

Design Report Saline Effluent Treatment Plant (SETP-WTC)

6526-680-132-REP-006

In Accordance with Licence 2AM-MEL1631 Part D, item 1 & 2

Prepared by:

Agnico Eagle Mines Limited – Meliadine Division

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TABLE OF CONTENTS

1	INTRODUCTION	5
1.1	Site Location and Access	5
1.2	Site Facilities.....	5
1.3	Purpose of Document.....	5
1.4	Scope of work.....	5
2	DESIGN METHODOLOGY	8
2.1	Design rationale, requirements, criteria and parameters	8
2.2	Design standards analysis and methods.....	8
2.3	Design assumptions and limitations	8
2.4	Saline Water Management Strategy	8
2.5	Methodology	9
2.6	Water Characteristics	9
2.7	Design Flow Rate	9
3	DESCRIPTION	10
3.1	Saline Effluent Treatment Plant (SETP-wTC)	10
3.2	Break point chlorination For ammonia removal.....	13
3.3	Dechlorination.....	14
3.4	Actiflo®	14
3.5	DISCFILTER POLISHING Filtration	15
3.6	pH AdjUStment tank	16
3.7	Reagents	16
3.8	Service Water System	18
3.9	Solid WAsTe management.....	18
3.10	Controls	18
4	CONSTRUCTION METHODS AND COMMISSIONING	19
4.1	Piping and pumping	19
4.2	Building	19
4.3	Construction method and equipment	19
4.2	Quality control/assurance	19
4.3	Testing and inspection.....	19
4.4	Timeline	19

LIST OF FIGURES

Figure 1 : General location plan	7
Figure 2 : SETP-WTC Overall Process Concept.....	12
Figure 3 : Break point determination	13
Figure 4 : Actiflo® Process	14
Figure 5 : Discfilter	16

LIST OF TABLES

Table 1 : Treatment Objectives of the SETP-WTC	8
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LIST OF APPENDICES

Appendix A: Layout
Appendix B: P&ID
Appendix C: Water line pumping station
Appendix D: Water line Valve and sea can

1 INTRODUCTION

1.1 SITE LOCATION AND ACCESS

Agnico Eagle Mines Limited (Agnico Eagle) is operating the Meliadine gold mine located approximately 25 km north of Rankin Inlet, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. The site is located on the peninsula between the East, South, and West basins of Meliadine Lake (63°01'23.8"N, 92°13'6.42"W). The area is accessible from the all-weather gravel road linking the Meliadine mine site with Rankin Inlet.

1.2 SITE FACILITIES

The current mine plan focuses on the development of the Tiriganiaq gold deposit which will be mined using both conventional open-pit and underground mining operations. Current mining facilities to support the mine include a plant site and accommodations, tailings storage facility, waste rock storage facilities, ore storage pads, process plant, power plant, maintenance facilities, water management treatment plants and supporting infrastructures.

Such infrastructures include water retention dikes, berms, culverts, channels, collection ponds, pumping stations, freshwater intake and water treatment plants. These infrastructures are required to manage water during pre-production, operation, and interim mine closure. In 2019, a Saline Effluent Treatment Plant (SETP), to provide water treatment prior to discharge to Melvin Bay, was constructed and was rated to 800 m³/day. The facility was upgraded in 2020 to treat up to 1600 m³/day (see design report 6526-680-132-REP-001).

To support the water management plan for the Life of Mine (LOM), a new saline effluent treatment plant located in the water treatment complex (WTC), is required. This plant will be named in this report SETP-WTC when referring to the new plant. The plant will be located in the WTC building already approved by the Nunavut Water Board (see design report 6526-694-132-REP-001 and As built report 6526-694-132-REP-002). The SETP-WTC will be located in the same building as the Effluent Water Treatment Plant (EWTP-WTC). The EWTP-WTC has been already approved within the Design report 6526-693-132-REP-001 and the As built report 6526-693-132-REP-003. No change to the functionality of the EWTP-WTC is expected from the addition of the SETP-WTC.

A general location plan of the SETP-WTC is shown in Figure 1.

1.3 PURPOSE OF DOCUMENT

This report includes the final design and construction drawings for the SETP-WTC.

1.4 SCOPE OF WORK

WSP Canada was retained by Agnico Eagle to work on detail engineering, while Veolia Water Technologies Canada (Veolia) and ASDR Canada Inc. (ASDR) will provide the main equipment of the SETP-WTC. This report describes the SETP-WTC, and the pumps and pipelines design on site. The water line conveying the treated water from site to Melvin Bay will be covered in other reports and is excluded from this current report. Construction drawings of the listed infrastructure are presented in Appendices of this report.

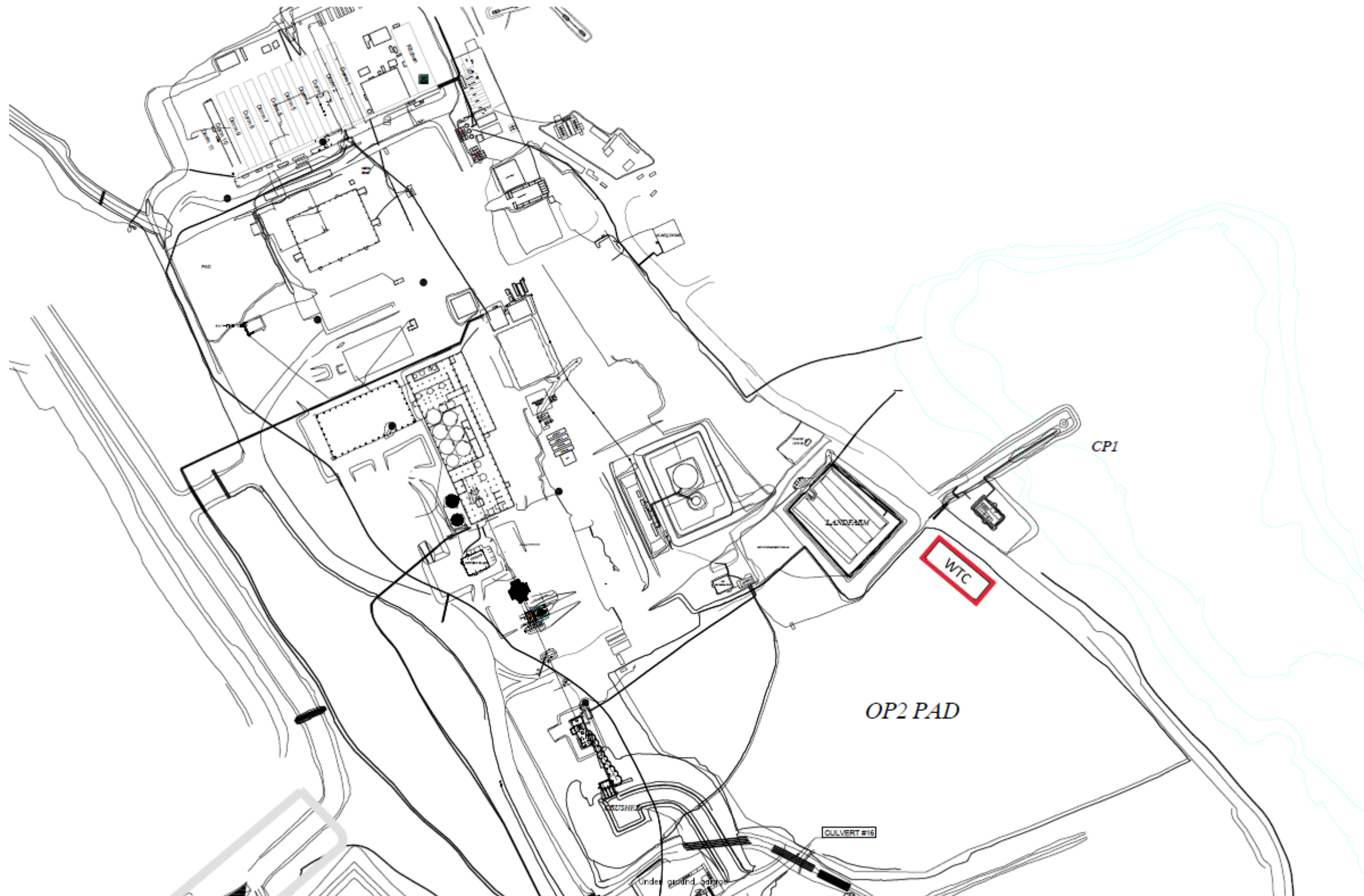


Figure 1 : General location plan

2 DESIGN METHODOLOGY

2.1 DESIGN RATIONALE, REQUIREMENTS, CRITERIA AND PARAMETERS

The design rationales are the following:

- Treatment performance of the SETP-WTC will comply with regulatory requirements;
- Production of byproduct (i.e., sludge, offspec water) should be minimized;
- Simple to operate.

The parameters of concern identified in saline ponds are: pH, Ammonia and Total Suspended Solids (TSS). The treatment plant is designed to meet the following effluent criteria presented in Table 1.

Table 1 : Treatment Objectives of the SETP-WTC

Parameters	Unit	Limit average	Limit instantaneous	Type of limit
pH	-		6-9.5	As per MDMER ¹
Acute Toxicity on marine species	-	Non-toxic		As per MDMER
TSS	mg/L	15	30	As per MDMER
Unionized ammonia	mg N/L	0.5	1	As per MDMER

Total dissolved solids (TDS) and ammonia concentration targets will be set to be non-acutely toxic as per the MDMER.

2.2 DESIGN STANDARDS ANALYSIS AND METHODS

Each component of the SETP-WTC was selected to achieve the requirement for the water quality of the effluent and to achieve a maximum treatment capacity of 20 000 m³/day (for the complete system). The selection of each of these components was based on a typical process used in the industrial water treatment sector. The robustness and redundancy of equipment were also taken into account during equipment/supplier selection.

2.3 DESIGN ASSUMPTIONS AND LIMITATIONS

The SETP-WTC is designed for a maximum treatment flow rate of 20 000 m³/d. The design of the chlorination and dechlorination system is flexible since the dosage of chemicals will be directly proportional to the ammonia concentration in the raw water and flow; the clarification system is based on a maximum raw water TSS of 200 ppm. To optimize treatment of ammonia to the treatment requirement, two lines are included in the SETP-WTC:

- One line with ammonia removal by break point chlorination/dechlorination followed by a TSS removal step;
- One line for TSS removal;
- Both lines converge to the polishing filtration system prior to being discharged.

2.4 SALINE WATER MANAGEMENT STRATEGY

¹ Metal and Diamond Mining Effluent Regulations (SOR/2002-222)

Saline water from the underground mine is transferred at the surface to the saline contact water pond storage. The saline water, as well as other contact water, will be pumped to the SETP-WTC (raw water source) through an in-line blending system, or will alternatively be fed to premixing pond, which will be used as a feed source for the SETP-WTC. Treated water exiting the SETP-WTC is discharged to the water line towards Melvin Bay.

2.5 METHODOLOGY

The SETP-WTC equipment integrate the following components to respect operational water quality targets for effluent:

- Break point chlorination reactor;
- Dechlorination reactor;
- TSS removal unit (two sand ballasted clarifiers (Actiflo®));
- Polishing filtration (discfilter);
- Dosing skids for polymer, coagulant (connected to the existing EWTP-WTC polymer and coagulant make-down systems);
- Make-down system for calcium hypochlorite, caustic soda, sodium thiosulfate;
- Powder activated carbon distribution system;
- Dosing skid for sulphuric acid, thiosulfate, hypochlorite;
- Instrumentation for process control; and
- Pumps and piping for the process.

2.6 WATER CHARACTERISTICS

The SETP-WTC equipment are designed based on water quality of saline contact water storage and surface contact water sources. Both Actiflo® can treat up to 200 mg/L of TSS.

2.7 DESIGN FLOW RATE

The design flow rate of the SETP-WTC is as follow:

- For the breakpoint chlorination line (limited by Actiflo® hydraulic):
 - Design flow of 12 000 m³/d;
 - Maximum flow of 12 090 m³/d.
- For the TSS removal line only (bypassed water):
 - Design flow of 12 000 m³/d;
 - Maximum flow of 12 000 m³/d.
- For the global water treatment plant (limited by the polishing filtration and the water line):
 - Maximum flow of 20 000 m³/d.

3 DESCRIPTION

3.1 SALINE EFFLUENT TREATMENT PLANT (SETP-WTC)

The Raw water feeding the SETP-WTC will be pumped to two treatment lines.

One line is used for ammonia and TSS removal through a break point chlorination process and TSS clarification. This line is composed of the following steps:

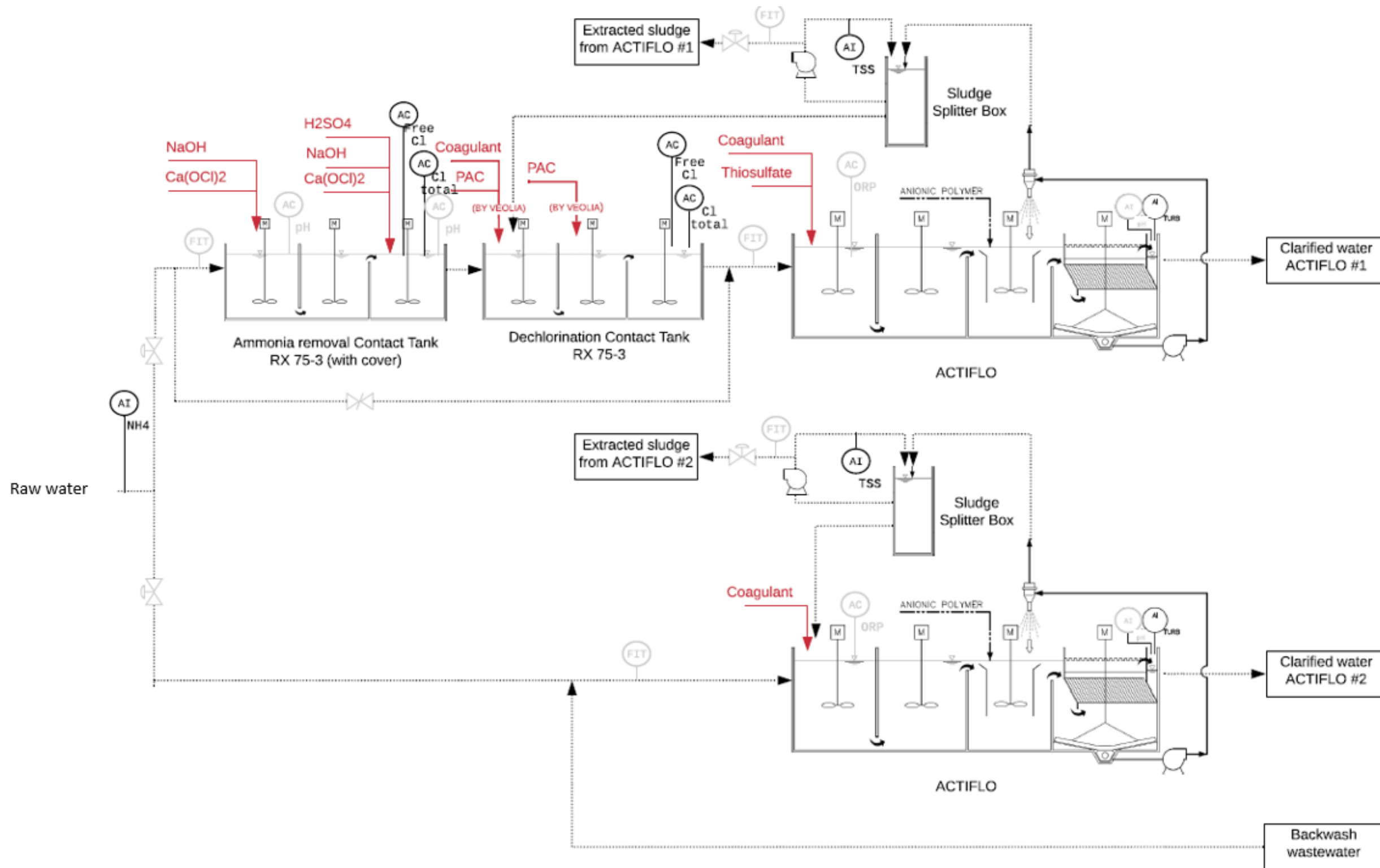
- Oxidation of ammonia in nitrogen gas in a mixed reactor using calcium hypochlorite solution. In this step, pH is controlled by caustic and sulphuric acid addition.
- Dechlorination using activated carbon in powder to remove the excess of chlorine followed by an addition of sodium thiosulfate for chlorine polishing removal.
- TSS removal using and sand ballasted clarifier (Actiflo®).

