SCADA SOFTWARE, HARDWARE & STANDARDS PROCEDURES

PALM BAY UTILITIES DEPARTMENT

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TABLE OF CONTENTS

LIST OF TABLES

1.0 INTRODUCTION

1.1 Purpose

The purpose of the SCADA Software, Hardware & Standards Procedures manual is to formulate a City-wide, long-term SCADA strategy to reduce operational costs by implementing programming standards that will streamline maintenance and operation activities.

The City's SCADA system was implemented over time on a site-by-site basis. Different programmers worked on the system without a written set of guidelines in place. The result was a SCADA system and looked and functioned differently at each of the facilities.

The purpose of this guideline is to establish a set of standards for new projects so that graphics, colors, naming conventions, and functionality are consistent throughout the system. A consistent set of standards will help facilitate operations and maintenance by having all look and operate in a similar manner.

These guidelines are designed to be a "working document" with revisions made at periodic intervals as needed to incorporate changes with new software versions, integration with other software systems, and include new functionality as requested by the users.

1.2 Facilities

The SCADA system presently connects all of PBUD's facilities, including the treatment plants, lift stations, remote pump stations, and water wells. A summary of the facilities and the approximate date SCADA technology was installed has been provided below.

Table 1-1. PBUD Facilities Listing

Facility	SCADA Installation Date
North Regional Wastewater Treatment Plant (WWTP)	2003
North Regional Water Reclamation Facility (WRF)	2005 – Main Plant 1999 – Reclaim High Service Pumps 2009 – Disk Filters
North Regional Lime Softening Water Treatment Plant (WTP)	2012
North Regional Reverse Osmosis Water Treatment Plant (RO WTP)	2006
South Regional Water Treatment Plant (SRWTP)	2004
Aquifer Storage and Recovery Well (ASR)	2005
Nash Water Re-Pump Facility	2007
Raw Water Wells	2007
Sanitary Lift Stations – Standard Install	1993 to Present
Sanitary Lift Stations – Data Flow Systems	2012

1.3 City Standardization

1.3.1 Software

The current SCADA application is GE Proficy iFIX and GE Proficy Historian. GE Proficy iFIX is the user interface to the SCADA system and is comprised of graphic screens which are used for monitoring and controlling the pump stations and treatment plants. Some versions of the iFIX software are "view only nodes" which enables the user the ability to monitor but have no control capability. Generally, only plant operators have the ability to control the processes. The Historian software is used for archiving data such as equipment runtimes, continuous process data (analog signals such as levels, pressures, and flows) and alarm logs.

I/O Server Connectivity. The servers are connected using a fiber optic cable.

Communication Protocols. The SCADA servers at North Regional and South Regional communicate via the Ethernet protocol.

1.3.2 Hardware

The City has standardized computer hardware to Dell products. The current hardware employed by the SCADA system is distributed throughout the utility system:

- South Regional RO Water Treatment Plant. The SCADA Servers and Historian Server reside in the SRWTP operations room.
- North Regional Lime Softening Water Treatment Plant. The SCADA servers reside in the Lime Softening WTP lab room. The lift station network (non-Data Flow system) also communicate to these servers via the Master Radio in the water tower.
- North Regional Wastewater Treatment Plant. The WWTP only has a view node which is located in the lab room.
- PLC / RTU communication protocols. PLCs/RTUs communicate to each other and to the SCADA software using the Modbus RTU protocol.

1.4 Standards Criteria

In order to make the SCADA system consistent across PBUD's system, the following items need to be standardized:

- Tags. Tags are names that assigned to data registers and objects within iFIX. Tags can be linked to PLC addresses as well as internal registers within iFIX. Tags are used for naming physical inputs and outputs, internally calculated values, and objects within iFIX. All data and objects within iFIX have an associated tag.
- Graphics. Graphics are the visual representation of the SCADA system to the user. Graphics include the representation of individual pieces of equipment and how they are connected in the treatment process. Graphics also include the display of system values (levels, flows, pressures, etc.) and equipment status (running, alarm, etc.). In addition, the system navigation (how a user moves from one display page to another) is part of the graphics.
- Indications and Scan Times. Indications are status information for the operator and are used to show the current control mode of the equipment (local/remote, manual/auto) as well as if there are any alarms. Scan Times are used to set how often alarms are processed and graphical

displays updated with status changes in the process system. These scan times are usually set to update once per second, but can be adjusted if necessary.

- Security. System security is implemented through the use of a user login name and password. Varying degrees of monitoring and control capability is assigned to each user through their login name. Control of the system is granted to operations staff, while other staff may only be granted permission to only view the system.
- Reports. Reports are queries into the SCADA database and can be used to download and log information such as pump runtimes.
- Software Version. The versions of the iFIX that are presently used vary depending on the when the original installations occurred. The installations used the latest version of iFIX that was available at the time, however, the previous installations were not updated at the same time so that all installations were operating on the same software version. The plan going forward will be to keep all software versions consistent across the SCADA network.

2.0 TAGS

2.1 Definition

Tags are names that assigned to data registers and objects within iFIX. Tags can be linked to PLC addresses as well as internal registers within iFIX. Tags are used for naming physical inputs and outputs, internally calculated values, and objects within iFIX. All data and objects within iFIX have an associated tag. Tags need to follow a standardized naming convention so that they are consistent throughout the SCADA network. Standardized tags also help to troubleshoot issues within iFIX if a standard format is used across all SCADA installations.

2.2 Naming Conventions

HMI tags will follow the standard set forth in the "Software Tag Format Guidelines" document, and will be strictly adhered to for proper HMI operation (in particular, for genies and supergenies in GE Proficy). PLC programs will use this same tag naming standard. There are five (5) sections for a standard HMI tag, separated by an underscore (_).

Table 2-1. Tag Naming Convention

Position	1st	2nd	3rd	4th	5th
Format =>	<Site Designation>_	<Process Group>_	<Device/Equipment>_	<Item Number>_	<Function>
Max Characters	4	8	3	3	none

Refer to "Software Tag Format Guidelines" document for a complete description of Software Tag Guidelines and examples.

2.3 Addressing Convention

For equipment requiring SCADA control, an address will be provided by the PLC to communicate with the HMI. Output addresses and values shall not be directly addressed by the HMI. For example, a manual start of a pump initiated by the HMI will not be directly written to the Start output of the PLC but rather a manual start bit will be set by the HMI is processed by the PLC program, ensuring all requirements are met before starting equipment. All commands to the PLC will be a latch command by the HMI with the PLC program unlatching the bit upon seeing the change.

2.4 Analog Scaling

All analog scaling will be performed within the PLC. The Raw Zero and Raw Full Scale of each of the analog HMI tags will be the same, making PLC program troubleshooting easier.

2.5 Alarms

All digital and analog alarms will be assigned an alarm category based on the City's specification, or City Personnel will assign the desired alarm categories. An additional alarm category ("Events") allows the City to track specific events for troubleshooting purposes. The following categories shall be used:

Table 2-2. Alarm Categories

Alarm Category	Description	Color Indication			
		Active, not acknowledged	Active, Acknowledged	Non-active, not acknowledged	Disabled
1	High Priority Analog Alarms	Black text, red background	White text, black background	Black text, grey background	White text, transparent background
2	Low Priority Analog Alarms	Black text, yellow background	White text, black background	Black text, grey background	White text, transparent background
3	Analog Events	Not displayed	Not displayed	Not displayed	Not displayed
11	High Priority Digital Alarms	Black text, red background	White text, black background	Black text, grey background	White text, transparent background
12	Low Priority Digital Alarms	Black text, yellow background	White text, black background	Black text, grey background	White text, transparent background
13	Digital Events	Not displayed	Not displayed	Not displayed	Not displayed

Discrete alarms sent from the PLC to the HMI may be configured with a delay timer in the PLC to remove nuisance alarms.

Analog alarms will be created and configured in the HMI in order to utilize the alarm features and capabilities of the HMI GE Proficy software. The setpoints for analog alarms (HI, HI-HI, LOW, LO-LO) will also be set in the HMI (not the PLC).

2.6 Interlocks

There is a distinct difference between "ALARMS" and "INTERLOCKS". Analog alarms will be created and configured in the HMI in order to utilize the alarm features and capabilities of the HMI GE Proficy software (as stated above). However, interlocks (discrete or analog), which are intended to stop equipment regardless of Operator interaction, will not be configured through the HMI. Interlocks will be configured and controlled in the PLC or hard-wired directly to the equipment being controlled. This allows the interlocks to still operate properly even if there is a loss of communication between the PLC and HMI.

If there is an active interlock (equipment is stopped/interlocked) then the PLC will communicate an interlocked state bit to the HMI for display.

If there is an analog value that creates an interlock when it reaches a certain value AND needs to be configurable by Operators, then that value is operator adjustable on the HMI and sent to the PLC.

2.7 Trends

All specified analog and digital values will be trended in GE Proficy. This includes levels, flows, totalized flows, valve positions, temperatures, pressures, analyzer values, runtimes, equipment statuses and Proportional Integral Derivative (PID) parameters. Trend data shall be retained as long as possible (sometimes up to 18 months), based on server storage size and the level of importance of the information.

2.7.1 Value Recording Intervals

The table below indicates the time intervals at which data can be trended. These intervals may be changed as needed depending on sever storage size and level of importance of information.

Table 2-3. Standard Recording Intervals

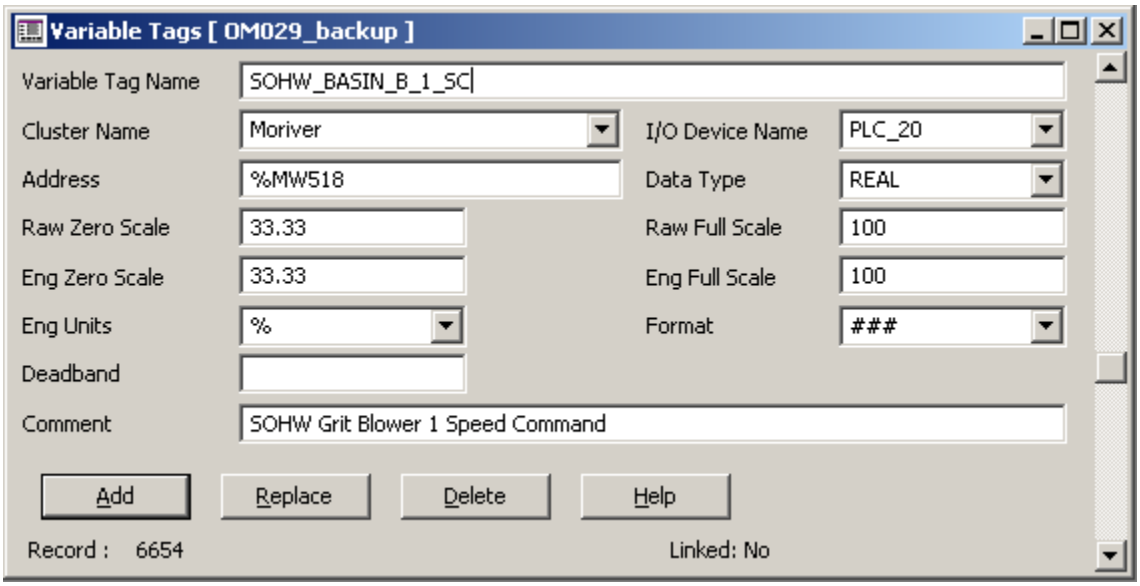
Value	Interval
Speed	10s
Position	10s
Analytical	10s
Level	10s
Pressure	10s
Flow	10s
Discrete	Change of State (event based)

2.8 Tag Creation

2.8.1 Analog Tag

Table 2-4. Analog Tag Parameters

Name/Field	Input
Variable Tag Name	Tag name using Software Tag Format Guidelines convention
Cluster Name	The cluster used by the Palm Bay Utilities Department, PBUD
I/O Device Name	Name of the device entered in I/O Device Form
Address	Address of the tag
Data Type	Analog values shall be type REAL in the HMI
Raw Zero Scale	The zero scale of the PLC tag
Raw Full Scale	The full scale of the PLC tag
Eng Zero Scale	Since scaling in the PLC, this number is the same as Raw Zero Scale
Eng Full Scale	Since scaling in the PLC, this number is the same as Raw Full Scale
Eng Units	One of the standard units as applicable
Format	The default format for display of the tag, can be overwritten on graphic display
Deadband	N/A. This field will be left blank.
Comment	An informative and brief comment explaining the nature of the tag

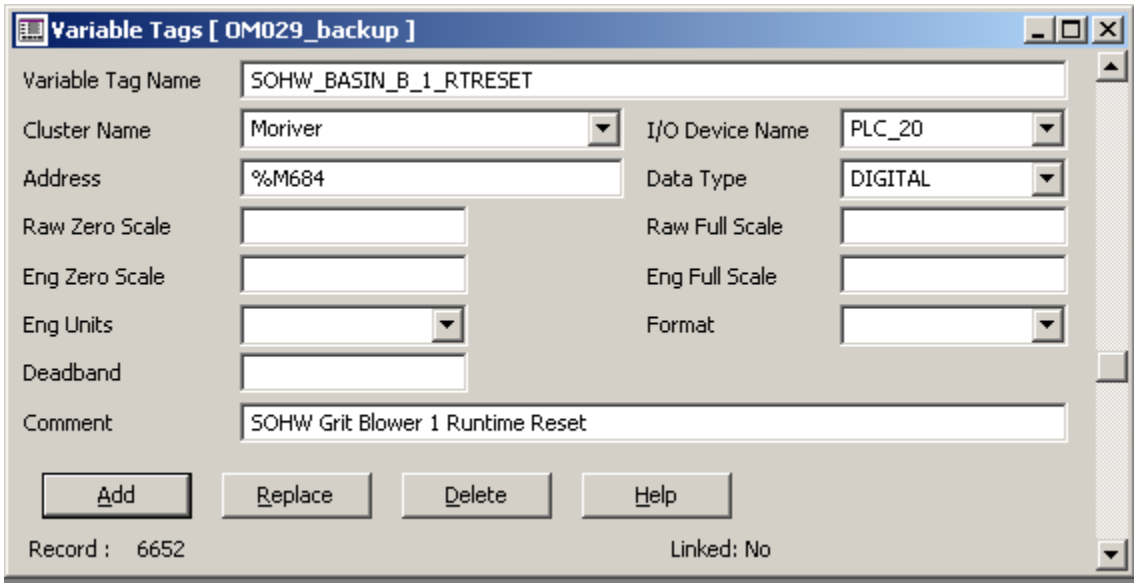


2.8.2 Digital Tag

Digital tags will follow similar guidelines to analog tags. However, scaling parameters, engineering units, and format will be excluded.

Table 2-5. Digital Tag Parameters

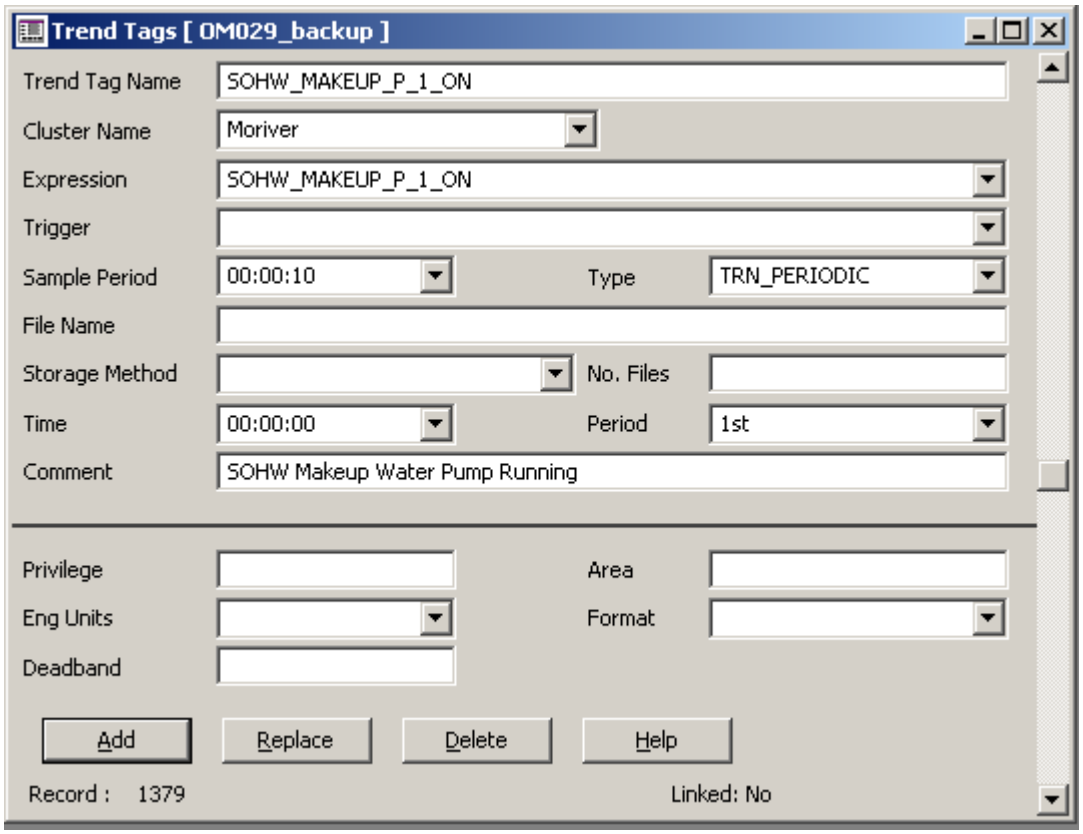
Name/Field	Input
Variable Tag Name	Tag name using Software Tag Format Guidelines convention
Cluster Name	The cluster used by the Palm Bay Utilities Department, PBUD
I/O Device Name	Name of the device entered in I/O Device Form
Address	Address of the tag
Data Type	DIGITAL
Raw Zero Scale	This field will be left blank.
Raw Full Scale	This field will be left blank.
Eng Zero Scale	This field will be left blank.
Eng Full Scale	This field will be left blank.
Eng Units	This field will be left blank.
Format	This field will be left blank.
Deadband	This field will be left blank.
Comment	An informative and brief comment explaining the nature of the tag



2.8.3 Trend Tag

Table 2-6. Trend Tag Parameters

Name/Field	Input
Trend Tag Name	Tag name using Software Tag Format Guidelines convention
Cluster Name	The cluster used by the Palm Bay Utilities Department, PBUD
Expression	Tag variable to be trended will be entered here
Trigger	Not used. This field will be left blank
Sample Period	10 second sample period will be normally selected. 10s
Type	Periodic trending will be selected. TRN_PERIODIC
File Name	Not used. This field will be left blank
Storage Method	Not used. This field will be left blank
No. Files	Not used. This field will be left blank
Time	00:00:00
Period	1st
Comment	An informative and brief comment explaining the nature of the tag

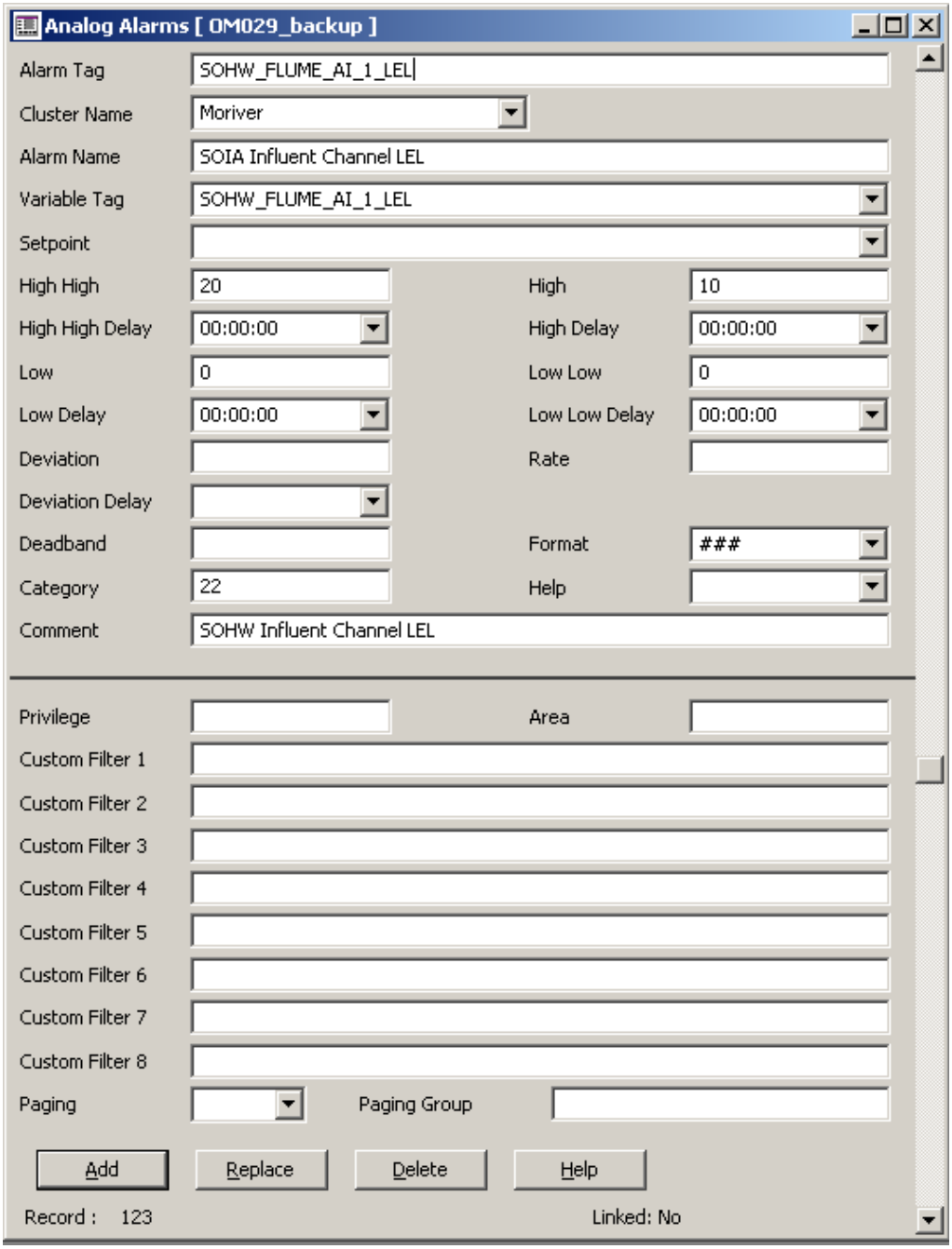


2.8.4 Analog Alarm Tag

Table 2-7. Analog Alarm Tag Parameters

Name/Field	Input
Alarm Tag Name	Tag name using Software Tag Format Guidelines convention
Cluster Name	The cluster used by the Palm Bay Utilities Department, PBUD
Alarm Name	The name of the physical device associated with the alarm (maximum of 79 characters). This property is optional, GE Proficy only uses it when details of the alarm are displayed on the screen or logged to a device.
Variable Tag	The analog variable (tag) that triggers the alarm (maximum of 79 characters).
Setpoint	An analog variable tag or base value that determines if a deviation alarm is to be triggered. This property is optional. If you do not specify a setpoint, it will default to 0 (zero).
High High	The value used as the triggering condition for a high high alarm (maximum of 10 characters). The high high alarm becomes active when the value of the variable tag exceeds this value for the duration of the high high delay period.
High High Delay	The delay period for High High Alarms. The alarm will only activate if its triggering condition is met for the duration of this period.
High	The value used as the triggering condition for a high alarm (maximum of 10 characters). The high alarm becomes active when the value of the variable tag exceeds this value for the duration of the high delay period.
High Delay	The delay period for High Alarms. The alarm will only activate if its triggering condition is met for the duration of this period.
Low	The value used as the triggering condition for a Low Alarm (maximum of 10 characters). A Low Alarm becomes active when the value of the Variable Tag drops below this value and remains there for the duration of the Low Delay period.
Low Delay	The delay period for Low Alarms. The alarm will only activate if its triggering condition is met for the duration of this period.
Low Low	The value used as the triggering condition for a Low Low Alarm (maximum of 10 characters). A Low Low Alarm becomes active when the value of the Variable Tag drops below this value and remains there for the duration of the Low Low Delay period.
Low Low Delay	The delay period for Low Low Alarms. The alarm will only activate if its triggering condition is met for the duration of this period.
Deviation	The value used as the triggering condition for a Deviation Alarm (maximum of 10 characters). A Deviation Alarm is activated when the value of the Variable Tag remains outside the deviation range (determined by the Setpoint) for the duration of the Deviation Delay period. This property is optional. If you do not specify a deviation, no Deviation Alarm is activated.
Rate	By dividing this value by the alarm period, GE Proficy determines the “maximum rate” at which the value of the variable tag can change (maximum of 10 characters). At each Scan Time, GE Proficy checks the value of the tag. If its rate of change is greater than the maximum rate, a Rate of Change Alarm is triggered.
Deadband	The value that Variable Tag must return to before the Deviation Alarm becomes inactive (maximum of 10 characters).
Format	The display format of the value (of the variable) when it is displayed on a graphics page, written to a file or passed to a function (that expects a string) (maximum of 10 characters). This property is optional. If you do not specify a format, the format defaults to the format specified for Variable tag.

