July 6th, 2017

Karen Kharatyan
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU
X0B 1J0

Re: Water License 2AM-MEL1631 Part D, Item 3 / NIRB Project Certificate 11MN034 Condition 18 - Submission of Construction Summary Report for the Freshwater Treatment Plant

Mr. Kharatyan,

Agnico Eagle Mines Limited is developing the Meliadine Project, a gold mine located approximately 25 km north from Rankin Inlet, and 80 km southwest from Chesterfield Inlet in the Kivalliq Region of Nunavut. Situated on the western shore of Hudson Bay, the Project site is located on a peninsula between the east, south, and west basins of Meliadine Lake (63°1'23.8'' N, 92°13'6.42"W) on Inuit Owned Land.

Facilities that are planned to be constructed for the operation of the future Meliadine Mine include a mill, power plant, maintenance facilities, tank farm for fuel storage, freshwater treatment plant, sewage treatment plant, and accommodation and kitchen facilities for 520 people.

Commissioning of the Freshwater Treatment Plant was completed April 7, 2017. In accordance with Water License 2AM-MEL1631, Part D, Item 3 and Schedule D, and Project Certificate 11MN034 Condition 18, please find enclosed with this letter, a copy of the Construction Summary Report for the Freshwater Treatment Plant.

Should you have any questions regarding this submission, please contact me.

Regards,

Agnico Eagle Mines Limited – Meliadine Division

Manon Turmel
manon.turmel@agnicoeagle.com
819-759-3555 x8136
Environmental Compliance Counselor

Meliadine Fresh Water Treatment Plant

Construction Summary Report (AS-Built report)

In Accordance with Water License 2AM-MEL1631 (Part D, item 3)

Prepared by:

Agnico Eagle Mines Limited – Meliadine Division

July 2017

TABLE OF CONTENTS

LIST OF FIGURE AND TABLE IN TEXT

APPENDICES

1 INTRODUCTION

As required by Water License A No. 2AM-MEL1631 – Agnico Eagle Mines Limited for the Meliadine Gold Project (Part D, Item 3), this report summarizes the construction work of the Freshwater Treatment Plant. Included in this report:

- Summary of the construction;
- Summary of field decisions and mitigation measures implemented during construction;
- As-built drawings;
- Photographs of the infrastructure.

2 SUMMARY OF THE CONSTRUCTION

2.2 SITE LOCATION AND ACCESS

Agnico Eagle Mines Limited (Agnico Eagle) is developing the Meliadine Project (the Project), a gold mine located approximately 25 km north from Rankin Inlet, and 80 km southwest from Chesterfield Inlet in the Kivalliq Region of Nunavut. Situated on the western shore of Hudson Bay, the Project site is located on a peninsula between the east, south, and west basins of Meliadine Lake (63°1’23.8’’ N, 92°13’6.42"W) on Inuit Owned Land.

The figure below presents a site location plan (Figure 1).

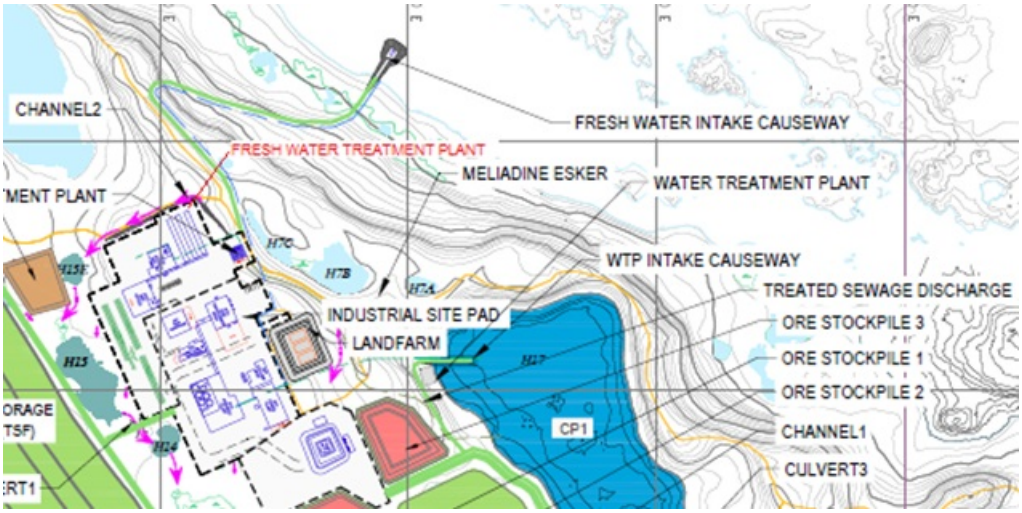

Figure 1. Plan of the site and location of the FWTP

2.3 SCHEDULE

The overall schedules for the Freshwater Treatment Plant are as follows:

- Period of construction and commissioning: From March 3rd, to April 6th, 2017.
- Date of operation start-up: April 7th, 2017.
- The construction monitoring was managed by the supplier (H2O innovation).

The construction monitoring summary is presented in Appendix A.

2.4 TREATMENT PLANT CHARACTERISTICS

The camp and accommodations are equipped with a Freshwater Treatment Plant (FWTP) for potable (domestic) water. The design flow rate for the FWTP is 216 m3 per day. In the FWTP, the freshwater first goes through cartridge filters and then is pumped through ultraviolet units, and finally is treated with sodium hypochlorite (chlorine). The treated water is stored within a potable water tank. Potable water is monitored according to the Nunavut health regulations for total and residual chlorine and microbiological parameters. Treated potable water is piped to the camp as well as to areas in the process plant, service complex, and other facilities requiring potable water. The following sections describe in more detail each step of the treatment. The flow diagram is available in Appendix B.

2.4.1 Cartridge filters treatment

Physical treatments are accomplished by withdrawing the suspended particles in raw Freshwater. This is achieved with cartridge filters which contain 4 pleated element cartridges that are able to trap debris, oils and other particles as water flows through it. The first cartridge filter will reaches 5 microns filtration and the second achieves 1 micron filtration.

2.4.2 Ultraviolet treatment

The water is then disinfected by two ultraviolet reactors installed in parallel. This treatment serves as sterilization which deactivates organic contaminants, such as pathogens, bacteria, parasites or viruses.

2.4.3 Chemical treatment

Chemical treatments are accomplished by the injection of sodium hypochlorite (NaClO), which is often used for water purification. Hypochlorite can be used to prevent algae growth and is effective against bacteria and viruses.

3 DOCUMENTATION ON FIELD DECISIONS THAT DEVIATE FROM THE ORIGINAL PLAN

The construction of the Fresh Water treatment plant followed the design drawing.

During the commissioning, the following issues occurred and were solved:

- Baseboard heater was heating wall instead of floor. To remediate to this, the heater temperature was adjusted to 5C to minimize wall heating.
- The Container#1 and Container#2 baseboard heaters were tripping. To remediate to this the electronic system was bypassed and an external thermostat control was installed.
- One the UV Passing chamber (UV-91000B) was leaking from a weld. To remediate to this, the chamber was replaced.

4 SUMMARY OF ANALYSIS RESULTS OF WATER QUALITY TESTS

To ensure good functioning of the system, water quality tests were undertaken on the drinking water outtake at the camp's kitchen. The parameters tested were coliforms, Escherichia coli (E.coli) and atypical bacteria. The results are presented in Appendix C and show that no bacteria were detected in the drinking water.

5 DRAWINGS AND PHOTOGRAPHS

As-built drawings are presented in Appendix D. Table 1 present the different drawing included in Appendix D.