The second line is composed of the following step:

- TSS removal using and sand ballasted clarifier (Actiflo®).

Both lines are then conveyed in a polishing filtration step using a disk filtration system prior to being pumped in the water line pumping station, where pH can be adjusted with sulphuric acid if needed.

The treatment concept is presented in Figure 2. The layout of the SETP-WTC including the EWTP-WTC is presented in Appendix A. The P&ID can be found in Appendix B.



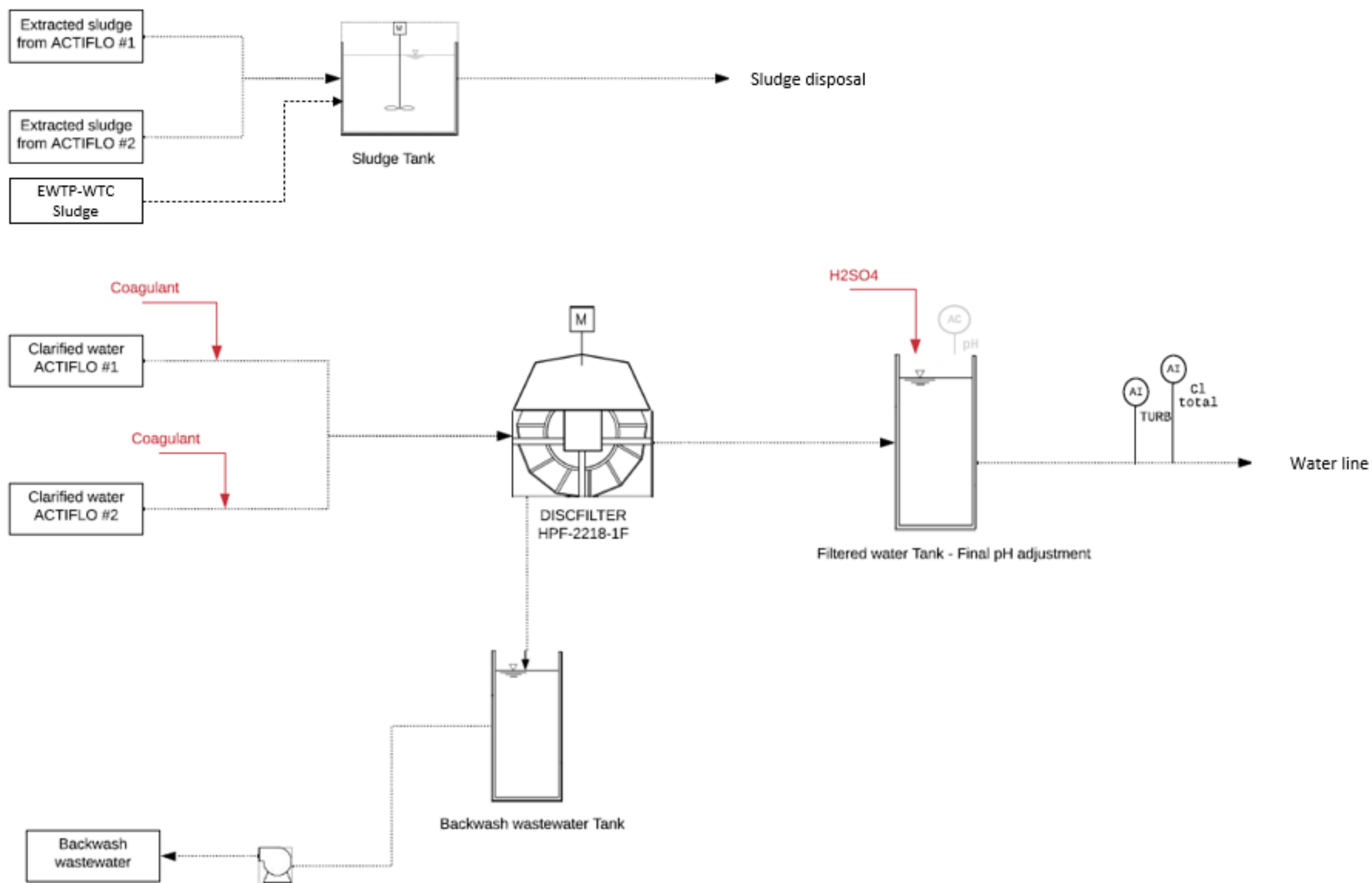


Figure 2 : SETP-WTC Overall Process Concept

3.2 BREAK POINT CHLORINATION FOR AMMONIA REMOVAL

Raw water is pumped to a closed-top reaction tank where a hypochlorite source and an alkali (NaOH) are added. The hypochlorite is a compound added to oxidize the ammonia (NH_4^+) into mainly nitrogen gas (N_2) through breakpoint chlorination and nitrite (NO_2^-) into nitrates (NO_3^-) through simple oxidation. The hypochlorite dosage is adjusted according to the dissolved organic carbon (DOC), nitrites and ammonia concentrations in the raw water, since all of these compounds will consume the added chlorine.

The hypochlorite injected in the water produces hypochlorous acid (HOCl). The hypochlorous acid is a weak acid, and part of the hypochlorous acid is decomposed in water into hypochlorite ions (OCl^-) depending on the pH. The pH can be adjusted to optimize the hypochlorite ion concentration in the reactor, therefore optimizing the chlorine dosage. The control of the pH also prevents the release of chlorine gas, which can be observed in acidic pH and which is a safety and corrosion issue.

The hypochlorous acid and hypochlorite ions in solution will first be consumed by reducing agents and organic matter contained in the water. When more chlorine is added in solution and there is a presence of ammonia, the ammonia will react to form chloramines, specifically monochloramines (NH_2Cl). When the quantity of chlorine is sufficient, the monochloramine will be destroyed, and depending on the concentration, will be transformed in dichloramines (NHCl_2) or trichloramines (NCl_3) and then, finally, in nitrogen (N_2). If the quantity of chlorine injected is sufficient, a breakpoint is reached where all chloramines and ammonia are converted into nitrogen.

The overall reaction leading to the release of nitrogen and nitrate as a final product is presented below:

- $\text{NH}_4^+ + 1.5 \text{HOCl} \rightarrow 0.5 \text{N}_2 + 1.5 \text{H}_2\text{O} + 2.5 \text{H}^+ + 1.5 \text{Cl}^-$
- $\text{NH}_4^+ + 4 \text{HOCl} \rightarrow \text{NO}_3^- + \text{H}_2\text{O} + 6 \text{H}^+ + 4 \text{Cl}^-$

Figure 3 also presents a graphical view of the break point determination.

The retention time within the chlorination tank is typically around 20 minutes.

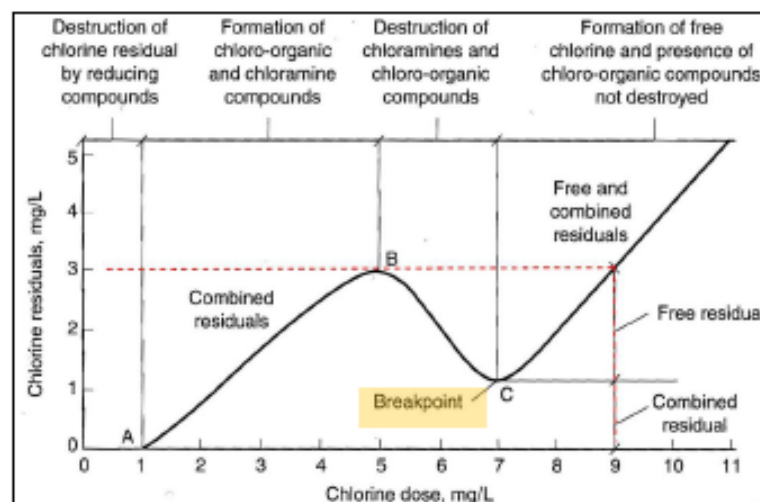


Figure 3 : Break point determination

3.3 DECHLORINATION

The chlorinated water, containing chlorine residual, flows to the dechlorination reactor for chlorine destruction. The dechlorination process aims to ensure the destruction of the residual chlorine. Powdered activated carbon (PAC) is used for chlorine removal.

The PAC is dosed in the dechlorination reactor in two steps (in the first two compartments), to allow a sufficient contact time for complete chlorine destruction and provide fresh activated carbon along the dechlorination process. Continuous automatic dosing systems are used to add fresh PAC to the dechlorination step. Some recirculated PAC, from the Actiflo® ballasted flocculation system, is also added to the dechlorination reactor. This allows a slight reduction of the PAC requirement and higher efficiency for the chlorine destruction.

Coagulant addition is also done in the dechlorination reactor, which provides high reaction time for the activation of the coagulant and coagulation of the colloids particles. The coagulant acts as a destabilization agent to agglomerate TSS particles contained in the raw water for further removal.

As a polishing step for chlorine removal, sodium thiosulfate is added in the first chamber of the Actiflo® system to remove trace of chlorine.

3.4 ACTIFLO®

Actiflo® are sand-ballasted settling units with a high-rate coagulation/flocculation/sedimentation process that utilizes microsand as a seed for floc formation. The microsand provides a surface area that enhances flocculation and acts as a ballast or weight. The resulting floc settles very fast, allowing for compact clarifier designs with high overflow rates and short retention times. The use of microsand also permits the unit to perform well under changing flow rates without impacting final effluent quality.

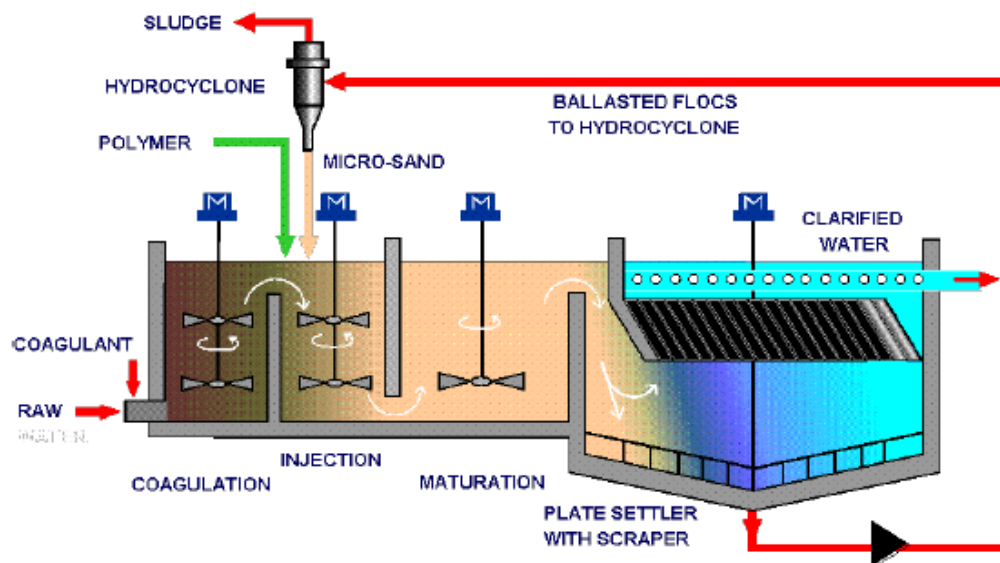


Figure 4 : Actiflo® Process

The slurry flows to the first basin, the coagulation chamber, where the reaction is optimized. The aluminum-based coagulant forms a floc of aluminum hydroxide ($\text{Al}(\text{OH})_3$) which acts as a bridge to tie colloidal particles together. The coagulated water then overflows to a second tank section called the injection tank. There, the microsand and flocculent aid polymer are added. The microsand provides a large contact area for floc attachment and acts as ballast, thereby accelerating the settling of the flocs. The flocculent aid polymer binds the destabilized suspended solids to the microsand particles by forming polymer bridges. From the injection tank, the water underflows to a third tank section called the maturation tank. In this section, the microsand and sludge flocs agglomerate and grow into high-density flocs known as microsand ballasted flocs. From the maturation zone, the water overflows to the settling section of the tank. In the settling zone, the microsand ballasted flocs settle quickly to the bottom of the unit. In the settling zone, the settling efficiency is further increased by the use of the lamella tubes. The clarified water exits the system via a series of collection troughs or wires. The clarified water is monitored for turbidity.

The sand-sludge mixture settles to the bottom of the clarifier. Scrapers force the sludge collected at the bottom of the clarifier into a central cone from which is continuously withdrawn and pumped to a hydro cyclone where the sludge and microsand are separated by centrifugal force. After separation, the higher density microsand is discharged from the bottom of the hydro cyclone and reinjected into the process for reuse. The lighter density sludge is discharged from the top of the hydro cyclone and directed to the sludge splitter box (one per Actiflo®) which recirculated sludge in the process. The extraction of sludge is performed to keep a sludge solid percentage close to 2% (w/w). Sludge is conveyed into the sludge tank prior pumping to the saline contact water storage area or in an appropriate location.

There will be two Actiflo® in the SETP-WTC. Each Actiflo® as specific features, which are listed below:

- Actiflo on the Breakpoint chlorination line:
 - No coagulant is dosed in the first chamber of the Actiflo® to allow to break bubbles resulting from the dechlorination process
 - Sodium thiosulfate is dosed to remove trace of chlorine in the first chamber
 - Sludge return is done in the dechlorination reactor
- Actiflo on the TSS removal line:
 - Sludge from the splitter box overflow is recirculated at the entry of the Actiflo® system

3.5 DISCFILTER POLISHING FILTRATION

Water from both Actiflo® process flows by gravity to the discfilter filtration process. The discfilter is used as a polishing step to reduce the suspended solids at the clarified water. The discfilter utilizes a filter cloth mounted on filter panels. These panels stem from a central drum where inlet water is admitted into the unit for treatment. Water is filtered in inside-out mode, flowing from the centre tube to the open base of the filter discs, through the polyester cloth before reaching the discfilter water collection tank.

The discfilter water collection tank is part of the discfilter and contains the filters and the filtered water. Particulate matter presents in the discfilter inlet water is retained by the filter media on the inside of the filter panels, eventually leading to solids built-up on the filter media. Consequently, the head loss across the discfilter increases, resulting in increased water level at the inlet of the unit. The unit includes an integral high-level switch that initiates a backwash cycle, which rotates the filter discs in order to expose clean filter media to the water flow path, while subjecting the dirty filter media to the cleaning action of the backwash spray tips. Filtered water stored in the discfilter water collection tank is pumped to feed

the series of spray tips strategically installed on the moving arms of the backwash system. This serves to clean the entire surface of the filter media while limiting the use of filtered water in the process.

An outlet weir integral to the discfilter water collection tank is used to maintain the water. The backwash water will be directed to a dirty water holding tank to be pumped back to the Actiflo® process. Filtered water flows over the weir of the tank and out of the unit.

A chemical trolley is available to clean the unit in the case of chemical scaling due to high calcium concentration in the water (possibility to use an acidic wash to wash down any calcite that might precipitate on the discs cloth).