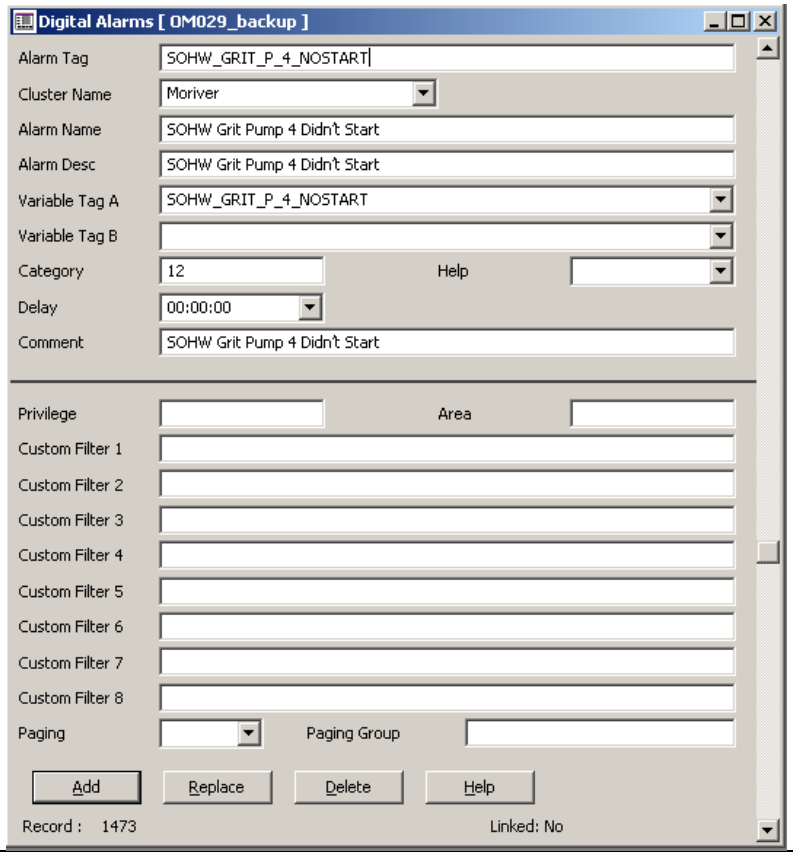
Category	The alarm category number or label (maximum of 10 characters). This property is optional. If you do not specify a category, the alarm defaults to Category 0.
Help	The name of the graphics page that displays when the AlarmHelp() function is called (maximum of 64 characters). This property is optional. If you do not specify a help page, no action occurs when the AlarmHelp() function is called.
Comment	Any useful comment (maximum of 48 characters).



2.8.5 Digital Alarm Tag

Table 2-8. Digital Alarm Tag Parameters

Name/Field	Input
Alarm Tag Name	The name of the alarm (maximum of 79 characters). The name must be unique to the cluster. Tag name using HMI standard tag naming convention
Cluster Name	The cluster used by the Palm Bay Utilities Department, PBUD
Alarm Name	The name of the physical device associated with the alarm (maximum of 79 characters). Optional. GE Proficy only uses it when details of the alarm are displayed on the screen or logged to a device.
Alarm Desc	The description of the alarm (maximum of 254 characters). This can include variable data. Optional. GE Proficy only uses it when details of the alarm are displayed on the screen or logged to a device.
Variable Tag A	The digital variables (tags) that trigger the alarm (maximum of 79 characters). You can configure digital alarms to activate based on the state of one or two digital variables. If you only use one variable to trigger the alarm, use the Var Tag A field.
Variable Tag B	
Category	Alarm category number or label (maximum of 16 characters). This property is optional. Default = Category 0.
Help	The alarm category number or label (maximum of 16 characters). This property is optional. If you do not specify a category, the alarm defaults to Category 0.
Delay	The alarm delay period. A digital alarm becomes active when the state of the triggering condition remains true for the duration of the delay period. The active alarm has an ON time of when the state became true. This property is optional.
Comment	Any useful comment (maximum of 48 characters).



3.0 GRAPHICS

3.1 Definition

Graphics are the visual representation of the SCADA system to the user. Graphics include the representation of individual pieces of equipment and how they are connected in the treatment process. Graphics also include the display of system values (levels, flows, pressures, etc.) and equipment status (running, alarm, etc.). In addition, the system navigation (how a user moves from one display page to another) is part of the graphics.

3.2 Graphic Display Characteristics

The OWS is intended to be a graphical representation of the current state of the plant. Using a variety of graphical objects and color-coding, an operator can instantly assess the current state of the plant they are monitoring. The features of the graphics screens enable a user-friendly interface to be both aesthetically pleasing and functional, but an emphasis will be placed on transferring the current logic states in the PLC to a human operator. Where possible, depiction of systems in “3d” will be used for aesthetic reasons. But, when needed or the display area is not available for such aesthetics, a “2d” approach will be used to display process operation, equipment status, and function. Graphics are developed and displayed using 1080p screen resolution and 65,536 colors. Objects that do not have I/O associated with them, and are not primary to the process or philosophy of the control theory, are not displayed in the graphics. Equipment will be identified to the level required by operations; this is to eliminate wasted graphical display space to label equipment already known to operations staff.

Analog values are to be depicted textually as a standard; for example, tank levels. Graphical depictions of gauges are not used where graphic space is limited; text will be the preferred method of representation. When space is available or when it is believed to be an asset to the interface, analog values will also be displayed as part of fill animation. To use the aforementioned example, it would be appropriate to show a depiction of a tank and have fill animation show its current level, as well as a text readout of the level. Units will be displayed adjacent to the text readout. Where several related analog variables are located on a single display, they should be displayed as a group; for example, process value and setpoint on a PID controller.

Process graphics will contain an abbreviated alarm summary listing recent system or plant-wide alarm occurrences. It will be possible for more alarms to be active than can be displayed on the abbreviated alarm summary. Therefore, an Alarm Summary graphic has been created to allow all of the active alarms to be displayed.

Process graphics that contain alarms will display the alarms as text located next to the piece of equipment the alarm represents or as a “lens” animation with static text. Text alarms will only be visible when the alarm state is active, and will become invisible when the alarm state is inactive. The “lens” alarm indication will be visible at all times with the lens changing colors when the alarm is active.

3.3 Navigation

The Main page directs the user to the designated Level 1 (Plant Overview) screens. The MENU, ALARMS, and TOP PANEL screens are designated Level 1 and linked on the Main Page. On new screens a navigation bar will be available to view any child windows in the case of Level 1 pages, or parent Windows in the case of Level 2 pages. All sibling windows will also be linked in the navigation bar.

3.4 New Screens and Levels

The following are examples of screens which have the indicated levels.

Level 1: Overview, Odor Control, Wet Wells and Pumps, Ethernet Network Communications.

Level 2: Influent, Grit Basin, Grit Handling, Sludge/Scum and Pumps, Clarifiers.

3.5 Color Guidelines

3.5.1 Color Definitions

The color guidelines for the HMI will follow those outlined in the specifications using a RGB Color Scheme.

Table 3-1. HMI RGB Color Scheme

Color	Red #	Green #	Blue #
Black	0	0	0
Blue	0	0	255
Brown	144	48	32
Cyan	0	224	224
Green on grey or adjacent to other	0	160	0
Green text on black background	0	208	0
Grey background	208	208	208
Orange	255	112	0
Purple	128	0	208
Red	255	0	0
White	255	255	255
Yellow	255	255	0

The darker green is perceived well against the grey background or next to other colors. The City prefers to use this green on symbols for pumps, motors, and the like. The lighter green is easier to perceive when reading text on a black background and the City would like to use it for any words or text that appears in that setting.

3.5.2 Function Color Definitions

Table 3-2. Function Color Definitions

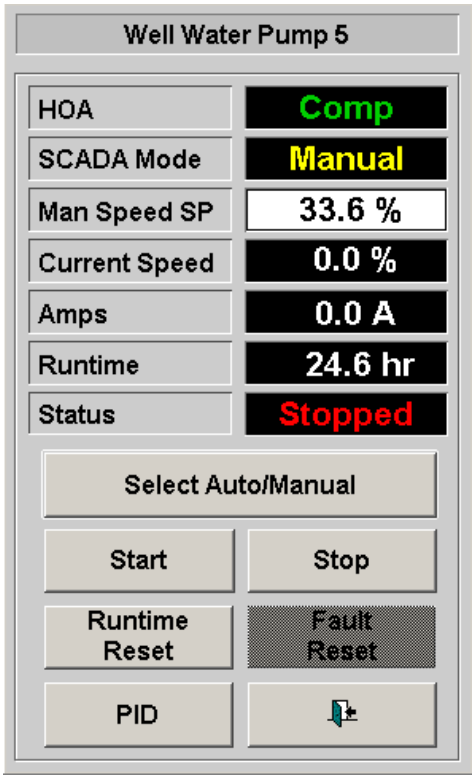
Tag Function	Inscription(s)	Equipment Color	Text	
			Color	Background
<indicating analog value>	<none>		White	Black
<setpoint>	<none>		Black	White
<manipulated value>	<none>		Black	White
<Wastewater Indicated Analog Value>	<none>		Blue	Black
<Sludge Indicated Analog Value>	<none>		Brown	Black
<Hypochlorite Indicated Analog Value>	<none>		Orange	Black
<ORP Indicated Analog Value>	<none>		Orange	Black
<NaOH Indicated Analog Value>	<none>		Purple	Black
<pH Indicated Analog Value>	<none>		Purple	Black
<valve/gate in transit>	INTRANSIT		Yellow	
LEAD	LEAD		Cyan	Black
LAG	LAG		Purple	Black
ON	ON	Green		
OFF	OFF	Red		
OPENED	OPENED	Green	Green	
CLOSED	CLOSED	Red	Red	
RUNNING	RUNNING	Green	Green	
RUNNING <with alarm>	RUNNING	Green/White Flashing	Green	
STOPPED	STOPPED	Red	Red	
STOPPED <with alarm>	STOPPED	Red/White Flashing	Red	
FAIL	FAIL	Red	Red	
HIGH	HIGH	Red	Red	
LOW	LOW	Red	Red	
HAND	HAND		Yellow	Black
LOCAL	LOCAL		Yellow	Black
OUT OF SERVICE	OOS		Red	Black
COMP	COMP		Green	Black
MANUAL	MANUAL		Yellow	Black
AUTO	AUTO		Cyan	Black

3.6 Faceplates ("Supergenies")

When certain equipment is selected, a popup faceplate ("Supergenie" in GE Proficy terms) will appear that gives more specific information related to the equipment as well as opportunity for Operator control. Security can be assigned to certain control operations so that only an Operator with sufficient permissions will be able to make changes.

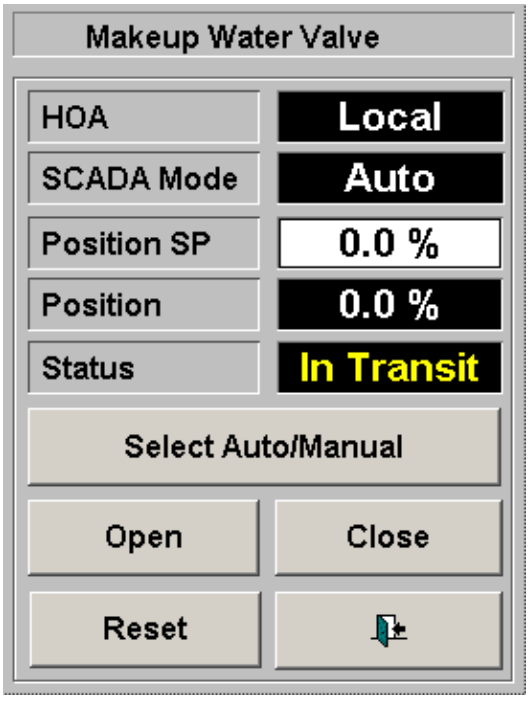
3.6.1 VFD

The VFD faceplate shows whether the equipment is in LOCAL or COMP (Computer) at the field control panel and if it is in MANUAL or AUTO at the HMI. It allows the Operator to set the manual speed setpoint and indicates the actual speed feedback, runtime hours, and status. When in COMP at the field control panel, the Operator can select AUTO/MANUAL at the HMI. When in MANUAL, then the Operator can select to START or STOP the equipment. If applicable, a PID Control button allows the operator to view the PID settings.



3.6.2 Analog Valve

The analog valve faceplate shows whether the equipment is in LOCAL or COMP (Computer) at the field control panel and if it is in MANUAL or AUTO at the HMI. It allows the operator to set the manual position setpoint and indicates the actual position feedback. When in COMP and MANUAL, the Operator can set the manual position setpoint. If applicable, a PID Control button allows the Operator to view the PID settings.

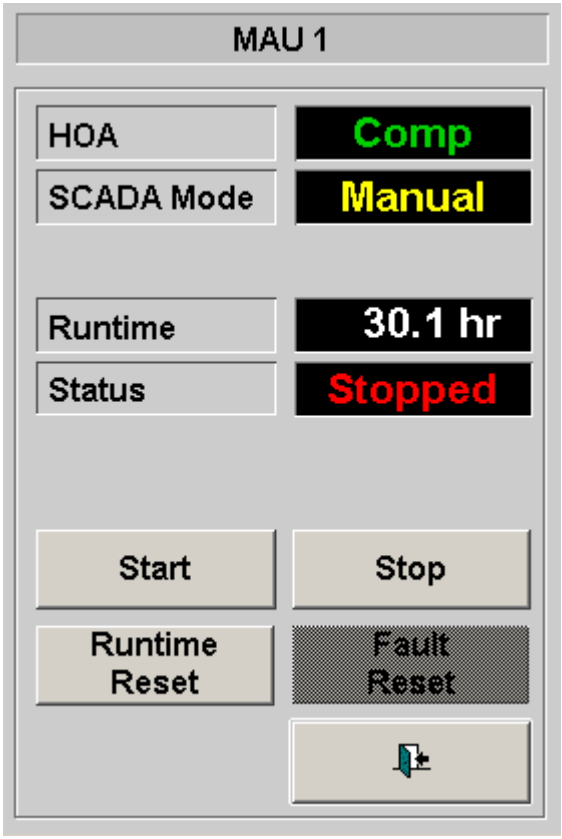


3.6.3 PID

The PID faceplate displays applicable information for tuning of a PID a loop. The Process Value (PV), Setpoint (SP), and Controlled Variable (Output, CV) are trended on the graph. The Setpoint can be adjusted with a slider (yellow slider on the right hand side of faceplate). An Operator with sufficient privileges can adjust the tuning parameters (Gain, Integral or Reset Time, and Derivative Time).

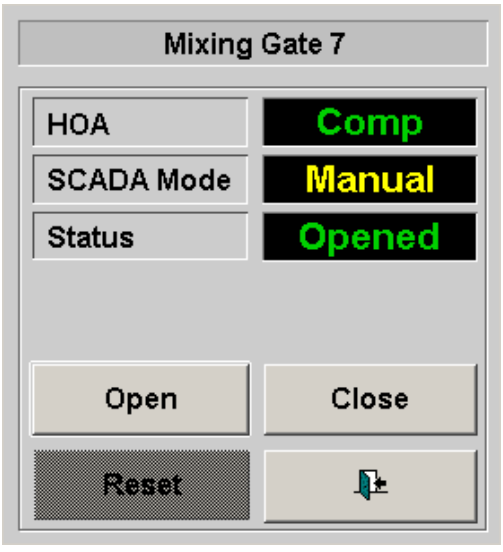
3.6.4 Discrete Motor

The discrete motor faceplate shows whether the equipment is in LOCAL or COMP (Computer) at the field control panel and if it is in MANUAL or AUTO at the HMI. It indicates the runtime hours and status (Running, Off, Fail to Start/Stop, etc.). When in COMP at the field control panel, the Operator can select AUTO or MANUAL. If it is in MANUAL they can select to start or stop the equipment.



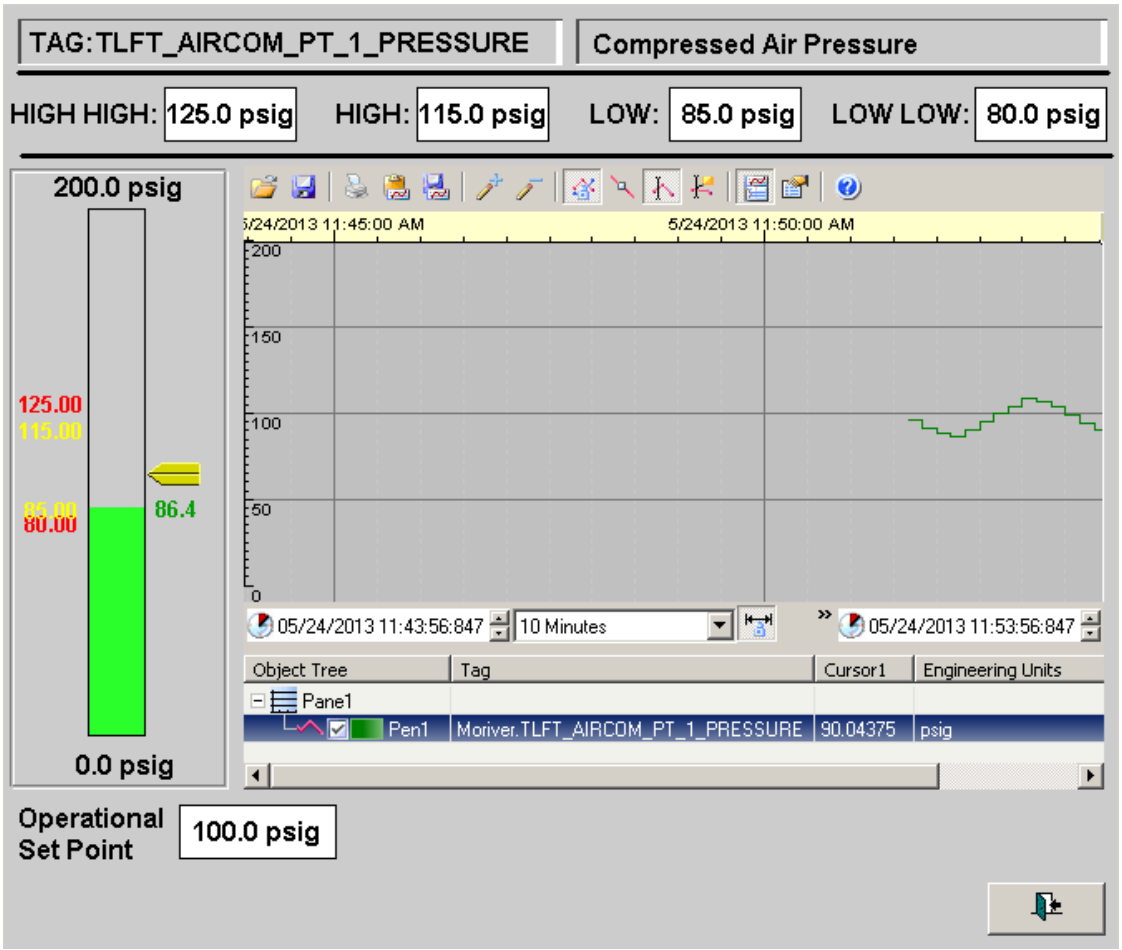
3.6.5 Discrete Valve/Gate

The discrete valve faceplate shows whether the equipment is in LOCAL or COMP (Computer) at the field control panel and if it is in MANUAL or AUTO at the HMI. It indicates the position status (Open, Close, etc.). When in COMP at the field control panel, the Operator can select AUTO or MANUAL. If is in MANUAL they can select to open or close the valve or gate.