Table 1. List of drawing contained in Appendix D

Drawing Number	Drawing Name
P65873-C01-0001_R04	Process and Instrumentation Diagrams Legend
P65873-C01-0100_R04	Raw Water Feed System
P65873-C01-0400_R04	Cartridge Filters
P65873-C01-0800_R04	Dosing Skids-Duplex Solenoid
P65873-C01-0910_R04	UV Treatment Units
P65873-C01-0990_R04	Treated Water Distribution System

Appendix E contains photographs taken after the completion of the construction of the FWTP.

Appendix A: Construction Monitoring Summary

Day	Time (from-to)		Work description	Comments/Delays
3/3/2017	**13:30pm to 17:30pm**		**Arrival on site**	WTP raw water tank feed to fire suppression system have to be insolated prior to fill raw water tank.
		STP/WTP	Material expedited from H2OI verification/gathering	
		WTP	Give the material to the plumber and give instruction to fix the 1 1/4'' PVC piping broken line	
		STP/WTP	STP/WTP interconnections verification	
		STP	Prepare material and give instruction to plumber in prevision of EQ sump and effluent sump inversion for the day after	
		STP	Smoke detector batteries replacement	
		WTP	Installing 5 microns and 10 microns Filters	
3/4/2017	**6:00am to 17:30pm**		**2nd day on site**	WTP raw water tank feed to fire suppression system have been insolated by plumber. EQ sump and effluent sump inversion could not be completed due to exteme weather condition
		WTP	I/O test	
		WTP	Start-up UV units, Test	
		WTP	pH/Cl probe wiring connection	
		WTP	Give instruction to the plumber to fix the 2'' broken PVC flange	
		WTP	Smoke detector batteries replacement	
3/5/2017	**6:00am to 17:30pm**		**3td day on site**	
		STP	EQ sump and effluent sump inversion completed by plumbers	
		STP	EQ pumps electrical connection completed by electriciens	
		WTP	Test the control between raw water lift station and WTP	
		WTP	Fix LT-10060 raw water level transmitter issue.	
3/6/2017	**6:00am to 17:30pm**		**4th day on site**	H2OI might have to start commissioning on STP, depending on how long it takes to solve the issues on the WTP raw water lift station.
		WTP	Raw water lift pumps start-up. No water came in the WTP.	
		STP	Troubleshooting remote emergency stop button electrical interconnection	
			Pick up Alexis M. at his arrival at 13:30	
		STP/WTP	Discuss about the next incoming days planning since raw water feed is not available on WTP.	
	1 hour		Camp orientation	

Day	Time (from-to)		Work description	Comments/Delays
3/7/2017	**6:00am to 17:30pm**		**5th day on site**	Some progress have been achieve on STP commissioning since WTP commissioning is delayed due to raw water lift pumps issue
		STP/WTP	7:30am meeting with agnico eagle. It have been determine that agnico eagle will witness some pre operational tests before starting up the systems.	
		STP	Replace 2 faulty pressure gages.	
		STP	Connect the 3 pH probes and the O2 sensor the transmitter.	
		STP/WTP	Verify VFD motor parameters	
		STP	Verify system parameters	
		STP	O/I test	
3/8/2017	**no site**		**6th day on site**	Blizzard red code all day
		STP/WTP	Double checking documentation in order to validate system determined set-point/adjustment	
3/9/2017			**7th day on site**	
		STP/WTP	Double checking the STP/WTP documentation in order to validate system determined set-point/adjustment.	Blizzard red code all day
3/10/2017	**10:00am to 17:30**		**8th day on site**	Blizzard red code, access to site at 10:00am
	1 heure	STP/WTP	Put together the OIT list for STP/WTP	
	2 heures	STP	H2S/CH2 gas detector installation	
3/11/2017	**6:00 to 17:30**		**9th day on site**	
	5 hours	STP	H2S/CH2 gas detector installation	
	1 hour	STP/WTP	13:30pm meeting with Agnico-Eagle	
	1 heure	STP/WTP	Solving Wi-Fi connection with the laptop supplied with the system (Programming laptop)	
3/12/2017	**6:00 to 17:30**		**10th day on site**	
	5 hours	STP	H2S/CH2 gas detector installation	
	1 hour	STP/WTP	14:00 meeting with Agnico-Eagle	
3/13/2017	**6:00am to 17:30pm**		**11th day on site**	
	30 minutes	STP/WTP	13:00 weekly conference call with Agnico-Eagle	
	3 heures	WTP	Solving UV intensity signal issue	
3/14/2017	**6:00am to 17:30pm**		**12th day on site**	
	2 heures	STP	Gas detector programming integration and test	
	2 heures	STP/WTP	Install 3 air dampers. WTP container#1 air damper not accessible with a ladder.	

Day	Time (from-to)		Work description	Comments/Delays
3/15/2017	**6:00am to 17:30pm**		**13th day on site**	Raw water lift station is operational and provide water to WTP from 10:00am. Non-potable water is ready to supply camp network, and STP Equalisation reservoir T-19000A by the end of the day
	5 heures	WTP	WTP start-up	
	2 hours 30 minutes	STP	Meeting with Agnico to coordinate STP commissioning	
3/16/2017	**6:00am to 17:30pm**		**14th day on site**	
	1 hour	STP	Meeting with Agnico to coordinate STP commissioning	
	2 heures	STP	Put on paper the coordination details discussed during previous meetings. Sent to H2OI engineering for approval.	
	1 heure	WTP	Put together an WTP operational testing check sheet under Agnico Eagle request	
	1 heure	WTP	Dosing pump clear water test/drawndown	
	30 minutes	WTP	pH and turbidity probe calibration	
3/17/2017	**10:30am to 17:30**		**15th day on site**	
	30 minutes	WTP	Agnico-Eagle operator training	
		WTP	Monitoring WTP distribution pump fixed speed operation to allow low pressure and smooth distribution network filling/venting	
		WTP	Verification while distribution network is pressurized	
3/18/2017	**6:00am to 17:30pm**		**16th day on site**	Camp sewage lift station not available to fill STP reservoir
	1 heure	WTP	Distribution pump automatic operation fine tuning	
3/19/2017	**6:00am to 17:30pm**		**17th day on site**	Start filling up STP equalisation reservoir T_19000B when bottom tie in for auxiliary water warm up system is ready at 9:00am
		STP	Outdoor reservoir T-19000A/B, T-72000 level sensor insolation	
		STP	Trottling T-19000A top blower valve to equilibrate the air supply to both equalization tank	
3/20/2017	**6:00am to 17:30pm**		**18th day on site**	Blizzard red code, Billy T. move into new camp in construction to keep working during blizzard
		STP	Filling up Aerobic tank T-72000	
		STP	Testing EQ pumps, screen filter, sump pumps automation while filling up Aerobic tank	

Day	Time (from-to)		Work description	Comments/Delays
3/21/2017	**6:00am to 17:30pm**		**19th day on site**	Realise there is metal chips on the sump tank. Raise the flag that the Aerobic tank to membrane tank 6'' pipe should have been cleaned from contruction debris. No progress can be done during the cleaning because this pipe was needed to progress on the operation testing. WTP raw water pump quit working during the day, and cause WTP shut down.
	5h	STP	Working with plumber to clean the 6 inch pipe from metal chips	
	2h	STP	Working with plumber to fix the 2 inch valve FV-74050-2 leak	Loosened during transportation. Have to drain a part of Aeration tank to fix the leak.
		STP	Filling Membrane tanks	
		STP	Test recirculation	
3/22/2017	**6:00am to 17:30pm**		**20th day on site**	Plumber installed 3X arctic vent
		STP	Clear water operational test membrane train 1 and 2. (permeation cycle)	
3/23/2017	**6:00am to 17:30pm**		**21th day on site**	
		STP	Clear water operational test membrane train 1 and 2. (CEB cycle, sludge wasting cycle)	
3/24/2017	**6:00am to 17:30pm**		**22th day on site**	Emptied Equalisation tank B by 12:00pm. EQ tankA filling valve frozen so no sewage was introduce, and no water was drained from Aerobic tank.
		STP	Finalize clear water test	

