

SCADA Data Across the Enterprise

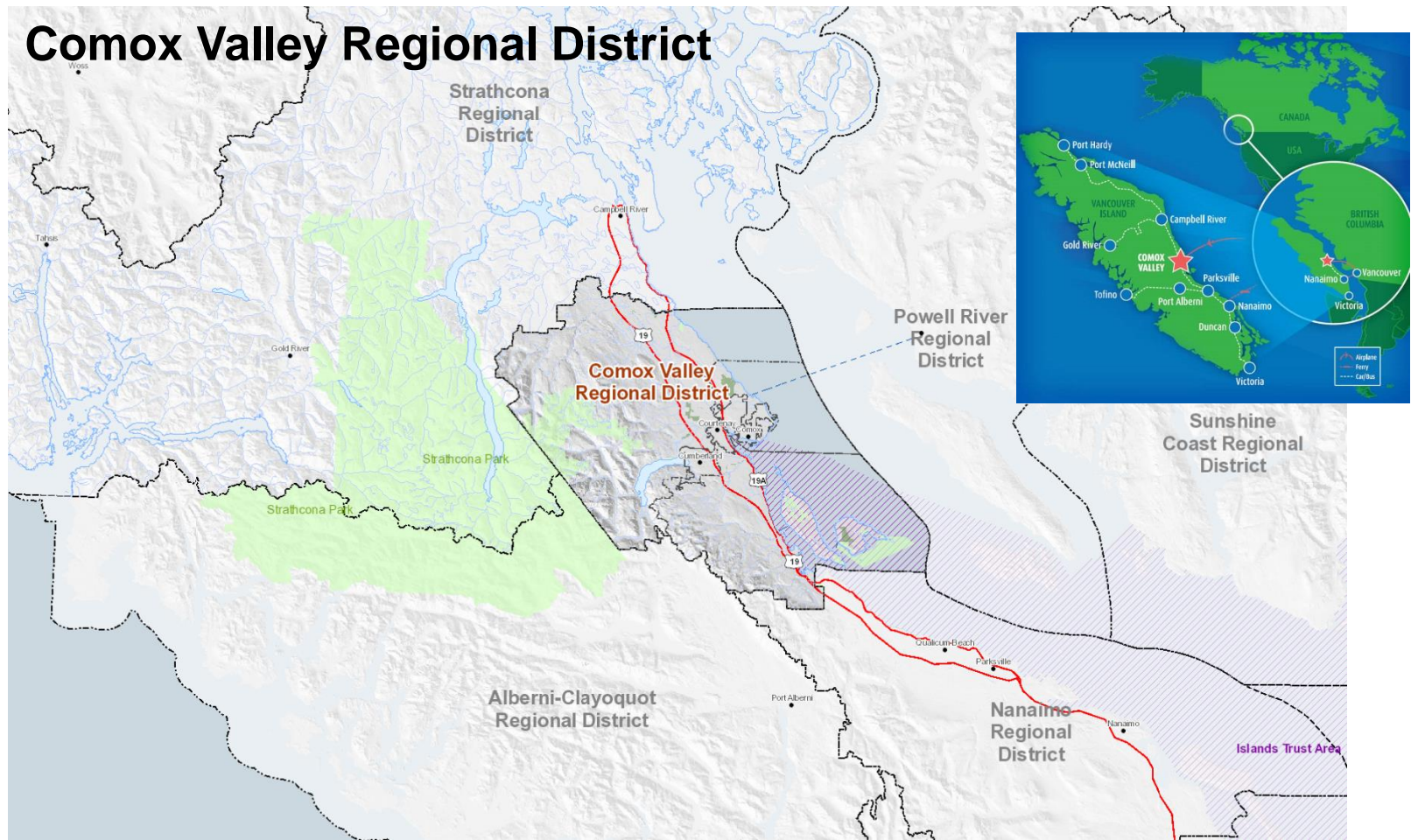
Brian Pearson

Senior Manager of Information Systems & GIS

Comox Valley Regional District



Comox Valley Regional District



Comox Valley Regional District

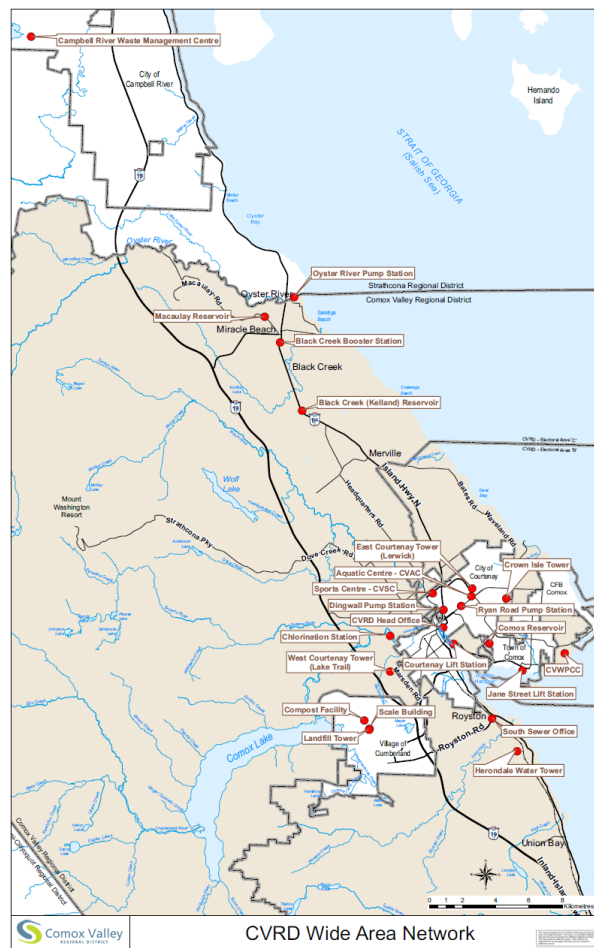
- Local regional government for 3 municipalities and 3 rural areas
- Manage major utilities – Water, Sewer, Solid Waste
- 27 remote sites throughout the Comox Valley



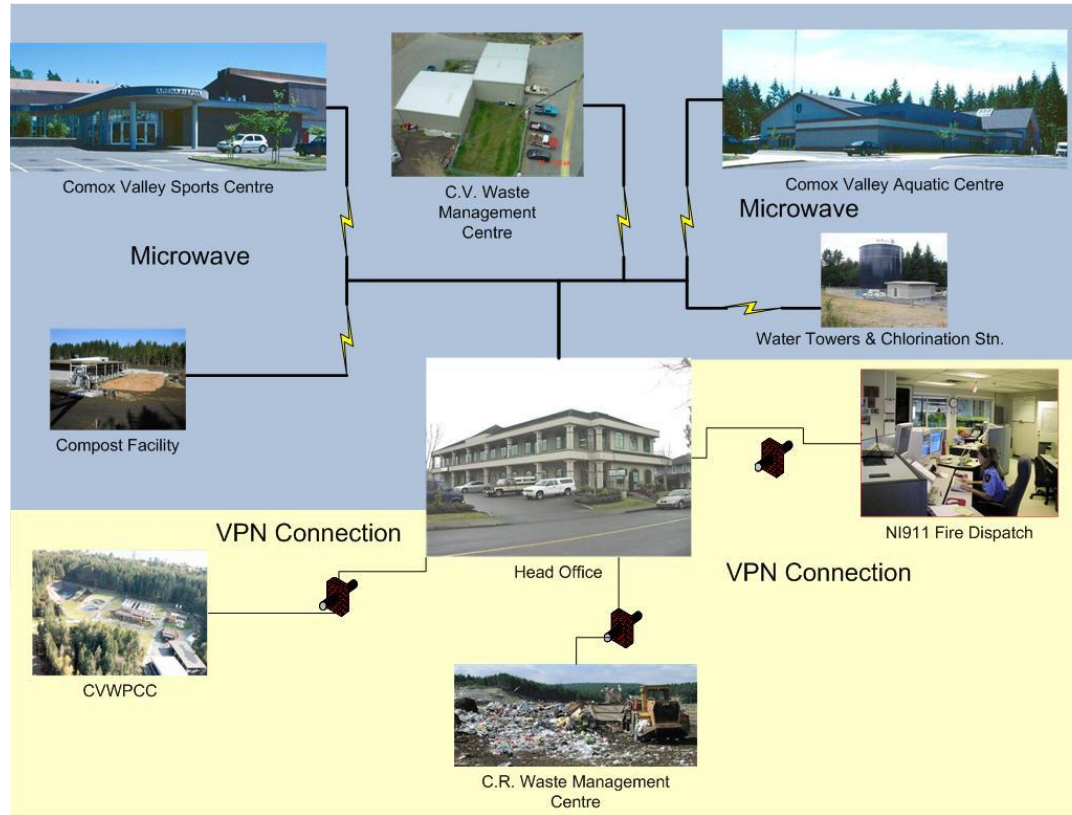
Business Challenge

- Bring all data from remote water, sewer and Solid waste stations to central office
- Large distances between sites makes local data analysis impossible
- Need to centrally store and analyze data from remote sites in real time
- Many staff members in several departments need to view collected data