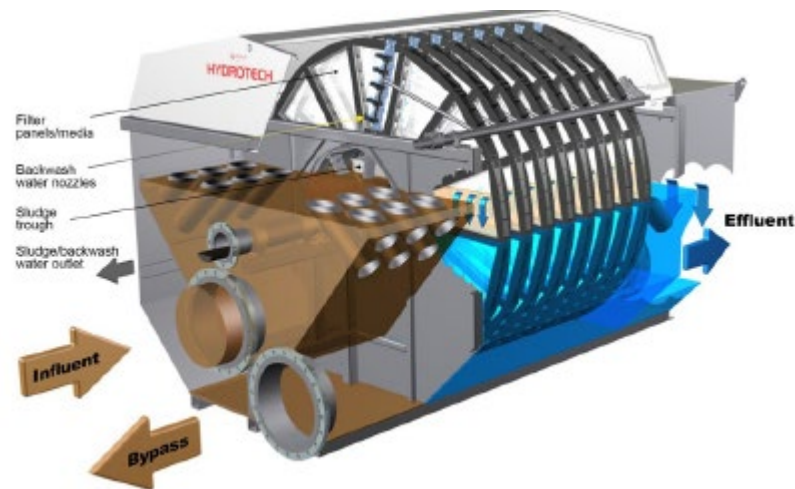


Figure 5 : Discfilter

3.6 PH ADJUSTMENT TANK

Treated waters (from discfilter) flow into a transfer tank where pH is adjusted if needed. Sulphuric acid will be used for pH adjustment in this tank. Water is then pumped to the water line pumping station. Details on the water line pumping station is presented in Appendix C.

3.7 REAGENTS

The following reagents will be used at the SETP-WTC:

Coagulant injection: Aluminum Chloride

The coagulant used on site for the EWTP-WTC is dry poly-aluminum chloride. The same coagulant will be used for this application, reusing the same make-down system currently in operation. The dosage will be performed using mechanical diaphragm metering pumps.

Polymer makedown and Injection: Anionic Polymer

The use of a flocculation agent is essential for a TSS removal process in cold temperature. The selected polymer for this application is Hydrex 6105. Hydrex 6105 is a solid, anionic polymer used to enhance flocculation and will be received in 25 kg bags. The make-down system used for the EWTP-WTC will be used in the new water treatment chain as well. This automatic preparation make down system will

be used to prepare a 0.05-0.3% solution. Warm water can be used if required for the polymer preparation. The solution will be dosed using mechanical metering pumps specifically designed for high viscosity products.

NaOH injection

Dry sodium hydroxide is a commodity and will be received in superbags of 1 m³ at 100 % active content concentration. A 25% solution will be prepared to reduce the risk associated with the exothermic reaction associated with NaOH dissolution and dosing of the dry powder to the water will be done in a way that limits heat production from the chemical make-down. An ambient temperature over 12 °C in the WTC will be required since 25% NaOH freezing point is at 12 °C. It is a hazardous product (class 8-corrosive) and will be handled accordingly.

Hypochlorite Injection

Calcium hypochlorite solution at 10 % (w/w) will be used to oxidize ammonia. It will be received in 45 kg pails at a concentration of 70% of active product. Solid will be transferred in a hopper by vacuum suction lances. Then, solid will be added with a screw conveyor in a dissolution reactor to prepare a 10% solution. This solution will be dosed from the distribution reaction to the chlorination reactor.

Sulphuric Acid

Sulphuric acid is used for pH control in the chlorination reactor and before final discharge. The addition of hypochlorite has an impact on the pH of the solution. If any excess from the breakpoint chlorination was to react slightly slower than expected, the pH of the water will increase as the hypochlorite release OH⁻ ions once the breakpoint is reached. Increasing of the water pH, for a water containing high calcium concentration, would result in calcite precipitation, affects the activated carbon efficiency and causes accumulation of solids within the water treatment chain. Sulphuric acid is a commodity and will be received in bulk containers of 1 m³ at 93 % concentration. This product will be used as is. Sulphuric acid has a freezing point of -30 °C. It is a hazardous product (class 8-corrosive) and will be handled accordingly.

Powdered Activated Carbon

The powdered activated carbon (PAC) is used for the destruction of residual chlorine. It will be received in superbags. PAC is dosed into the process using the HydraCarb system, which is based on a gravimetric feeder, a wetting cone and an educator to transport the PAC slurry to the dosing points. Manual injection valves allow a split between each compartment of the dechlorination reactor and dosing of the PAC is controlled by the flow of water passing in the chlorination reactor.

Sodium Thiosulphate

Sodium Thiosulphate is used to quench the residual chlorine prior discharge to prevent residual toxicity. It will be received in superbags of 1 m³ at 100% active content as dry product.

Microsand

The presence of microsand in the Actiflo® allows for:

- An increase in the probability of encounters between particles;
- An increase in the exchange surface and consequently in the adsorption capacity compared to conventional flocculation; and

- The formation of solid and dense ballasted flocs which will resist an energetic stirring followed by rapid settling.

These properties lead to very short residence times for flocculation as well as settling, thus optimizing the process. The microsand is recycled in the process. During the operation, it is estimated that 3 g of microsand per cubic meter of raw water will be lost in the sludge. Therefore, approximately 3 g of microsand per cubic meter of raw water needs to be added. The microsand will be supplied in 22.68 kg bags and will be added manually to the Actiflo® as required, approximately once or twice a week (the dosage of sand is through batch addition).

3.8 SERVICE WATER SYSTEM

The service water system will be sourced from the EWTP-WTC treated water tank. The description of the EWTP-WTC is presented in the approved reports: Design report 6526-693-132-REP-001 and As built report 6526-693-132-REP-003. Below is a summary of EWTP-WTC description.

EWTP-WTC Summary

The purpose of the EWTP-WTC (ACP-700R) is to remove TSS from the influent water pumped from Collection Pont 1 (CP1). The equipment has an operational range of 6,250 to 28,000 m³/d. The first treatment component consists of one Actiflo® clarifier with two (2) recirculation lines and two (2) hydrocyclones. The Actiflo® can be operated with one (1) or two (2) lines, depending on the influent flow rate and TSS content. The hydrocyclone overflow is sent to the Multiflo for sludge thickening. The Multiflo overflows by gravity into a tank which is then pumped into the raw water Actiflo® inlet pipe for recirculation. The principal purpose of the Multiflo is to decrease the amount of water in the sludge. The Actiflo® overflow is designed to meet the Type A License (and MDMER) final effluent discharge criteria for TSS concentrations. The final effluent is monitored for pH, turbidity and flow rate, which are monitored continuously.

3.9 SOLID WASTE MANAGEMENT

Sludge from SETP-WTC and EWTP-WTC

Sludge produced in the SETP-WTC and EWTP-WTC system will be stored in the sludge tank prior to being disposed in saline contact water ponds according to the water management plan.

3.10 CONTROLS

The general control strategy is detailed in the P&ID in Appendix B. The SETP-WTC pump and dosing skid will be controlled by a series of sensors measuring levels, flow, and water quality. Treated water will be monitored continuously for pH, turbidity and total chlorine. These analyzers will dictate if the treated water is sent to the water line or recirculated in the saline contact water storage area. Ammonia will be analysed periodically in the treated effluent with a manual method to assess the treatment performance.

4 CONSTRUCTION METHODS AND COMMISSIONING

4.1 PIPING AND PUMPING

For the operation of the SETP-WTC, the following pumps and pipes will be installed:

- Various lines and pumps inside the building of the SETP-WTC;
- Raw water line of the SETP-WTC;
- Water line from the SETP-WTC to Melvin Bay;
- Recirculation line from SETP-WTC to the saline contact water storage area.

Pipes will be above-ground and will lie directly on the tundra or existing PAD and infrastructure. Sharp stones will be removed before the pipe installation to reduce the risks of tears and premature wear. Piping routing is presented in Appendix A (for the SETP-WETC) and Appendix D (for the water line).

4.2 BUILDING

The existing Water Treatment Complex (WTC) Building will be improved to install all SETP-WTC equipment. The existing building approved footprint (design report 6526-694-132-REP-001 and As built report 6526-694-132-REP-002) will be increased by a new section of approximately 18 m length (see Appendix A for the layout of the WTC). The construction will be done on an existing pad.

4.3 CONSTRUCTION METHOD AND EQUIPMENT

Mobile equipment used for the construction will operate into the footprint of existing pads.

4.2 QUALITY CONTROL/ASSURANCE

A quality control/insurance program will be required during construction of each of the infrastructure components to ensure that construction-sensitive features of the design are achieved.

Upon the completion of the construction activities, an as-built construction report will be prepared and submitted to the regulators within 90 days after SETP-WTC is completed. The construction report should provide all relevant supporting documentation.

4.3 TESTING AND INSPECTION

Prior to start up, the indoor/outdoor pipe will be tested for leaks. If leaks are found, the joint will be re-welded or re-torqued.

After start-up, a periodic inspection, performed by Agnico Eagle personal, will be done to ensure piping integrity.

4.4 TIMELINE

The expected date of construction and commissioning completion is planned to be summer 2022.

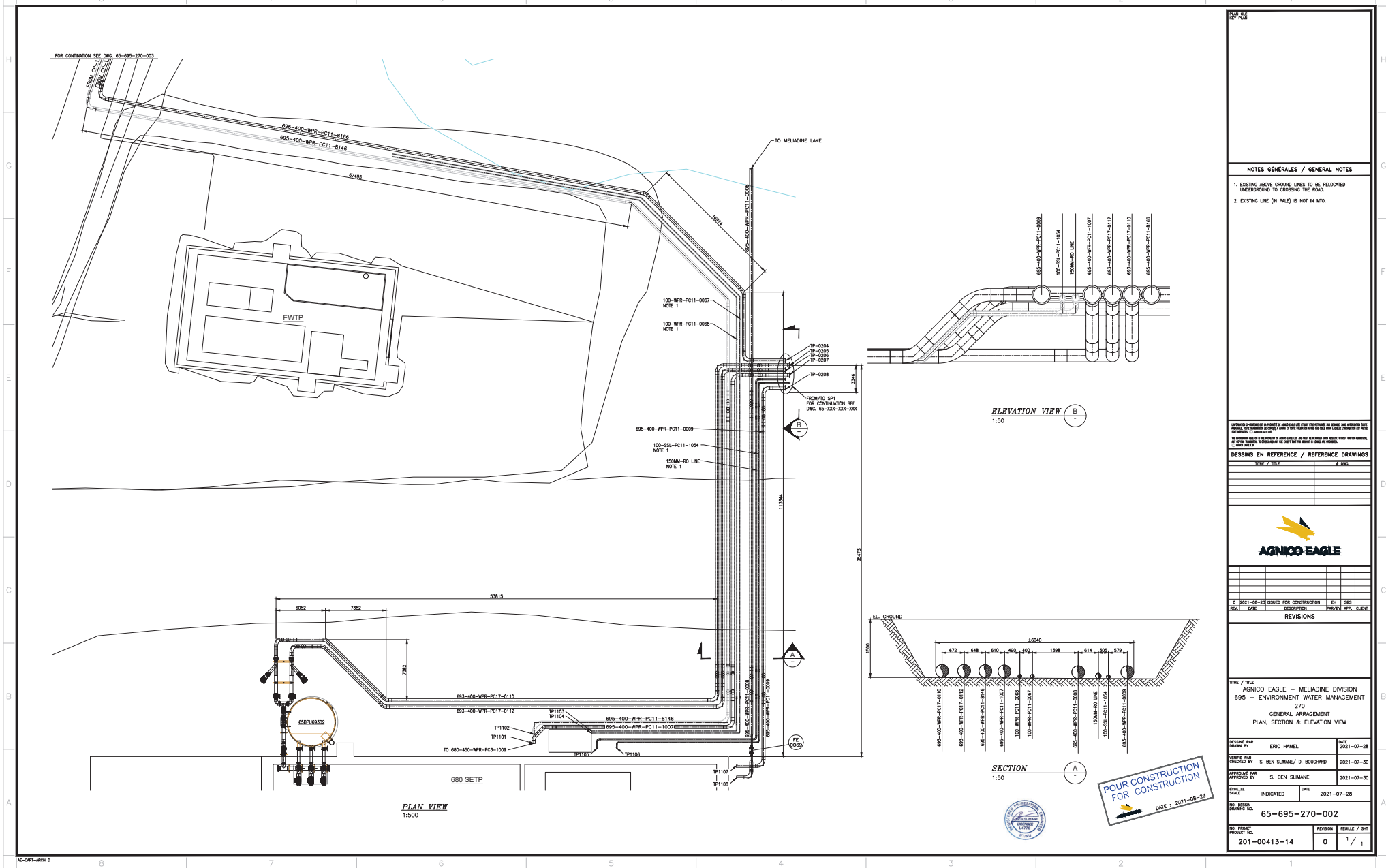
Appendix A





**POUR CONSTRUCTION
FOR CONSTRUCTION**
DATE : 2021-09-27

[illegible]



PLAN
1:500

NOTES GÉNÉRALES / GENERAL NOTES

- EXISTING ABOVE GROUND LINES TO BE RELOCATED UNDERGROUND TO CROSSING THE ROAD.
- EXISTING LINE (IN PALE) IS NOT IN MTD.

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

NO. DESIGN	PROJECT NO.	REVISION	REASON / BY
201-00413-14	0	1 / 1	



NO. DESIGN	PROJECT NO.	REVISION	REASON / BY
201-00413-14	0	1 / 1	

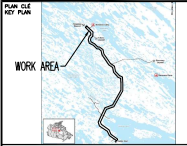
REVISIONS

NO. DESIGN	PROJECT NO.	REVISION	REASON / BY
201-00413-14	0	1 / 1	

WIRE / FILE
AGNICO EAGLE - MELIADE DIVISION
695 - ENVIRONMENT WATER MANAGEMENT
270
GENERAL ARRANGEMENT
PLAN, SECTION & ELEVATION VIEW

DESIGNED BY ERIC HAMEL	DATE 2021-07-28
CHECKED BY S. BEN SLIMANE / D. ROUVARD	DATE 2021-07-30
APPROVED BY S. BEN SLIMANE	DATE 2021-07-30
SCALE INDICATED	DATE 2021-07-28

NO. DESIGN PROJECT NO.	REVISION	REASON / BY
201-00413-14	0	1 / 1



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Montréal, Québec H2C 1P7
Tel: 514 734-0101 Fax: 514 734-0102
www.snc-lavalin.com

Project No : 674195-0000

NOTES GÉNÉRALES / GENERAL NOTES

COORDINATES SYSTEMS

UTM15-RKI (-0+250 TO 13+000) :
UTM15 NAD83 CSRS/SCRS (GEOD HT V2.0)
BENCHMARK CCM-14-92877013 :
EAST : 545280.004
NORTH : 6965803.749
ELE : 19.045

UTM15-MEL (13+000 TO 35+000) :
UTM15 NAD83 (GEOD HT V2.0)
BENCHMARK CCM-14-92877013 :
EAST : 545279.894
NORTH : 6965802.926
ELE : 22.598



CONTRACTOR'S RESPONSIBILITY: TO VERIFY ALL DIMENSIONS, LEVELS, AND LOCATIONS OF ALL STRUCTURES, UTILITIES, AND EXISTING CONDITIONS. TO OBTAIN ALL NECESSARY PERMITS AND APPROVALS. TO MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AND UTILITIES. TO PROTECT ALL EXISTING UTILITIES AND STRUCTURES. TO MAINTAIN ALL RECORDS AND DOCUMENTATION. TO COMPLY WITH ALL APPLICABLE REGULATIONS AND STANDARDS.

DESIGNS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITLE / TITRE	#	DATE



A	2022/01/18	ISSUED FOR PERMITTING	R.L.	LO.	S.A.