Appendix B: Process Flow Schematics

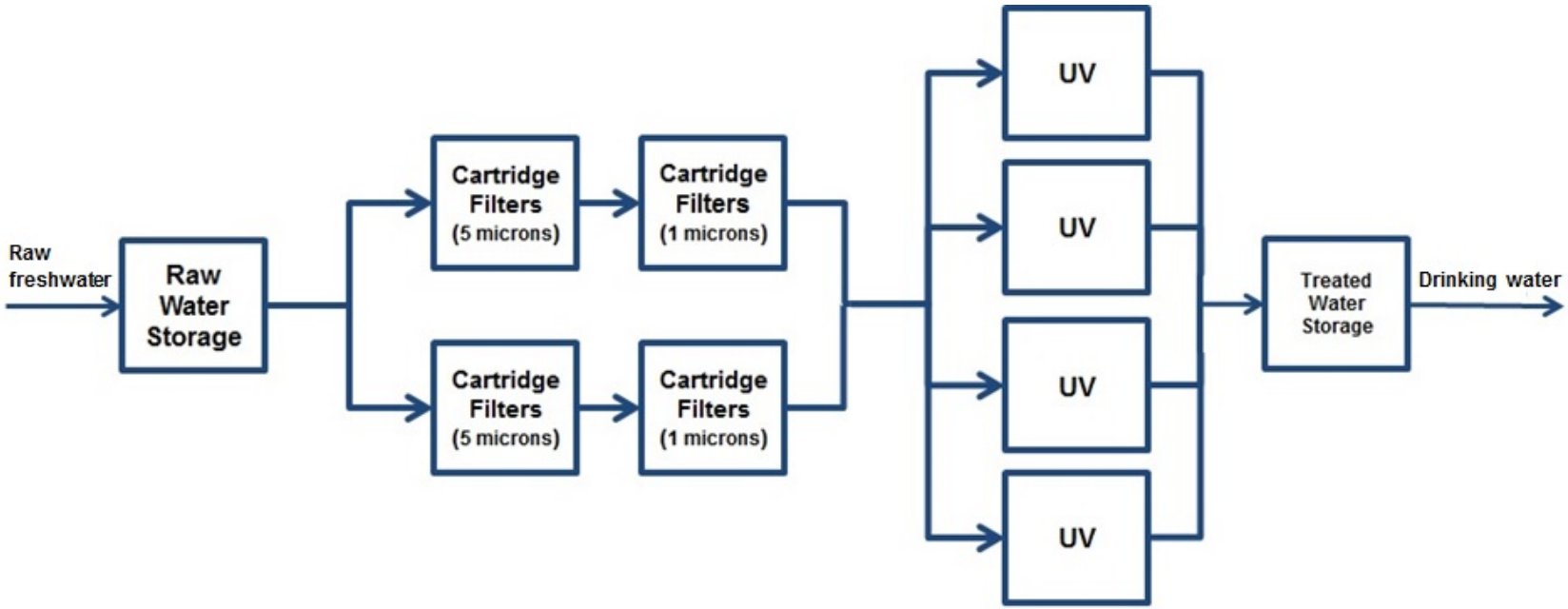

Figure 2: Process Flow Schematics

Appendix C: Summary of analysis result of water quality test

Certificate # : RNM100431

Client #: 1311

Client Reference : N/A

CERTIFICATE OF ANALYSIS

Agnico Eagle Meliadine
Meliadine
Rankin Inlet
Nunavut X0C 0A0
Nº tèlèphone : (867) 645-2990

Sample # : RNM200453
Matrix : Drinking Water
Received on : 2017-04-04
Sampled on : 2017-04-03 5:47
Sample's conditions at reception : Conforme (10.0°C)
Sampling site : DW-Kitchen
Sampler : JM/CP

Parameter (method)	Result	Unit	Norm/ Recommendation	Date of analysis
B.H.A.A. (M-BHAA-1,0) a 1	0	UFC/mL		2017-04-05
Total coliforms (M-COLI-4.0) a 1	0	UFC/100 mL	≤ 10 (N)	2017-04-05
Atypical colonies (M-COLI-4.0) a 1	0	UFC/100 mL	≤ 200 (N)	2017-04-05
Escherichia coli (M-COLI-4.0) a 1	0	UFC/100 mL	0 (N)	2017-04-05

Legend :
a : Paramètre(s) acrédité(s) (N) : Norme (R) : Recommandation UFC : Unités formatrices des colonies 1 : analyse effectuée au laboratoire H2Lab à Rouyn-Noranda

Reference :
(N): c.Q-2, r-40, annexe 1 (RQEP)
(R): Recommandations pour la qualité de l'eau potable au Canada, Santé Canada

Certificate emission date: 2017-04-07

125, Industrial Blvd, Rouyn-Noranda (Quebec) Canada J9X 6P2
Phone. : 819-797-0550 Toll Free: 1-877-326-8690 www.h2lab.ca

Certificate # : RNM100432

Client #: 1311

Client Reference : N/A

CERTIFICATE OF ANALYSIS

Agnico Eagle Meliadine
Meliadine
Rankin Inlet
Nunavut X0C 0A0
Nº tèlèphone : (867) 645-2990

Sample # : RNM200454
Matrix : Drinking Water
Received on : 2017-04-04
Sampled on : 2017-04-03
Sample's conditions at reception : Conforme (9.5°C)
Sampling site : DW-Wing 3
Sampler : JM/CP

Parameter (method)	Result	Unit	Norm/ Recommendation	Date of analysis
B.H.A.A. (M-BHAA-1,0) a 1	0	UFC/mL		2017-04-05
Total coliforms (M-COLI-4.0) a 1	0	UFC/100 mL	≤ 10 (N)	2017-04-05
Atypical colonies (M-COLI-4.0) a 1	0	UFC/100 mL	≤ 200 (N)	2017-04-05
Escherichia coli (M-COLI-4.0) a 1	0	UFC/100 mL	0 (N)	2017-04-05

Legend :
a : Paramètre(s) acrédité(s) (N) : Norme (R) : Recommandation UFC : Unités formatrices des colonies 1 : analyse effectuée au laboratoire H2Lab à Rouyn-Noranda

Reference :
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Certificate emission date: 2017-04-07

125, Industrial Blvd, Rouyn-Noranda (Quebec) Canada J9X 6P2
Phone. : 819-797-0550 Toll Free: 1-877-326-8690 www.h2lab.ca

Certificate # : RNM100433

Client #: 1311

Client Reference : N/A

CERTIFICATE OF ANALYSIS

Agnico Eagle Meliadine
Meliadine
Rankin Inlet
Nunavut X0C 0A0
Nº tèlèphone : (867) 645-2990

Sample # : RNM200455
Matrix : Drinking Water
Received on : 2017-04-04
Sampled on : 2017-04-03 6:0
Sample's conditions at reception : Conforme (11.0°C)
Sampling site : DW-Kitchen 2
Sampler : JM/CP

Parameter (method)	Result	Unit	Norm/ Recommendation	Date of analysis
B.H.A.A. (M-BHAA-1,0) a 1	0	UFC/mL		2017-04-05
Total coliforms (M-COLI-4.0) a 1	0	UFC/100 mL	≤ 10 (N)	2017-04-05
Atypical colonies (M-COLI-4.0) a 1	0	UFC/100 mL	≤ 200 (N)	2017-04-05
Escherichia coli (M-COLI-4.0) a 1	0	UFC/100 mL	0 (N)	2017-04-05