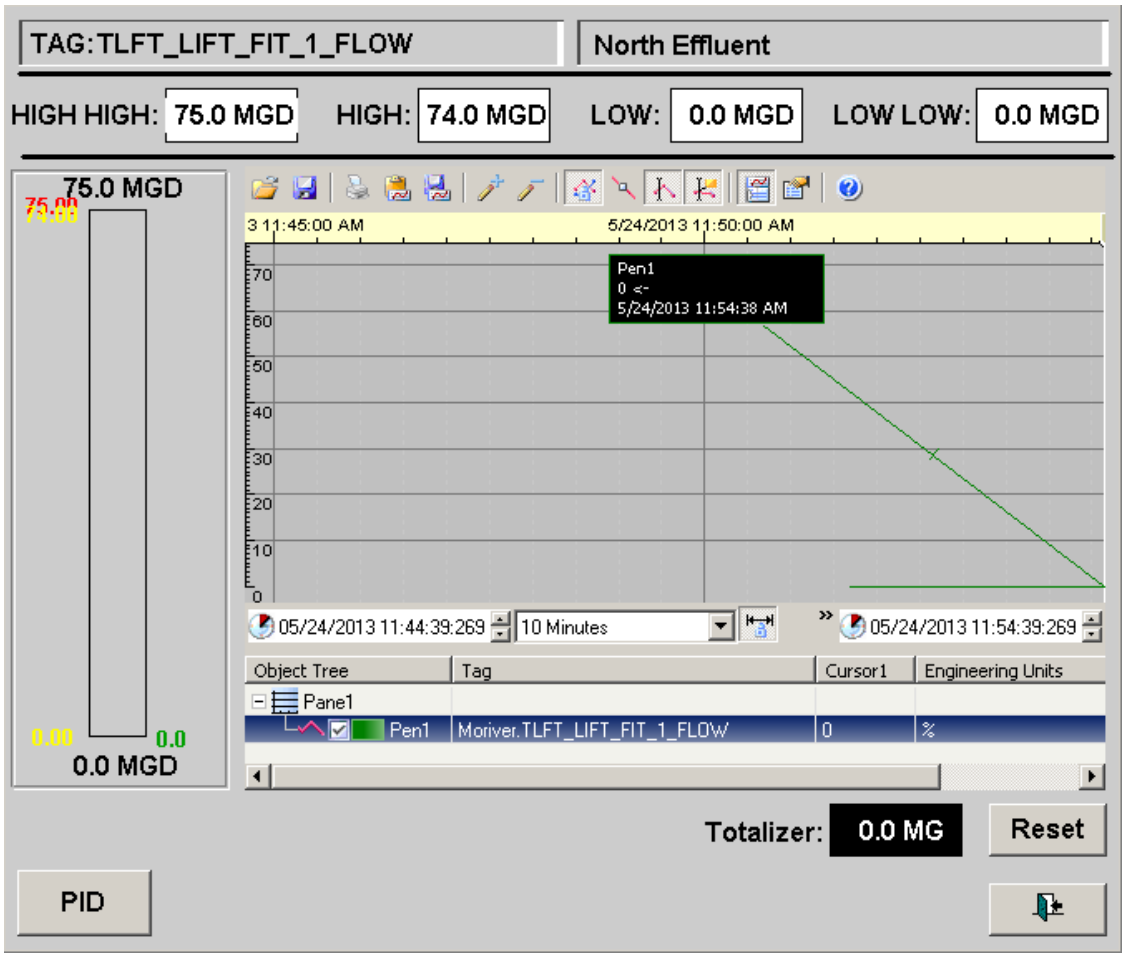
3.6.6 Analog

The analog faceplate shows the trended value along with high high, high, low and low-low alarm levels. A bar graph on the side shows the current value with the alarm levels for an easy to read graphical representation. Operators can adjust the various alarm levels by selecting them and entering the desired value.



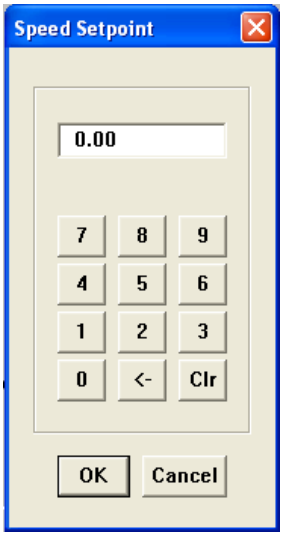
3.6.7 Flow Meter

The flow meter faceplate is similar to the analog faceplate except it adds a totalized flow at the bottom, which can be reset.



3.6.8 Data Entry

Clicking on an analog setpoint brings up a keypad for data entry. The type and format of the data entry format will be determined by the calling function or Supergenie.



3.7 Use of Genies and Supergenies

The flexibility and modularity of Genies and Supergenies shall be utilized to ease development and allow for future expansion of the GE Proficy project. In order to leverage the full potential of these tools, the Software Tag Format Standard conventions must be strictly followed.

3.8 Tool Tips and Help Pages

Tool tips will be available on buttons and setpoints to indicate their function. A help button will appear on pages that will show a popup page that describes the function of the current page.

4.0 INDICATIONS AND SCAN TIMES

4.1 Definition

Indications are status information for the operator and are used to show the current control mode of the equipment (local/remote, manual/auto) as well as if there are any alarms. Scan Times are used to set how often alarms are processed and graphical displays updated with status changes in the process system. These scan times are usually set to update once per second, but can be adjusted if necessary*.*

4.2 Equipment MODE Naming Convention (LOCAL-OOS-COMP)

The state of the device/equipment mode is displayed on the SCADA HMI as "LOCAL", "OOS", "MANUAL", or "AUTO".

4.2.1 LOCAL

This indicates that a field device is controlled 'locally' at the field device via start/stop or open/close pushbuttons or local device-mounted interface module (VFD 'HIM' module) in the field. The device's mode control switch (i.e. HOA, HA, LOR, LR, LOC, LC, etc.) would be in the 'H' (Hand) or 'L' (LOCAL) position. When the device is in this mode, then there is NO control capability from the PLC for interlocks, starting/stopping, etc.

4.2.2 OOS (Out-of-Service)

Status for equipment identifies any or all of the following:

- Motor Disconnect OPEN
- Power to Panel OFF
- HOA switch in OFF Position

4.2.3 COMP (Computer)

This indicates that a device is controlled via the PLC. The device's mode control switch (i.e. HOA, HA, LOR, LR, LOC, LC, etc.) would be in the 'A' (Auto), 'R' (REMOTE), or 'C' (Computer) position.When the device is in this mode, then the PLC has control and the PLC/HMI control of the device is then either in MANUAL or AUTO mode.

A pushbutton on the HMI screen allows the operator to 'toggle' between AUTO and MANUAL modes (only when the devices HOA switch is in the COMP position)

4.2.4 MANUAL

The use of the term MANUAL is very specific, meaning the device's HOA switch is in the 'A' position AND the PLC mode is also in MANUAL for this device/equipment. MANUAL mode means that an Operator has the capability (from the HMI local SCADA system) to command a device to start/stop, open/close, etc.

4.2.5 AUTO

The use of the term AUTO is very specific, meaning the device's HOA switch is in the 'A' position AND the PLC mode is also in AUTO for this device/equipment. AUTO mode means that the PLC has full control of whether the equipment/device starts/stops, opens/closes, etc. When in AUTO mode, then

control of the device is entirely through the PLC logic. A Plant Operator cannot control the device in this mode, except for set-points of PID loops, limits, etc. In order for an Operator to take control of the device/equipment, then the Operator must first put the device into MANUAL mode.

4.3 Communication Failures

The communication between the PLC and HMI will be constantly monitored. Indications on the HMI Communication screen as well as HMI alarms are designed to alert Operators to any failures.

4.4 Alarm Scan Time

The "[Alarm]ScanTime" is located in the Citect.ini file. This parameter determines the rate at which alarms are scanned and processed. A value of 500 (the default value) indicates that GE Proficy tries to process the alarms every 500ms. However, if GE Proficy cannot read all the alarm data from the I/O device within 500ms, the alarms are processed at a slower rate. For example, if it takes 800ms to read all the alarm data from the I/O device, GE Proficy processes the alarms every 800ms.

If the alarm scan time is increased, the Alarms Server uses less CPU (because it does not need to process the alarm records as often). The amount of data read from the I/O device is also reduced so that other processes (Trends, Reports, and the current page) get their I/O device data more quickly.

The City shall be responsible for the configuration of the Alarm Server scan timing.

4.5 Page Scan Times

The Page Scan Time defines how often the graphics page is updated at runtime. The Page scan time also determines the rate of execution of the While page shown events (i.e. the command(s) which are executed while the page is displayed at runtime).

Select the "Default" check box to use the default page scan time (as set using the [Page] ScanTime parameter in Citect.ini); otherwise, leave it blank, and enter (or select) another value in the field below. For example, if a page scan time of 200 milliseconds is entered, GE Proficy will try to update the page every 200 milliseconds, and any While page shown events are executed every 200 milliseconds.

Pages scan times shall be set as "Default".

5.0 SECURITY

5.1 User Permissions

User permissions can protect sensitive pieces of equipment from being controlled in a manner not specified by the City (i.e. PID loop parameters). The City will determine all user roles and privileges to ensure proper function of the current GE Proficy program with security in place for values in the system.

6.0 REPORTS

6.1 Background

The City will specify the types of reports needed for the system. Typical reports include daily and monthly flow totals and chemical application. MIN, MAX and AVERAGE aggregate functions can be performed on most reported values.

6.2 Logged Values

As noted in the trending section, trend tags will be logged by the Historian server in specified intervals with a specified deadband to avoid logging repeated data. The trend tags will allow for backfilling in case of a failure with the Historian server. City Personnel will configure the Historian for logging these values.

6.3 Report Format

Report formats shall remain consistent throughout the specified reports with similar parameter names and color schemes.

6.4 Report Scheduling

The Historian server can be set up to generate reports through the interface but can also create reports at scheduled intervals and store them at a configured file location. The City will determine the reports that shall be automatically generated and the storage location of those reports. The naming convention of the stored report files will also be determined by the City.

7.0 SOFTWARE VERSION

New applications will be developed and implemented in the version and service pack of GE Proficy SCADA software as determined by the City prior to the commencement of each project.

8.0 PROCEDURES REVISION HISTORY

8.1 General

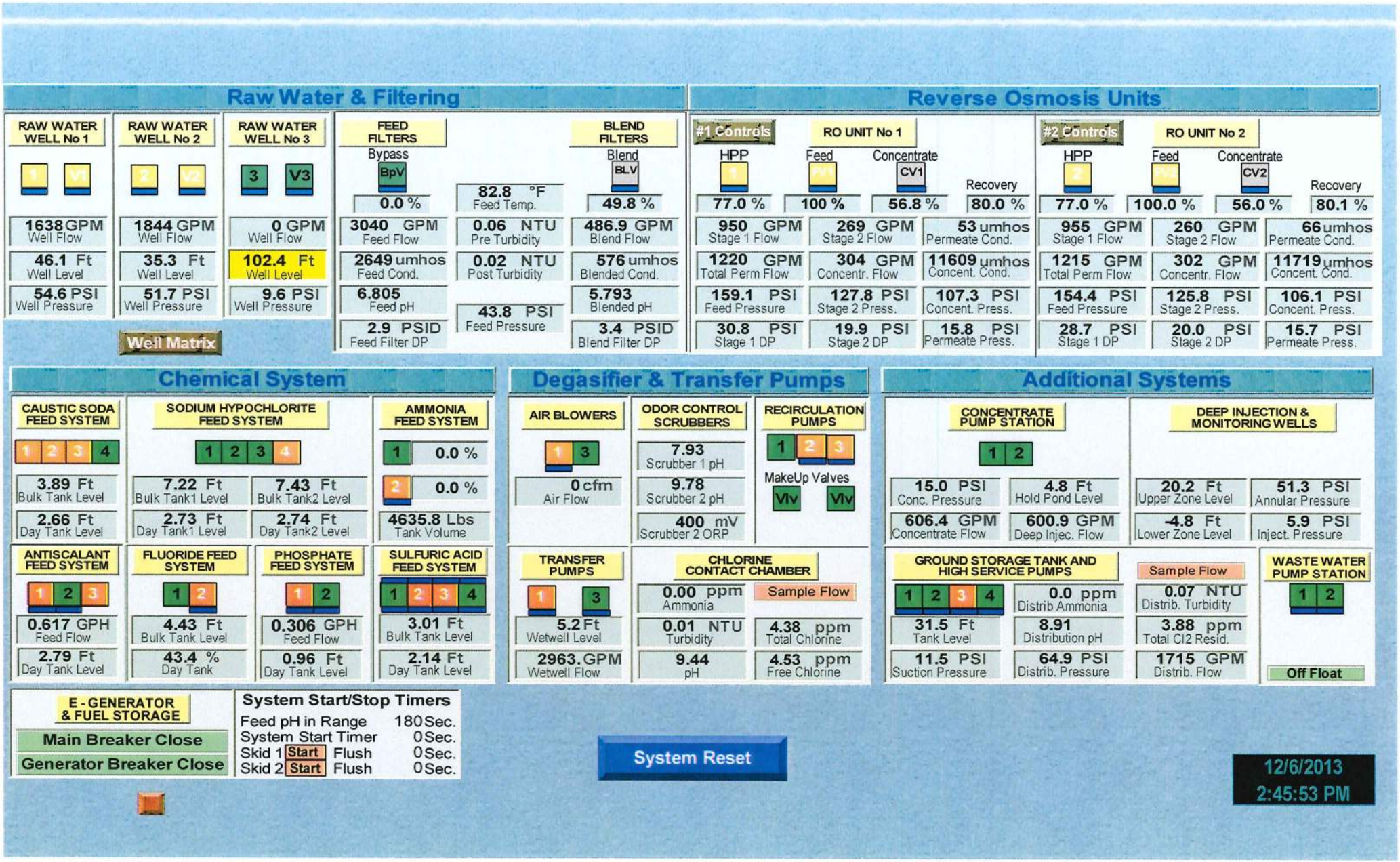
Revisions to the SCADA Software, Hardware & Standards Procedures shall be documented in this section.

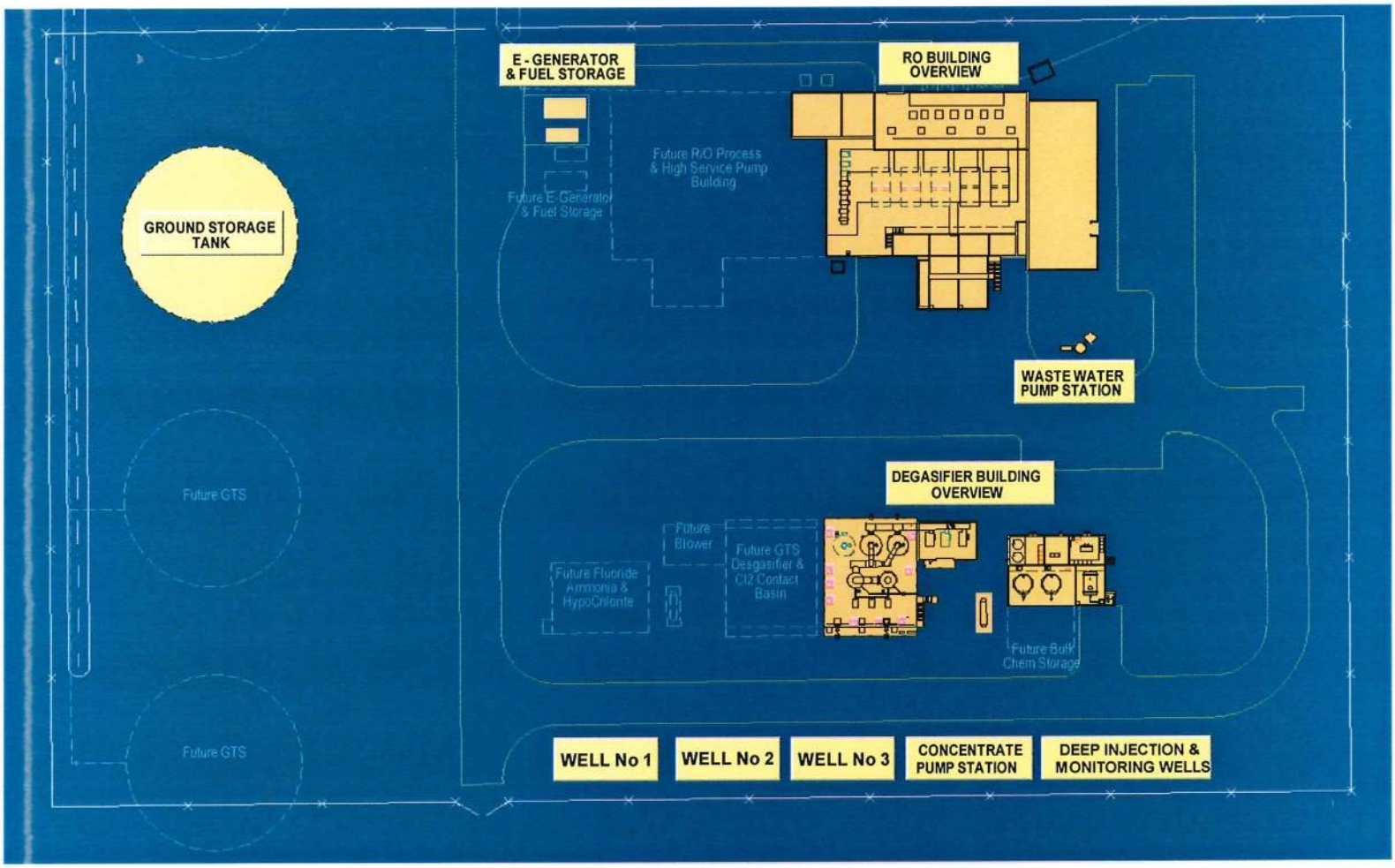
8.2 Revision History

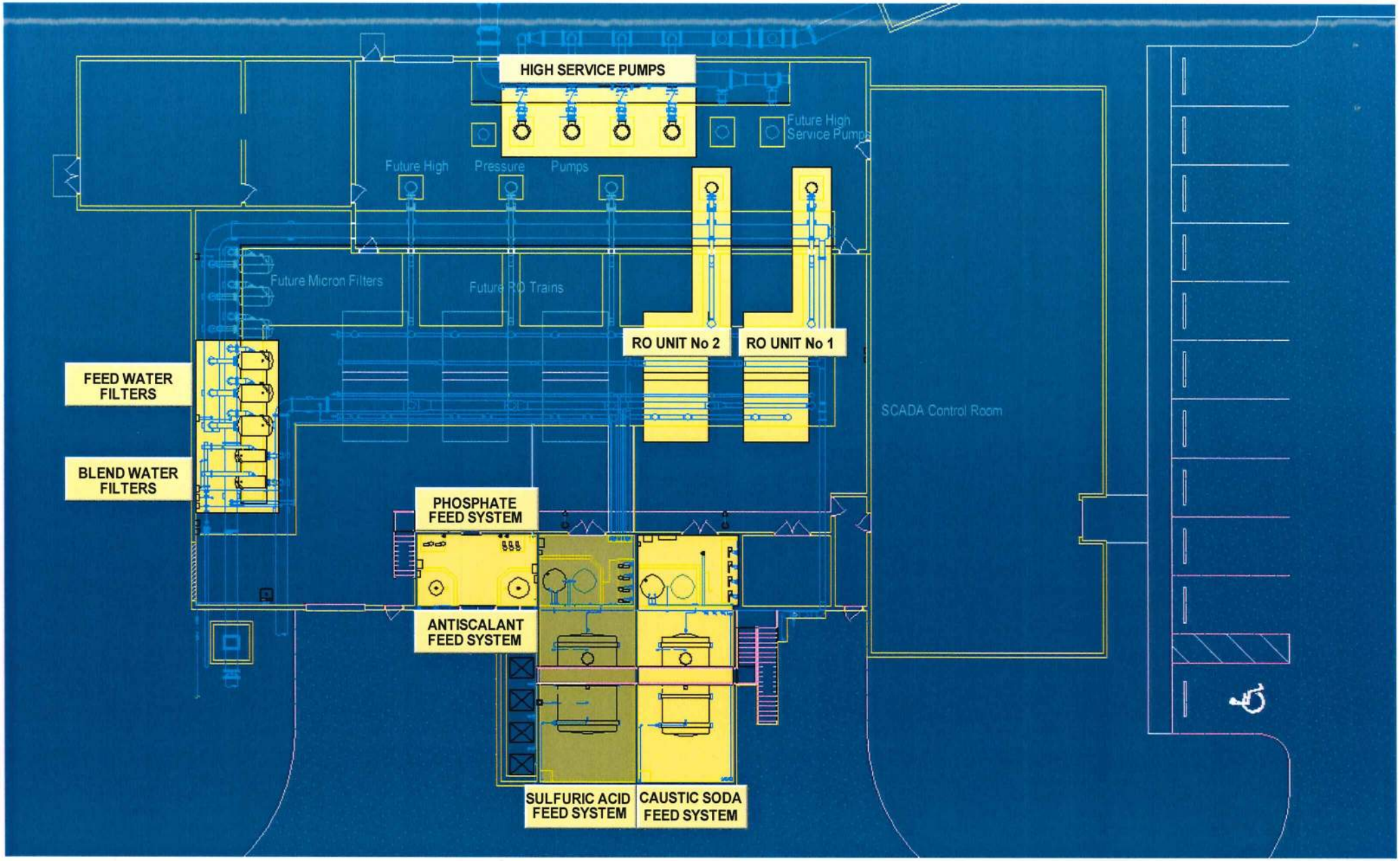
- June 2016 – SCADA Software, Hardware & Standards Procedures document created.