REVISIONS

NO.	DATE	DESCRIPTION	PROJ.	APP.	DATE

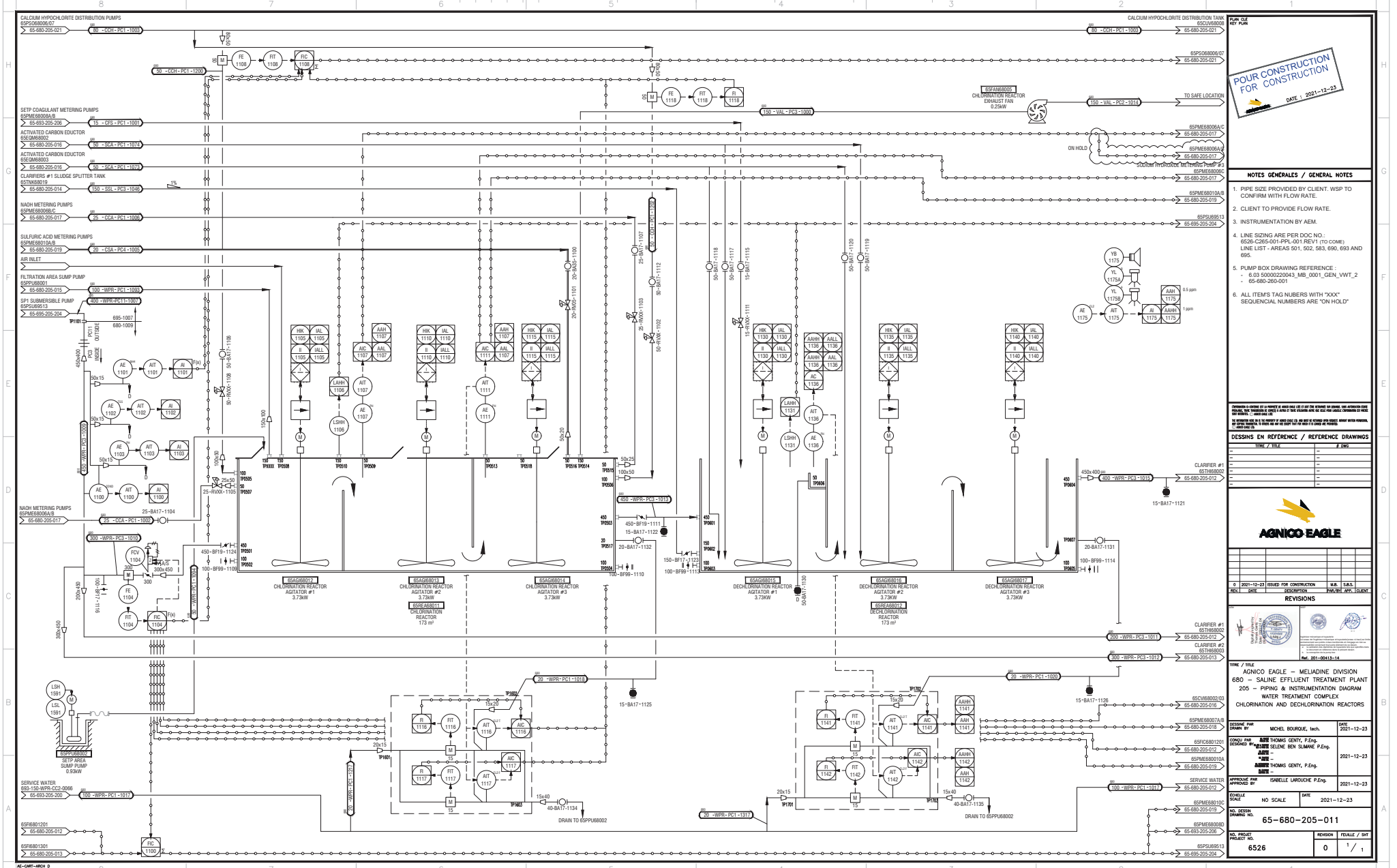
TITLE / TITRE
AGNICO EAGLE - MELIADINE DIVISION
WATER MGMT (SITE DRAINAGE & SETTLING POND)
PLAN
POND'S PUMPING LINES
MELIADINE SITE VIEW

DESIGNED BY BRUNO LEMIEUX, tech.	DATE 2022/01/18
CHECKED BY MARCO VINCENT, Ing.	2022/01/18
APPROVED BY ISRAEL GAGNON, Ing.	2022/01/18
SCALE 1 : 4000	DATE 2021/11/30

NO. DESIGN
DRAWING NO. 65-695-270-004

NO. PROJET	REVISION	FEUILLE / SHEET
6526	A	1 / 1

Appendix B



**POUR CONSTRUCTION
FOR CONSTRUCTION**
DATE : 2021-12-23

NOTES GÉNÉRALES / GENERAL NOTES

1. PIPE SIZE PROVIDED BY CLIENT. WSP TO CONFIRM WITH FLOW RATE.
2. CLIENT TO PROVIDE FLOW RATE.
3. INSTRUMENTATION BY AEM.
4. LINE SIZING ARE PER DOC NO. : 65-680-205-001 (REV.1) (TO COME).
LINE LIST - AREAS 501, 502, 583, 589, 693 AND 695.
5. PUMP BOX DRAWING REFERENCE :
6. 63-50000220043_M0_0001_GEN_VWT_2
65-680-200-001
6. ALL ITEM'S TAG NUMBERS WITH "XXX"
SEQUENTIAL NUMBERS ARE "ON HOLD"

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TIME / FILE	DESCRIPTION	DATE
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DATE	ISSUED FOR CONSTRUCTION	DATE	ISSUED FOR CONSTRUCTION
2021-12-23	2021-12-23	2021-12-23	2021-12-23

REVISIONS

NO.	DATE	DESCRIPTION	BY	CHKD.
1	2021-12-23	ISSUED FOR CONSTRUCTION	M.B.	S.B.

REVISIONS

TIME / FILE	DESCRIPTION	DATE
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---	---	---
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AGNICO EAGLE - MELIADINE DIVISION

680 - SAUVE EFFLUENT TREATMENT PLANT

205 - PIPING & INSTRUMENTATION DIAGRAM

WATER TREATMENT COMPLEX

CHLORINATION AND DECHLORINATION REACTORS

DESIGNED BY: MICHEL BOURQUE, I.Eng.

DATE: 2021-12-23

DESIGNED BY: MICHEL BOURQUE, I.Eng.

DATE: 2021-12-23

DESIGNED BY: MICHEL BOURQUE, I.Eng.

DATE: 2021-12-23

DESIGNED BY: MICHEL BOURQUE, I.Eng.

DATE: 2021-12-23

DESIGNED BY: MICHEL BOURQUE, I.Eng.

DATE: 2021-12-23

DESIGNED BY: MICHEL BOURQUE, I.Eng.

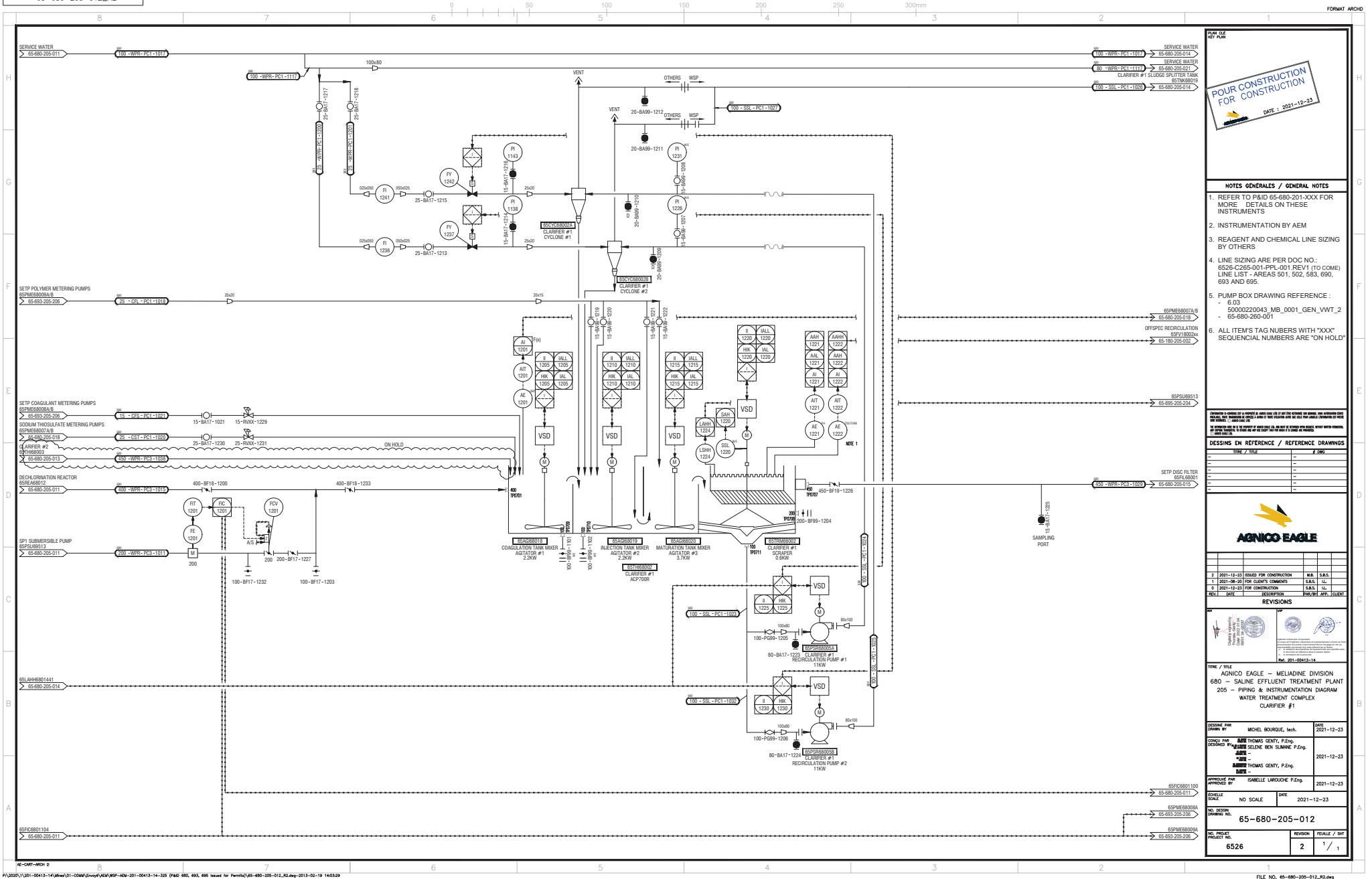
DATE: 2021-12-23

DESIGNED BY: MICHEL BOURQUE, I.Eng.

DATE: 2021-12-23

DESIGNED BY: MICHEL BOURQUE, I.Eng.

DATE: 2021-12-23



POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2021-12-23

NOTES GÉNÉRALES / GENERAL NOTES

1. REFER TO P&ID 65-680-201-XXX FOR MORE DETAILS ON THESE INSTRUMENTS
2. INSTRUMENTATION BY AEM
3. REAGENT AND CHEMICAL LINE SIZING BY OTHERS
4. LINE SIZING ARE PER DOC NO.: 6526-C265-001-PPL-001.REV1 (TO COME)
LINE LIST - AREAS 501, 502, 583, 690, 693 AND 695.
5. PUMP BOX DRAWING REFERENCE :
6.03
50000220043_MB_0001_GEN_VVWT_2
65-680-205-001
6. ALL ITEM'S TAG NUMBERS WITH "XXX" SEQUENTIAL NUMBERS ARE "ON HOLD"

REVISIONS
1 2021-12-23 ISSUED FOR CONSTRUCTION
2 2021-12-23 FOR CLIENT'S COMMENTS
3 2021-12-23 FOR CONSTRUCTION

DATE	REVISION	BY	APP. BY
2021-12-23	1	MOHAMED BOURQUE, tech.	
2021-12-23	2	MOHAMED BOURQUE, tech.	
2021-12-23	3	MOHAMED BOURQUE, tech.	



DATE	REVISION	BY	APP. BY
2021-12-23	1	MOHAMED BOURQUE, tech.	
2021-12-23	2	MOHAMED BOURQUE, tech.	
2021-12-23	3	MOHAMED BOURQUE, tech.	

DATE	REVISION	BY	APP. BY
2021-12-23	1	MOHAMED BOURQUE, tech.	
2021-12-23	2	MOHAMED BOURQUE, tech.	
2021-12-23	3	MOHAMED BOURQUE, tech.	

DATE	REVISION	BY	APP. BY
2021-12-23	1	MOHAMED BOURQUE, tech.	
2021-12-23	2	MOHAMED BOURQUE, tech.	
2021-12-23	3	MOHAMED BOURQUE, tech.	

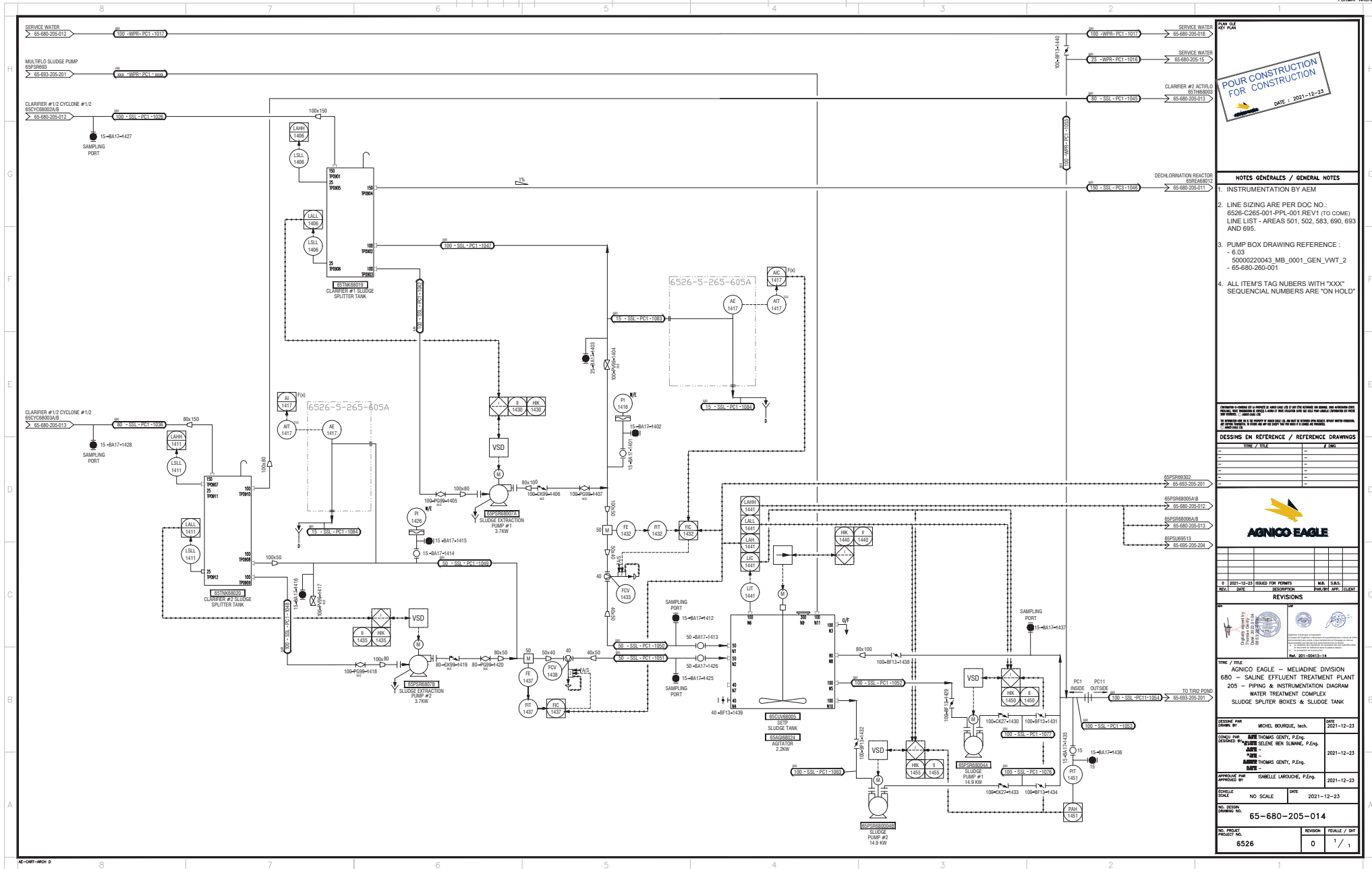
DATE	REVISION	BY	APP. BY
2021-12-23	1	MOHAMED BOURQUE, tech.	
2021-12-23	2	MOHAMED BOURQUE, tech.	
2021-12-23	3	MOHAMED BOURQUE, tech.	