Legend :
a : Paramètre(s) acrédité(s) (N) : Norme (R) : Recommandation UFC : Unités formatrices des colonies 1 : analyse effectuée au laboratoire H2Lab à Rouyn-Noranda

Reference :
(N): c.Q-2, r-40, annexe 1 (RQEP)
(R): Recommandations pour la qualité de l'eau potable au Canada, Santé Canada

Certificate emission date: 2017-04-07

125, Industrial Blvd, Rouyn-Noranda (Quebec) Canada J9X 6P2
Phone. : 819-797-0550 Toll Free: 1-877-326-8690 www.h2lab.ca

Certificate # : RNM100434

Client #: 1311

Client Reference : N/A

CERTIFICATE OF ANALYSIS

Agnico Eagle Meliadine
Meliadine
Rankin Inlet
Nunavut X0C 0A0
Nº tèlèphone : (867) 645-2990

Sample # : RNM200456
Matrix : Drinking Water
Received on : 2017-04-04
Sampled on : 2017-04-03 6:5
Sample's conditions at reception : Conforme
Sampling site : DW-H2O WTP
Sampler : JM/CP

Parameter (method)	Result	Unit	Norm/ Recommendation	Date of analysis
B.H.A.A. (M-BHAA-1,0) a 1	0	UFC/mL		2017-04-05
Total coliforms (M-COLI-4.0) a 1	0	UFC/100 mL	≤ 10 (N)	2017-04-05
Atypical colonies (M-COLI-4.0) a 1	0	UFC/100 mL	≤ 200 (N)	2017-04-05
Escherichia coli (M-COLI-4.0) a 1	0	UFC/100 mL	0 (N)	2017-04-05

Legend :
a : Paramètre(s) acrédité(s) (N) : Norme (R) : Recommandation UFC : Unités formatrices des colonies 1 : analyse effectuée au laboratoire H2Lab à Rouyn-Noranda

Reference :
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(R): Recommandations pour la qualité de l'eau potable au Canada, Santé Canada

Certificate emission date: 2017-04-07

125, Industrial Blvd, Rouyn-Noranda (Quebec) Canada J9X 6P2
Phone. : 819-797-0550 Toll Free: 1-877-326-8690 www.h2lab.ca

Appendix D: Freshwater Treatment Plant as-Built Drawing

VALVE SYMBOLS

N.OPEN N.CLOSED

BALL
V-BALL
BUTTERFLY
DIAPHRAGM
GATE
GLOBE
NEEDLE
PLUG
SAMPLE/DRAIN
CHECK
BACKFLOW PREVENTER
INJECTION QUILL
3-WAY, 4-WAY
PRESSURE REGULATING
BACK PRESSURE REGULATING
FLOW CONTROL
2-WAY SOLENOID
3-WAY SOLENOID
4-WAY SOLENOID
AIR RELEASE
VACUUM BREAKER
PRESSURE RELEASE
SLUICE GATE/WEIR

VALVE ACTUATOR SYMBOLS

PNEUMATIC (FAIL LAST POSITION)
F.C. PNEUMATIC FAIL CLOSE
F.O. PNEUMATIC FAIL OPEN
ELECTRIC
DIAPHRAGM
POSITIONER (ANY ACTUATOR TYPE)
HAND OVERRIDE (ANY ACTUATOR TYPE)
TRAVEL STOPS (ANY ACTUATOR TYPE)

FLOWMETER SYMBOLS

ROTAMETER
ROTAMETER W/ INTEGRAL NEEDLE VALVE
THERMAL
INTEGRAL
REMOTE
MAGNETIC
PADDLE
VORTEX
DP/ORIFICE

INSTRUMENTATION SYMBOLS

LOCALLY MOUNTED	IN CONTROL PANEL	DESCRIPTION
X	X	DISCRETE INSTRUMENT
	X	PRIMARY PLC OR DCS SHARED CONTROL
	X	SECONDARY PLC OR DCS SHARED CONTROL
	X	COMPUTER FUNCTION

INSTRUMENT FUNCTIONS

K SIGNAL PROCESSING FUNCTION
A/M AUTO/MANUAL
Σ ADDITION/SUMMATION
Δ DIFFERENTIAL
INTERLOCK LOGIC FUNCTION
AVERAGING

INSTRUMENT CONNECTIONS

THREADED SOCKETWELD WELDED

PIPING CONNECTIONS & SYMBOLS

FLANGE
QUICK DISCONNECT HOSE/TUBE
THREADED CONNECTION
EXPANSION/FLEXIBLE/ ISOLATION JOINT
UNION
GROOVED COUPLING
BLIND FLANGE
DOUBLE CONTAINMENT
CAPPED END
X" INSULATION THICKNESS
REDUCER
INSULATION
ECCENTRIC REDUCER
X" INSULATION THICKNESS
HEAT TRACING
E=ELECTRIC S=STEAM G=GLYCOL
DRAIN OUTLET

PIPING ABBREVIATIONS

316 SS	316 STAINLESS STEEL
304 SS	304 STAINLESS STEEL
316L SS	LOW CARBON 316 STAINLESS STEEL
304L SS	LOW CARBON 304 STAINLESS STEEL
CPVC	CHLORINATED POLYVINYL CHLORIDE
CS	CARBON STEEL
DI	DUCTILE IRON
HDPE	HIGH-DENSITY POLYETHYLENE
PE	POLYETHYLENE
PVC	POLYVINYL CHLORIDE
RLCS	RUBBER LINED CARBON STEEL
SCH.	SCHEDULE
SDR	STANDARD DIMENSION RATIO

LINE SYMBOLOGY

MAIN PROCESS LINE
SECONDARY PROCESS LINE
PROCESS LINE, BY OTHERS
COMM LINK (EX. PLC TO HMI)
COMM LINK (EX. PLC TO DCS)
ELECTRIC WIRING
PNEUMATIC LINE
LINE JUMPER
PIPE DISCONTINUATION
FLOW DIRECTION ARROWS
4" 316 SS SCH.10 LINES SIZE/ MATERIAL IDENTIFIER
SKID BOUNDARY
NOT BY H_2O Innovation
SKID BY H_2O Innovation
1 REVISION
LINES TO/FROM OTHER SHEETS
DESCRIPTION
C01-0001 SHT 1
DESTINATION

PUMP SYMBOLS

CENTRIFUGAL
CHEMICAL METERING
DIAPHRAGM
POSITIVE DISPLACEMENT
VACUUM
SUBMERSIBLE OR FLOATING
VERTICAL TURBINE
PERISTALTIC/HOSE

MISCELLANEOUS EQUIPMENT SYMBOLS

CARTRIDGE FILTER HOUSING
AUTOMATIC STRAINER
SILENCER
MOTORIZED MIXER
STATIC MIXER
RESIN TRAP
MOTOR
EDUCTOR OR VENTURI
Y STRAINER
CONICAL OR TEMPORARY STRAINER
PULSATION DAMPENER
DIAPHRAGM
FLOW ORIFICE
RUPTURE DISK (PRESSURE)
RUPTURE DISK (VACUUM)
SPECTACLE BLIND (NORMALLY OPEN, NORMALLY CLOSED)
COARSE BUBBLE DIFFUSER
FINE BUBBLE DIFFUSER
FILTER
TURBOCHARGER
MANWAY
TANK
IMMERSED HEATER
IN-LINE HEATER
ULTRASONIC LEVEL TRANSMITTER
FLOAT-STYLE LEVEL SWITCH
CHEMICAL CONTAINMENT
ST-nnnnn
CALIBRATION COLUMN
MEMBRANE
UV STERILIZER
AIR COMPRESSOR
POSITIVE DISPLACEMENT BLOWER
REGENERATIVE BLOWER
CENTRIFUGAL BLOWER
REFRIGERATED AIR DRYER
FLOW CHAMBER
BIO-WHEEL