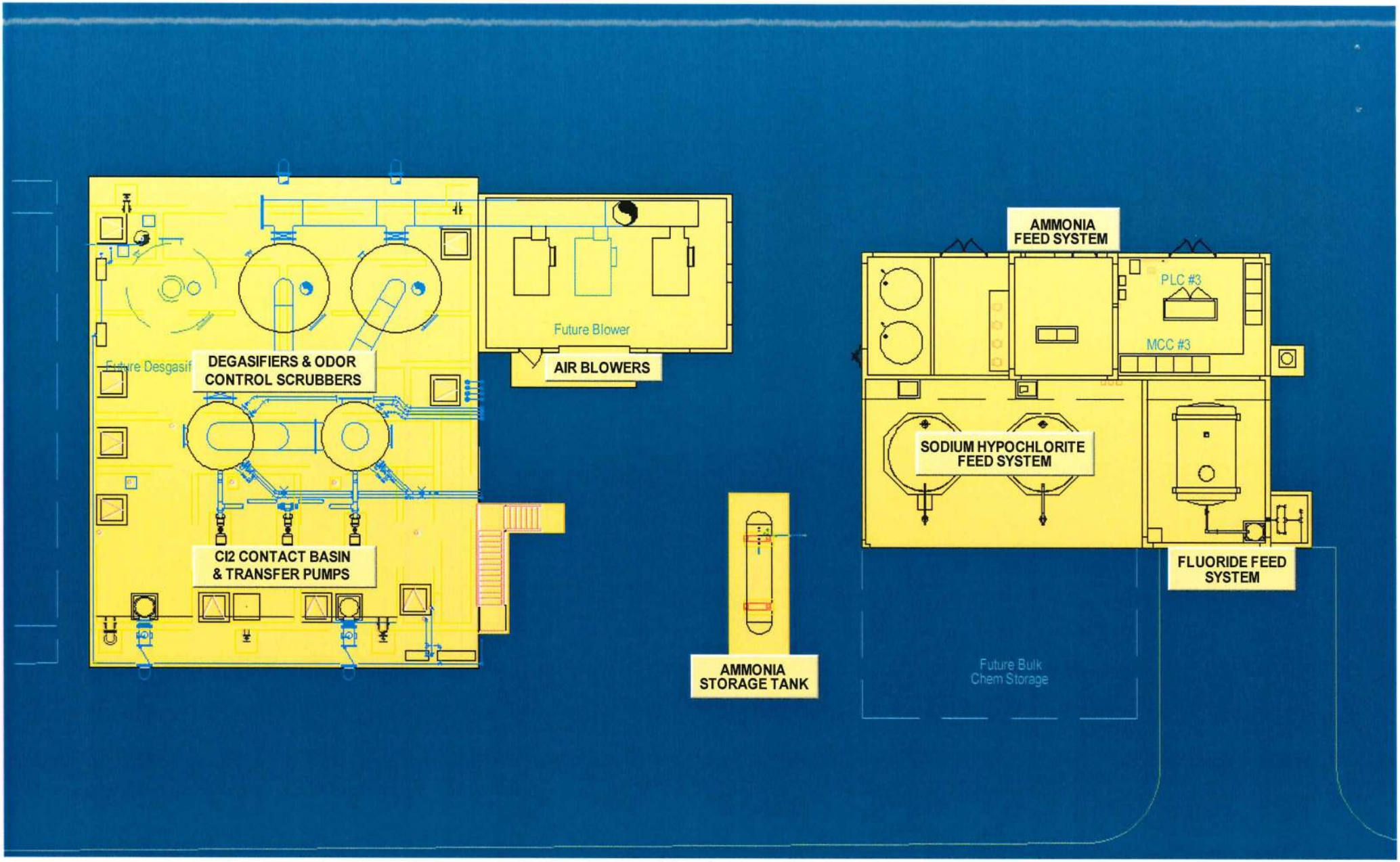
APPENDIX A – SAMPLE SCADA SCREENS

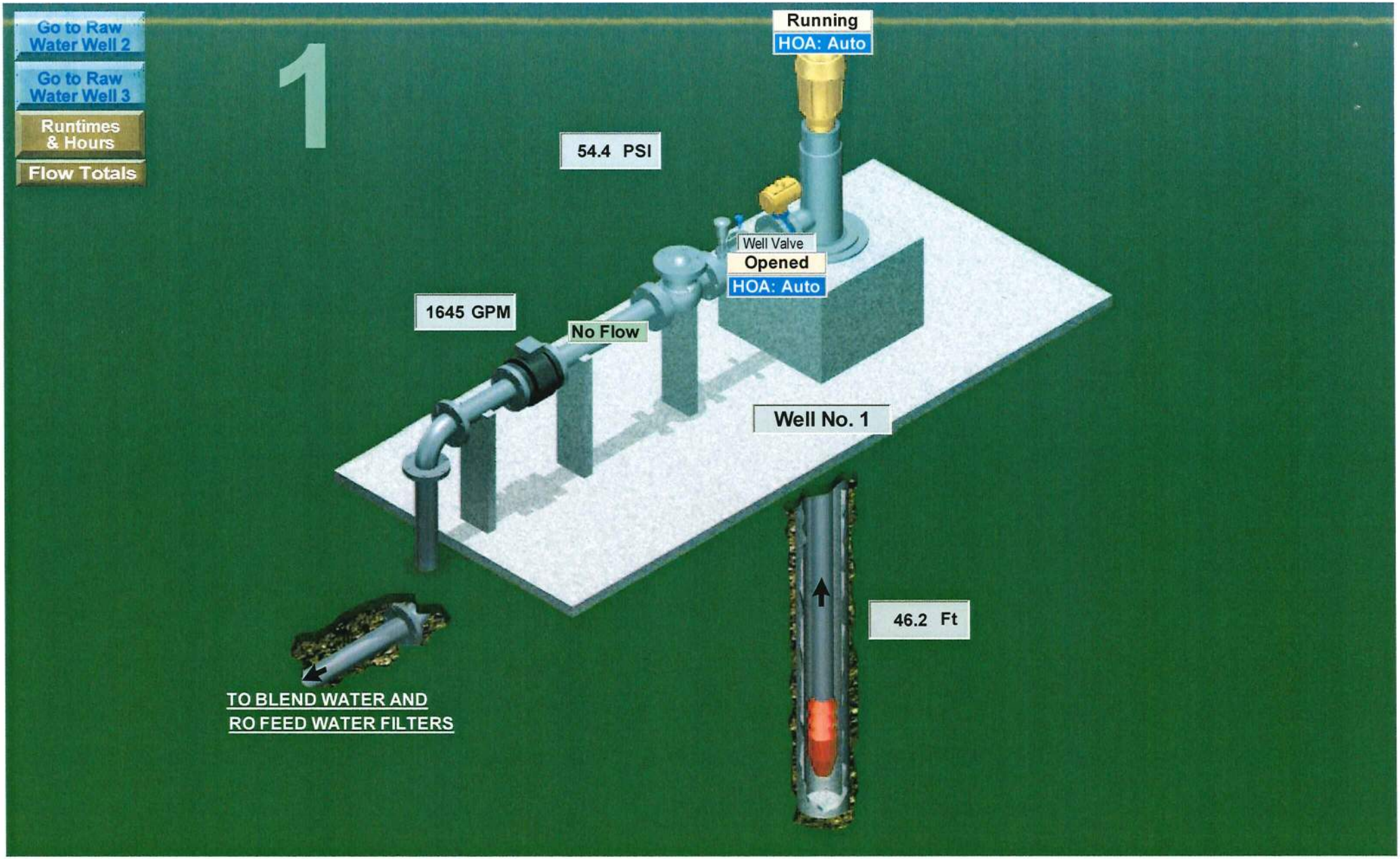

12/6/2013
2:43:57 PM
ADMINISTRATOR
EXIT
PALM BAY WATER UTILITIES
Plant Data Overview
LOGOUT
Current User:
EVERETT CLARK
Palm Bay Utilities
RO Plant South Regional Facility
Lime & RO Plant Troutman Facility
Liftstations & Wells Telemetry System
Wastewaster In-plant Telemetry System
Alarm Summary
Alarm History
Login
Back

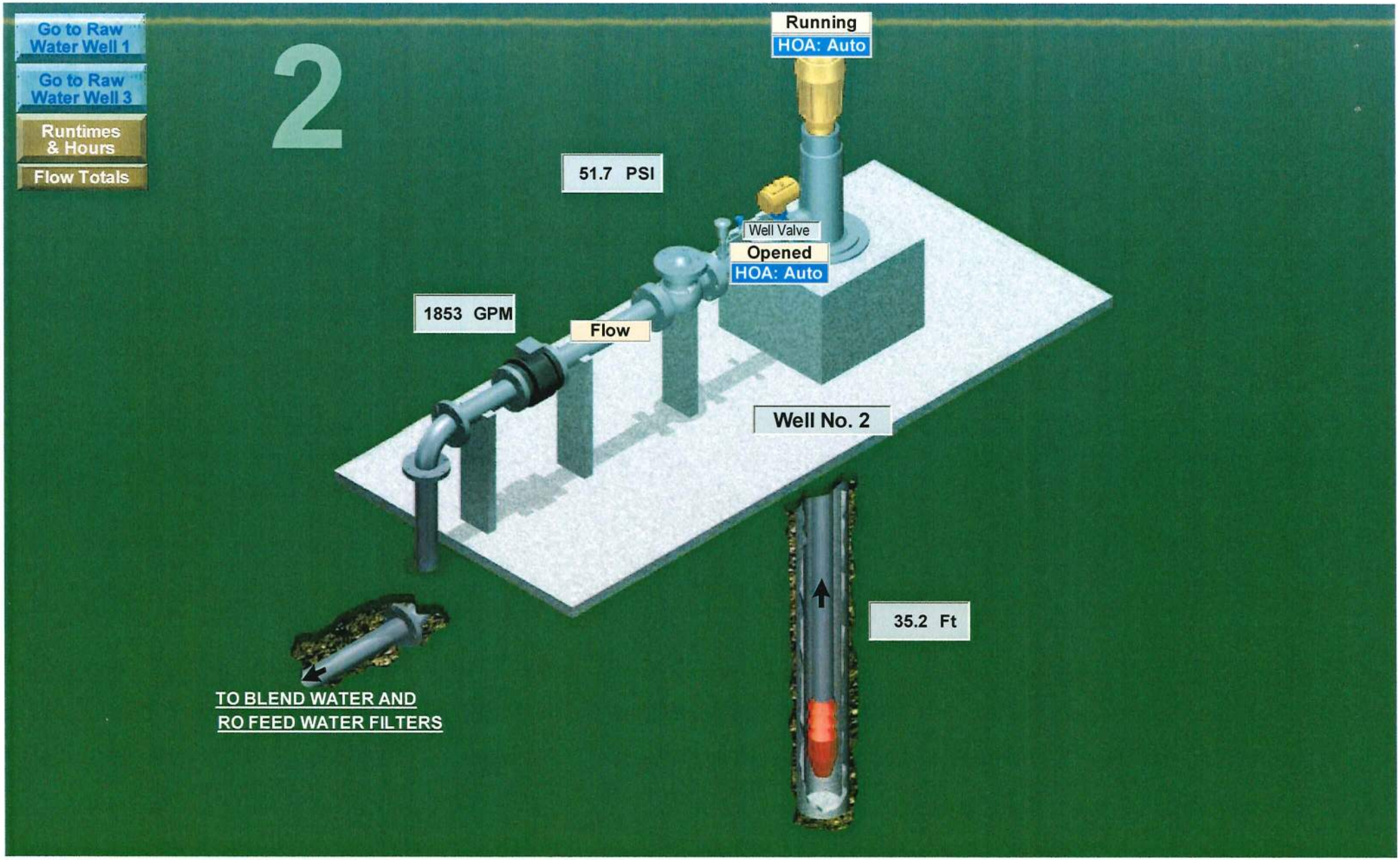

Raw Water & Filtering
RAW WATER WELL No 1
1638 GPM Well Flow
46.1 Ft Well Level
54.6 PSI Well Pressure
RAW WATER WELL No 2
1844 GPM Well Flow
35.3 Ft Well Level
51.7 PSI Well Pressure
RAW WATER WELL No 3
0 GPM Well Flow
102.4 Ft Well Level
9.6 PSI Well Pressure
Well Matrix
FEED FILTERS
Bypass
0.0 %
3040 GPM Feed Flow
2649 umhos Feed Cond.
6.805 Feed pH
2.9 PSID Feed Filter DP
82.8 °F Feed Temp.
0.06 NTU Pre Turbidity
0.02 NTU Post Turbidity
43.8 PSI Feed Pressure
BLEND FILTERS
Blend
49.8 %
486.9 GPM Blend Flow
576 umhos Blended Cond.
5.793 Blended pH
3.4 PSID Blend Filter DP
Reverse Osmosis Units
#1 Controls
RO UNIT No 1
HPP
Feed
Concentrate
CV1
Recovery
77.0 %
100 %
56.8 %
80.0 %
950 GPM Stage 1 Flow
1220 GPM Total Perm Flow
159.1 PSI Feed Pressure
30.8 PSI Stage 1 DP
269 GPM Stage 2 Flow
304 GPM Concentr. Flow
127.8 PSI Stage 2 Press.
19.9 PSI Stage 2 DP
53 umhos Permeate Cond.
11609 umhos Concent. Cond.
107.3 PSI Concent. Press.
15.8 PSI Permeate Press.
#2 Controls
RO UNIT No 2
HPP
Feed
Concentrate
CV2
Recovery
77.0 %
100.0 %
56.0 %
80.1 %
955 GPM Stage 1 Flow
1215 GPM Total Perm Flow
154.4 PSI Feed Pressure
28.7 PSI Stage 1 DP
260 GPM Stage 2 Flow
302 GPM Concentr. Flow
125.8 PSI Stage 2 Press.
20.0 PSI Stage 2 DP
66 umhos Permeate Cond.
11719 umhos Concent. Cond.
106.1 PSI Concent. Press.
15.7 PSI Permeate Press.
Chemical System
CAUSTIC SODA FEED SYSTEM
3.89 Ft Bulk Tank Level
2.66 Ft Day Tank Level
SODIUM HYPOCHLORITE FEED SYSTEM
7.22 Ft Bulk Tank1 Level
2.73 Ft Day Tank1 Level
7.43 Ft Bulk Tank2 Level
2.74 Ft Day Tank2 Level
AMMONIA FEED SYSTEM
0.0 %
0.0 %
4635.8 Lbs Tank Volume
ANTISCALANT FEED SYSTEM
0.617 GPH Feed Flow
2.79 Ft Day Tank Level
FLUORIDE FEED SYSTEM
4.43 Ft Bulk Tank Level
43.4 % Day Tank
PHOSPHATE FEED SYSTEM
0.306 GPH Feed Flow
0.96 Ft Day Tank Level
SULFURIC ACID FEED SYSTEM
3.01 Ft Bulk Tank Level
2.14 Ft Day Tank Level
Degasifier & Transfer Pumps
AIR BLOWERS
0 cfm Air Flow
ODOR CONTROL SCRUBBERS
7.93 Scrubber 1 pH
9.78 Scrubber 2 pH
400 mV Scrubber 2 ORP
RECIRCULATION PUMPS
MakeUp Valves
TRANSFER PUMPS
5.2 Ft Wetwell Level
2963. GPM Wetwell Flow
CHLORINE CONTACT CHAMBER
0.00 ppm Ammonia
Sample Flow
0.01 NTU Turbidity
4.38 ppm Total Chlorine
9.44 pH
4.53 ppm Free Chlorine
Additional Systems
CONCENTRATE PUMP STATION
15.0 PSI Conc. Pressure
606.4 GPM Concentrate Flow
4.8 Ft Hold Pond Level
600.9 GPM Deep Injec. Flow
DEEP INJECTION & MONITORING WELLS
20.2 Ft Upper Zone Level
-4.8 Ft Lower Zone Level
51.3 PSI Annular Pressure
5.9 PSI Inject. Pressure
GROUND STORAGE TANK AND HIGH SERVICE PUMPS
31.5 Ft Tank Level
11.5 PSI Suction Pressure
0.0 ppm Distrib Ammonia
8.91 Distribution pH
64.9 PSI Distrib. Pressure
Sample Flow
0.07 NTU Distrib. Turbidity
3.88 ppm Total Cl2 Resid.
1715 GPM Distrib. Flow
WASTE WATER PUMP STATION
Off Float
E - GENERATOR & FUEL STORAGE
Main Breaker Close
Generator Breaker Close
System Start/Stop Timers
Feed pH in Range 180 Sec.
System Start Timer 0 Sec.
Skid 1 Start Flush 0 Sec.
Skid 2 Start Flush 0 Sec.
System Reset
12/6/2013
2:45:53 PM

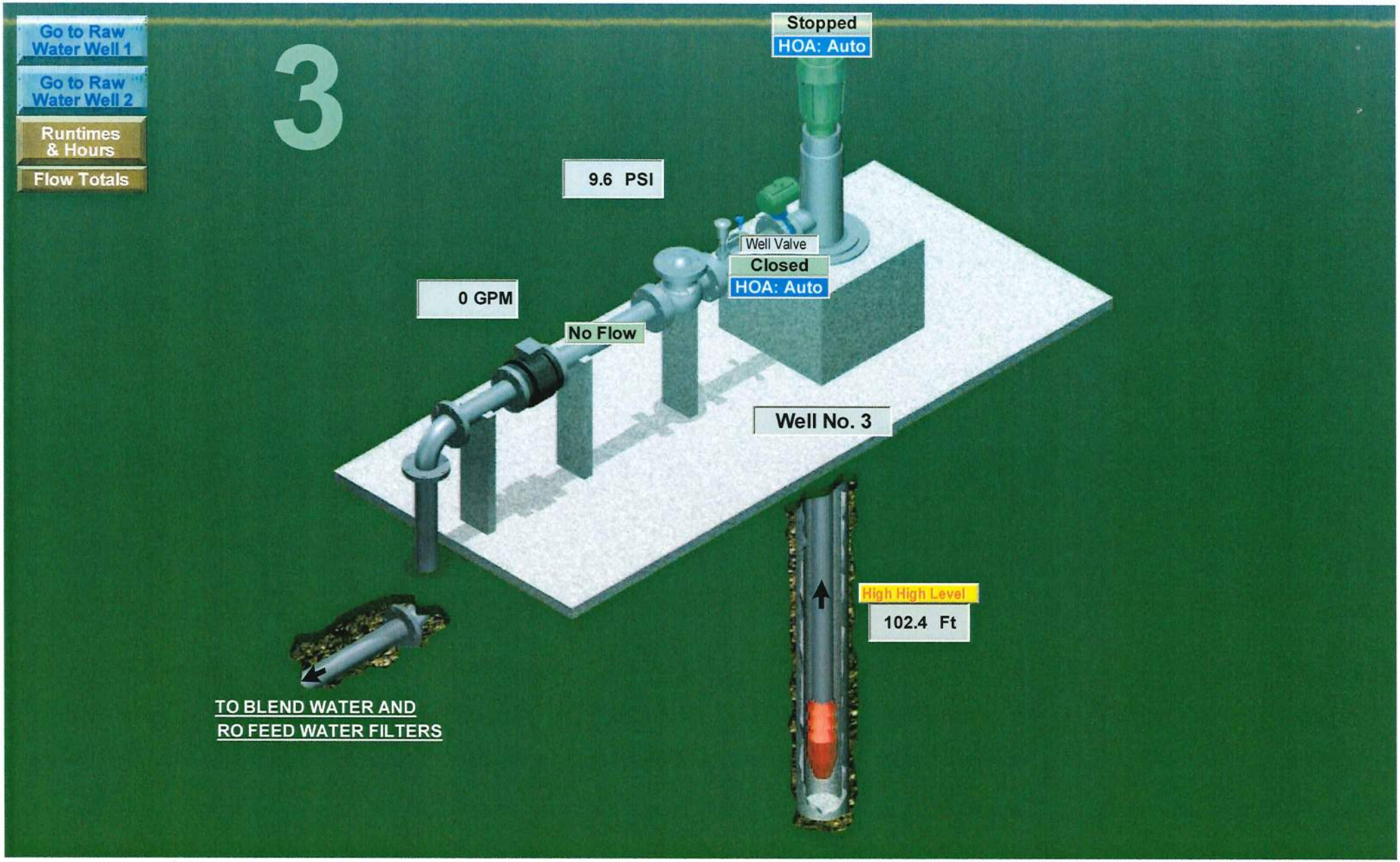

E - GENERATOR & FUEL STORAGE
RO BUILDING OVERVIEW
Future R/O Process & High Service Pump Building
Future E-Generator & Fuel Storage
GROUND STORAGE TANK
WASTE WATER PUMP STATION
DEGASIFIER BUILDING OVERVIEW
Future GTS
Future Blower
Future GTS Desgasifier & Cl2 Contact Basin
Future Fluoride Ammonia & HypoChlorite
Future Bulk Chem Storage
Future GTS
WELL No 1
WELL No 2
WELL No 3
CONCENTRATE PUMP STATION
DEEP INJECTION & MONITORING WELLS