27 remote sites
throughout the
Comox Valley

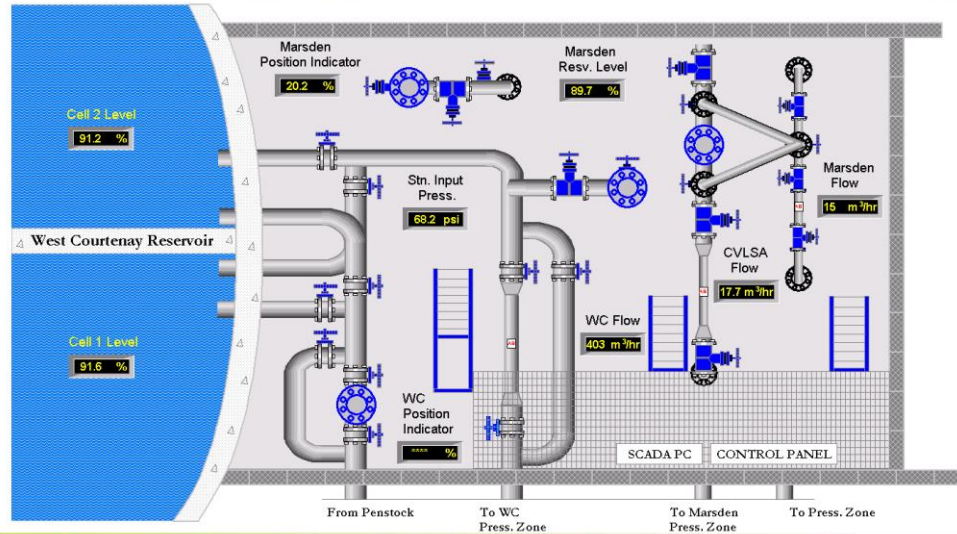


CVRD Wide Area Network









User Logged In : JAMES

SCADA
Selection Screen

West Courtenay
Trending

West Courtenay
Alarm Summary

Please
Logout

West Courtenay
Setpoints

West Courtenay
Timers

HELP !

West Courtenay - Setpoints



10 psi WC Low Input Pressure Alarm

5 m³/hr WC Low Flow Alarm

6 % WC Position Indicator Max. open before Alarm

6 % WC Position Indicator Min. open before Alarm

hold the alt valve position on marsden

19.00

Enter

98 % Cell 2 - Hi Level Alarm

95 % Cell 2 - Stop Fill

87 % Cell 2 - Start Fill

60 % Cell 2 - Low Level Alarm

98 % Cell 1 - Hi Level Alarm

95 % Cell 1 - Stop Fill

87 % Cell 1 - Start Fill

60 % Cell 1 - Low Level Alarm

96 % Alarm - Hi Reservoir Level

93 % Marsden Stop Fill

85 % Marsden Start Fill

60 % Alarm - Low Reservoir Level

98 Marsden Hi Pressure Shutdown

60 Marsden Low Pressure Alarm

5 % Marsden Position Indicator
Max. open before Alarm

6 % Marsden Position Indicator
Min. open before Alarm

Marsden Reservoir

100 %

0 %

89.9 %

Close
Setpoints

West Courtenay Reservoir

100 %

0 %

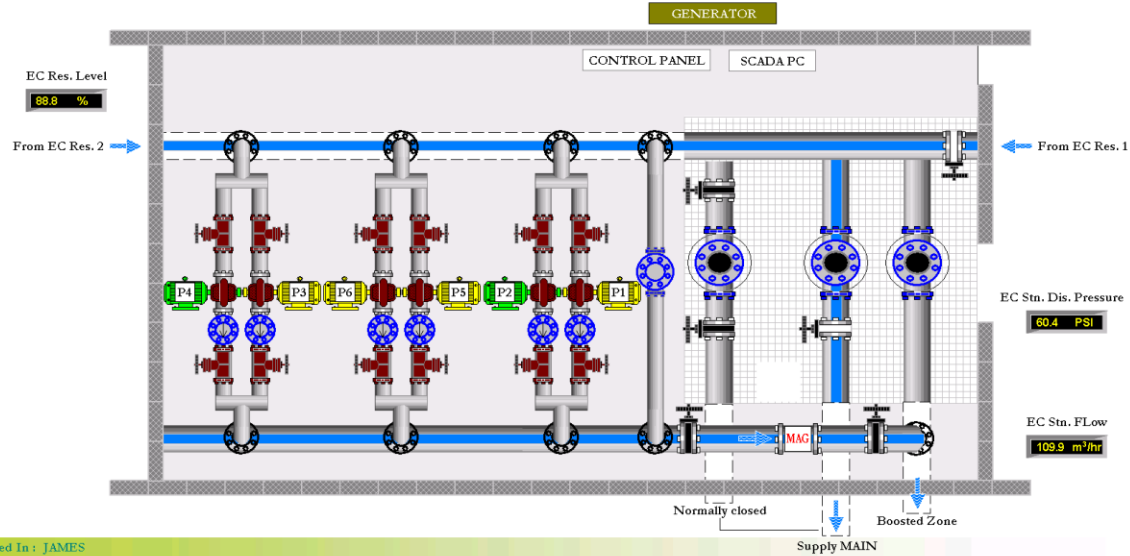
Cell 2 Level

91.1 %

Cell 1 Level

91.5 %





User Logged In: JAMES

SCADA
Selection ScreenEast Courtenay
TrendingEast Courtenay
Alarm SummaryPlease
Logout

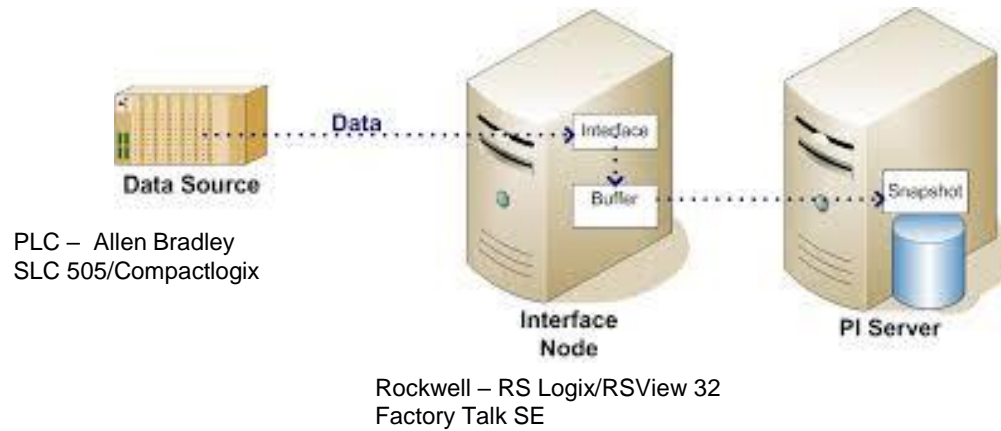
Idle in 356

East Courtenay
Pumps DataEast Courtenay
SetpointsEast Courtenay
Timer

HELP !