FLOW INSTRUMENTS

FAH	FLOW ALARM HIGH
FAL	FLOW ALARM LOW
FCV	FLOW CONTROL VALVE
FE	FLOW ELEMENT
FI	FLOW INDICATOR
FIC	FLOW INDICATING CONTROLLER
FIT	FLOW INDICATING TRANSMITTER
FR	FLOW RECORDING
FSH	FLOW SWITCH HIGH
FSL	FLOW SWITCH LOW
FV	FLOW CONTROL OR ON/OFF VALVE
FQ	FLOW TOTALIZER
FY	FLOW SIGNAL CONVERT, I/P, OR SOLN

PRESSURE INSTRUMENTS

PAH	PRESSURE ALARM HIGH
PAL	PRESSURE ALARM LOW
PC	PRESSURE CONTROLLER
PCV	SELF REG PRESS CONTROL VALVE
PDH	DIFFERENTIAL PRESSURE HIGH
PDI	DIFFERENTIAL PRESSURE INDICATOR
PDIT	DIFF PRESS INDICATING TRANSMITTER
PDSH	DIFFERENTIAL PRESS SWITCH HIGH
PG	PRESSURE GAUGE
PI	PRESSURE INDICATOR
PIC	PRESSURE INDICATING CONTROLLER
PIT	PRESSURE INDICATING TRANSMITTER
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
PSV	SELF REG PRESS SAFETY VALVE
PT	PRESSURE TRANSMITTER
PY	PRESS SIGNAL CONVERT, I/P, OR SOLN
PSLH	PRESSURE SWITCH LOW HIGH

LEVEL INSTRUMENTS

LAH	LEVEL ALARM HIGH
LAL	LEVEL ALARM LOW
LCV	SELF REG LEVEL CONTROL VALVE
LE	LEVEL ELEMENT
LG	LEVEL GAUGE
LI	LEVEL INDICATOR
LIC	LEVEL INDICATING CONTROLLER
LIT	LEVEL INDICATING TRANSMITTER
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
LT	LEVEL TRANSMITTER
LV	LEVEL CONTROL OR ON/OFF VALVE
LY	LEVEL SIGNAL CONVERT, I/P, OR SOLN

TEMPERATURE INSTRUMENTS

TAH	TEMPERATURE ALARM HIGH
TAL	TEMPERATURE ALARM LOW
TC	TEMPERATURE CONTROLLER
TE	TEMPERATURE ELEMENT
TG	TEMPERATURE GAUGE
TI	TEMPERATURE INDICATOR
TIC	TEMP INDICATING CONTROLLER
TIT	TEMP INDICATING TRANSMITTER
TSH	TEMPERATURE SWITCH HIGH
TSL	TEMPERATURE SWITCH LOW
TT	TEMPERATURE TRANSMITTER
TV	TEMP CONTROL OR ON/OFF VALVE
TY	TEMP SIGNAL CONVERT, I/P, OR SOLN

ELECTRICAL ABBREVIATIONS

JB	JUNCTION BOX
MCP	MAIN CONTROL PANEL
RIO	REMOTE I/O PANEL
PP	POWER PANEL
VFD	VARIABLE FREQUENCY DRIVE
HOA	HAND-OFF-AUTO

ANALYTICAL INSTRUMENTS

AAH	ANALYTICAL ALARM HIGH
AAL	ANALYTICAL ALARM LOW
AE	ANALYTICAL ELEMENT
AI	ANALYTICAL INDICATOR
AIC	ANAL INDICATING CONTROLLER
AIT	ANAL INDICATING TRANSMITTER
ASH	ANALYTICAL SWITCH HIGH
ASL	ANALYTICAL SWITCH LOW
AT	ANALYTICAL TRANSMITTER
AY	ANALYTICAL SIGNAL CONVERT, I/P, OR SOL

MISCELLANEOUS INSTRUMENTS

HS	HAND SWITCH
HI	HAND SWITCH POSITION INDICATOR
II	CURRENT INDICATOR
QQI	TOTALIZER INDICATOR
SC	SPEED CONTROLLER
SI	SPEED INDICATOR
YA	MOTOR ALARM
YC	MOTOR CONTROL
YI	MOTOR ON/OFF INDICATOR
ZI	POSITION INDICATOR
ZIC	SWITCH CLOSE INDICATOR
ZIO	SWITCH OPEN INDICATOR
ZSC	POSITION SWITCH CLOSED
ZSO	POSITION SWITCH OPEN
ZT	POSITION TRANSMITTER
ZY	POSITIONER

VALVES & EQUIPMENT

AC	AIR COMPRESSOR
ARV	AIR RELEASE VALVE
AS	AIR SUPPLY
B	BLOWER
BT	BULK TOTE
CBD	COARSE BUBBLE DIFFUSER
CV	CHECK VALVE
ED	EDUCTOR
F	FILTER
FBD	FINE BUBBLE DIFFUSER
FL	FAIL LAST (DEFAULT IF NOT SHOWN)
FC	FAIL CLOSED
FO	FAIL OPEN
FQG	CALIBRATION COLUMN
H	HEATER
HCV	HAND CONTROL VALVE
HTR	HEATER
HV	HAND VALVE
M	MOTOR
MX	MIXER
P	PUMP
RT	RESIN TRAP
ST	SPILL TANK
STR	STRAINER
T	TANK
UV	ULTRAVIOLET
HV	HAND VALVE
MV	MULTI FUNCTION VALVE

OTHER ABBREVIATIONS

CAP	CAPACITANCE
CIP	CLEAN-IN-PLACE
COND	CONDUCTIVITY
DO_2	DISSOLVED OXYGEN
ESP	EMERGENCY STOP
IA	INSTRUMENT AIR
I/P	CURRENT TO PNEUMATIC CONVERTER
ORP	OXIDATION REDUCTION POTENTIAL
pH	HYDROGEN ION
RES	RESISTIVITY
RTD	RESISTANCE TEMP DETECTOR
SOL	SOLENOID
SP	SET POINT
uS	MICROSIEMENS

REGISTERED PROFESSIONAL ENGINEER R. DESGAGNÉ LICENSEE NT/NU

15/06/2017

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TOLERANCES
FRACTIONS ±1/64
DECIMALS 0.X ±0.030
0.XX ±0.015
ANGLES ±0.5°
HOLE SIZES ±1/64"
HOLE CENTERS ±1/32"
DO NOT SCALE PRINTS

MELIADINE

WTP CONTAINERIZED UNIT

TITLE: PROCESS AND INSTRUMENTION DIAGRAMS LEGEND

SCALE: N/A

DRAWING NUMBER: P65873-C01-0001

SHEET: 1 of 1

REVISION 04

CONTINUED
NOTE 2 ⚠1

RAW WATER
M 120V
2" PVC SCH.80
FV-10001
TREATED WATER
C01-0910 SHT1
FROM CHLORINE
SENSOR BLEED LINE ⚠3

VENT
RAW WATER
STORAGETANK
T-10000
FILTERED WATER
C01-0400 SHT 1
FROM TURBIDITY SENSOR

0-2.00m
HH
H LI 10060 LX 10001
L
LL
AI
LT 10060
24 VDC
HV-10060
2" PVC SCH.80
HV-10250A
HV-10228A 1/2"
P-10200A
CV-10251A
HV-10252A

0-1000kPa
HH PI 10259
H
AI
0-690kPa
PG 10254
PT 10259
24 VDC

20 m3/h
HH
H FI 10274 FX 10276
L
LL
AI
FIT 10274
24 VDC
M
M 120V
FV-10299
HCV-10276
RAW WATER
C01-0400 SHT 1
TO CARTRIDGE FILTERS