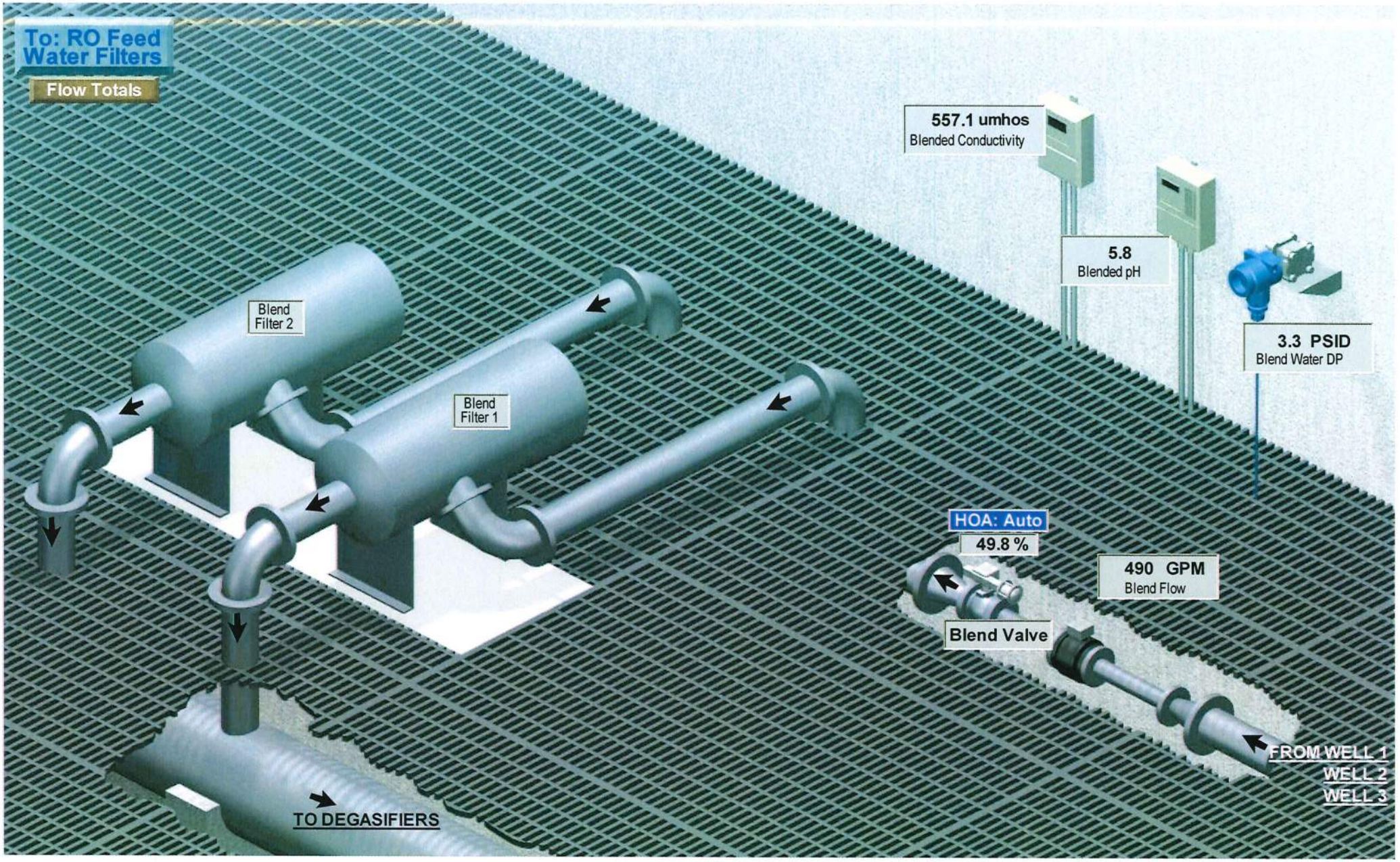

HIGH SERVICE PUMPS
Future High Service Pumps
Future High Pressure Pumps
Future Micron Filters
Future RO Trains
RO UNIT No 2
RO UNIT No 1
FEED WATER FILTERS
BLEND WATER FILTERS
SCADA Control Room
PHOSPHATE FEED SYSTEM
ANTISCALANT FEED SYSTEM
SULFURIC ACID FEED SYSTEM
CAUSTIC SODA FEED SYSTEM


DEGASIFIERS & ODOR CONTROL SCRUBBERS
Future Desgasif
Future Blower
AIR BLOWERS
CI2 CONTACT BASIN & TRANSFER PUMPS
AMMONIA STORAGE TANK
AMMONIA FEED SYSTEM
PLC #3
MCC #3
SODIUM HYPOCHLORITE FEED SYSTEM
FLUORIDE FEED SYSTEM
Future Bulk Chem Storage


Go to Raw Water Well 2
Go to Raw Water Well 3
Runtimes & Hours
Flow Totals
1
Running
HOA: Auto
54.4 PSI
Well Valve
Opened
HOA: Auto
1645 GPM
No Flow
Well No. 1
46.2 Ft
TO BLEND WATER AND
RO FEED WATER FILTERS


Go to Raw Water Well 1
Go to Raw Water Well 3
Runtimes & Hours
Flow Totals
2
Running
HOA: Auto
51.7 PSI
Well Valve
Opened
HOA: Auto
1853 GPM
Flow
Well No. 2
35.2 Ft
TO BLEND WATER AND
RO FEED WATER FILTERS


Go to Raw Water Well 1
Go to Raw Water Well 2
Runtimes & Hours
Flow Totals
3
Stopped
HOA: Auto
9.6 PSI
Well Valve
Closed
HOA: Auto
0 GPM
No Flow
Well No. 3
High High Level
102.4 Ft
TO BLEND WATER AND
RO FEED WATER FILTERS


To: RO Feed Water Filters
Flow Totals
557.1 umhos
Blended Conductivity
5.8
Blended pH
3.3 PSID
Blend Water DP
Blend Filter 2
Blend Filter 1
HOA: Auto
49.8 %
490 GPM
Blend Flow
Blend Valve
FROM WELL 1
WELL 2
WELL 3
TO DEGASIFIERS

To: Blend Water Filters

Flow Totals

6.8
Feed pH

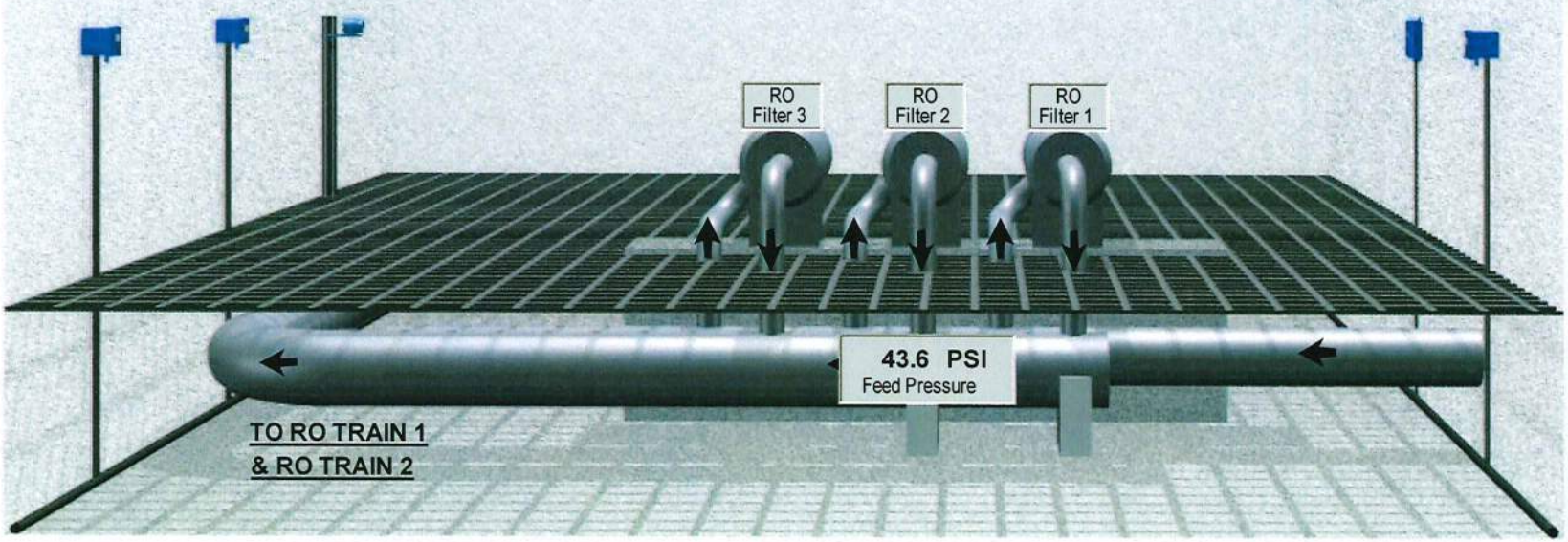
0.0 NTU
Feed Turbidity

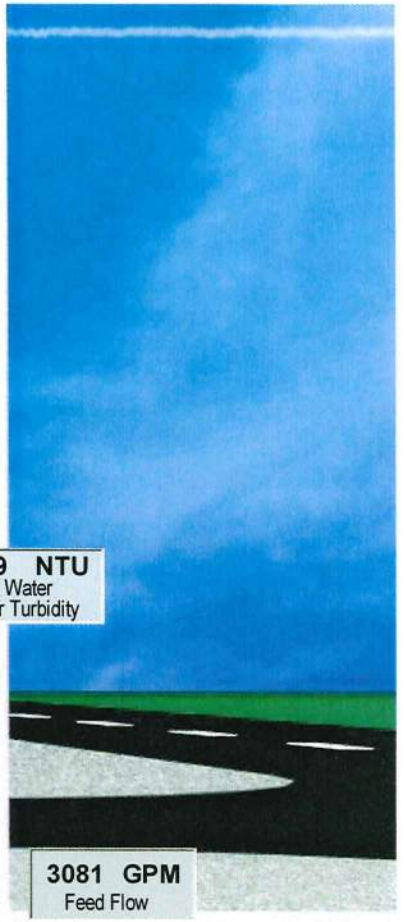
82.8 °F
Feed Temperature

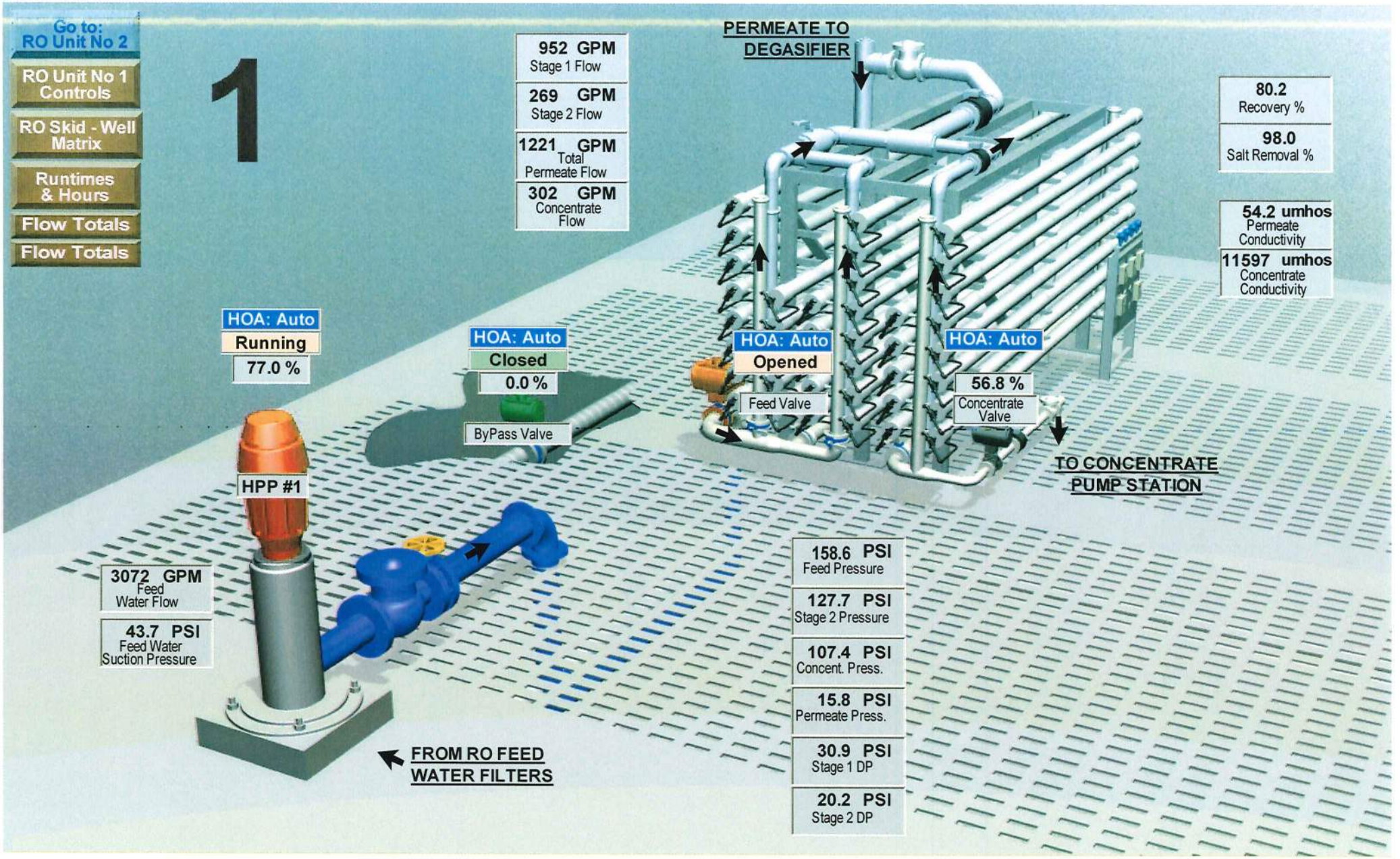
2.9 PSID
Feed Water DP

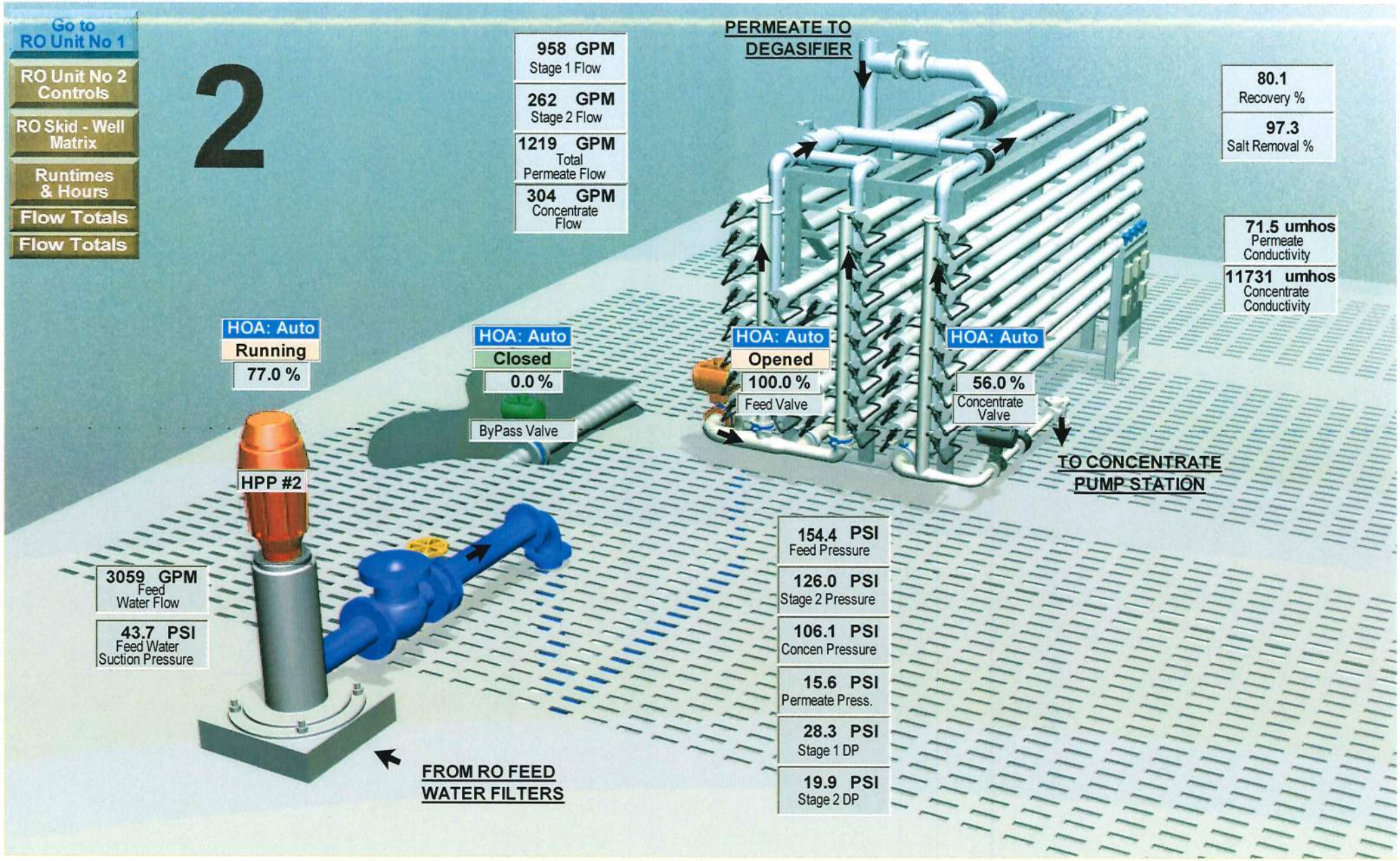
2646.5 umhos
Feed Conductivity

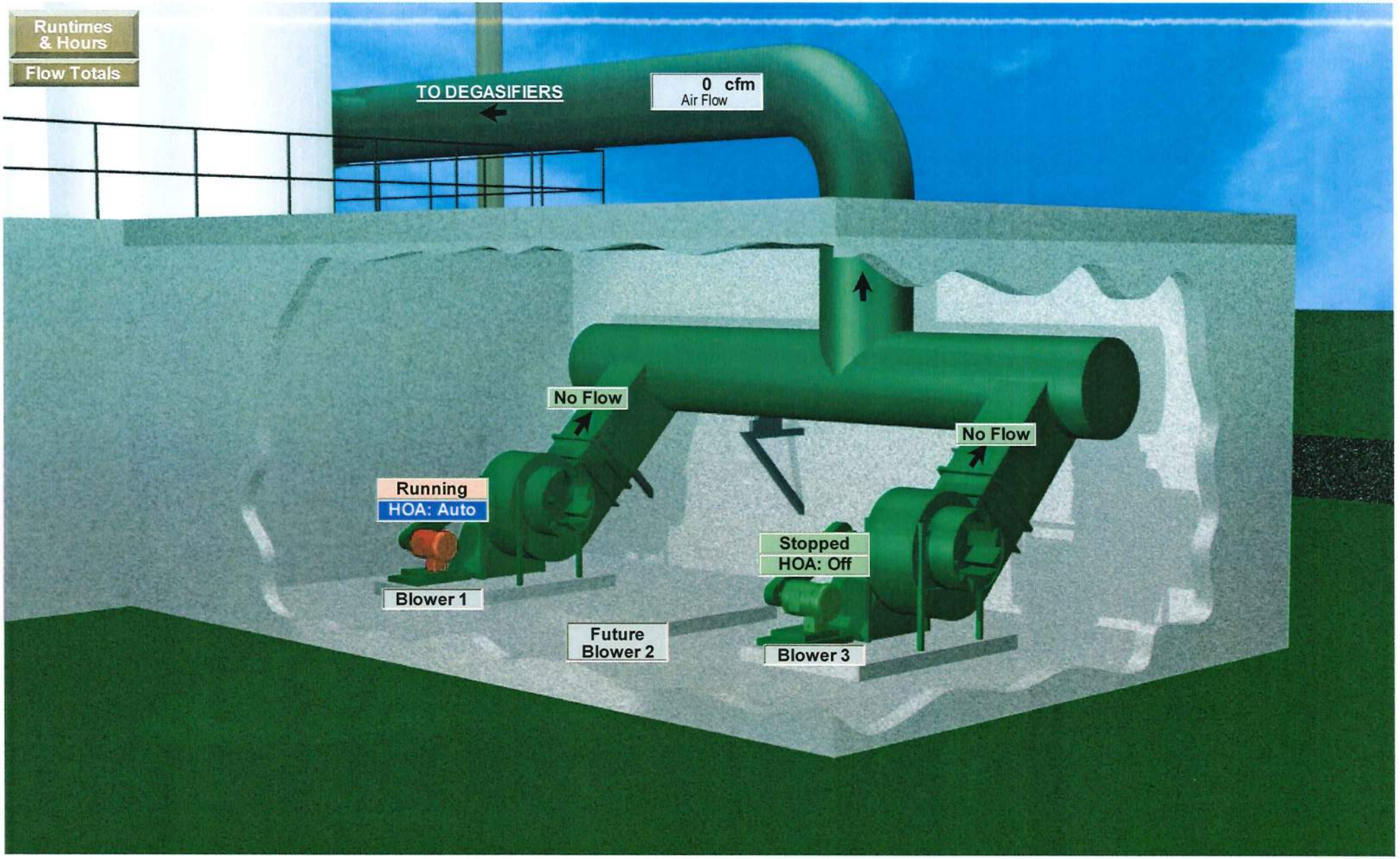
0.059 NTU
Feed Water
Pre-Filter Turbidity