DATE	REVISION	BY	APP. BY
2021-12-23	1	MOHAMED BOURQUE, tech.	
2021-12-23	2	MOHAMED BOURQUE, tech.	
2021-12-23	3	MOHAMED BOURQUE, tech.	

DATE	REVISION	BY	APP. BY
2021-12-23	1	MOHAMED BOURQUE, tech.	
2021-12-23	2	MOHAMED BOURQUE, tech.	
2021-12-23	3	MOHAMED BOURQUE, tech.	

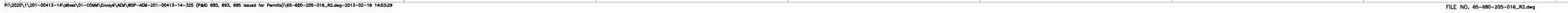


ASSIGNED NAME DESIGNED BY	MICHEL BOURQUE, tech.	DATE	2021-12-23
CONGO FILE DESIGNED BY	DATE THOMAS GEMAY, P.Eng. DATE SELENE BEN SUDANE, P.Eng. DATE DATE THOMAS GEMAY, P.Eng. DATE	2021-12-23	
APPROVED NAME APPROVED BY	ISABELLE LAROUCHE P.Eng.	2021-12-23	
ENGINEER SCALE	NO SCALE	DATE	2021-12-23
NO. DESIGN DRAWING NO.			
65-680-205-013			
NO. PROJECT PROJECT NO.	6526	REVISION	0 1 /





DESIGNED BY	MICHEL BOURQUE, l'arch.	DATE	2021-12-23
CONCEPTED BY	ARTHUR THOMAS GENTY, P.Eng.		
DESIGNED BY	JEAN-SEBASTIEN BEN SUDANE, P.Eng.		
	ARTHUR THOMAS GENTY, P.Eng.	2021-12-23	
	ARTHUR THOMAS GENTY, P.Eng.		
APPROVED FOR CONSTRUCTION BY	ISABELLE LAROUCHE, P.Eng.	2021-12-23	
SCALE	NO SCALE	DATE	2021-12-23
NO. DESIGN DRAWING IN			
65-680-205-011			
NO. PROJECT PROJECT NO.	6526	REVISION	FEUILLE / SHEET
		2	1 / 1





FILE NO. 65-680-205-017_R2.doc

NOTES GÉNÉRALES / GENERAL NOTES

- CONFIRMATION D'ACHAT EST LA PROPRIÉTÉ DE AMCO CABLE LTD. AND MUST BE RETURNED UPON REQUEST, WITHOUT WRITING FOR ANY REASON, TO OTHERS AND NOT BE EXCEPT THAT FOR WHICH IT IS ISSUED ARE PROVIDED.

DESSINS EN RÉFÉRENCE / REFERENCE DRAWING

[illegible]

REV.	DATE	DESCRIPTION	PAR/BN	APP.	C
REVISIONS					

	Ref. 201-00413-14
TIME / TITLE	

[illegible]

DESIGNÉ PAR DRAWN BY	MICHEL BOURQUE, tech.	DATE 2021-12
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CONÇU PAR THOMAS GENTY, P.Eng.

DESIGNED BY: **SELENE BEN SLIMANE, P.Eng.**

2021-12

DATE -	
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APPROUVÉ PAR APPROVED BY	ISABELLE LAROUCHE, P.Eng.	2021-12
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ÉCHELLE SOUS	NO. ÉCHELLE	DATE
		2021 12 28

NO SCALE	2021-12-23
NO. 000000	

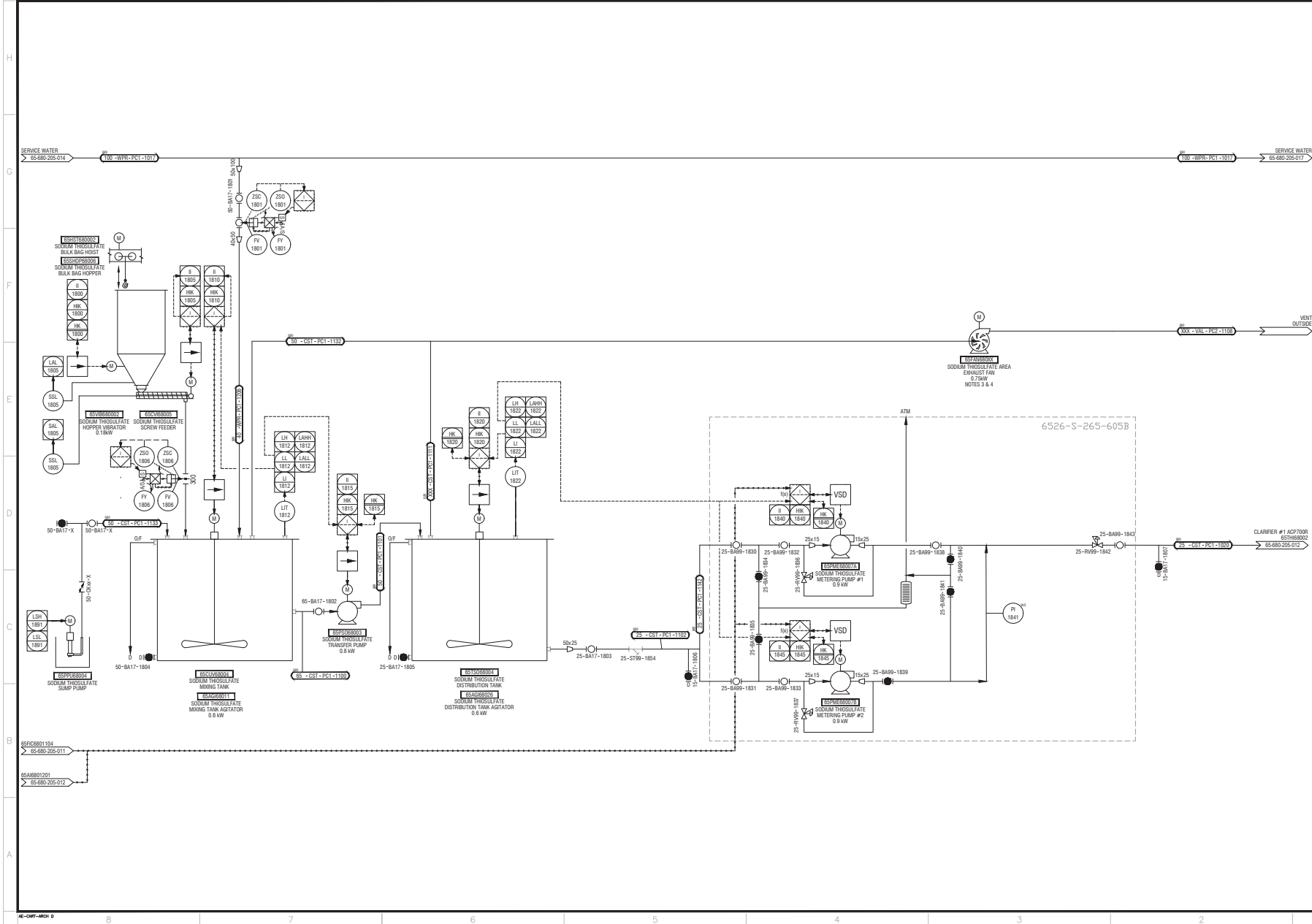
65-680-205-017

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NO. PROJET PROJECT NO.	REVISION	FEUILLE / PAGE
		1 / 1

6526	2	1/
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[illegible]



POUR CONSTRUCTION FOR CONSTRUCTION

DATE : 2021-12-23

NOTES GÉNÉRALES / GENERAL NOTES

1. INSTRUMENTATION BY AEM
2. REAGENT AND CHEMICAL LINE SIZING BY AEM
3. FAN INLET AND OUTLET PIPE SIZING BY AEM
4. FAN TAG # TO BE PROVIDED BY AEM
5. LINE SIZING ARE PER DOC NO : 6526-C265-001-PPL-001.REV1 (TO COME)
LINE LIST - AREAS 501, 502, 583, 690, 693 AND 695.
6. PUMP BOX DRAWING REFERENCE :
- 6.03 0000220043_MB_0001_GEN_VWT_2
- 65-680-260-001
7. ALL ITEM'S TAG NUMBERS WITH "XXX" SEQUENTIAL NUMBERS ARE "ON HOLD"

DESSINS EN REFERENCE / REFERENCE DRAWINGS

TYPE / RÈGLE	#
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AGNICO EAGLE

REVISIONS

NO	DATE	DESCRIPTION	APP. BY	APP. FOR
1	2021-12-23	ISSUED FOR CONSTRUCTION	M.B. S.A.E.	---
2	2021-08-25	FOR CLIENT'S COMMENTS	S.A.S. U.	---
3	2021-10-23	FOR CONSTRUCTION	S.A.S. U.	---

TIME / TITLE

AGNICO EAGLE - MELLIADINE DIVISION
680 - SALINE EFFLUENT TREATMENT PLANT
205 - PIPING & INSTRUMENTATION DIAGRAM
WATER TREATMENT COMPLEX
REAGENTS - SODIUM THIOSULFATE

DESIGNER MICHEL BOURQUE, tech. **DATE** 2021-12-23

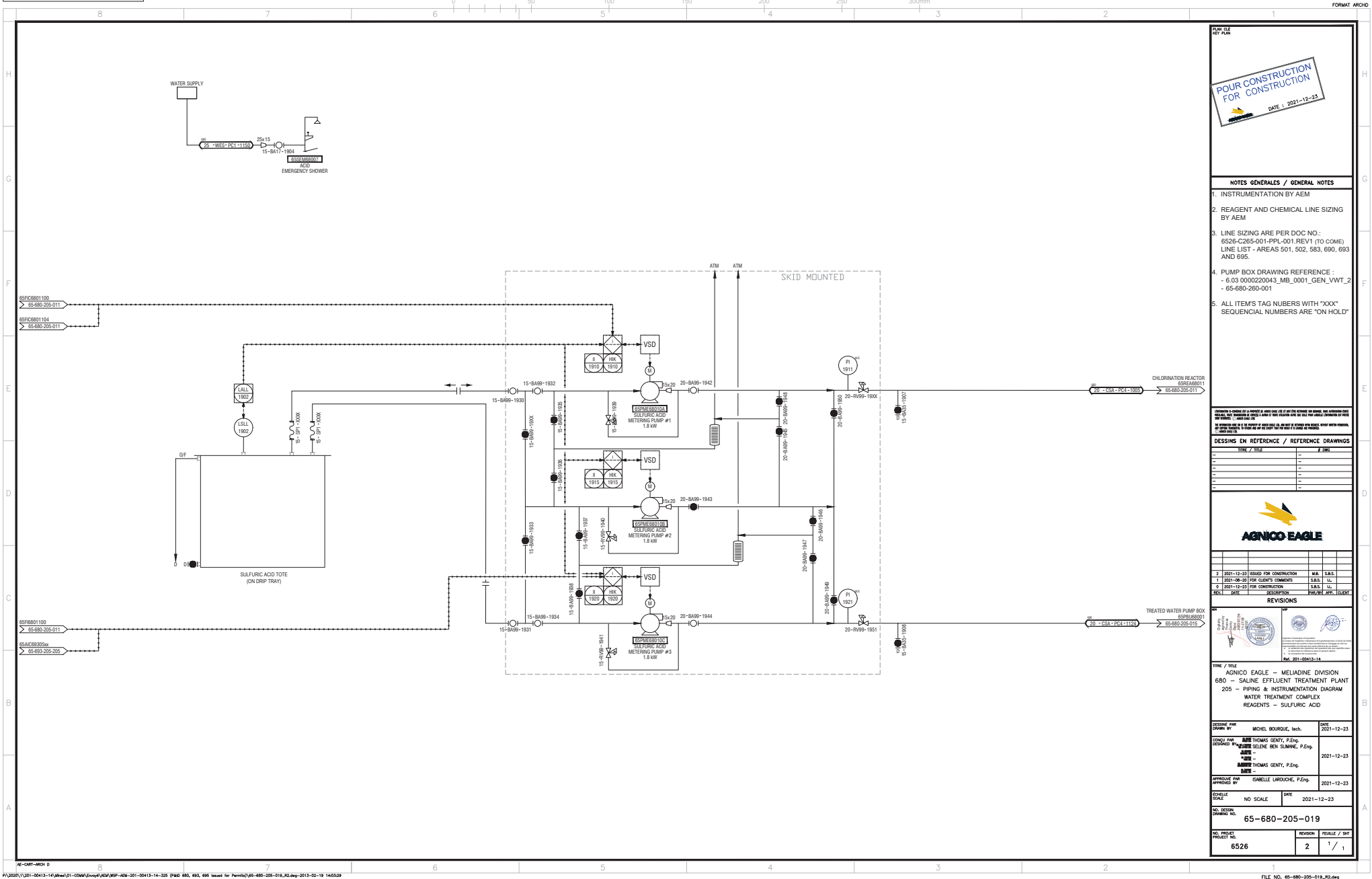
CONCHECKED BY MATHIE THOMAS GENTY, P.Eng. **DATE** 2021-12-23

APP. BY ISABELLE LAROUCHE, P.Eng. **DATE** 2021-12-23

SCALE NO SCALE **DATE** 2021-12-23

PROJECT NO. 65-680-205-018

REVISION 2 **FEUILLE / SHEET** 1 / 1



POUR CONSTRUCTION FOR CONSTRUCTION

DATE : 2021-12-23

NOTES GÉNÉRALES / GENERAL NOTES

1. INSTRUMENTATION BY AEM
2. REAGENT AND CHEMICAL LINE SIZING BY AEM
3. LINE SIZING ARE PER DOC NO.: 6526-C265-001-PPL-001 REV1 (TO COME)
LINE LIST - AREAS 501, 502, 583, 690, 693 AND 695.
4. PUMP BOX DRAWING REFERENCE : 6.03 0000220043_MB_0001_GEN_VWT_2 - 65-680-260-001
5. ALL ITEM'S TAG NUMBERS WITH "XXX" SEQUENTIAL NUMBERS ARE "ON HOLD"

REVISIONS & MODIFICATIONS TO BE MADE TO THIS DRAWING SHALL BE MADE BY THE DESIGNER. THE DESIGNER SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED. THE USER SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED. THE USER SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED.

DESIGNS EN REFERENCE / REFERENCE DRAWINGS	TITLE / TITRE	#	DATE



REVISIONS	DATE	DESCRIPTION	BY	APP'D
1	2021-12-23	ISSUED FOR CONSTRUCTION	M.B.	S.B.C.
2	2021-06-25	FOR CLIENT'S COMMENTS	S.B.C.	U.
3	2021-12-23	FOR CONSTRUCTION	S.B.C.	U.

REVISIONS	DATE	DESCRIPTION	BY	APP'D
1	2021-12-23	ISSUED FOR CONSTRUCTION	M.B.	S.B.C.
2	2021-06-25	FOR CLIENT'S COMMENTS	S.B.C.	U.
3	2021-12-23	FOR CONSTRUCTION	S.B.C.	U.