3" PVC SCH.80
HV-10078

RAW WATER
TO FIRE PUMP
6" PVC SCH.80

DRAIN/OVERFLOW

HV-10250B
HV-10228B 1/2"
RAW WATER PUMPS
P-10200B
CV-10251B
HV-10252B

LEH 11068 HH
DI
LE 10068
120 V
NOTE 3

CONTINUED
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BY H_2O Innovation

START FLT RUN HOA
YC YA YI HS
DO DI DI
M 600V
TYPICAL PUMP MOTOR

HOA
HSC HSO
DO DO
M 120 VAC, 1 PH, 60 Hz
TYPICAL ELECTRIC VALVE

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LICENSEE
NT/NU
15/06/2017

NOTES:

1. ALL SIGNALS GOING INTO MCP-101.
2. EQUIPEMENT TO BE PLACED IN CONTAINER #1.
3. WATER LEAK DETECTOR ⚠

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INTERPRETATION ANSI Y14.5
TOLERANCES
FRACTIONS ±1/64
DECIMALS .X ±0.030
.XXX ±0.015
ANGLES ±0.5°
HOLE SIZES ±1/64
HOLE CENTERS ±1/32
DO NOT SCALE PRINTS

MELIADINE

WTP CONTAINERIZED UNIT

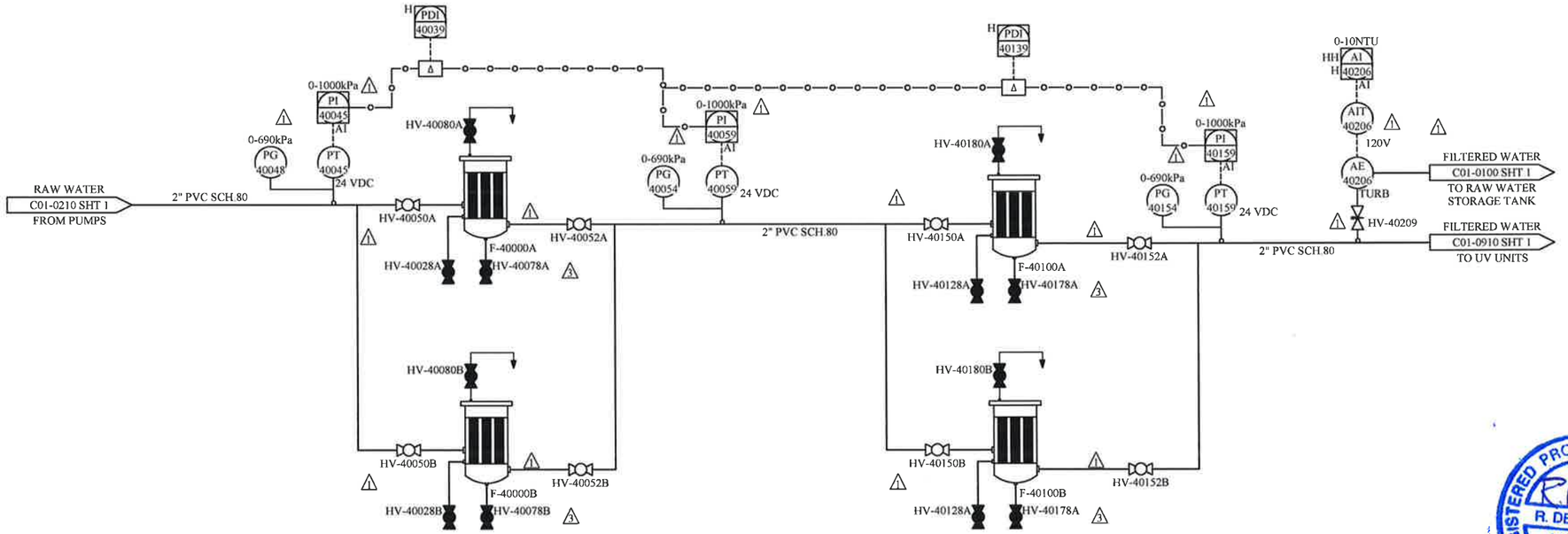
TITLE:
RAW WATER FEED SYSTEM
PROCESS & INSTRUMENTATION DIAGRAM

SCALE: N/A
DRAWING NUMBER: P65873-C01-0100
SHEET: 1 of 1
REVISION 04

CONTINUES

CONTINUES

NOTE 2 ⚠1



5 MICRONS CARTRIDGE FILTERS

1 MICRON CARTRIDGE FILTERS

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CONTINUES

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CONTINUES

NOTES:

1. ALL SIGNALS GOING INTO MCP-101.
2. EQUIPEMENT TO BE PLACED IN CONTAINER #1. ⚠1

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INTERPRETATION ANSI Y14.5
TOLERANCES
FRACTIONS ±1/32"
DECIMALS .0X ±0.030
.0XX ±0.015
ANGLES ±0.5°
HOLE SIZES ±1/32"
HOLE CENTERS ±1/16"
DO NOT SCALE PRINTS

MELIADINE

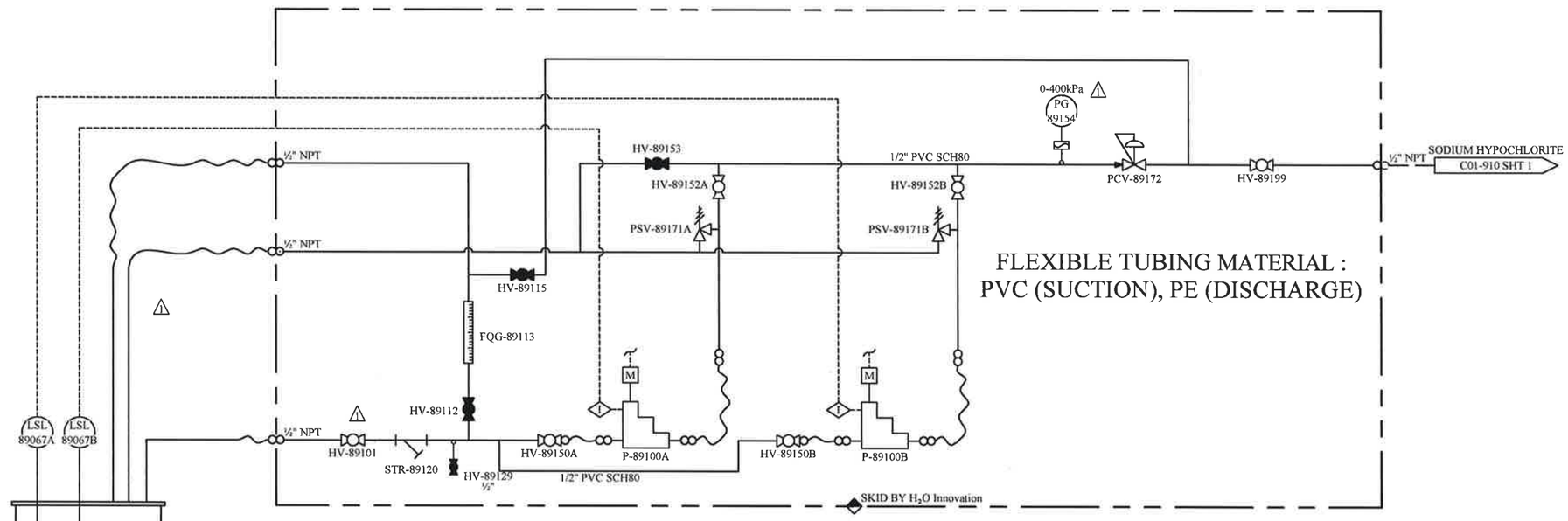
WTP CONTAINERIZED UNIT

TITLE:
CARTRIDGE FILTERS
PROCESS & INSTRUMENTATION DIAGRAM

SCALE: N/A

DRAWING NUMBER: P65873-C01-0400
SHEET: 1 of 1

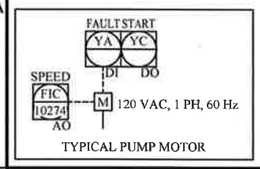
REVISION 04



FLEXIBLE TUBING MATERIAL :
PVC (SUCTION), PE (DISCHARGE)