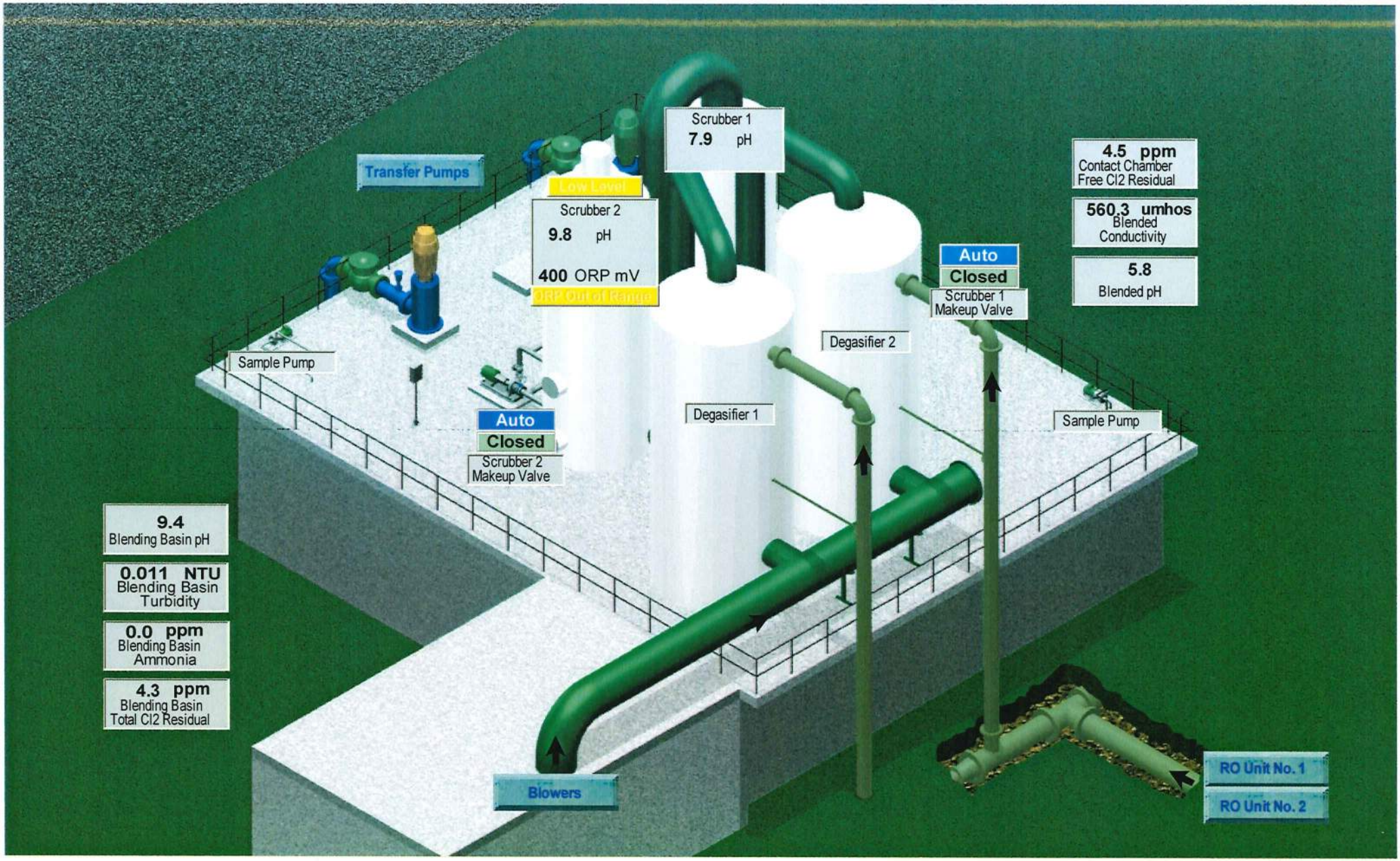


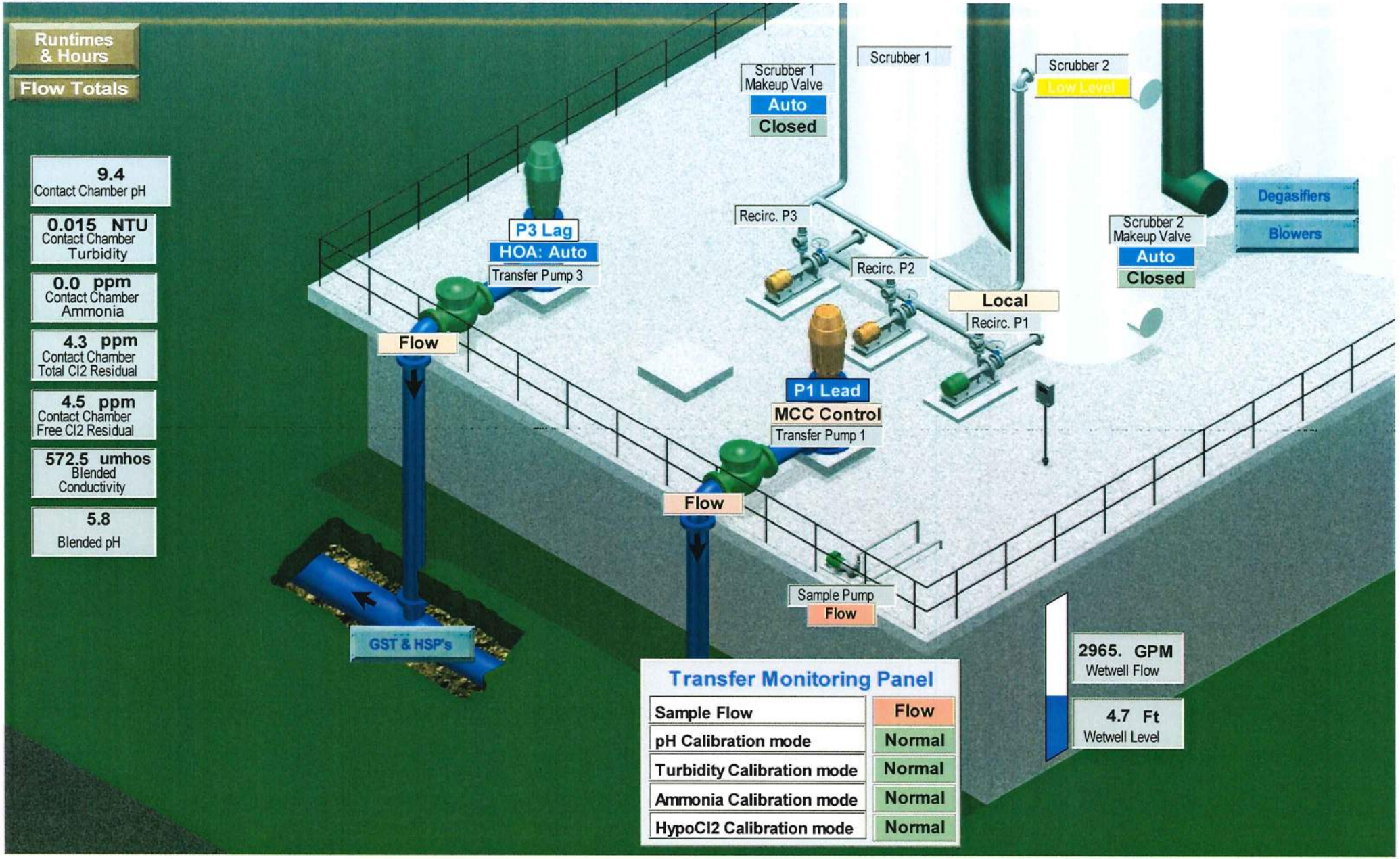


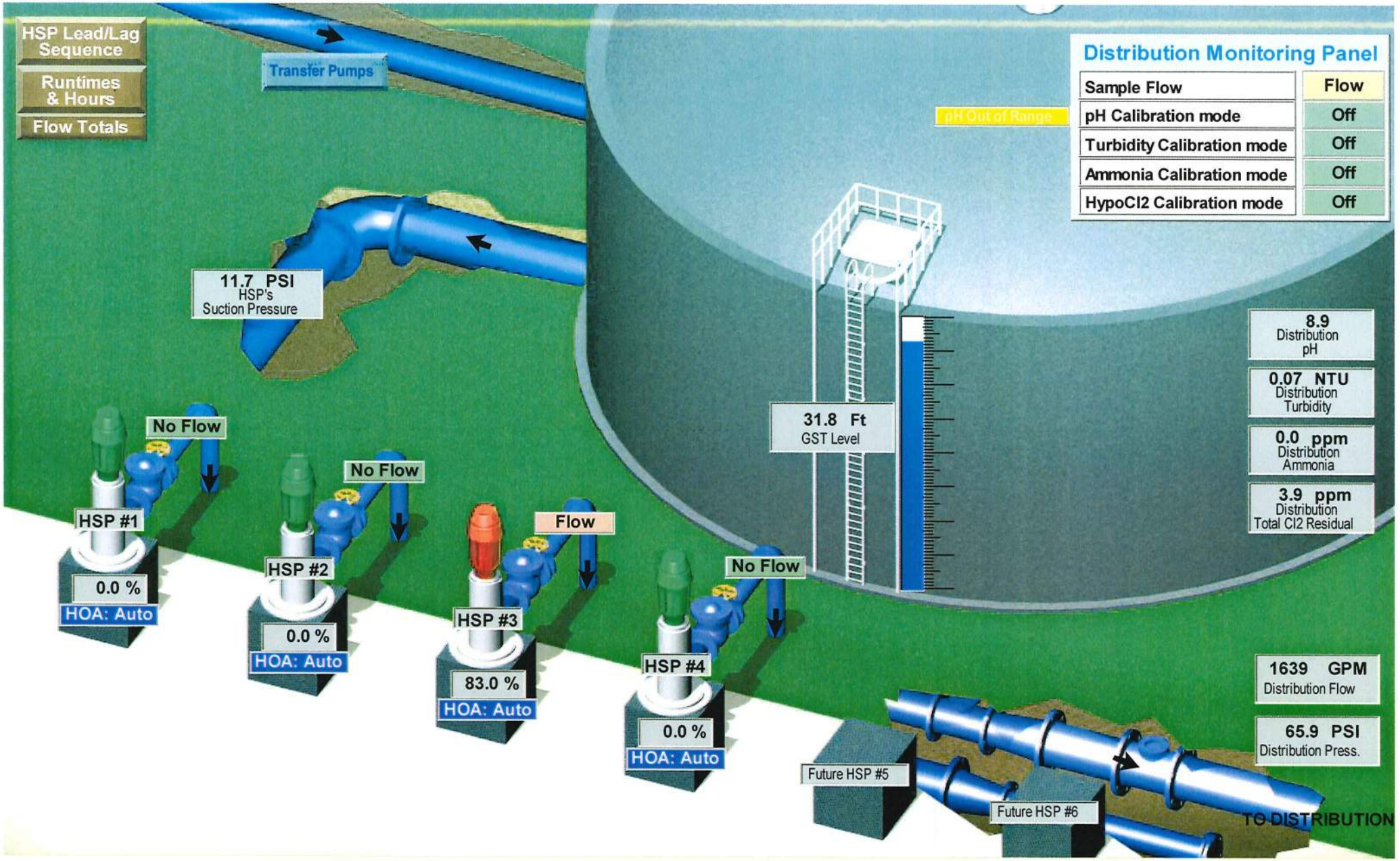

Go to:
RO Unit No 2
RO Unit No 1 Controls
RO Skid - Well Matrix
Runtimes & Hours
Flow Totals
Flow Totals
1
952 GPM
Stage 1 Flow
269 GPM
Stage 2 Flow
1221 GPM
Total Permeate Flow
302 GPM
Concentrate Flow
PERMEATE TO DEGASIFIER
80.2
Recovery %
98.0
Salt Removal %
54.2 umhos
Permeate Conductivity
11597 umhos
Concentrate Conductivity
HOA: Auto
Running
77.0 %
HOA: Auto
Closed
0.0 %
ByPass Valve
HOA: Auto
Opened
Feed Valve
HOA: Auto
56.8 %
Concentrate Valve
TO CONCENTRATE PUMP STATION
HPP #1
3072 GPM
Feed Water Flow
43.7 PSI
Feed Water Suction Pressure
FROM RO FEED WATER FILTERS
158.6 PSI
Feed Pressure
127.7 PSI
Stage 2 Pressure
107.4 PSI
Concent. Press.
15.8 PSI
Permeate Press.
30.9 PSI
Stage 1 DP
20.2 PSI
Stage 2 DP

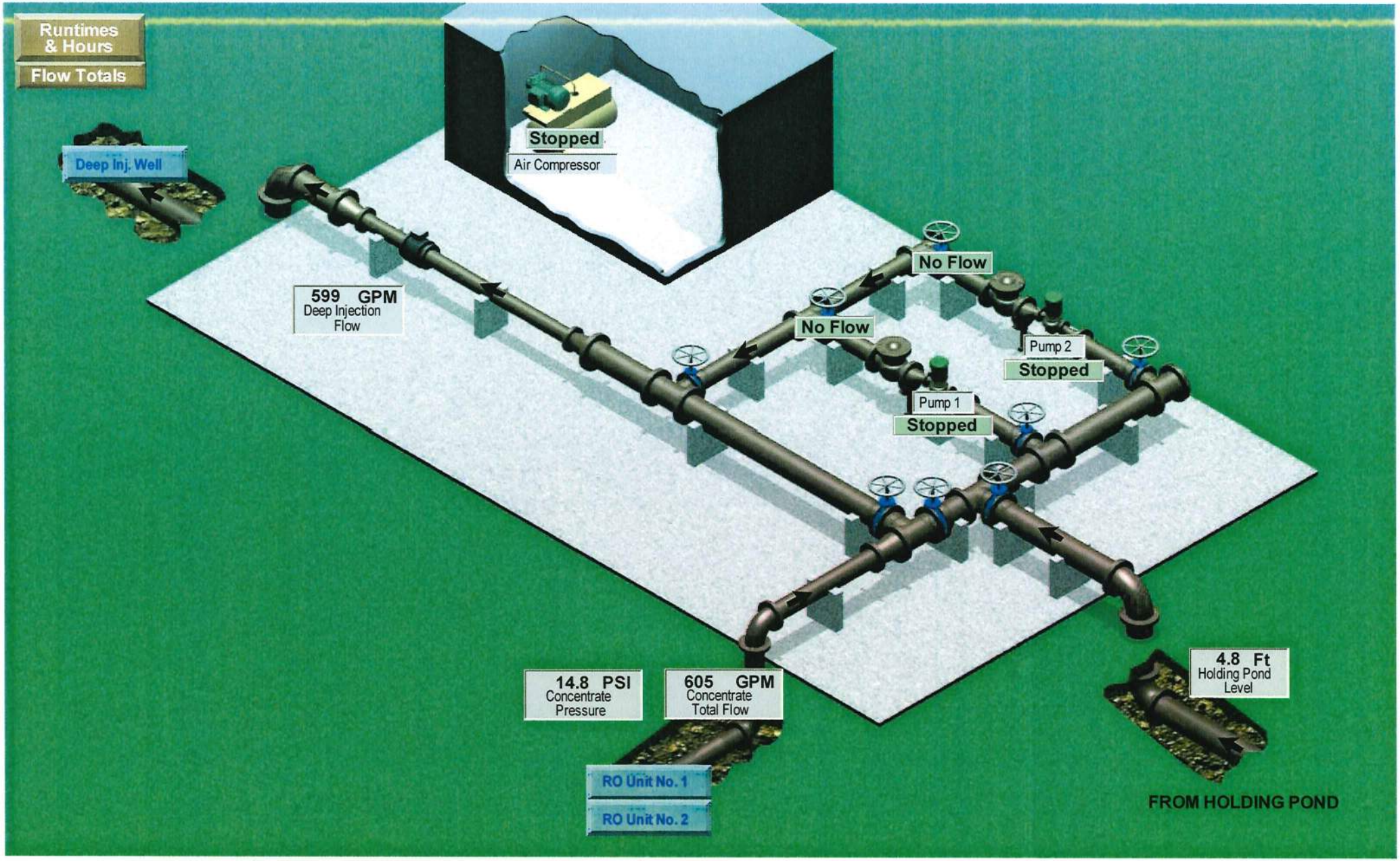

Go to RO Unit No 1
RO Unit No 2 Controls
RO Skid - Well Matrix
Runtimes & Hours
Flow Totals
Flow Totals
2
958 GPM Stage 1 Flow
262 GPM Stage 2 Flow
1219 GPM Total Permeate Flow
304 GPM Concentrate Flow
PERMEATE TO DEGASIFIER
80.1 Recovery %
97.3 Salt Removal %
71.5 umhos Permeate Conductivity
11731 umhos Concentrate Conductivity
HOA: Auto
Running
77.0 %
HOA: Auto
Closed
0.0 %
ByPass Valve
HOA: Auto
Opened
100.0 %
Feed Valve
HOA: Auto
56.0 %
Concentrate Valve
TO CONCENTRATE PUMP STATION
HPP #2
3059 GPM Feed Water Flow
43.7 PSI Feed Water Suction Pressure
154.4 PSI Feed Pressure
126.0 PSI Stage 2 Pressure
106.1 PSI Concen Pressure
15.6 PSI Permeate Press.
28.3 PSI Stage 1 DP
19.9 PSI Stage 2 DP
FROM RO FEED WATER FILTERS

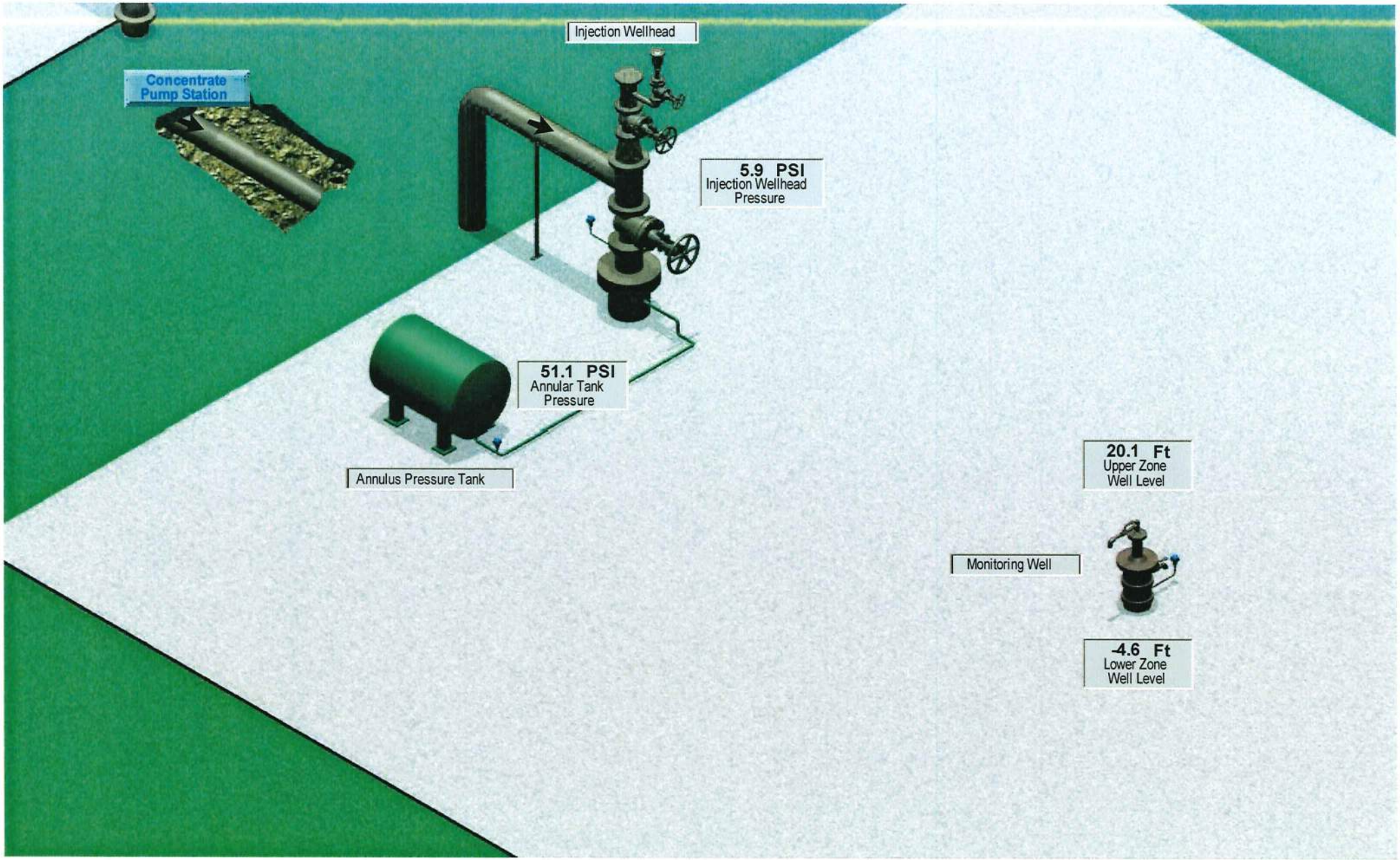

Runtimes & Hours
Flow Totals
TO DEGASIFIERS
0 cfm
Air Flow
No Flow
No Flow
Running
HOA: Auto
Stopped
HOA: Off
Blower 1
Future Blower 2
Blower 3