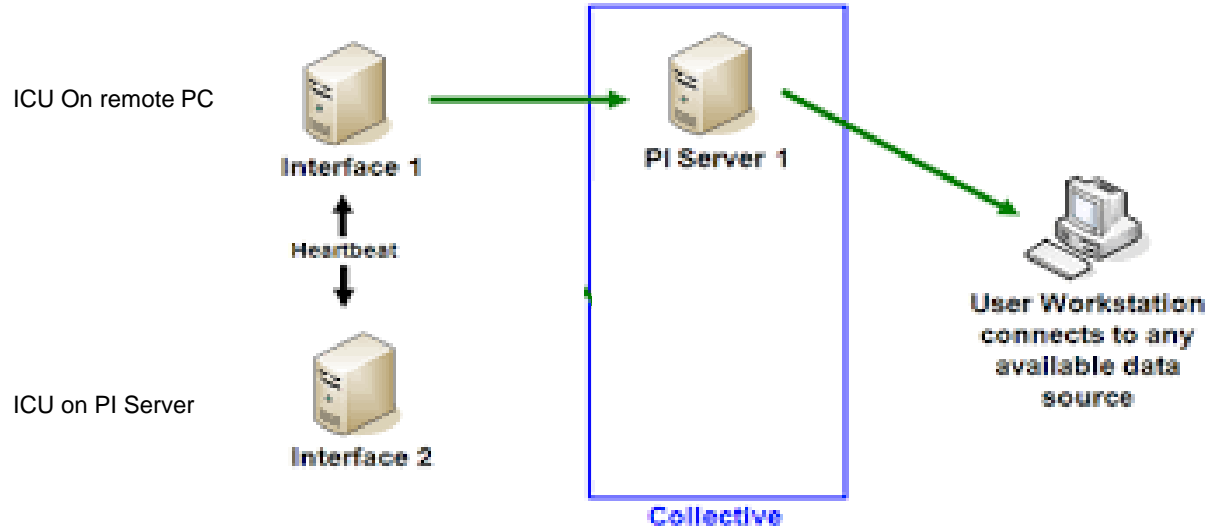
PI – Historian server

Standard Configuration at Remote Sites



Mappings & Trusts - PI System Management Tools (Administrator)											
File View Tools Help											
Servers											
Search											
Servers											
CVSCADA											
System Management Tools											
Search											
Alarms											
Batch											
Data											
Interfaces											
IT Points											
Operation											
Points											
Security											
Database Security											
Firewall											
Identifiers, Users, & Groups											
Mappings & Trusts											
Security Settings											
Mappings Trusts											
Trust	Server	Collective	Description	PI User	Domain	OS User	Application Name	Network Path	IP Address	NetMask	Enabled
Phyq_120P	CVSCADA			piadmin					127.0.0.1	255.255.255.255	True
Black Creek RSView OPC	CVSCADA			PI_OPCHrt			OPCtE		172.16.110.61	255.255.255.255	True
Buffering Black Creek	CVSCADA			PI_OPCHrt			pbutils.exe		172.16.110.61	255.255.255.255	True
Buffering Observation Service	CVSCADA			PI_OPCHrt			pbutils.exe		172.16.101.11	255.255.255.255	True
Buffering Corrosion Service	CVSCADA			PI_OPCHrt			pbutils.exe		172.16.100.112	255.255.255.255	True
Buffering Courtyard Station Service	CVSCADA			PI_OPCHrt			pbutils.exe		172.16.100.132	255.255.255.255	True
Buffering Crown Isle	CVSCADA			PI_OPCHrt			pbutils.exe		172.16.100.121	255.255.255.255	True
Buffering Dingwall	CVSCADA			PI_OPCHrt			pbutils.exe		172.16.100.131	255.255.255.255	True
Buffering East Courtyard	CVSCADA			PI_OPCHrt			pbutils.exe		172.16.100.141	255.255.255.255	True
Buffering Flare	CVSCADA			PI_OPCHrt			pbutils.exe		172.16.99.21	255.255.255.255	True
Buffering Manden Service	CVSCADA			PI_OPCHrt			pbutils.exe		172.16.100.171	255.255.255.255	True
Buffering Oyster River	CVSCADA			PI_OPCHrt			pbutils.exe		172.16.111.21	255.255.255.255	True
Buffering Treatment Plant	CVSCADA			PI_OPCHrt			pbutils.exe		172.16.3.16	255.255.255.255	True
Buffering Treatment Plant New	CVSCADA			PI_OPCHrt			pbutils.exe		192.168.3.103	255.255.255.255	True
Buffering West Courtyard	CVSCADA			PI_OPCHrt			pbutils.exe		172.16.100.161	255.255.255.255	True
Buffering Trust	CVSCADA			PI_OPCHrt			pbutils.exe		172.16.115.30	255.255.255.0	True
Buffering Trust(2ndPI)	CVSCADA	172.16.100.30		PI_OPCHrt			pbutils.exe		172.16.100.30	255.255.255.255	True
Observation RSview OPC	CVSCADA			PI_OPCHrt			OPCtE		172.16.101.11	255.255.255.255	True
Concor Res RSView OPC	CVSCADA			PI_OPCHrt			OPCtE		172.16.100.112	255.255.255.255	True
Courtyard Station RSView OPC	CVSCADA			PI_OPCHrt			OPCtE		172.16.100.132	255.255.255.255	True
Crown Isle RSView OPC	CVSCADA			PI_OPCHrt			OPCtE		172.16.100.121	255.255.255.255	True
CVRD Corrosight_Instname	CVSCADA			piadmin				CVRD Corrosight	0.0.0.0	0.0.0.0	True
CVRD Corrosight_IP	CVSCADA			piadmin					172.16.0.234	255.255.255.255	True
CVSCADA_Senselinet	CVSCADA			piadmin					192.168.4.30	255.255.255.255	True
Dingwall RSView OPC	CVSCADA			PI_OPCHrt			OPCtE		172.16.100.131	255.255.255.255	True
East Courtyard RSView OPC	CVSCADA			PI_OPCHrt			OPCtE		172.16.100.141	255.255.255.255	True
Flare OPC	CVSCADA			PI_OPCHrt			OPCtE		172.16.99.21	255.255.255.255	True
Historian connection	CVSCADA			PI_OPCHrt					172.16.100.242	255.255.255.255	True
Historian connection server	CVSCADA			PI_UCIEditor			PIUCU.exe		172.16.100.242	255.255.255.255	True
Manden RSView OPC	CVSCADA			PI_OPCHrt			OPCtE		172.16.100.171	255.255.255.255	True
Oyster River RSview OPC	CVSCADA			PI_OPCHrt			OPCtE		172.16.111.21	255.255.255.255	True
PI ICU Black Creek	CVSCADA	Black Creek		PI_UCIEditor			PIUCU.exe		172.16.110.61	255.255.255.255	True
PI ICU Observation	CVSCADA			PI_UCIEditor			PIUCU.exe		172.16.101.11	255.255.255.255	True
PI ICU Corrosion	CVSCADA			PI_UCIEditor			PIUCU.exe		172.16.100.112	255.255.255.255	True
PI ICU Courtyard Station	CVSCADA	Communication from the remote node to the server		PI_UCIEditor			PIUCU.exe		172.16.100.132	255.255.255.255	True
PI ICU Crown Isle	CVSCADA			PI_UCIEditor			PIUCU.exe		172.16.100.121	255.255.255.255	True
PI ICU Dingwall	CVSCADA			PI_UCIEditor			PIUCU.exe		172.16.100.131	255.255.255.255	True
PI ICU East Courtyard	CVSCADA			PI_UCIEditor			PIUCU.exe		172.16.100.141	255.255.255.255	True
PI ICU Flare	CVSCADA			PI_UCIEditor			PIUCU.exe		172.16.99.21	255.255.255.255	True
PI ICU Manden	CVSCADA			PI_UCIEditor			PIUCU.exe		172.16.100.171	255.255.255.255	True
PI ICU Oyster River	CVSCADA	Oyster River Station		PI_UCIEditor			PIUCU.exe		172.16.111.21	255.255.255.255	True
PI ICU Ryan	CVSCADA			PI_UCIEditor			PIUCU.exe		172.16.100.151	255.255.255.255	True
PI ICU Treatment Plant	CVSCADA			PI_UCIEditor			PIUCU.exe		172.16.3.16	255.255.255.255	True
PI ICU Treatment Plant New	CVSCADA			PI_UCIEditor			PIUCU.exe		192.168.3.103	255.255.255.255	True
PI ICU West Courtyard	CVSCADA			PI_UCIEditor			PIUCU.exe		172.16.100.161	255.255.255.255	True
PI SDK Trust Oyster River	CVSCADA			PI_UCIEditor			PISDKUtility.exe		172.16.111.21	255.255.255.255	True
PI SDK Trust Treatment Plant	CVSCADA			PI_UCIEditor			PISDKUtility.exe		172.16.3.16	255.255.255.255	True
PI SDK Trust Treatment Plant New	CVSCADA			PI_UCIEditor			PISDKUtility.exe		192.168.3.103	255.255.255.255	True
Real Time Data (Business) M3	CVSCADA			rsview		rsview			172.16.100.30	255.255.255.255	True
Session Record											
CVSCADA\Programmer piadmin, piadmin, PINWorld											