SODIUM HYPOCHLORITE, 12 % DOSING SYSTEM

NOTE 2 ⚠



TYPICAL PUMP MOTOR

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NOTES:

1. ALL SIGNALS GOING INTO MCP-101.
2. EQUIPEMENT TO BE PLACED IN CONTAINER #1. ⚠

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INTERPRETATION ANSI Y14.5
TOLERANCES
FRACTIONS ±1/64"
DECIMALS 0 X ±0.030
0 XX ±0.015
ANGLES ±0.5°
HOLE SIZES ±1/64"
HOLE CENTERS ±1/32"
DO NOT SCALE PRINTS

MELIADINE

WTP CONTAINERIZED UNIT

TITLE:
DOSING SKIDS - DUPLEX SOLENOID
PROCESS & INSTRUMENTATION DIAGRAM

SCALE: N/A
DRAWING NUMBER: P65873-C01-0800
SHEET: 1 of 1
REVISION 04

CONTINUED

FILTERED WATER
C01-0400 SHT 1
FROM FILTRATION SYSTEM

2" PVC SCH.80

INTENSITY AI 91000A AT
UV CONTROLLER 120 VAC, 1PH, 60Hz
UV COMM CENTER
FAULT YA 91000A DI
S
1" 316SS SCH.10
1" PVC SCH80
FV-91053A
HV-91052A
UV-91000A
1" 316SS SCH.10
HV-91050A

INTENSITY AI 91000B AT
UV CONTROLLER 120 VAC, 1PH, 60Hz
UV COMM CENTER
FAULT YA 91000B DI
S
1" 316SS SCH.10
1" PVC SCH80
FV-91053B
HV-91052B
UV-91000B
1" 316SS SCH.10
HV-91050B

INTENSITY AI 91000C AT
UV CONTROLLER 120 VAC, 1PH, 60Hz
UV COMM CENTER
FAULT YA 91000C DI
S
1" 316SS SCH.10
1" PVC SCH80
FV-91053C
HV-91052C
NOTE 2
UV-91000C
1" 316SS SCH.10
HV-91050C

INTENSITY AI 91000D AT
UV CONTROLLER 120 VAC, 1PH, 60Hz
UV COMM CENTER
FAULT YA 91000D DI
½" PVC SCH80
S
1" 316SS SCH.10
1" PVC SCH80
FV-91053D
HV-91052D
UV-91000D
1" 316SS SCH.10
HV-91050D

SODIUM HYPOCHLORITE
C01-0800 SHT 1
FROM DOSING PUMPS

CONTINUED

2" PVC SCH.80
IQ-89197
MX-91083

NOTE 4

0-5 ppm HH H L LL AI 91093 AT
4-9 pH HH H L LL AI 91090 AI
AIT 91093 24 VDC
AE 91093 Cl2
AE 91090 pH
HV-91077
TREATED WATER
C01-0100 SHT 1
TO RAW WATER STORAGE TANKS
NOTE 3

0-1 L/min
FI 91094
0-50°C TI 91058 AI
TT 91058
HV-91099
NOTE 1

TREATED WATER
C01-0990 SHT 1
TO TREATED WATER STORAGE TANKS

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NOTES:

1. TEMPORARY CONNECTION FOR COMMISSIONING
2. ALL SIGNALS GOING INTO MCP-101.
3. ¼" OD TUBING BETWEEN INSTRUMENT LINE AND RAW WATER TANK.
4. EQUIPMENT TO BE PLACED IN CONTAINER #1

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INTERPRETATION ANSI Y14.5
TOLERANCES
FRACTIONS ±1/64"
DECIMALS 0.X ±0.030
0.XX ±0.015
0.XXX ±0.005
ANGLES ±0.5°
HOLE SIZES ±1/64"
HOLE CENTERS ±1/64"
DO NOT SCALE PRINTS

MELIADINE

WTP CONTAINERIZED UNIT

TITLE:
UV TREATMENT UNITS
PROCESS & INSTRUMENTATION DIAGRAM

SCALE:	DRAWING NUMBER:	REVISION
N/A	P65873-C01-0910	04
	SHEET: 1 of 1	

TREATED WATER
C01-0910 SHT 1
FROM UV UNITS

2" PVC SCH.80

VENT

TREATED WATER STORAGETANK T-99000

NOTE 1

HH
H
L
LL
0-2.00m
LT 99259
AI
LT 99259
24 VDC

HV-99259

4" PVC SCH.80
HV-99078

HV-99250A

3" PVC SCH.80

HV-99228A 1/2"

M
P-99200A

CV-99251A

HV-99252A

HYDROPNEUMATIC TANK T-99300

HV-99301 1-1/4"

3" PVC SCH.80

0-690kPa
PG 99254

0-600kPa
HH
H
L
PI 99259
PX 99200
AI
PT 99259
24 VDC

0-45 m3/Hr
LL
FI 99274
AI
FIT 99274
24 VDC
M

TREATED WATER
TO EMERGENCY SHOWER

HV-99277 1/2"

HV-99299

TREATED WATER
TO DISTRIBUTION

NOTE 3

NOTE 4

M
3" PVC SCH.80
HV-99250B

HV-99228B 1/2"

TREATED WATER DISTRIBUTION PUMPS P-99200B

CV-99251B

HV-99252B

LEH 99068
HH
DI
LE 99068
120 V

NOTE 5

DRAIN/OVERFLOW

BY H_2O Innovation

BY OTHERS

SIGNAL
FROM PROCESS VARIABLE

PID	SPD	START	FLT	RUN	HOA
PIC	SI	YC	YA	YI	HS
AO	AI	DO	DI	DI	

SC

M 600 VAC, 3 PH, 60 Hz

TYPICAL PUMP MOTOR (WITH VFD)

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15/06/2017

NOTES:

1. 5 TANKS IN SERIES LINKED TOGETHER
2. ALL SIGNALS GOING INTO MCP-101.
3. EQUIPMENT TO BE PLACED IN CONTAINER #2.
4. EQUIPMENT TO BE PLACED IN CONTAINER #1.
5. WATER LEAK DETECTOR

DRAWING REVISION

REV	DATE (DD/MM/YYYY)	REVISION DESCRIPTION	DRAWN	CHKD	ENG	APPVD
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INTERPRETATION ANSI Y14.5
TOLERANCES
FRACTIONS ±1/64
DECIMALS X.X ±0.030
X.XX ±0.015
X.XXX ±0.5
ANGLES ±0.5°
HOLE SIZES ±1/64
HOLE CENTERS ±1/32
DO NOT SCALE PRINTS