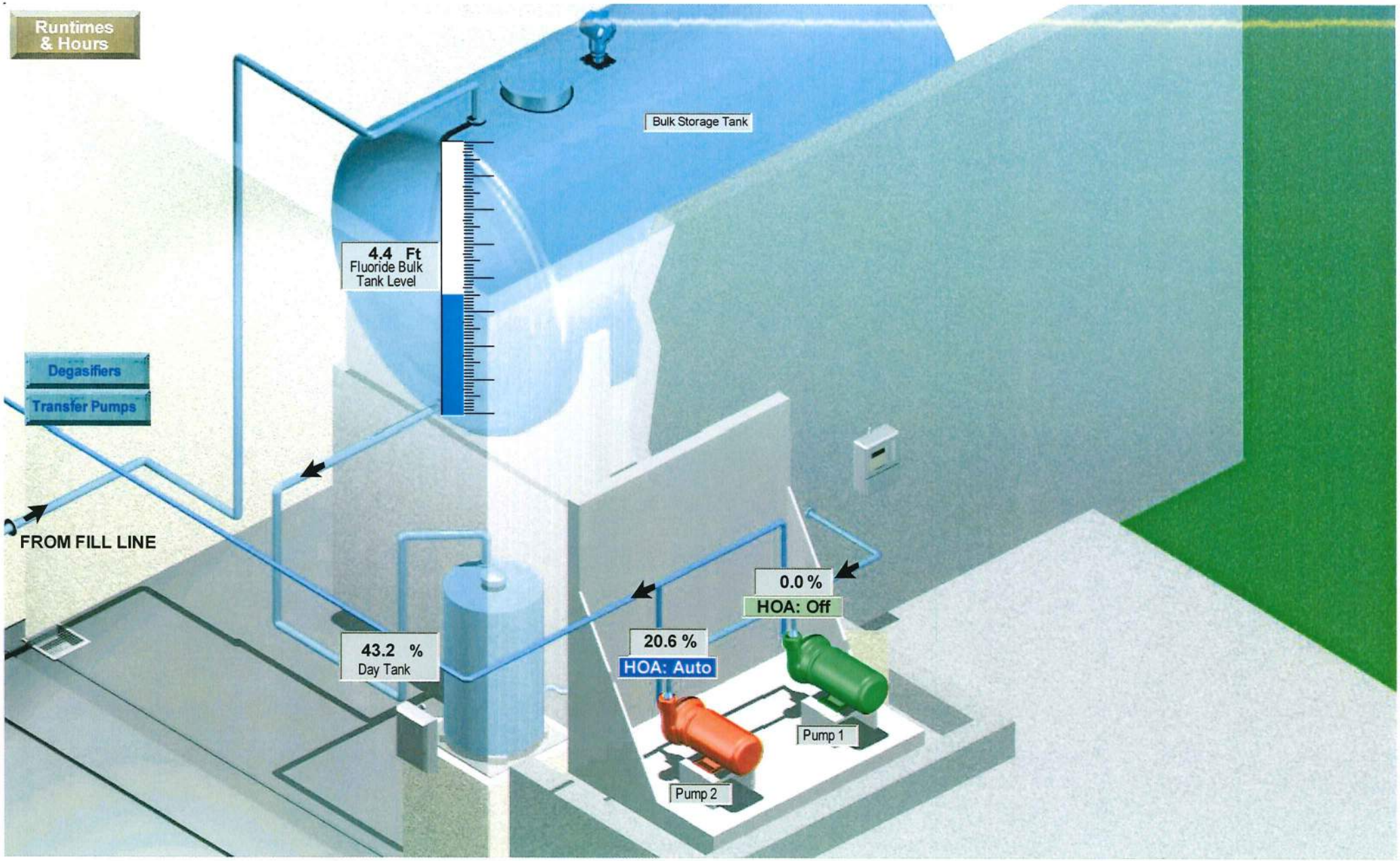

Scrubber 1
7.9 pH
Transfer Pumps
Low Level
Scrubber 2
9.8 pH
400 ORP mV
ORP Out of Range
4.5 ppm
Contact Chamber
Free Cl2 Residual
560.3 umhos
Blended
Conductivity
5.8
Blended pH
Auto
Closed
Scrubber 1
Makeup Valve
Degasifier 2
Sample Pump
Degasifier 1
Sample Pump
Auto
Closed
Scrubber 2
Makeup Valve
9.4
Blending Basin pH
0.011 NTU
Blending Basin
Turbidity
0.0 ppm
Blending Basin
Ammonia
4.3 ppm
Blending Basin
Total Cl2 Residual
Blowers
RO Unit No. 1
RO Unit No. 2

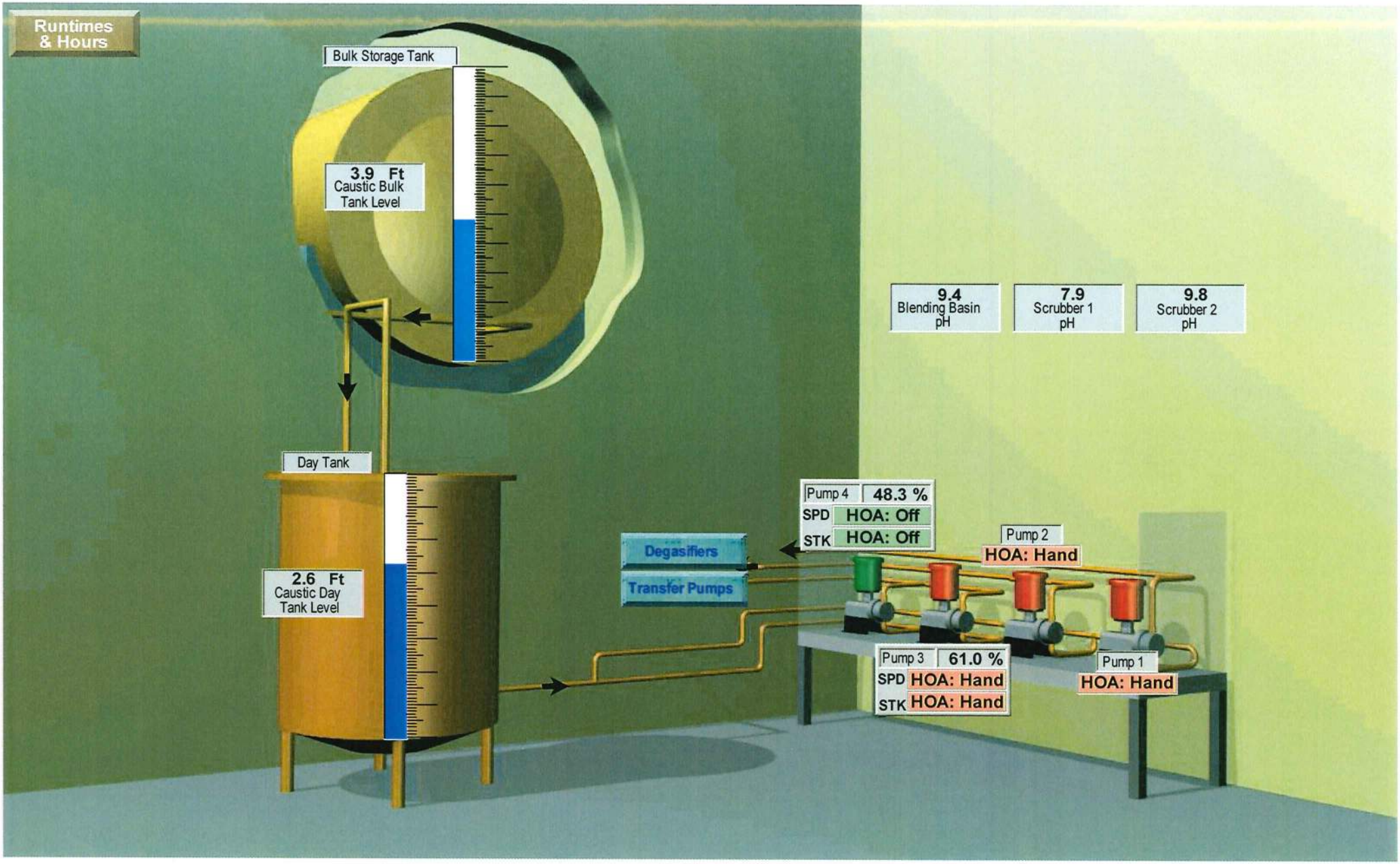

Runtimes & Hours
Flow Totals
9.4
Contact Chamber pH
0.015 NTU
Contact Chamber Turbidity
0.0 ppm
Contact Chamber Ammonia
4.3 ppm
Contact Chamber Total Cl2 Residual
4.5 ppm
Contact Chamber Free Cl2 Residual
572.5 umhos
Blended Conductivity
5.8
Blended pH
Scrubber 1
Scrubber 1 Makeup Valve
Auto
Closed
Scrubber 2
Low Level
Scrubber 2 Makeup Valve
Auto
Closed
Degasifiers
Blowers
Recirc. P3
Recirc. P2
Recirc. P1
Local
P3 Lag
HOA: Auto
Transfer Pump 3
Flow
P1 Lead
MCC Control
Transfer Pump 1
Flow
Sample Pump
Flow
GST & HSP's
2965. GPM
Wetwell Flow
4.7 Ft
Wetwell Level
Transfer Monitoring Panel
Sample Flow
Flow
pH Calibration mode
Normal
Turbidity Calibration mode
Normal
Ammonia Calibration mode
Normal
HypoCl2 Calibration mode
Normal

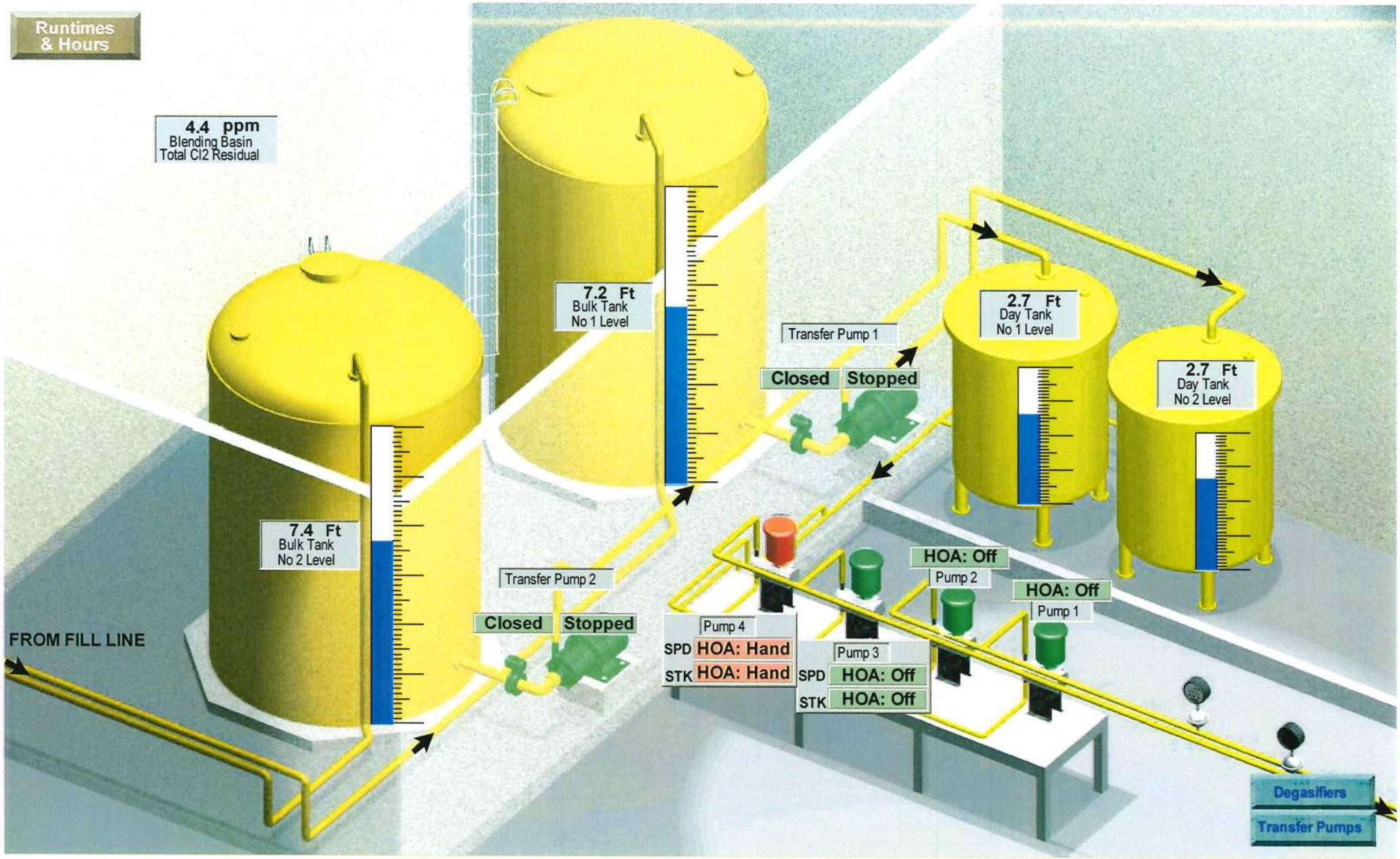

HSP Lead/Lag Sequence
Runtimes & Hours
Flow Totals
Transfer Pumps
11.7 PSI
HSP's
Suction Pressure
Distribution Monitoring Panel
Sample Flow
Flow
pH Out of Range
pH Calibration mode
Off
Turbidity Calibration mode
Off
Ammonia Calibration mode
Off
HypoCl2 Calibration mode
Off
31.8 Ft
GST Level
8.9
Distribution
pH
0.07 NTU
Distribution
Turbidity
0.0 ppm
Distribution
Ammonia
3.9 ppm
Distribution
Total Cl2 Residual
No Flow
HSP #1
0.0 %
HOA: Auto
No Flow
HSP #2
0.0 %
HOA: Auto
Flow
HSP #3
83.0 %
HOA: Auto
No Flow
HSP #4
0.0 %
HOA: Auto
1639 GPM
Distribution Flow
65.9 PSI
Distribution Press.
Future HSP #5
Future HSP #6
TO DISTRIBUTION

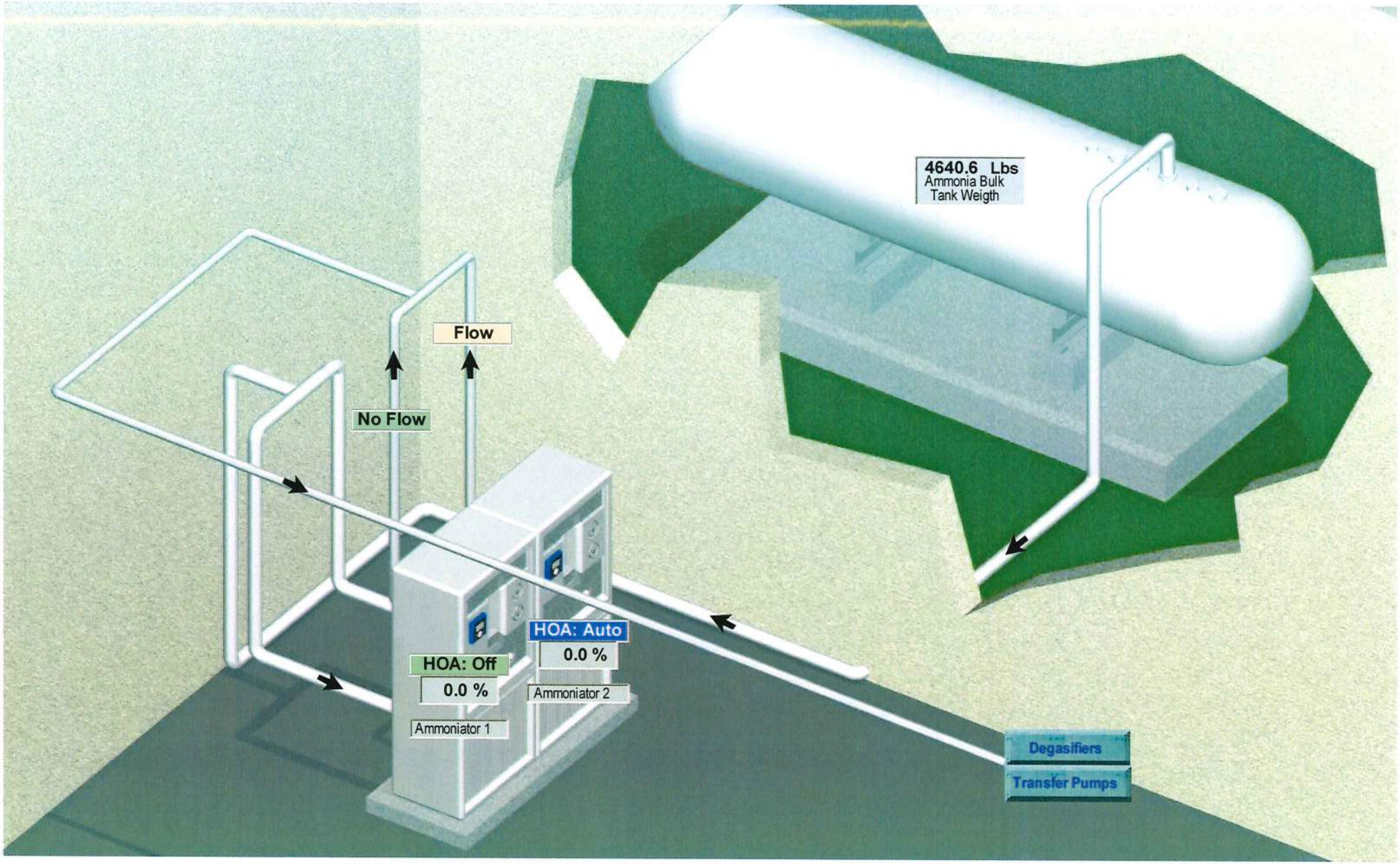

Runtimes & Hours
Flow Totals
Stopped
Air Compressor
Deep Inj. Well
599 GPM
Deep Injection Flow
No Flow
No Flow
Pump 2
Stopped
Pump 1
Stopped
14.8 PSI
Concentrate Pressure
605 GPM
Concentrate Total Flow
4.8 Ft
Holding Pond Level
RO Unit No. 1
RO Unit No. 2
FROM HOLDING POND

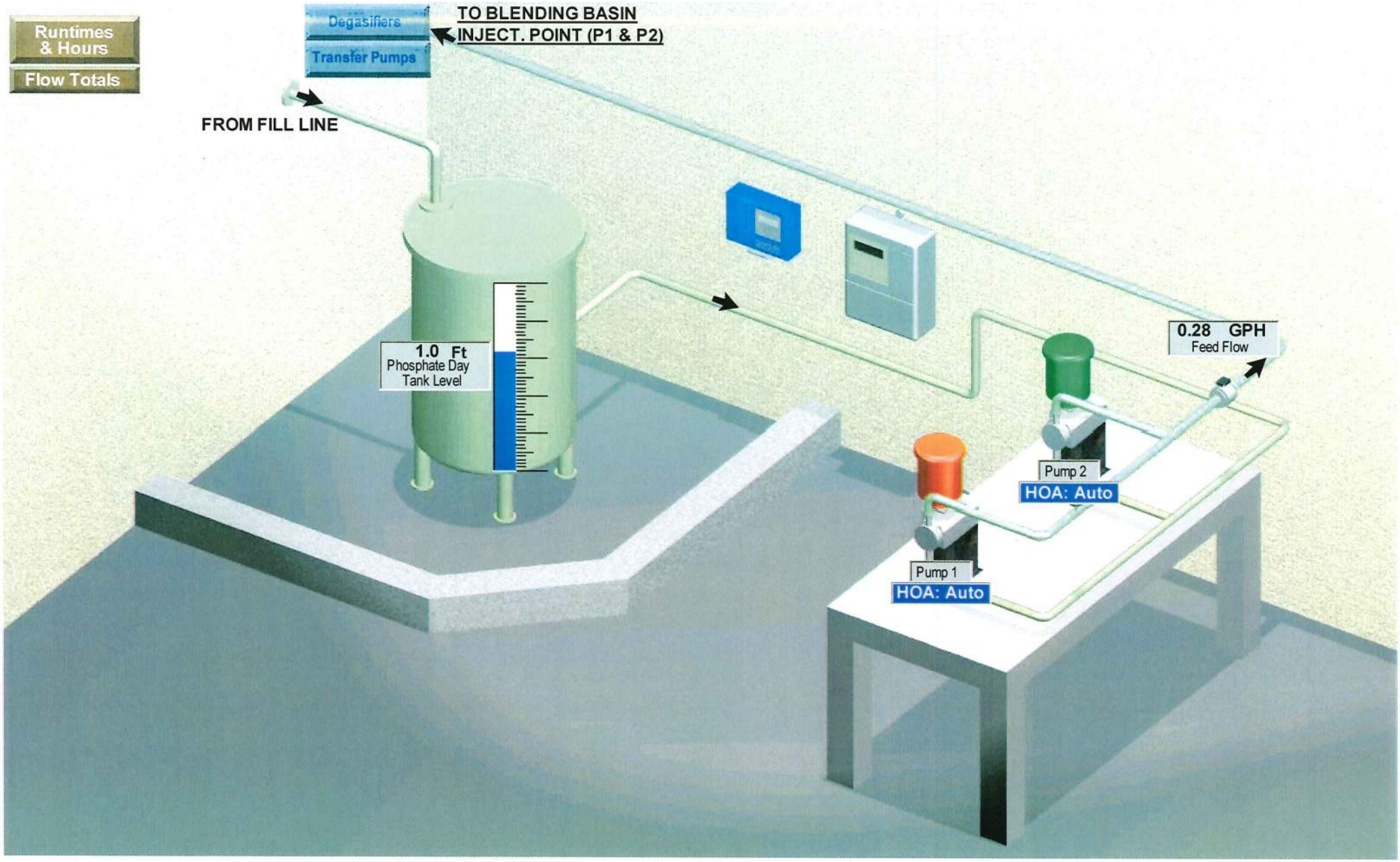

Injection Wellhead
Concentrate Pump Station
5.9 PSI
Injection Wellhead Pressure
51.1 PSI
Annular Tank Pressure
Annulus Pressure Tank
20.1 Ft
Upper Zone Well Level
Monitoring Well
-4.6 Ft
Lower Zone Well Level