Failover



ICU Failover set-up

PI Interface Configuration Utility - opcint3

Interface: FailOver Chlorination 31 (opcint3) -> CVSCADA

Type: OPCInt OPC

Description: FailOver Chlorination 31

Versions: opcint.exe version 2.5.1.3 Unint version 4.5.5.22

PI Data server Connection Status
✓ CVSCADA Writeable

General
OPCInt
Service
Unint
Failover
Health Points
Performance Counters
Performance Points
PI SDK
Disconnected Startup
Debug
IO Rate
Interface Status

Unint Failover
☒ Enable Unint Failover
☐ Phase 1 ☒ Phase 2

Failover ID# for this instance: 2 \\CVSCADA\opcint3

Failover ID# of the other instance: 1 \\PC0323\opcint1

☐ Do not failover when both interfaces lose connection to PI
☐ Failover control tags are unsolicited (not scan based)
Rate at which the heartbeat point is updated/checked: 5000 milliseconds

UFO Type: WARM Synchronization File Path: \\172.16.101.11\failover\opcint_OPC_31.dat

Status	Tag	Exdesc	PointSource	L
Created	CVSCADA-opcint_31_OPC_UF02_ActiveID	[UF02_ActiveID]	OPC	3
Created	CVSCADA-opcint_31_OPC_UF02_Heartbeat_2	[UF02_Heartbeat:2]	OPC	3
Created	CVSCADA-opcint_31_OPC_UF02_Heartbeat_1	[UF02_Heartbeat:1]	OPC	3

Close Apply

Ready Stopped opcint3 - Installed

PI ACE

PI ACE Manager

Server Scheduler Executable Module Context Tag Help

CVSCADA.rdc.bc.ca

default

failover

BlackCreek

Chlorination

Comox

CourtenayStation

CrownIsle

DingWall

EastCourtenay

Flare

Marsden

OysterRiver

Ryan

WestCourtenay

Name	Status/Value	Since	Schedule	Output Tags
Context Summary				
CVSCADA.rdc.bc.ca.default\failover\BlackCreek\CVSCADA	On	7/12/2016 3:23:38 PM	Clock (5, 0)	1
CVSCADA.rdc.bc.ca.default\failover\Chlorination\CVSCADA	On	7/12/2016 3:23:38 PM	Clock (5, 10)	1
CVSCADA.rdc.bc.ca.default\failover\Comox\CVSCADA	On	7/12/2016 3:23:38 PM	Clock (5, 10)	1
CVSCADA.rdc.bc.ca.default\failover\CourtenayStation\CVSCADA	On	7/12/2016 3:23:38 PM	Clock (5, 10)	1
CVSCADA.rdc.bc.ca.default\failover\CrownIsle\CVSCADA	On	7/12/2016 3:23:38 PM	Clock (5, 0)	1
CVSCADA.rdc.bc.ca.default\failover\DingWall\CVSCADA	On	7/12/2016 3:23:38 PM	Clock (5, 0)	1
CVSCADA.rdc.bc.ca.default\failover\EastCourtenay\CVSCADA	On	7/12/2016 3:23:38 PM	Clock (5, 0)	1
CVSCADA.rdc.bc.ca.default\failover\Flare\CVSCADA	On	7/12/2016 3:23:38 PM	Clock (15, 0)	1
CVSCADA.rdc.bc.ca.default\failover\Marsden\CVSCADA	On	7/12/2016 3:23:38 PM	Clock (5, 5)	1
CVSCADA.rdc.bc.ca.default\failover\OysterRiver\CVSCADA	On	7/12/2016 3:23:38 PM	Clock (5, 0)	1
CVSCADA.rdc.bc.ca.default\failover\Ryan\CVSCADA	On	7/12/2016 3:23:38 PM	Clock (5, 5)	1
CVSCADA.rdc.bc.ca.default\failover\WestCourtenay\CVSCADA	On	7/12/2016 3:23:38 PM	Clock (5, 5)	1

1 Executables; 12 Modules; 12 Contexts (12 Running, 0 Error, 0 Unregistered, 0 OutOfService)

Coresight Visualization

File Edit View Favorites Tools Help

PI Coresight

Search All Displays

Filter by Keywords

All Displays

Favorites

My Displays

Recent

ProcessBook

All Displays (27)