AGNICO EAGLE - MELLADINE DIVISION
680 - SALINE EFFLUENT TREATMENT PLANT
205 - PIPING & INSTRUMENTATION DIAGRAM
WATER TREATMENT COMPLEX
REAGENTS - SULFURIC ACID

DESIGNED BY	DATE	DATE
MICHEL BOURQUE, tech.	2021-12-23	
CONCEPT BY	DATE	DATE
JEAN THOMAS GENTY, P.Eng.	2021-12-23	
APPROVED BY	DATE	DATE
ISABELLE LAROCHE, P.Eng.	2021-12-23	

NO SCALE	DATE	DATE
NO SCALE	2021-12-23	
NO PROJECT	NO. REVISION	FEUILLE / SHEET
6526	2	1 / 1



1
FILE NO. 65-680-205-020_R0.dwg





1. INSTRUMENTATION BY AEM
2. REAGENT AND CHEMICAL LINE SIZING BY AEM
3. ALL ITEM'S TAG NUMBERS WITH "XXX" SEQUENTIAL NUMBERS ARE "ON HOLD"

1. INSTRUMENTATION BY AEM
2. REAGENT AND CHEMICAL LINE SIZING BY AEM
3. ALL ITEM'S TAG NUMBERS WITH "XXX" SEQUENTIAL NUMBERS ARE "ON HOLD"

NAME	TITLE	APPROVAL SIGNATURE	DATE
P-A BOSSE	PROJECT COORDINATOR		

CONFIRMATION D'ENTRÉE EST LA PROMESSE DE VOUS ENVOYER C'EST ET DOIT ÊTRE RETOURNÉ SUR DEMANDE, SANS AUTOMATISME POUR
S'ASSURER QUELLES INFORMATIONS ONT ÉTÉ REÇUES ET SONT ADAPTÉES À VOS BESOINS. MERCI DE NOUS ENVOYER VOTRE CONFIRMATION.

TIME / TITLE	# SONGS

[illegible]

REVISIONS	
1	1.0

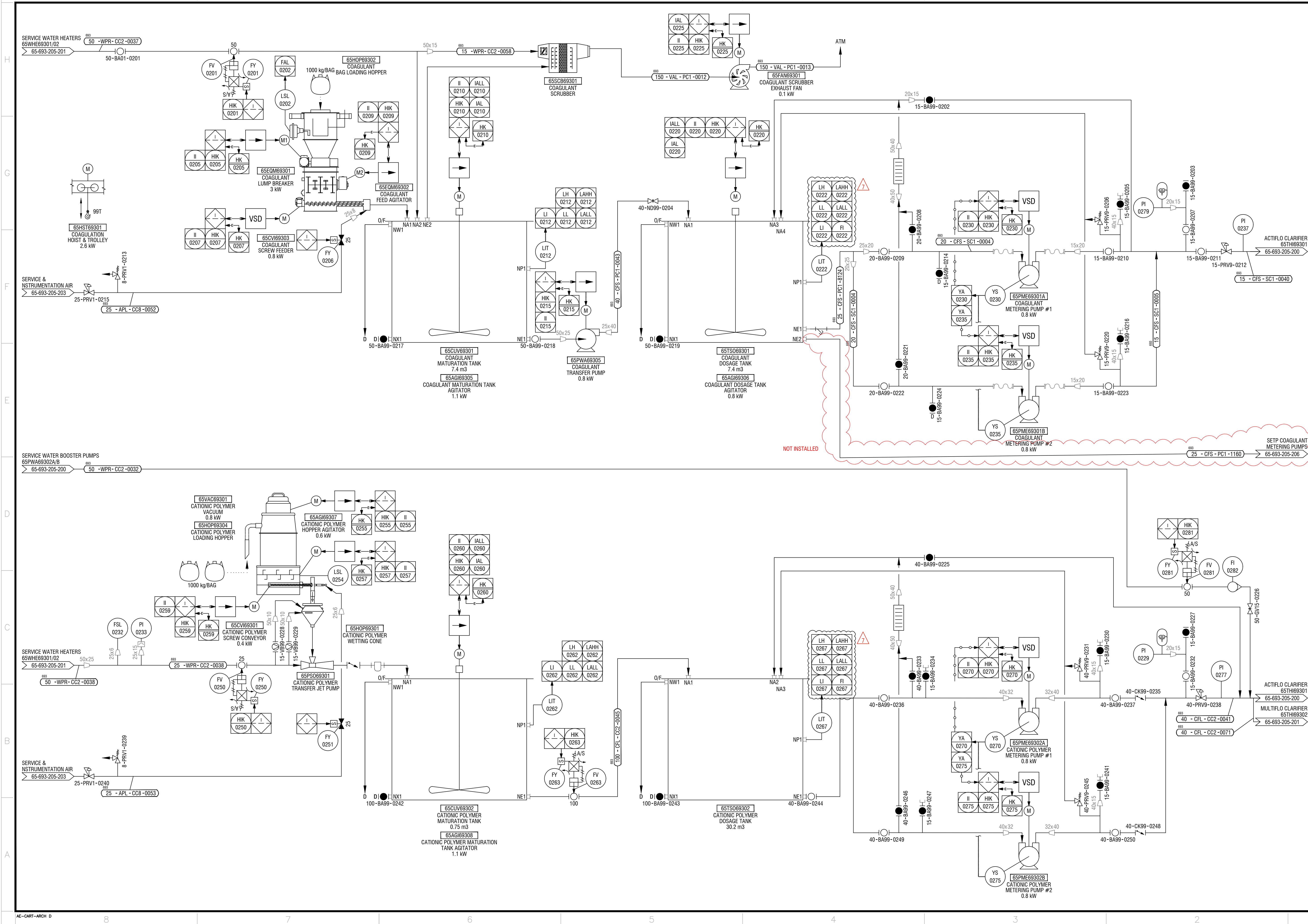


• **Prevalence** – the proportion of the population with a disease at a particular point in time

NO. DESIGN	
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DRAWING NO. 65-693-205-200





PLAN CLÉ
KEY PLAN

WSP

1075, 3e AVENUE EST
VAL-D'OR (QUÉBEC) CANADA J9P 0J7
TÉL. : 819 824-6274 | TÉLÉC. : 819 824-1514 | WWW.WSPGROUP.COM

Ref. 151-06440-10

NOTES GÉNÉRALES / GENERAL NOTES



**TEL QUE CONSTRUIT
AS BUILT**

DATE : 2021-10-07

BASIC ENGINEERING FINAL APPROVAL PROCESS

NAME	TITLE	APPROVAL	SIGNATURE	DATE
P.-A. BOISSE	PROJECT COORDINATOR			
MARTIN GAIMONT	MELIADINE PROCESS PLANT SUPERINTENDANT			
DANIEL SÉGUIN	ENGINEERING MANAGER MELIADINE			

L'INFORMATION CI-CONTENUE EST LA PROPRIÉTÉ DE AGNICO EAGLE LTD. ET DOIT ÊTRE RETENUE SANS DÉMARQUE, SANS AUTORISATION ÉCRITE. REPRODUCTION, TRADUCTION OU COPIE À TITRE D'ILLUSTRATION SEULEMENT, SANS DÉMARQUE, SANS AUTORISATION ÉCRITE. AGNICO EAGLE LTD. REPRÉSENTE LA PRÉCISION DES DONNÉES ET NE GARANTIT PAS LA PRÉCISION DES DONNÉES. AGNICO EAGLE LTD. REPRÉSENTE LA PRÉCISION DES DONNÉES ET NE GARANTIT PAS LA PRÉCISION DES DONNÉES. AGNICO EAGLE LTD. REPRÉSENTE LA PRÉCISION DES DONNÉES ET NE GARANTIT PAS LA PRÉCISION DES DONNÉES.

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/ÉV	APP.	CLIENT
5	2021-02-15	ISSUED FOR CONSTRUCTION	S.P.	T.G.	
4	2021-01-18	ISSUED FOR CONSTRUCTION	S.P.	T.G.	
3	2019-01-29	AS BUILT	J.L.	S.P.	
8	2021-10-07	AS BUILT	L.R.F.	T.G.	
7	2021-09-20	ADD F16930222 & F16930267	C.B.	A.C.	
6	2021-04-15	ISSUED FOR TENDER	L.L.	S.J.	

REVISIONS

TITRE / TITLE
AGNICO EAGLE - MELIADINE DIVISION
693 - FINAL WATER TREATMENT PLANT
205 - PIPING & INSTRUMENTATION DIAGRAM
COAGULANT & CATIONIC POLYMER

DESSINÉ PAR DRAWN BY	DATE
JONATHAN LAVOIE	2018-02-02

VÉRIFIÉ PAR CHECKED BY	DATE
BERTRAND FORTIN, P. Eng. ÉRIC LAVOIE, P. Eng.	2018-03-22

APPROUVÉ PAR APPROVED BY	DATE
BERTRAND FORTIN, P. Eng. ÉRIC LAVOIE, P. Eng.	2018-03-22

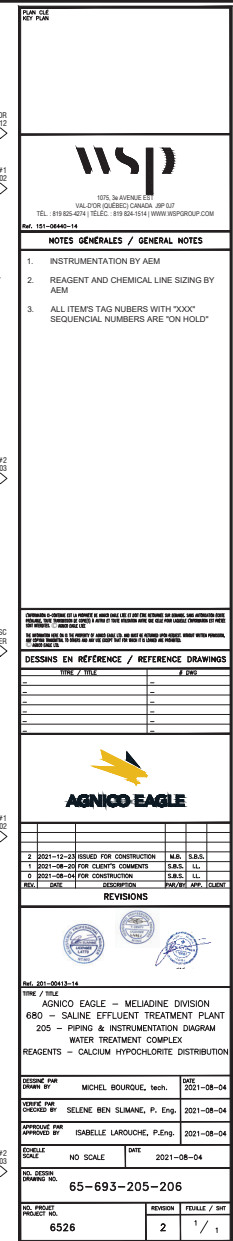
ÉCHELLE SCALE	DATE
NO SCALE	2015-08-05

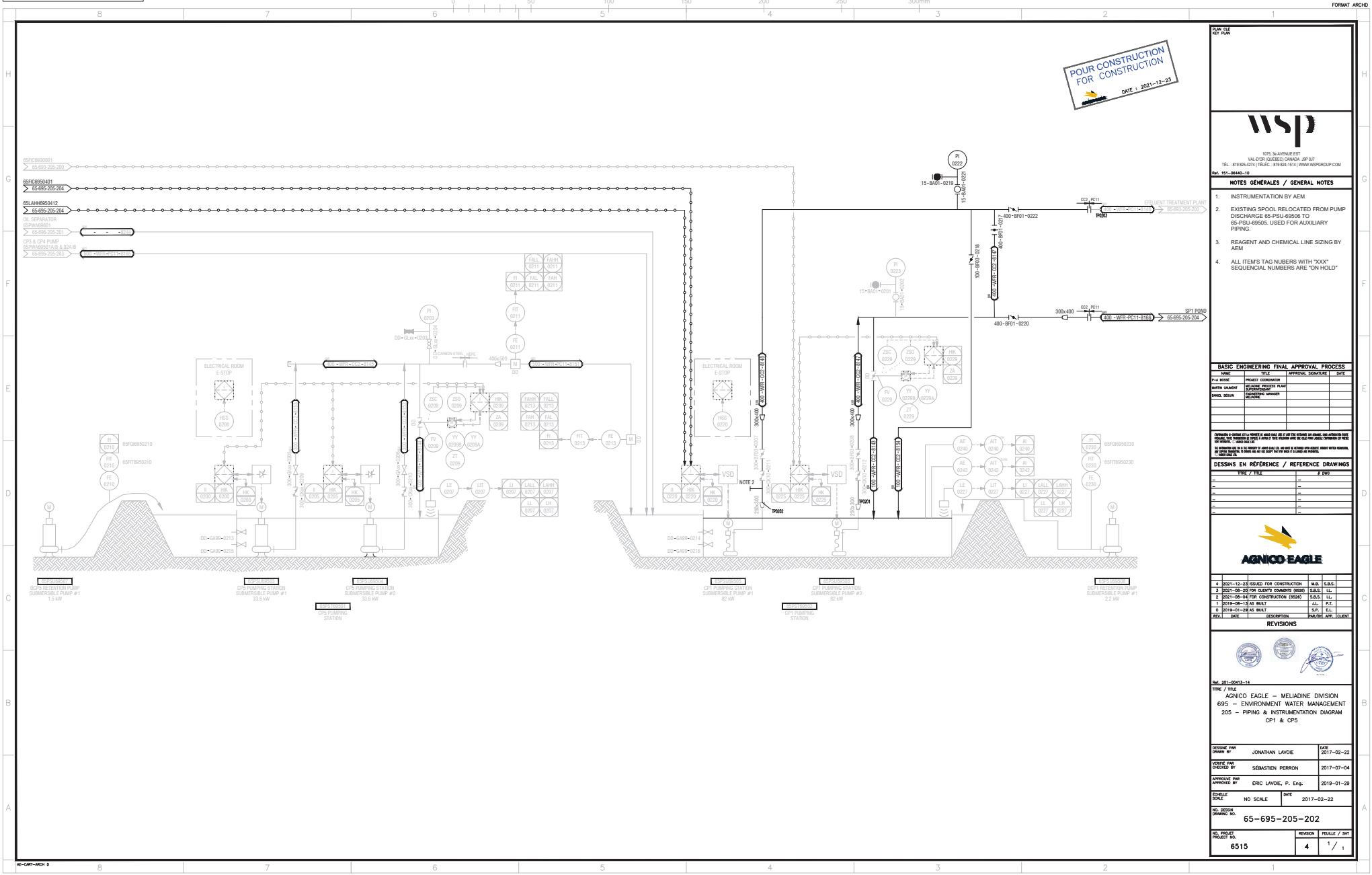
NO. DESSIN
PROJECT NO. 65-693-205-202

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHEET
6526	8	1 / 1



PLAN GLE KEY PLAN			
1075, 3e AVENUE EST VAL-D'OR (QUÉBEC) CANADA J9P 0J7 TÉL. : 819 825-4274 TÉLÉC. : 819 824-1514 WWW.WSPGROUP.COM			
Ref. 151-06440-10			
NOTES GÉNÉRALES / GENERAL NOTES			
TEL QUE CONSTRUIT AS BUILT DATE : 2021-10-07			
BASIC ENGINEERING FINAL APPROVAL PROCESS			
NAME	TITLE	APPROVAL SIGNATURE	DATE
P.-A. BOSSE	PROJECT COORDINATOR		
MARTIN GAUMONT	MELIADINE PROCESS PLANT SUPERINTENDANT		
DANIEL SEGUN	ENGINEERING MANAGER MELIADINE		
L'INFORMATION CI-CONTRE EST LA PROPRIÉTÉ DE AGNICO EAGLE LTD. ET DOIT ÊTRE RETOURNÉE SANS ASSURANCE D'ÊTRE MODIFIÉE. TOUTE MODIFICATION DE CONTENU À RETENIR ET TOUTE PRÉCISION NÉCESSAIRE DOIT ÊTRE Fournie. L'INFORMATION EST Fournie SANS GARANTIE. ©AGNICO EAGLE LTD. THE INFORMATION HERE ON IS THE PROPERTY OF AGNICO EAGLE LTD. AND MUST BE RETURNED UPON REQUEST WITHOUT WRITTEN PERMISSION. ANY CHANGES NECESSARY TO CORRECT OR IMPROVE THIS DOCUMENT MUST BE SUBMITTED TO AGNICO EAGLE LTD.			
DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS			
TITLE / TITLE	# DWG		
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AGNICO EAGLE			
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4	2021-01-18 ISSUED FOR CONSTRUCTION	S.P.	T.G.
3	2021-01-29 AS BUILT	J.L.	S.P.
8	2021-10-07 AS BUILT	L.R.F.	T.G.
2	2021-09-21 ADDED: F16930317	C.B.	A.C.
6	2021-04-15 ISSUED FOR TENDER	L.L.	S.J.
REV.	DATE	DESCRIPTION	PAR/BY APP. CLIENT
REVISIONS			
TITLE / TITLE AGNICO EAGLE – MELIADINE DIVISION 693 – FINAL WATER TREATMENT PLANT 205 – PIPING & INSTRUMENTATION DIAGRAM ANIOTIC POLYMER & AIR COMPRESSOR			
DESSINER PAR DRAWN BY	JONATHAN LAVOIE	DATE	2018-02-02
VÉRIFIÉ PAR CHECKED BY	BERTRAND FORTIN, P. Eng. ÉRIC LAVOIE, P. Eng.		2018-03-22
APPROUVÉ PAR APPROVED BY	BERTRAND FORTIN, P. Eng. ÉRIC LAVOIE, P. Eng.		2018-03-22
ÉCHELLE SCALE	NO SCALE	DATE	2015-08-05
NO. DESSIN DRAWING NO.			
65-693-205-203			
NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHEET	SHT
6526	8	1 /	1





WSP
1075, BAVERDIE EST
VAL D'OR (QUÉBEC) CANADA J9P 6J7
TEL : 819-552-4274 / TELÉ : 819-524-1514 / WWW.WSPGROUP.COM
Fax: 81-552-6640-10

NOTES GÉNÉRALES / GENERAL NOTES

1. INSTRUMENTATION BY AEM
2. EXISTING SPOOL RELOCATED FROM PUMP DISCHARGE 65-PSU-68008 TO 65-PSU-68005. USED FOR AUXILIARY PIPING.
3. REAGENT AND CHEMICAL LINE SIZING BY AEM
4. ALL TAGS TAG NUMBERS WITH "000" SEQUENTIAL NUMBERS ARE "ON HOLD"

BASIC ENGINEERING FINAL APPROVAL PROCESS

NAME	TITLE	APPROVAL SIGNATURE	DATE
WSP	ENGINEERING		
AGNICO	ENGINEERING		
AGNICO	ENGINEERING		
AGNICO	ENGINEERING		
AGNICO	ENGINEERING		

DESIGNS EN RÉFÉRENCE / REFERENCE DRAWINGS

TYPE / TYPE	REV.
65-695-205-202	1
65-695-205-202	2
65-695-205-202	3
65-695-205-202	4
65-695-205-202	5
65-695-205-202	6

AGNICO EAGLE

REVISIONS

REV.	DATE	DESCRIPTION	PREP.	APP.	DATE
1	2017-12-28	ISSUED FOR CONSTRUCTION	S.B.	S.B.	
2	2017-08-28	FOR CLIENT'S COMMENTS (R200)	S.B.	S.B.	
3	2017-08-04	FOR CONSTRUCTION (R200)	S.B.	S.B.	
4	2019-08-14	AS BUILT	A.L.	P.S.	
5	2019-01-28	AS BUILT	S.P.	E.L.	