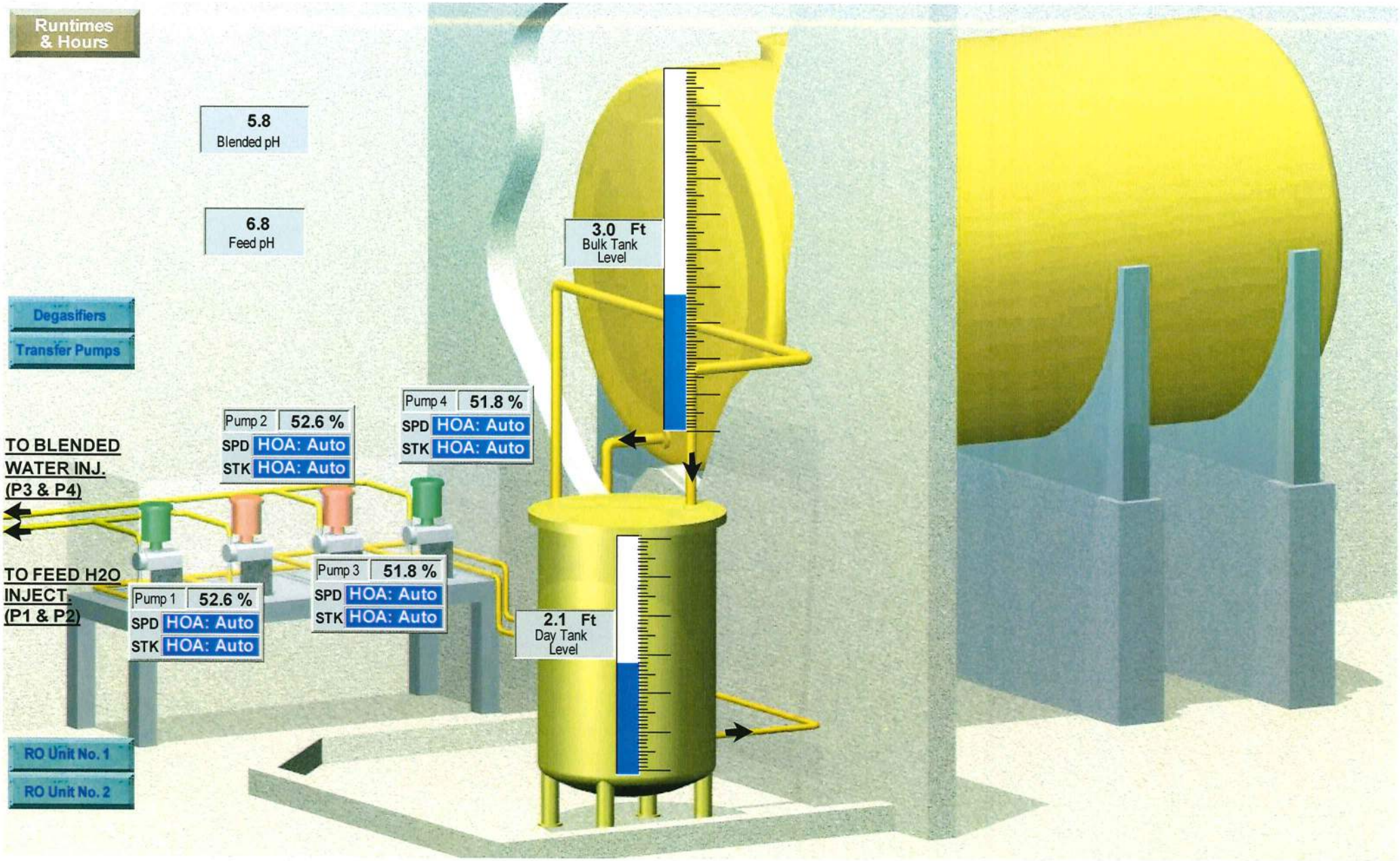

Runtimes & Hours
Bulk Storage Tank
4.4 Ft
Fluoride Bulk Tank Level
Degasifiers
Transfer Pumps
FROM FILL LINE
43.2 %
Day Tank
0.0 %
HOA: Off
20.6 %
HOA: Auto
Pump 1
Pump 2

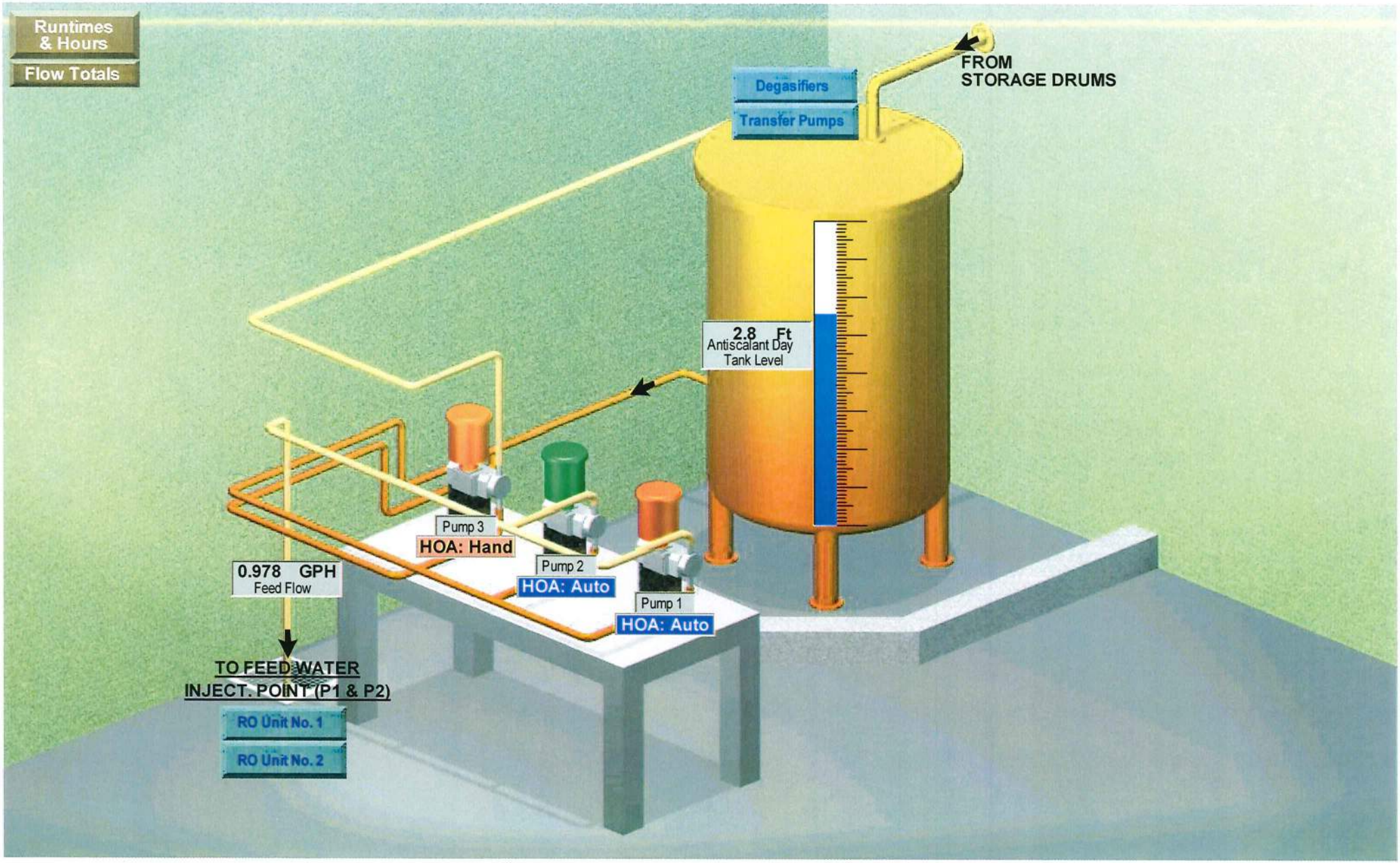

Runtimes & Hours
Bulk Storage Tank
3.9 Ft
Caustic Bulk Tank Level
9.4
Blending Basin pH
7.9
Scrubber 1 pH
9.8
Scrubber 2 pH
Day Tank
2.6 Ft
Caustic Day Tank Level
Pump 4 48.3 %
SPD HOA: Off
STK HOA: Off
Degasifiers
Transfer Pumps
Pump 2
HOA: Hand
Pump 3 61.0 %
SPD HOA: Hand
STK HOA: Hand
Pump 1
HOA: Hand

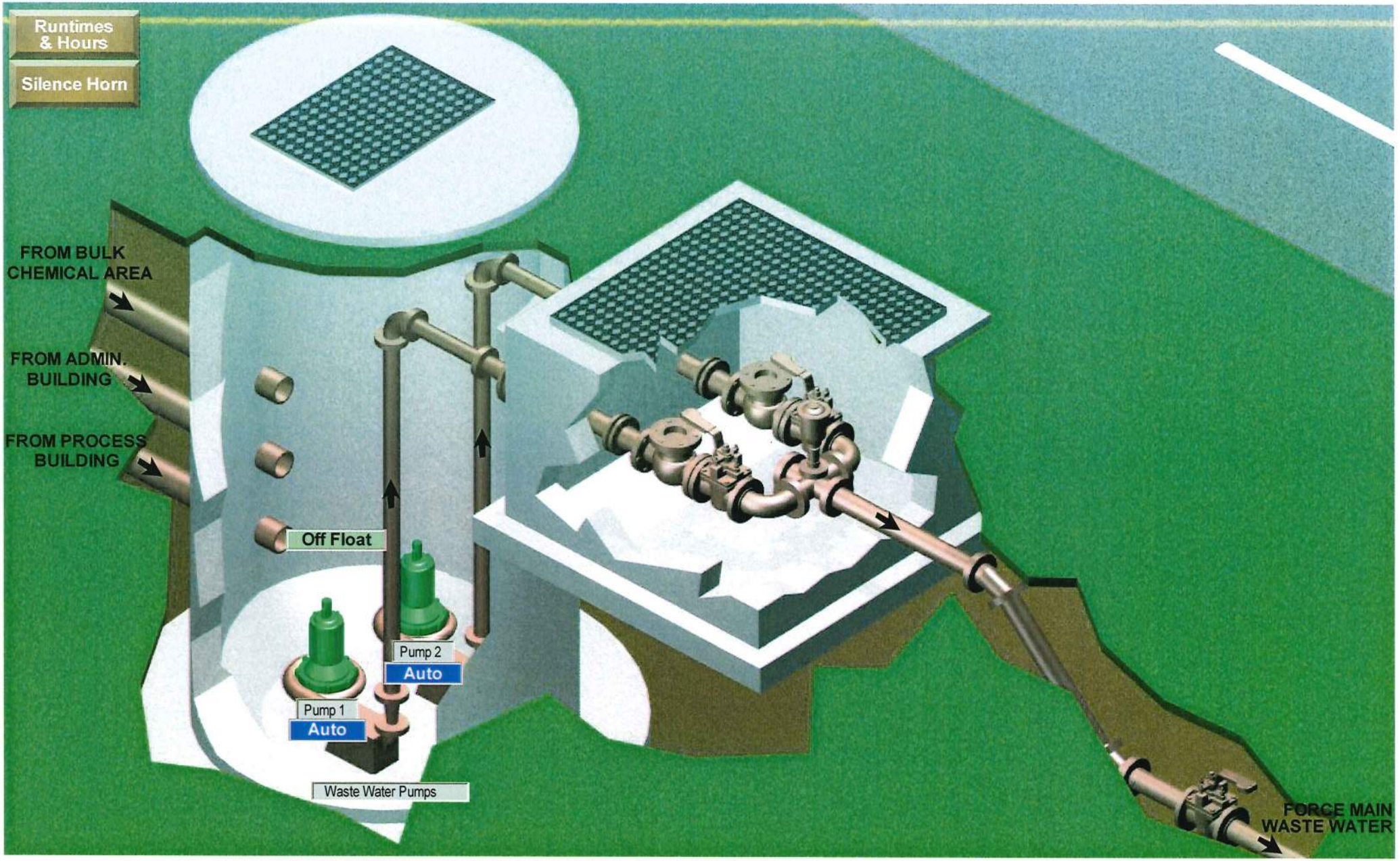

Runtimes & Hours
4.4 ppm
Blending Basin
Total Cl2 Residual
7.2 Ft
Bulk Tank
No 1 Level
7.4 Ft
Bulk Tank
No 2 Level
Transfer Pump 1
Closed
Stopped
2.7 Ft
Day Tank
No 1 Level
2.7 Ft
Day Tank
No 2 Level
Transfer Pump 2
Closed
Stopped
FROM FILL LINE
Pump 4
SPD HOA: Hand
STK HOA: Hand
Pump 3
SPD HOA: Off
STK HOA: Off
HOA: Off
Pump 2
HOA: Off
Pump 1
Degasifiers
Transfer Pumps

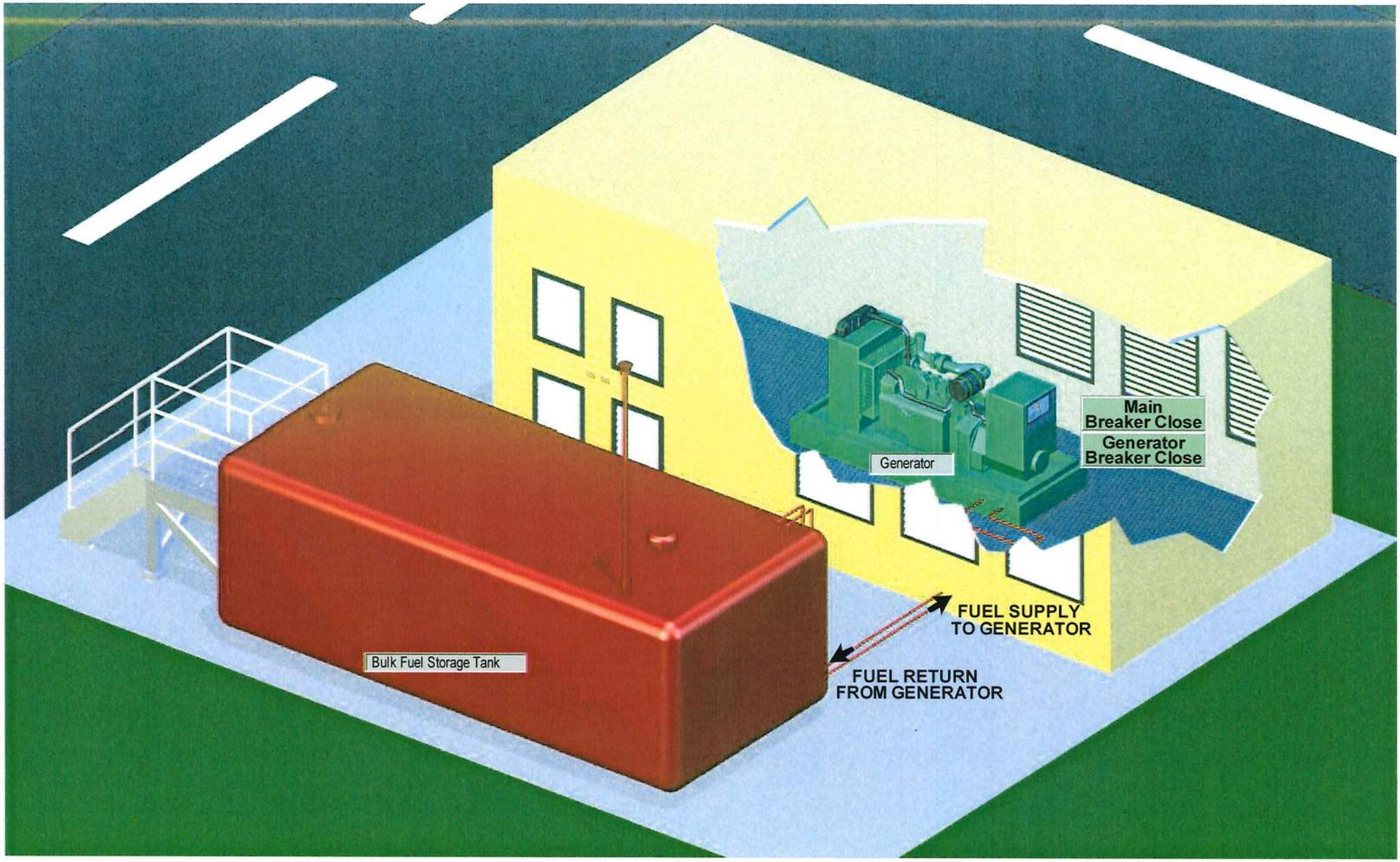

4640.6 Lbs
Ammonia Bulk
Tank Weigth
Flow
No Flow
HOA: Auto
0.0 %
HOA: Off
0.0 %
Ammoniator 2
Ammoniator 1
Degasifiers
Transfer Pumps

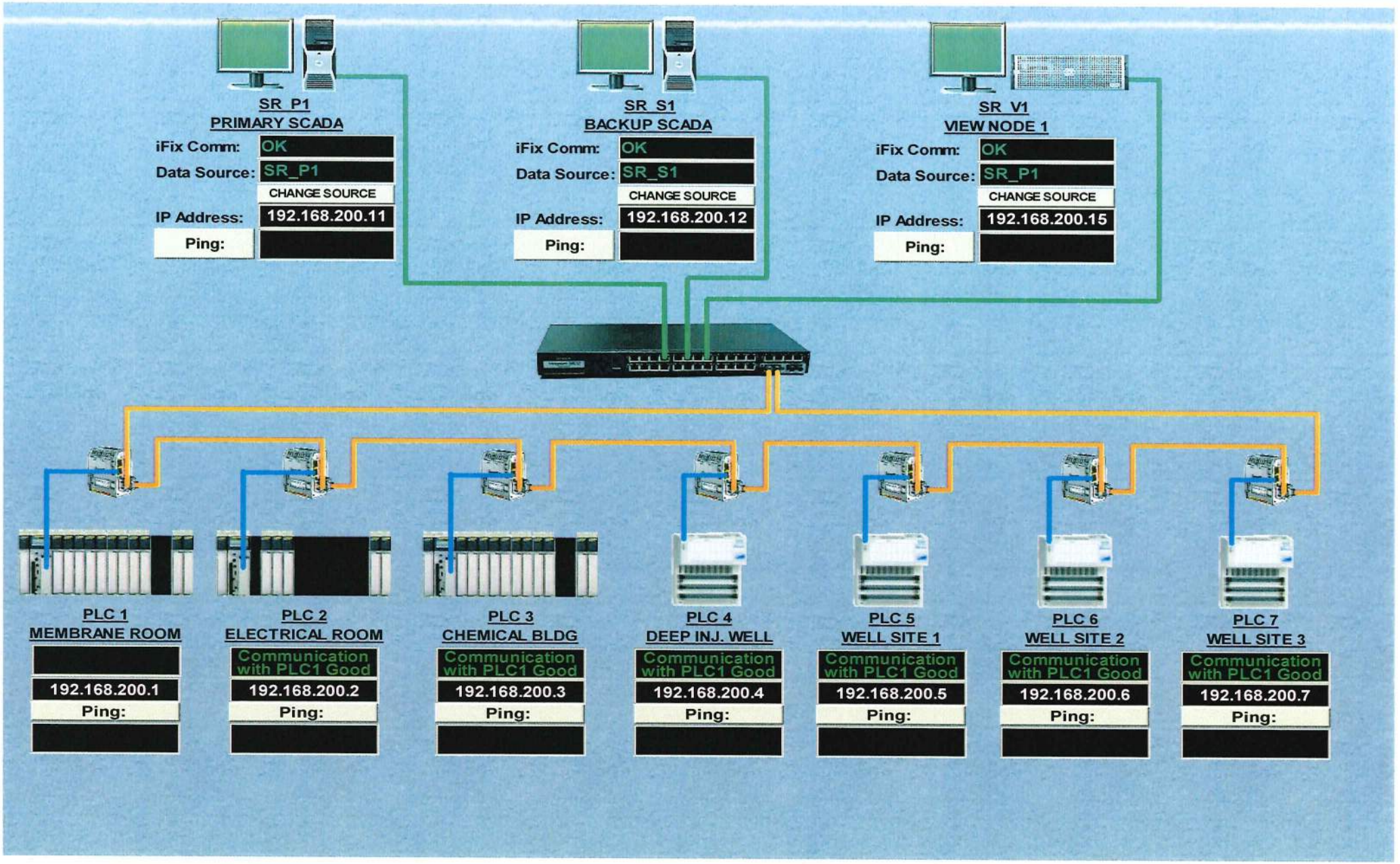

Runtimes & Hours
Flow Totals
Degasifiers
Transfer Pumps
TO BLENDING BASIN
INJECT. POINT (P1 & P2)
FROM FILL LINE
1.0 Ft
Phosphate Day
Tank Level
0.28 GPH
Feed Flow
Pump 2
HOA: Auto
Pump 1
HOA: Auto


Runtimes & Hours
5.8
Blended pH
6.8
Feed pH
3.0 Ft
Bulk Tank Level
Degasifiers
Transfer Pumps
Pump 4 51.8 %
SPD HOA: Auto
STK HOA: Auto
Pump 2 52.6 %
SPD HOA: Auto
STK HOA: Auto
TO BLENDED WATER INJ. (P3 & P4)
TO FEED H2O INJECT. (P1 & P2)
Pump 3 51.8 %
SPD HOA: Auto
STK HOA: Auto
Pump 1 52.6 %
SPD HOA: Auto
STK HOA: Auto
2.1 Ft
Day Tank Level
RO Unit No. 1
RO Unit No. 2


Runtimes & Hours
Flow Totals
FROM STORAGE DRUMS
Degasifiers
Transfer Pumps
2.8 Ft
Antiscalant Day Tank Level
Pump 3
HOA: Hand
Pump 2
HOA: Auto
Pump 1
HOA: Auto
0.978 GPH
Feed Flow
TO FEED WATER INJECT. POINT (P1 & P2)
RO Unit No. 1
RO Unit No. 2


Runtimes & Hours
Silence Horn
FROM BULK CHEMICAL AREA
FROM ADMIN. BUILDING
FROM PROCESS BUILDING
Off Float
Pump 2
Auto
Pump 1
Auto
Waste Water Pumps
FORCE MAIN WASTE WATER


Main
Breaker Close
Generator
Breaker Close
Generator
FUEL SUPPLY
TO GENERATOR
FUEL RETURN
FROM GENERATOR
Bulk Fuel Storage Tank


SR_P1
PRIMARY SCADA
iFix Comm:
OK
Data Source:
SR_P1
CHANGE SOURCE
IP Address:
192.168.200.11
Ping:
SR_S1
BACKUP SCADA
iFix Comm:
OK
Data Source:
SR_S1
CHANGE SOURCE
IP Address:
192.168.200.12
Ping:
SR_V1
VIEW NODE 1
iFix Comm:
OK
Data Source:
SR_P1
CHANGE SOURCE
IP Address:
192.168.200.15
Ping:
PLC 1
MEMBRANE ROOM
192.168.200.1
Ping:
PLC 2
ELECTRICAL ROOM
Communication with PLC1 Good
192.168.200.2
Ping:
PLC 3
CHEMICAL BLDG
Communication with PLC1 Good
192.168.200.3
Ping:
PLC 4
DEEP INJ. WELL
Communication with PLC1 Good
192.168.200.4
Ping:
PLC 5
WELL SITE 1
Communication with PLC1 Good
192.168.200.5
Ping:
PLC 6
WELL SITE 2
Communication with PLC1 Good
192.168.200.6
Ping:
PLC 7
WELL SITE 3
Communication with PLC1 Good
192.168.200.7
Ping: