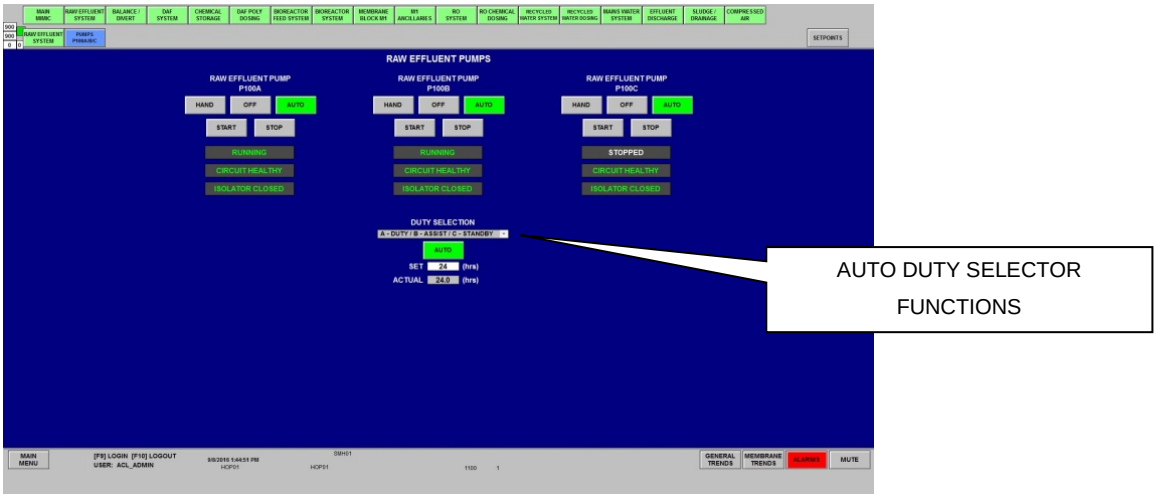
1. Prior to starting the Raw Effluent Pumps, ensure that the Balance Tank and the following systems are ready to receive effluent.

2. Ensure that the Pre-Screen Divert System is available (see J5584-OM04-03 OP01 Section 3.2) or the control valve AV105 is set manually to direct the effluent to the required location.

3. Ensure that the Inlet Screen is ready to receive effluent (see J5584-OM04-03 OP01 Section 3.3) (unless it is bypassed).

4. Ensure that the Post-Screen Divert System is available (see J5584-OM04-03 Section 3.4) or the control valves AV115/AV117 are set manually to direct the screened effluent to the required location.

5. Navigate to the Raw Effluent Pumps Operation Page and select the sequence of operation of the Pumps P100A/B/C using the drop-down duty selector box. Alternatively if all pumps are available to operate set the Auto Duty Selector Function to AUTO such that the pump duty is automatically rotated on a timed basis. Check that a suitable Cycle Timer setting is set.
   Note: In Auto Duty Rotation Mode, the pump duty selection is changed in sequence starting at the current selection.



Raw Effluent Pump Operation Page

6. At the Pump Operation Page, set all Raw Effluent Pumps P100A/B/C to AUTO. When the level in Raw Effluent Sump reaches the Duty Pump Permit Level, the selected duty pump will start (providing it is not being inhibited by other controls).

7. Check that the pump is running correctly with no adverse noise or vibration. If excess noise or vibration occurs stop the pump at the operator interface (or using isolator in severe cases) and investigate fault.

8. Check that suitable flow is measured at flowmeter IF100.

4.0 SHUTDOWN PROCEDURE

To carry out a short term shutdown of the Raw Effluent Pump System, the following procedures apply:-

NOTE:

It is necessary to maintain one Raw Effluent Pump operational at all times to forward the raw effluent to the Inlet Screen and Balance Tank.

Shutdown of all Raw Effluent Pumps will lead to flooding of the raw effluent sump and possibly productions areas in the factory.

1. Prior to shutting down a pump, ensure that the other pumps are selected as DUTY and ASSIST and are available to operate in AUTO mode.
2. At the Pump Operation Page, set the required Raw Effluent Pump to OFF.
3. If required for maintenance, set the local electrical isolator for the required pump to OFF position.
4. If required for maintenance access, close the outlet valve to isolate the required pump.

5.0 PRE START-UP CHECKS

Prior to starting up the Raw Effluent Pumping System following a shutdown for maintenance the following checks must be undertaken:-

1. Ensure that the following equipment is correctly installed and that all necessary commissioning checks are carried out in accordance with the manufacturer's instructions. This should include motor rotation checks for each drive and any necessary lubrication, etc. as described in the manufacturer's literature.
   - Raw Effluent Pumps P100A/B/C
   - Raw Effluent Auto-sampler E101

2. Ensure that the following instrumentation is correctly installed and that the necessary commissioning/ set-up is carried out in accordance with the manufacturer's instructions. Ensure that it is operating correctly and communicating with the control panel (same reading should be read at instrument and operator interface).
   - Raw Effluent Sump Level Transmitters IL100A/B
   - Raw Effluent Flowmeter IF100

3. Check that all pipework connections are complete and flange bolts correctly tightened.

4. Check and/or set the following valve positions:-

VALVE	POSITION	NOTES
V102A	Open	Pump P100A discharge isolation
V102B	Open	Pump P100B discharge isolation
V102C	Open	Pump P100C discharge isolation
Untagged	Closed	Pump discharge gauge valves
V150	Closed	Air release valve
V152	Closed	Tanker connection
V103	Closed	Raw Effluent sample point/drain

5. At the operator interface, ensure that the following drives are set to OFF to prevent un-controlled start-up:-
   - Raw Effluent Pumps P100A/B/C

6. Set the local electrical isolators for the following drives to ON position:-
   - Raw Effluent Pumps P100A/B/C

7. Reset any associated alarms at the SCADA.

8. The normal Start-Up Procedure (Section 3.0) can now be carried out.