MELIADINE

WTP CONTAINERIZED UNIT

TITLE:
TREATED WATER DISTRIBUTION SYSTEM
PROCESS & INSTRUMENTATION DIAGRAM

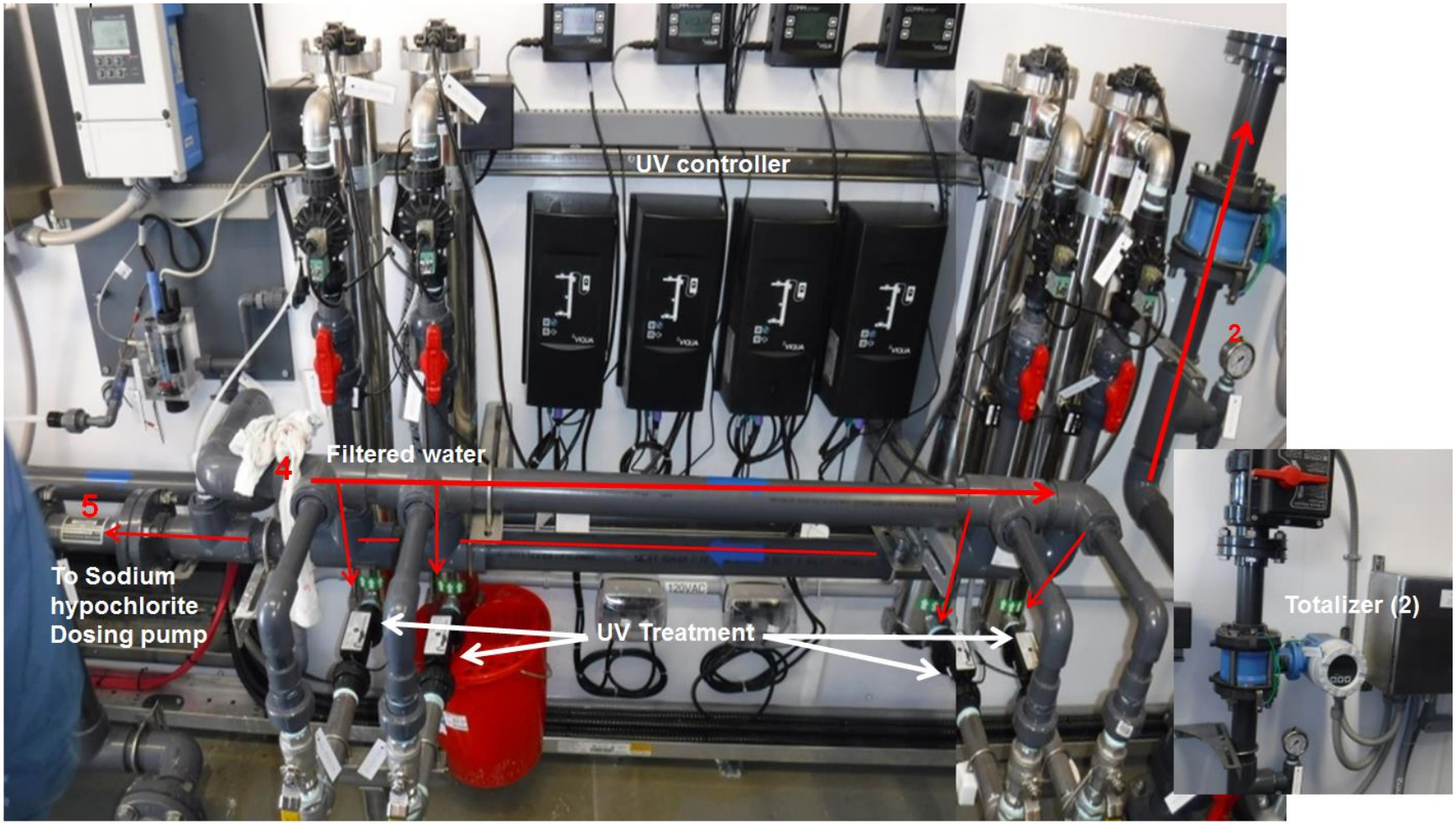
SCALE:	DRAWING NUMBER:	REVISION
N/A	P65873-C01-0990	04

SHEET: 1 of 1

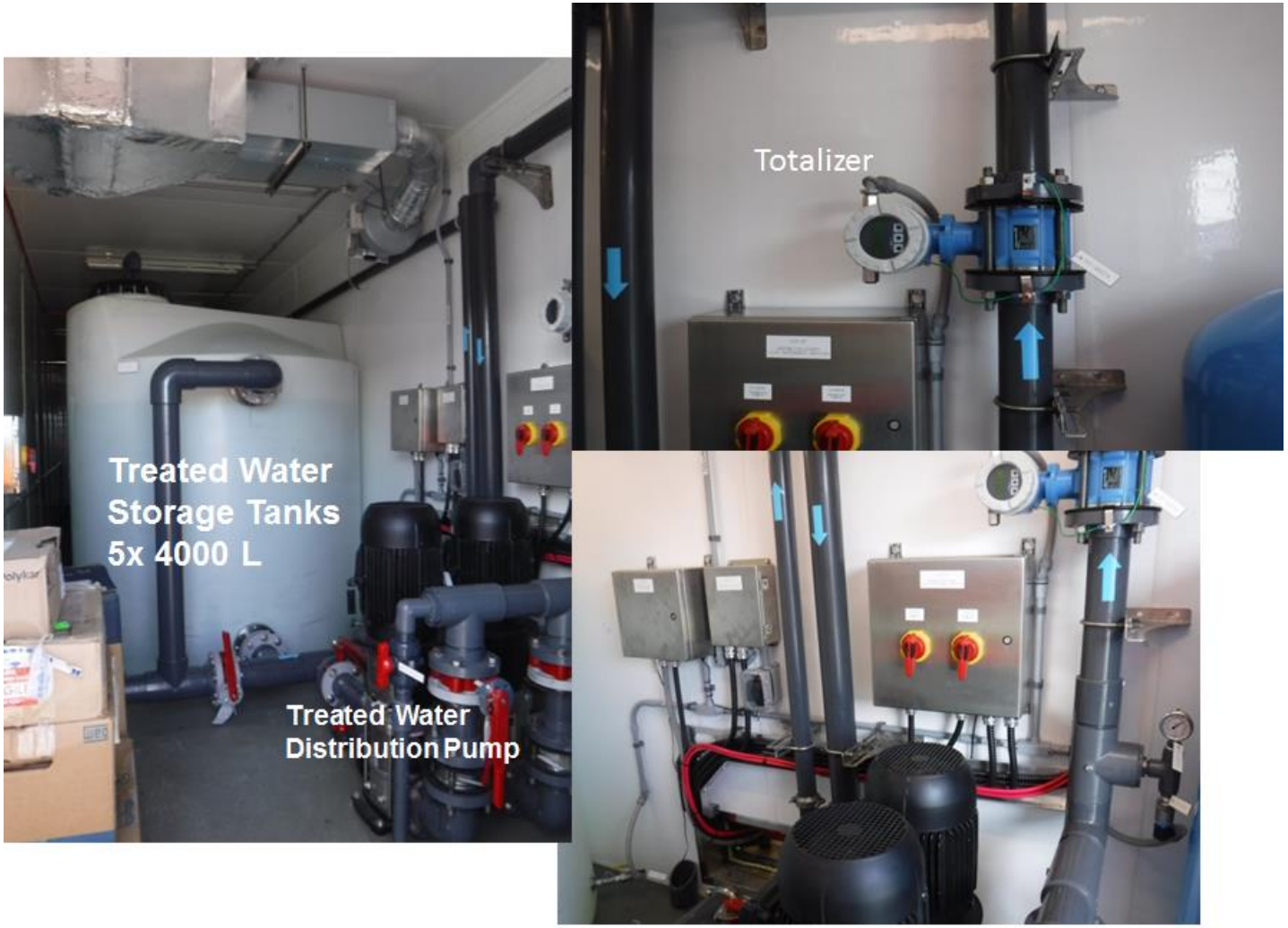
Appendix E: Freshwater Treatment Plant Photographs

Photos of the outside view of the Freshwater Treatment Plant

Photos of the Fresh water treatment system (Cartridge filters treatment and Chemical Treatment)



Photos of the Ultra Violet Treatment installation and totalizer



Photos of the Treated Water Storage and distribution Pump