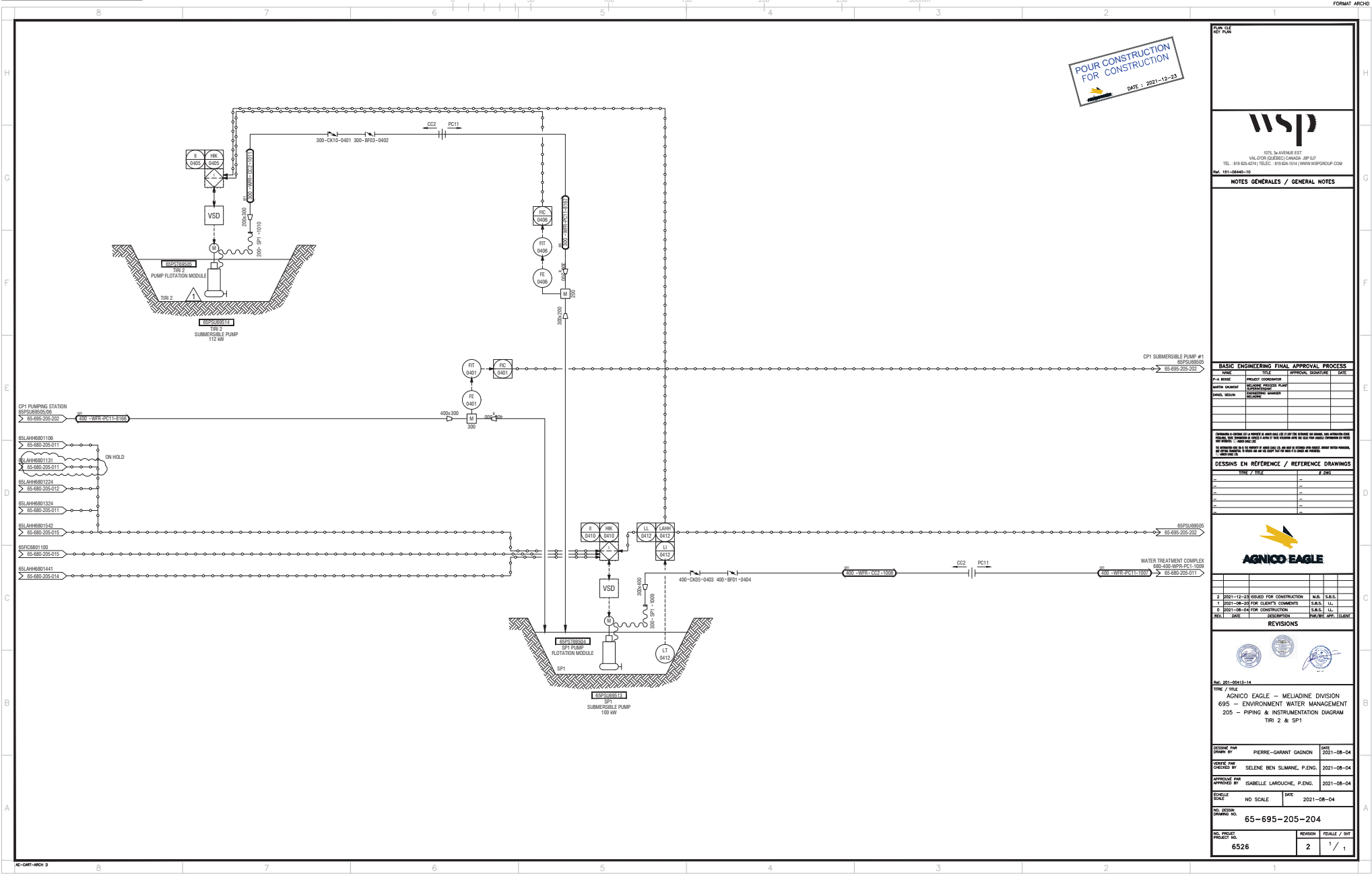
AGNICO EAGLE - MELIADINE DIVISION
695 - ENVIRONMENT WATER MANAGEMENT
205 - PIPING & INSTRUMENTATION DIAGRAM
CP1 & CP5

DESIGNER JONATHAN LAVOIE
CHECKED BY SÉBASTIEN PERRON
APPROVED BY ERIC LAVOIE, P. Eng.
DATE 2017-02-22

SCALE NO SCALE
DATE 2017-02-22

65-695-205-202

REV. 4
REVISION 1 / 1



POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2021-12-23

WSP

1075, BAVENUE EST
VAL-D'OR (QUEBEC) CANADA J9P 6J7
TEL : 819 553-4274 / TELÉC. : 819 524-1514 / WWW.WSPGROUP.COM
Fax: 81-0660-52

NOTES GÉNÉRALES / GENERAL NOTES

BASIC ENGINEERING FINAL APPROVAL PROCESS

NAME	TITLE	APPROVAL	SIGNATURE	DATE
P. J. WHITE	PROJECT COORDINATOR			
SENECA UNIVERSITY	SENECA UNIVERSITY			
SENECA, QUEBEC	SENECA, QUEBEC			

DESIGNS EN REFERENCE / REFERENCE DRAWINGS

NO.	FILE	P. NO.
1	2021-08-25	20
2	2021-08-25	21
3	2021-08-25	22
4	2021-08-25	23
5	2021-08-25	24

AGNICO EAGLE

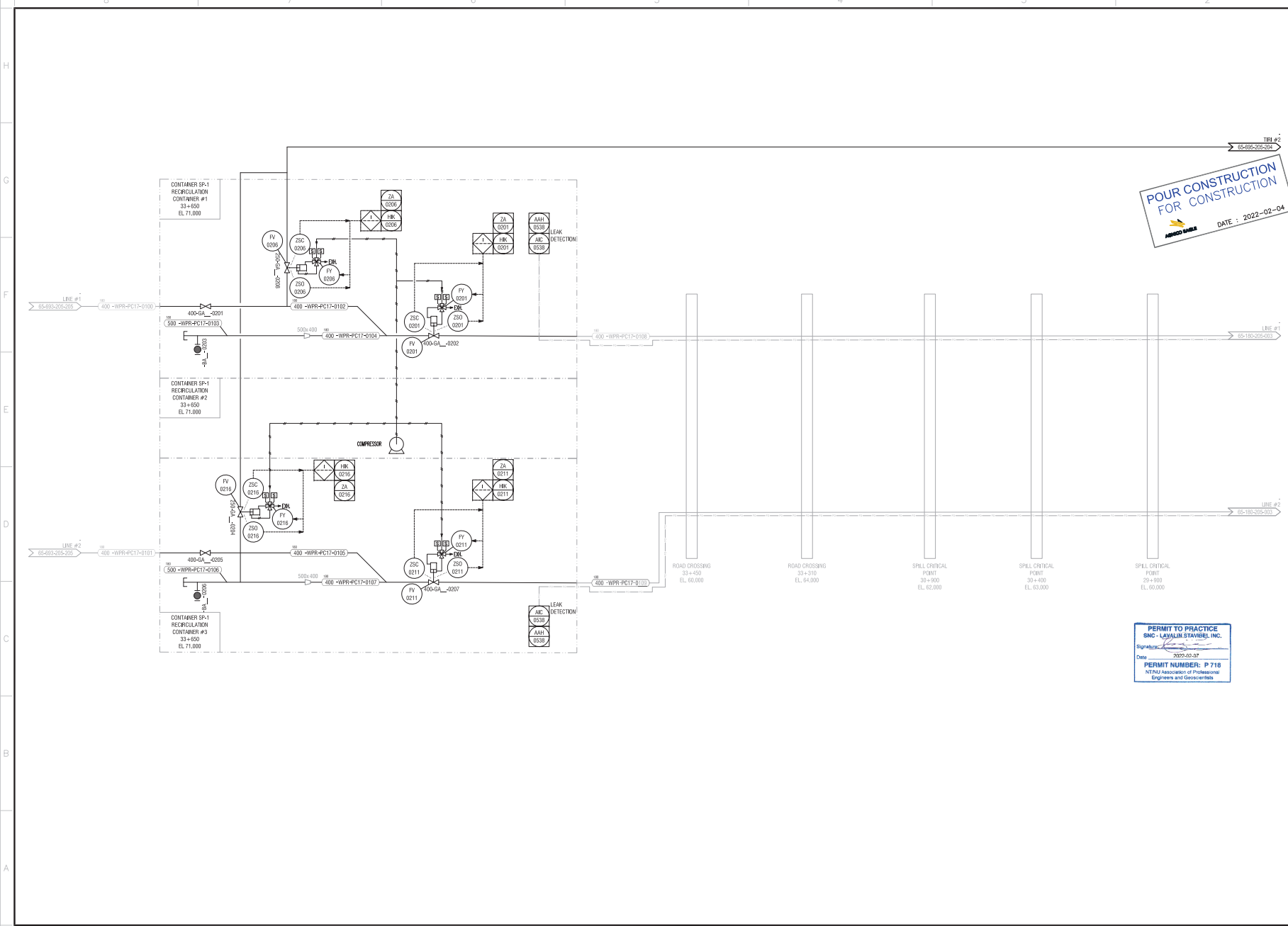
REVISIONS

NO.	DATE	REVISION	BY	CHK.
1	2021-08-25	ISSUED FOR CONSTRUCTION	S.B.S.	U.L.
2	2021-08-25	FOR CLIENT'S COMMENTS	S.B.S.	U.L.
3	2021-08-25	FOR CONSTRUCTION	S.B.S.	U.L.

AGNICO EAGLE - MELIADINE DIVISION
695 - ENVIRONMENT WATER MANAGEMENT
205 - PIPING & INSTRUMENTATION DIAGRAM
TIRI 2 & SP1

DESIGNER PIERRE-GARANT GAGNON **DATE** 2021-08-04
CHECKED BY SELENE BEN SLIMANE, P.ENG. 2021-08-04
APPROVED BY ISABELLE LAROCHE, P.ENG. 2021-08-04
SCALE NO SCALE **DATE** 2021-08-04
PROJECT NO. 65-695-205-204
REVISION 2 **FEUILLE / TOT** 1 / 1





**POUR CONSTRUCTION
FOR CONSTRUCTION**
DATE : 2022-02-04

KEY PLAN

SNC-LAVALIN
SNC-Lavalin Stantec Inc.
100, rue Grande Chaumière
Trois-Rivières (Québec) J8G 3G7
Tél. 381-754-4101 Téléc. 381-707-4100
www.snc-lavalin.com

Project No. : 674195-0000

NOTES GÉNÉRALES / GENERAL NOTES

2022-02-07

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

NO.	TITRE / TITLE	ÉCHELLE / SCALE
1	WATER LINE HIGH POINT CONTAINER	65-180-270-203
2	WATER LINE DOWNSTREAM CONTAINER	65-180-270-204

AGNICO EAGLE

PERMIT TO PRACTICE
SNC - LAVALIN STANTEC INC.
Signature: [Signature]
Date: 2022-02-07
PERMIT NUMBER: P 718
NOTA: Possession of Professional Engineers and Geoscientists

REVISIONS

NO.	DESCRIPTION	DATE
1	2022-02-04 ISSUE FOR CONSTRUCTION	07/29/2022

DESIGNED BY DONALD PELLERIN, Tech. **DATE** 2020/07/09

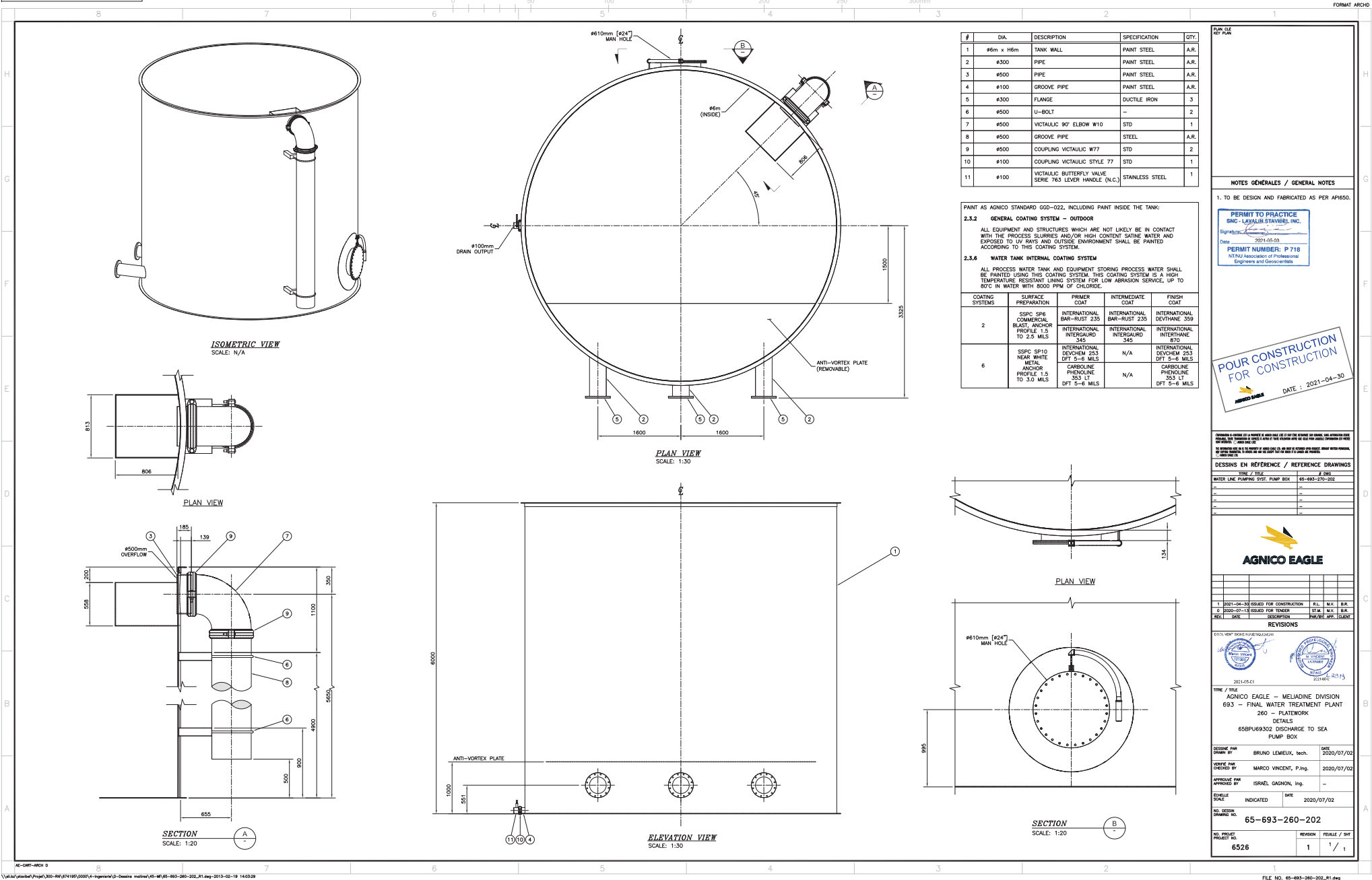
CHECKED BY ANDRÉ LEVESQUE, P.Eng. **DATE** 2020/07/29