Water System Overview
RDCSIawjam

Black Creek Overview
RDCSIawjam

Flare Overview
RDCSIawjam

Comox Overview
RDCSIawjam

Dingwall Overview
RDCSIawjam

Crown Isle Overview
RDCSIawjam

Oyster River Setpoints
RDCSIawjam

Ryan Road Overview
RDCSIawjam

Chlorination Station Overview
RDCSIawjam

Comox Setpoints
RDCSIawjam

Dashboard
RDCSIpearlri

East Courtenay Overview
RDCSIawjam

Water Reservoir Levels
RDCSIawjam

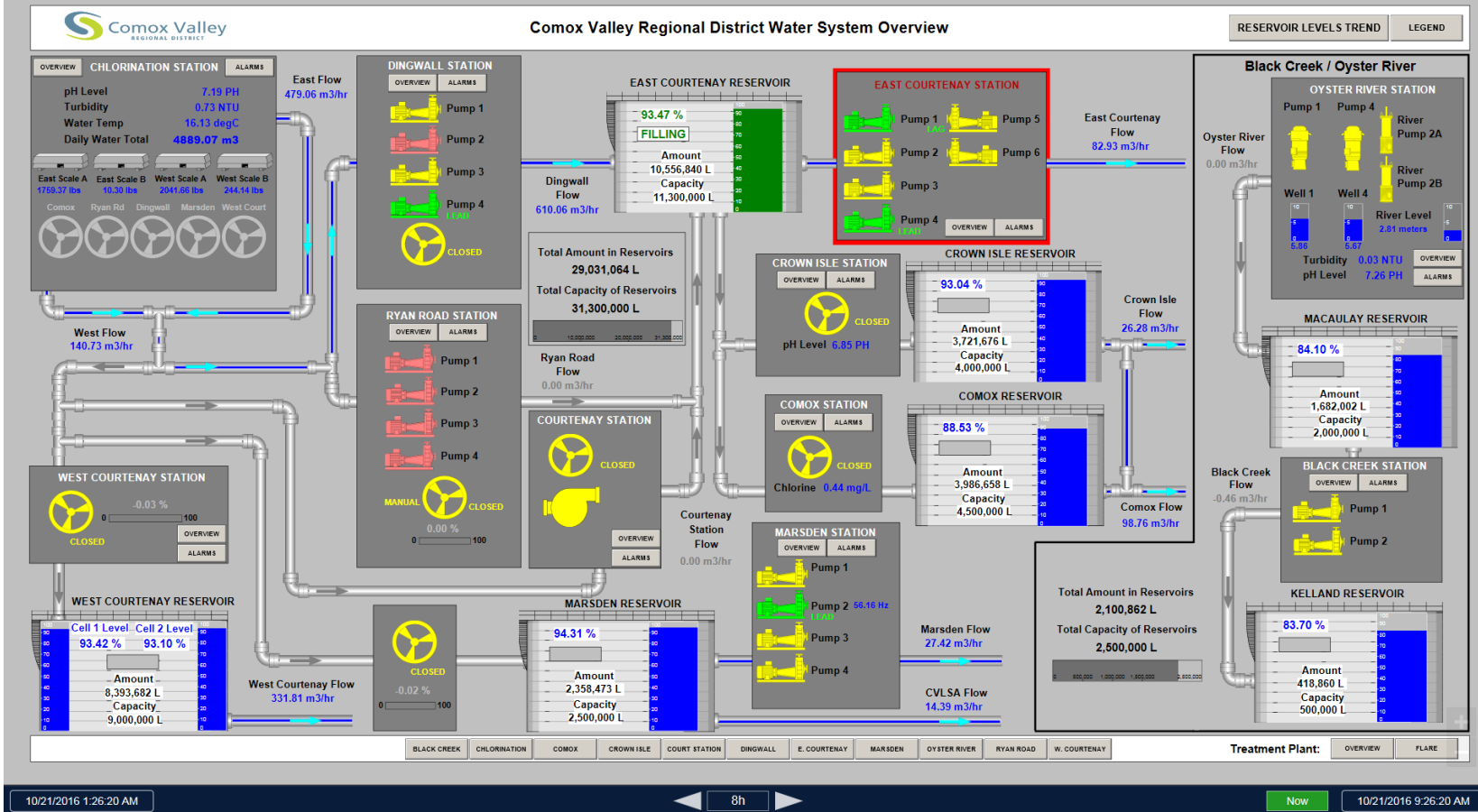
West Courtenay Overview
RDCSIawjam

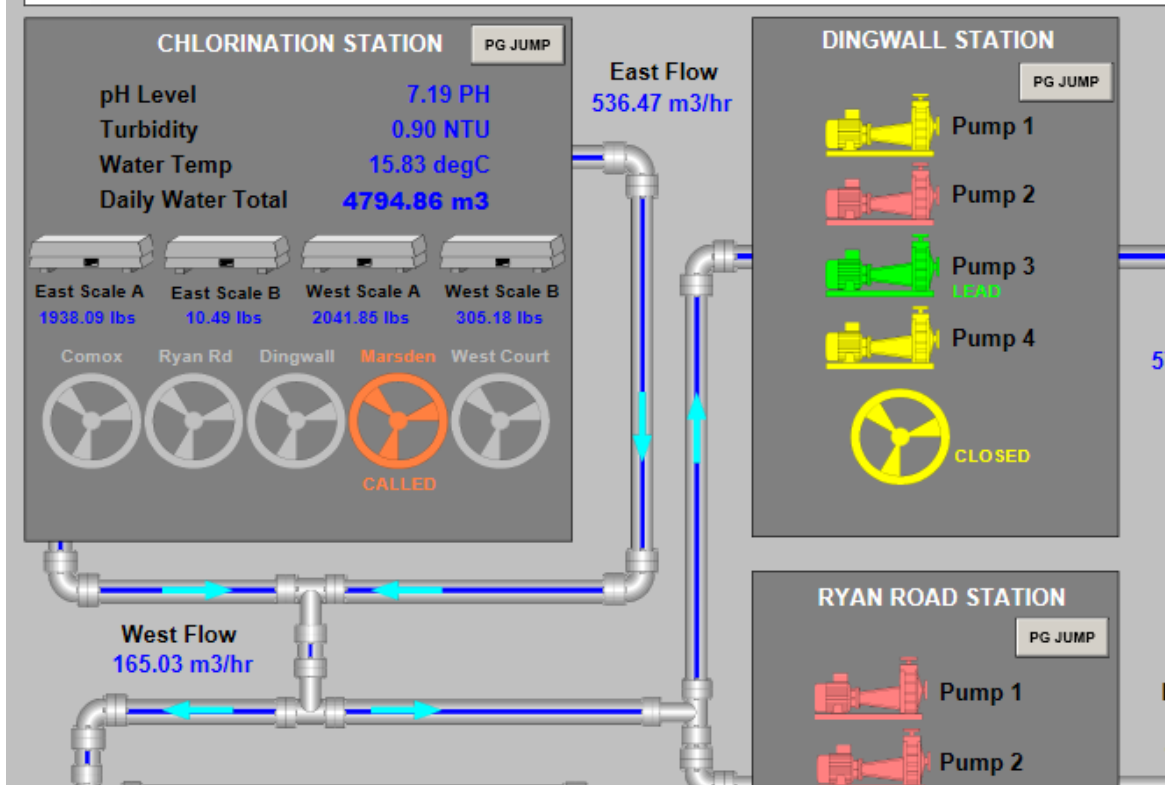
Oyster River Overview
RDCSIawjam

Black Creek
RDCSIpearlri

Test
RDCSIpearlri

Crown Isle Setpoints
RDCSIawjam

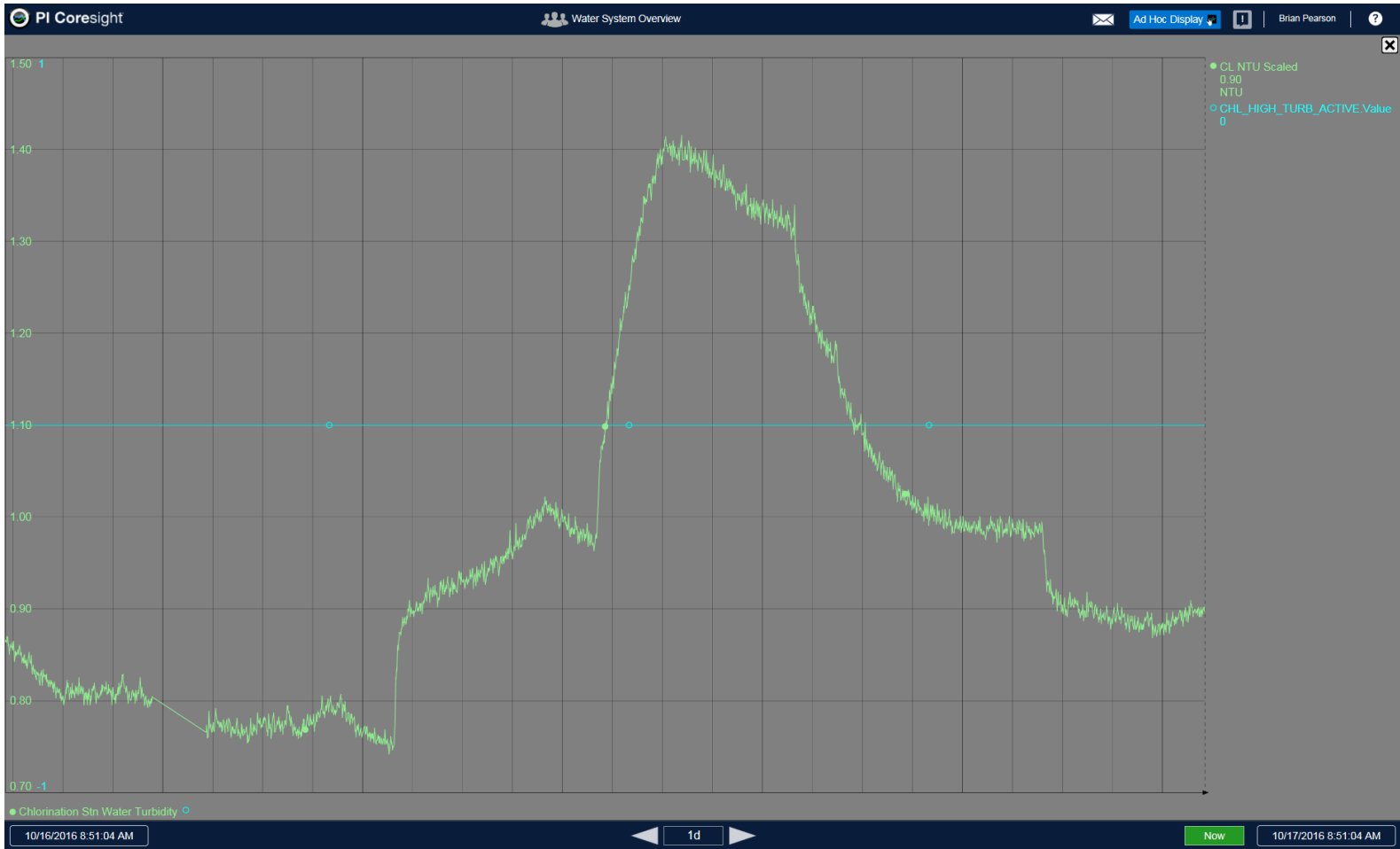


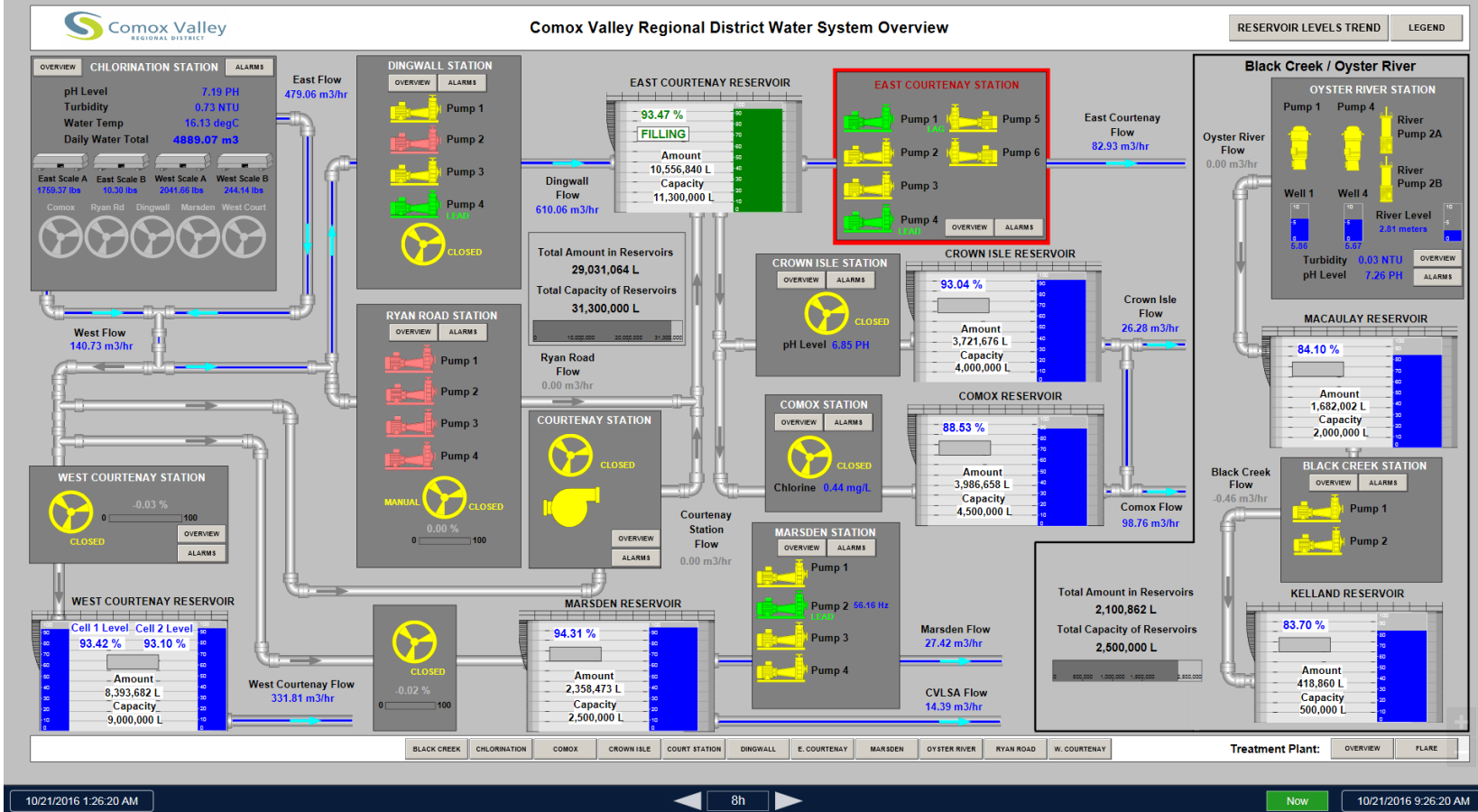


57

R

1







Comox Overview

Setpoints

Alarms

Trends

Comox Reservoir

86.27 %

FILLING

Start SP

88.00 %

Stop SP

90.00 %

Chlorine Level

0.44 mg/L

Reservoir Level

86.27 %

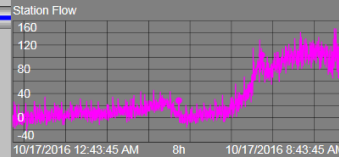
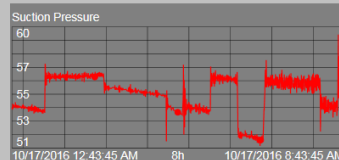
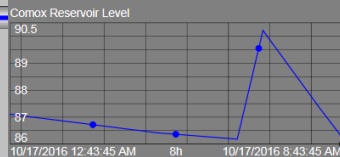
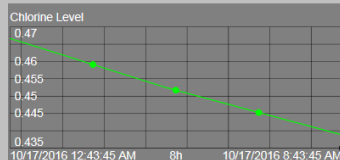
Suction Pressure

55.82 PSI

ACTIVE ALARM

Altitude Valve

Rotork



Station Flow

96.94 m3/hr

Total Flow (24h)

276.91 m3

ALT VALVE STATUS

OPEN

CLOSED

FAILED TO OPEN
FAILED TO CLOSE

Rotork Status

OPEN

CLOSED

WS Overview

Black Creek

Chlorination

Comox

Crown Isle

Court Station

Dingwall

E. Courtenay

Marsden

Oyster River

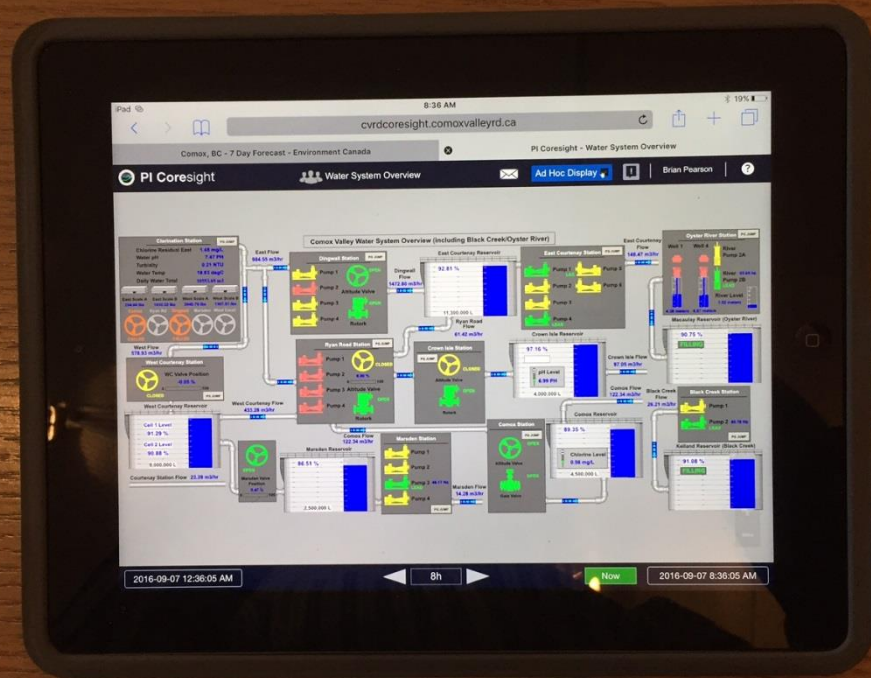
Ryan Road

W. Courtenay

+

-







East Courtenay Overview

Setpoints

Alarms

Trends

East Courtenay Reservoir

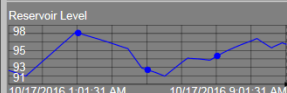
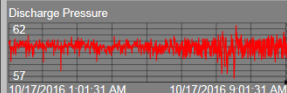
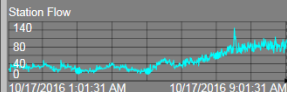
95.74 %

FILLING

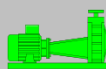
Station Information

Station Flow 90.18 m³/hr
Total Flow (24h) 397.04 m³
Discharge Pressure 60.16 PSI

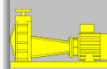
ACTIVE ALARM



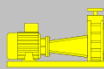
Pump 1



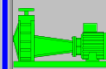
Pump 2



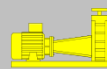
Pump 3



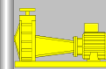
Pump 4



Pump 5



Pump 6



PUMP STATUS

OFFLINE
STANDBY
CALLED
RUNNING
FAULTED
AUTO
MANUAL
LEAD LAG
LEAD RUNTIME
0.00 Hours

PUMP STATUS

OFFLINE
STANDBY
CALLED
RUNNING
FAULTED
AUTO
MANUAL
LEAD LAG
LEAD RUNTIME
0.00 Hours

PUMP STATUS

OFFLINE
STANDBY
CALLED
RUNNING
FAULTED
AUTO
MANUAL
LEAD LAG
LEAD RUNTIME
0.00 Hours

PUMP STATUS

OFFLINE
STANDBY
CALLED
RUNNING
FAULTED
AUTO
MANUAL
LEAD LAG
LEAD RUNTIME
18.83 Hours

PUMP STATUS

OFFLINE
STANDBY
CALLED
RUNNING
FAULTED
AUTO
MANUAL
LEAD LAG
LEAD RUNTIME
0.00 Hours

PUMP STATUS

OFFLINE
STANDBY
CALLED
RUNNING
FAULTED
AUTO
MANUAL
LEAD LAG
LEAD RUNTIME
0.00 Hours

WS Overview

Black Creek

Chlorination

Comox

Crown Isle

Court Station

Dingwall

E. Courtenay

Marsden

Oyster River

Ryan Road

W. Courtenay

10/17/2016 1:01:31 AM

8h

Now

10/17/2016 9:01:31 AM



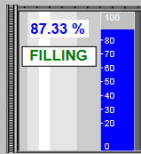
Chlorination Station Overview

Setpoints

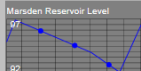
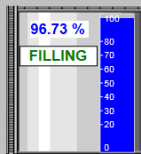
Alarms

Trends

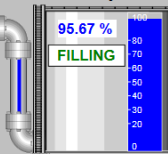
Comox Reservoir



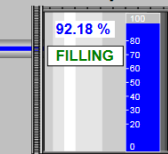
Marsden Reservoir



East Courtenay Reservoir



West Courtenay Reservoir



WS Overview

Black Creek

Chlorination

Comox

Crown Isle

Court Station

Dingwall

E. Courtenay

Marsden

Oyster River

Ryan Road

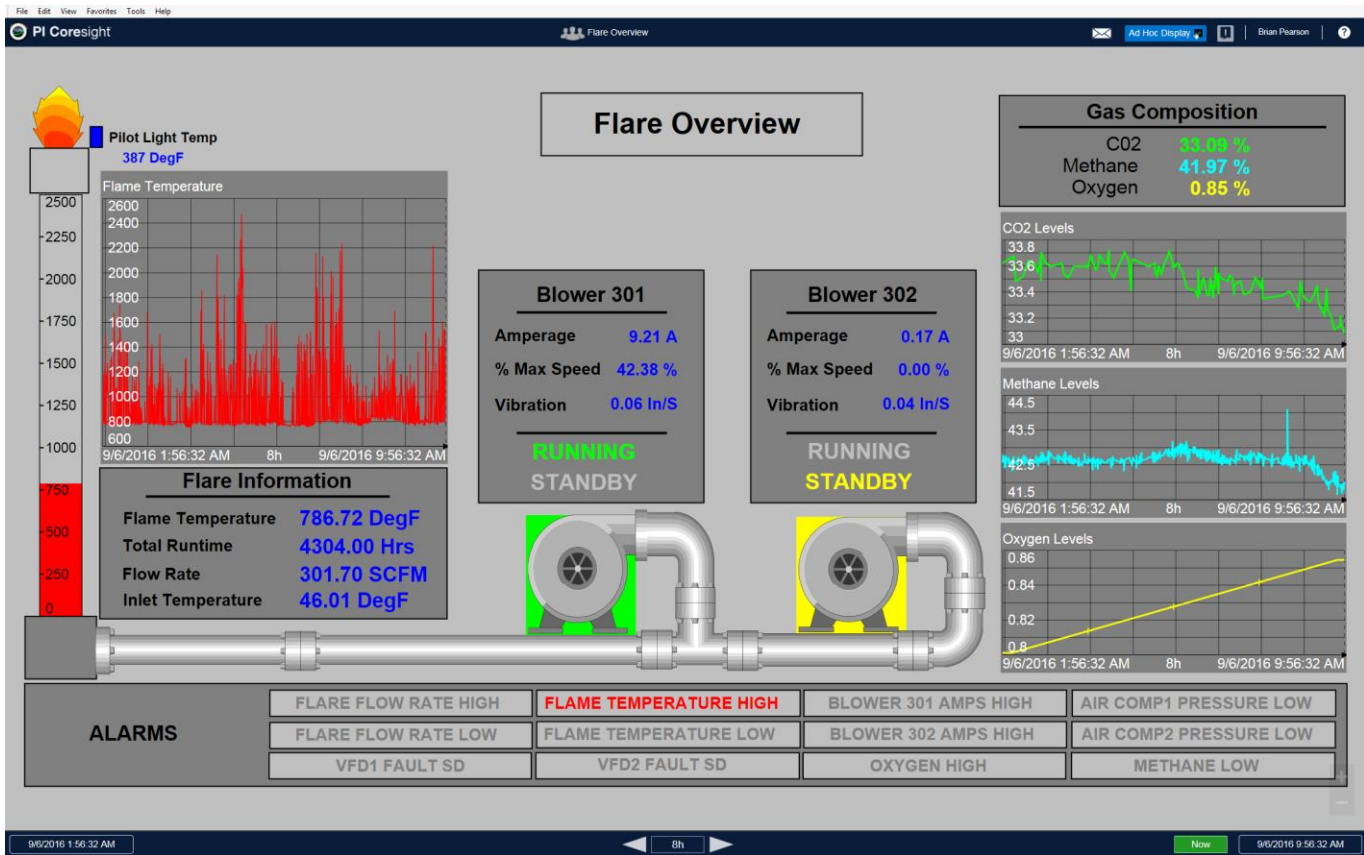
W. Courtenay

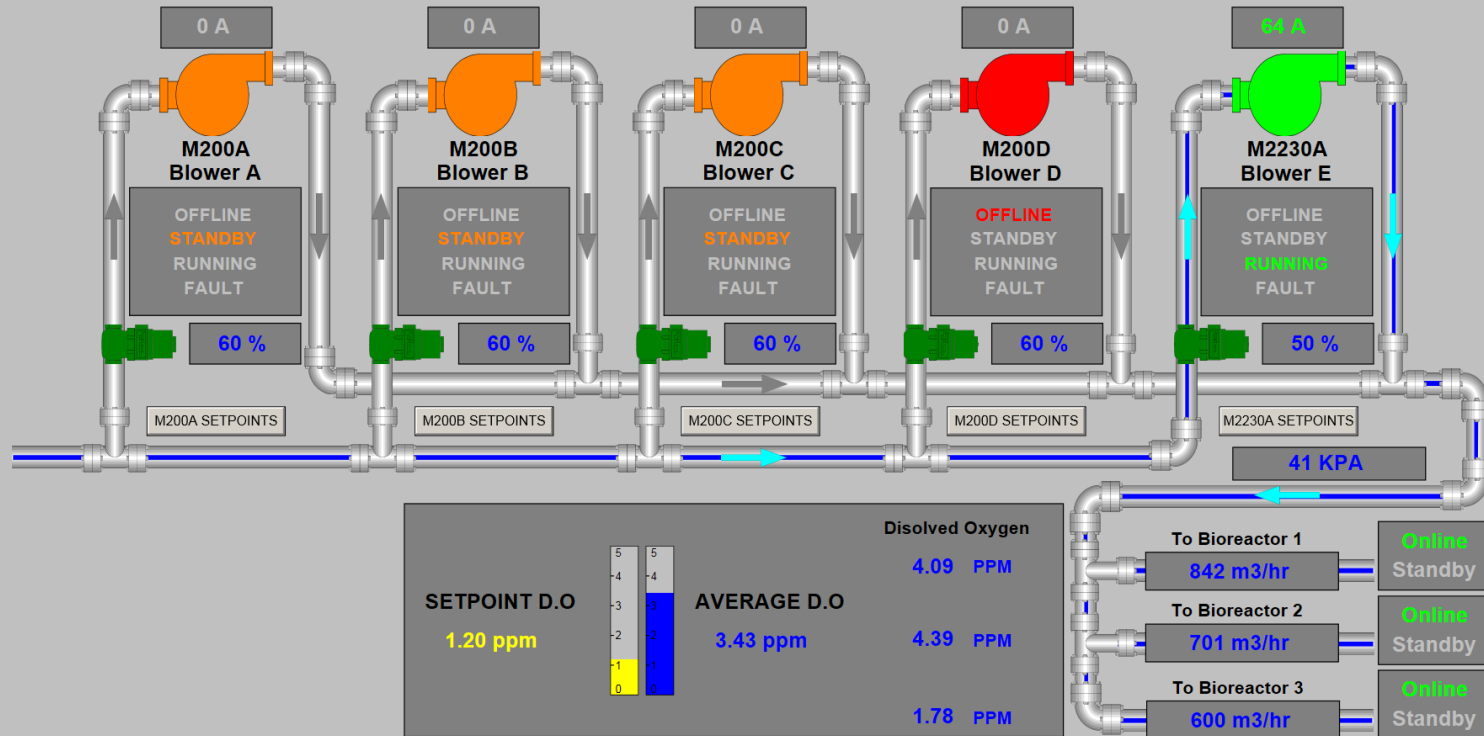
10/17/2016 1:07:32 AM

8h

Now

10/17/2016 9:07:32 AM



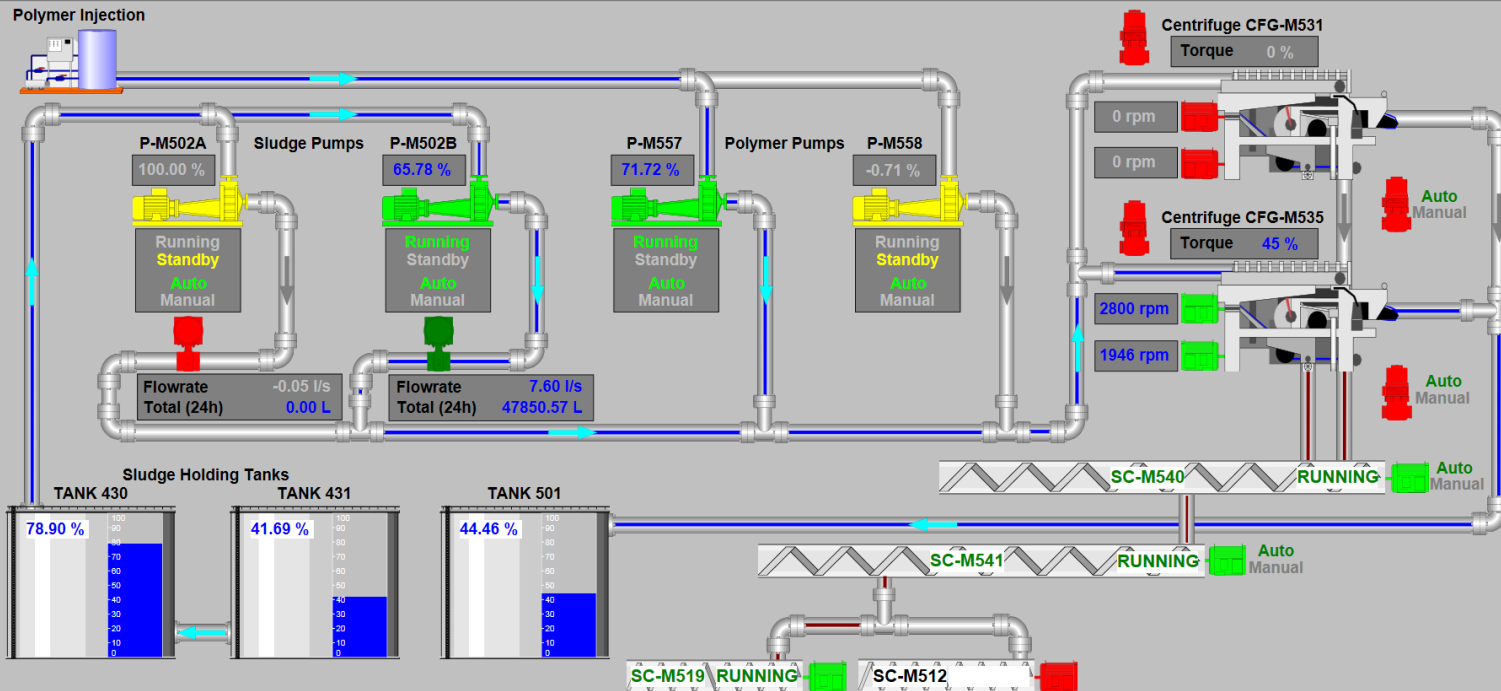




Solids Dewatering Overview

TP Overview

Polymer Injection



10/17/2016 12:55:05 AM

8h

Now

10/17/2016 8:55:05 AM



Sludge Thickner Valves Overview

TP Overview

Tank M400A

Timer Accum.
0Timer Preset
13 Minutes

ACTIVE

OFF
HAND
AUTO

Tank M400B

Timer Accum.
7Timer Preset
15 Minutes

ACTIVE

OFF
HAND
AUTOActive Grinder/VFD
M401/2A M401/2B

PAUSE

Timer Accum.
0Timer Preset
42 Minutes

ACTIVE

BYPASS
AUTOSludge to Holding Tank
44 %

Valve Status

Sludge Thickner No. 1

ZS-207

OPEN
CLOSED

Sludge Thickner No. 2

ZS-208

OPEN
CLOSED

Demo – Coresight

<http://cvrdcoresight/Coresight>

Meeting our Business needs

- PI allows us to bring all data from remote water, sewer and Solid waste stations to central office
- PI allows for collection through many methods as well as providing failover for the many different network connections between remote sites
- PI centrally stores and archives data from remote sites and allows for analysis in real time
- Coresight allows staff members in several different departments to view and analyze collected data quickly and easily.

Questions ?

Contact Information

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