APPROVED BY ISRAËL GAGNON, P.Eng. **DATE** 2022/02/04

SCALE N/A **DATE** 9 JULY 2020

NO. DESIGN 65-180-205-002 **REVISION** 0 **FEUILLE / SHEET** 1 / 1

Appendix C



		Equipment data sheet			 SNC-LAVALIN
		Water line pumps			
Client	Agnico Eagle	Data sheet number	Revision	Date	
Project	6526 - Meliadine Phase 2	6526-S-265-603B-EDS-001	R1	23/06/20	
#	6526-S-265-603B			Prepared by	Israël Gagnon
				Verified by	Marco Vincent

1	GENERAL			
2	Equipment Name / Number	-	Water line pumps	
3			65PWA69306 A/B/C	
4	Expected Equipment Life	years	25	
5	Site Location	-	Near Rankin Inlet, Nunavut Territory, CAN	
6	Equipment Location	-	Indoor, heated building	
7	Description	Units		*Required Vendor Information
8	SERVICE CONDITIONS			
9	Environment		Humid, dusty	
10	Ambient Temperature	°C	5 to 36	
11	Duty (100 days / year)	h/day	24	
12	Circuit availability	%	100	
13	Altitude Above Sea Level	m	62	
14	Quantity	-	2 pumps in parallel + 1 backup	
15	PROCESS DATA			
16	Material Characteristics			
17	Feed Material Description	-	Actiflo and SETP Effluent water (salt water)	
18	Material Temperature	°C	5 to 25	
19	Material pH	-	~7,5-8,5	
20	Water Specific Gravity	-	1.05	
21	TECHNICAL DATA - GENERAL REQUIREMENTS			
22	Operation	-	Continuous	
23	Expected Pump Type	-	Centrifugal - Heavy Duty	
24	VSD Driven	-	Yes	
25	Static Head at Highest Point	m	31	
26	Static Head at Discharge	m	-68	
27	Parameters for one pump			
28	Minimum flow (For one pump)	m³/h	125	
29	nominal flow (for one pump)	m³/h	250	
30	Design flow (for one pump)	m³/h	418	
31	Suction pressure	kPa (g)	14.5	
32	Max Discharge Pressure in 1 pipe (at nominal flow)	kPa (g)	889	
33	Max Discharge Pressure in 2 pipes (at design flow)	kPa (g)	725	
34	NPSHA (Water)	m (abs)	7.3	
35	TECHNICAL DATA - PUMP DATA			
36	Manufacturer	-		
37	Model	-		
38	Pump Type	-		
39	Pump Size	-		
40	Pump Curve	-		
41	Brake Power	kW		
42	Shut-off Head	m		
43	NPSH Required	m		
44	Flowrate - Nominal	m³/h		
45	Nominal Discharge Velocity	m/s		
46	Seal Type	-	Mechanical Seal	
47	Gland Service Requirements	m³/h		
48	Max. Allowable Casing Pressure	kPa		
49	Operating Efficiency	%		
50	HR-ER Ratio (ER valid if %v/v<20%)	-		
51	Seal Arrangement	-		
52	Noise Level	dB		
53	TECHNICAL DATA - IMPELLER			
54	Impeller Type	-		
55	Impeller Model	-		
56	Impeller Diameter	mm		
57	Impeller Speed	RPM		
58	Impeller Tip Speed	m/s		
59	Max. Stop Pressure	m		
60	Impeller Attachment Method	-		
61	TECHNICAL DATA - SUCTION AND DISCHARGE			
62	Suction Diameter	mm		
63	Suction Flange			
64	Discharge Diameter	mm		
65	Discharge Flange			
66	TECHNICAL DATA - BELT DRIVE (IF REQUIRED)			
67	Drive Pulley Diameter	mm		
68	Driven Pulley Diameter	mm		
69	Belt Type	-		
70	Belt Size	mm		
71	Number of Belts	-		
72	Belt Service Factor	-		
73	Guard Included	-	Yes	
74	TECHNICAL DATA - MATERIAL			
75	Casing	-		
76	Casing Bolts	-		
77	Shaft	-		
78	Shaft Sleeve	-		
79	Packing (Seal)	-	Mechanical Seal	
80	Bearing Housing	-		

81	Base Plate				
82	TECHNICAL DATA - WEIGHT				
83	Pump	kg			
84	Motor	kg			
85	Base Plate	kg			
86	Gearbox / Coupling	kg			
87	Total Shipping Weight	kg			
88	Heaviest Component for Maintenance	kg			
89	TECHNICAL DATA - MOTOR				
90	Manufacturer	-			
91	Motor Type	-			
92	Service Factor	-			
93	Control Type	-			
94	Absorbed Power	kW			
95	Installed Power	kW			
96	Notes				
97	1) Depending on the application, this specification can be revised with the Engineer's approval only. Refer to the general specification.				
98	2) The Static Head and total Dynamic Head are not corrected according to the head ratio.				
99	3) The supplier is responsible of validating the head ratio and efficiency ratio for every application.				
Rev.	Description	Prepared	Verified	Approved	Date
R0	for tender	M.V.	I.G.		2020-06-19
R1	Clarification for pressure	IG	MV		2020-06-23

Prepared by : Marco Vincent, P. Eng

Verified by : Israël Gagnon, P. Eng., MBA

Approved by :

Name and Title

OIQ N°

NAPEG N°

Signature

Date

145737

2020-06-23

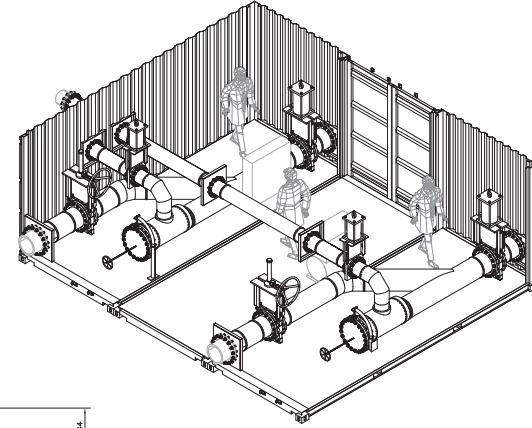
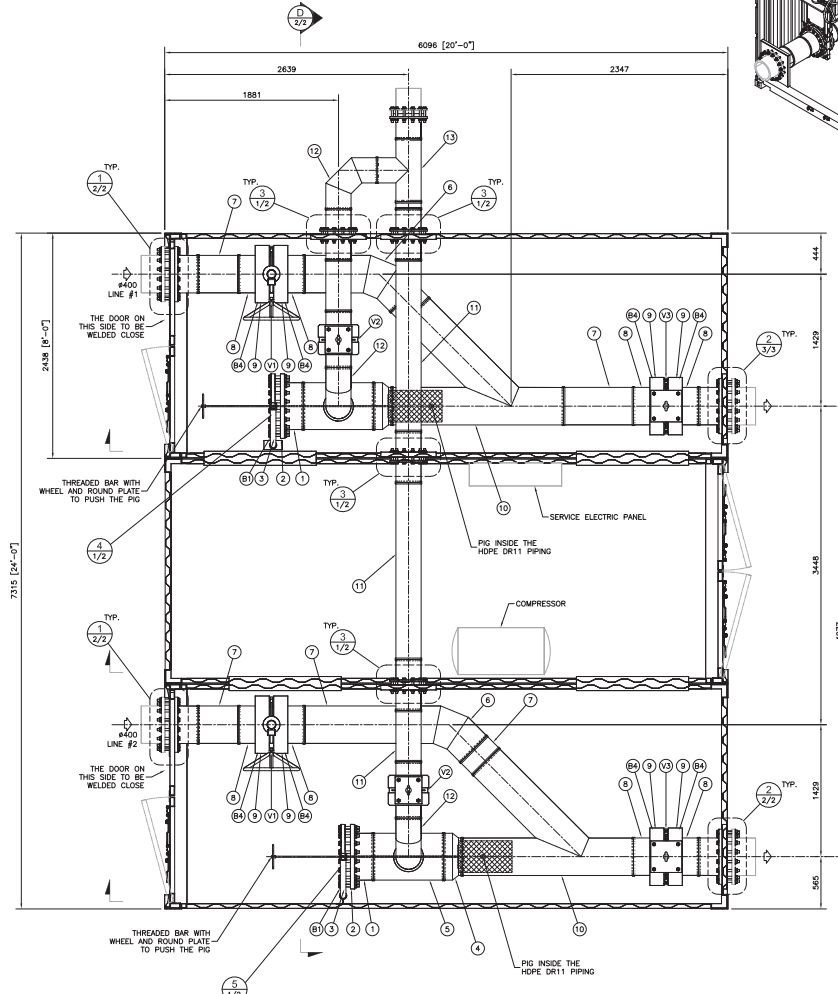
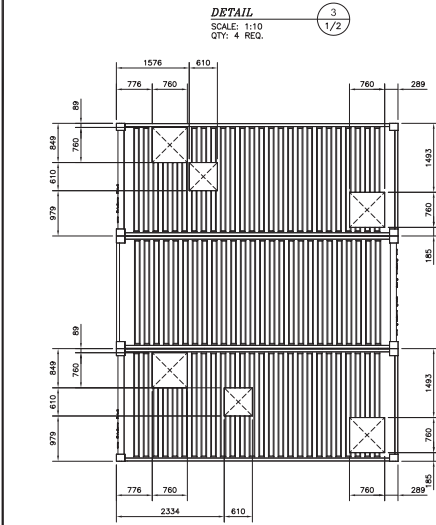
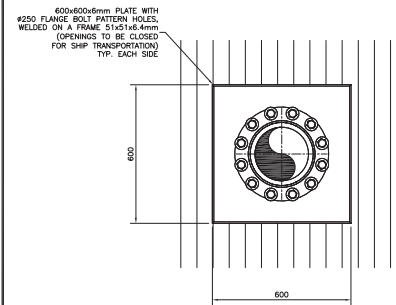
Appendix D

PIPING AND FITTINGS TABLE				
ITEM	DIA.	DESCRIPTION	SPECIFICATION	QTY.
1	#500mm	BUTT FUSION HDPE FLANGE ADAPTER	DR11	2
2	#500mm	FLANGE FOR HDPE ADAPTOR	DUCTILE IRON	2
3	#500mm	BLIND FLANGE	DUCTILE IRON	2
4	#500x400mm	HDPE ECCENTRIC REDUCER	DR11	2
5	#500x500x250mm	HDPE REDUCING TEE	DR11	2
6	#400mm	HDPE 45° ELBOW	DR11	2
7	#400mm	HDPE PIPE	DR11	A.R.
8	#400mm	BUTT FUSION HDPE FLANGE ADAPTER	DR11	12
9	#400mm	FLANGE FOR HDPE ADAPTOR	DUCTILE IRON	12
10	#400mm	HDPE 45° LATERAL	DR11	2
11	#250mm	HDPE PIPE	DR11	A.R.
12	#250mm	HDPE 90° ELBOW	DR11	3
13	#250mm	HDPE TEE	DR11	1
14	#250mm	BUTT FUSION HDPE FLANGE ADAPTER	DR11	13
15	#250mm	FLANGE FOR HDPE ADAPTOR	DUCTILE IRON	13

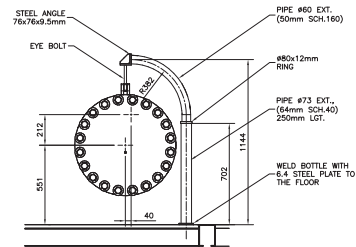
VALVES TABLE				
ITEM	DIA.	DESCRIPTION	SPECIFICATION	QTY.
V1	#400	ORBITOX KNIFE GATE VALVE (MANUAL) MODEL VS. SERIE 61	FLANGED	2
V2	#250	ORBITOX KNIFE GATE VALVE (ACTUATED) MODEL VS. SERIE 61	FLANGED	2
V3	#400	ORBITOX KNIFE GATE VALVE (ACTUATED) MODEL VS. SERIE 61	FLANGED	2

BOLTS / NUTS / WASHERS				
B1	M30x225mm Lg.	C/W NUTS A194 Gr.2H / WASHERS	ASTM A193 Gr.B7	40
B2	M24x225mm Lg.	C/W NUTS A194 Gr.2H / WASHERS	ASTM A193 Gr.B7	64
B3	M20x80mm Lg.	C/W WASHERS	ASTM A193 Gr.B7	48
B4	M24x125mm Lg.	C/W WASHERS	ASTM A193 Gr.B7	128
B5	M20x150mm Lg.	C/W NUTS A194 Gr.2H / WASHERS	ASTM A193 Gr.B7	60

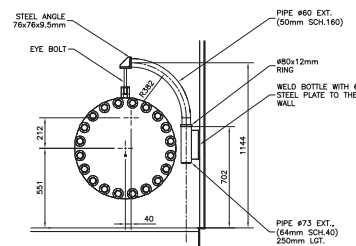
NOTE:
- HEX. HEAD MACHINE BOLTS WITH HEAVY HEX. NUTS
- STUD BOLTS WITH HEAVY HEX. NUTS
- GASKET: 400x3mm (14x1/8") 150 Lbs FF, RED SILICONE 60 DURO
(SOLID SILICONE ELASTOMER)
- THE QUANTITY AND LENGTH OF BOLTS MUST BE VALIDATED BY THE CUSTOMER OR THE CONTRACTOR. ALL DEFINE ABOUT THE TYPE OF VALVES AND FLANGES SELECTED.



3D VIEW
SCALE: N/A



DETAIL
SCALE: 1:16



DETAIL
SCALE: 1:16

PROJECT NO. : 674195-0000

NOTES GÉNÉRALES / GENERAL NOTES

- ALL PIPING SUPPORTS MUST BE PROVIDED.
- ALL EQUIPMENTS MUST BE ANCHORED IN THE CONTAINER FOR TRANSPORT.
- HDPE PIPE SEGMENTS SHALL BE ASSEMBLED TYPICALLY WITH A BUTT FUSION JOINT.

PERMIT TO PRACTICE
SNC - Lavalin STAVBEL INC.
Signature: 2021-06-07
Date: 2021-06-07
PERMIT NUMBER: P 718
NTAA Association of Professional Engineers and Geoscientists

POUR CONSTRUCTION FOR CONSTRUCTION
DATE : 2021-06-04

AGNICO EAGLE

1 2021-04-04 ISSUED FOR CONSTRUCTION R.L. M.V. B.A.
2 2021-04-26 ISSUED FOR TENDER R.L. M.V. B.A.
3 2021-04-26 ISSUED FOR TENDER R.L. M.V. B.A.

REVISIONS

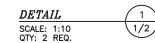
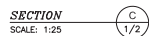
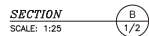
DATE / TITLE
AGNICO EAGLE - MELIADINE DIVISION
180 - SALINE EFFLUENT DISCHARGE SYSTEM
270 - PIPING
PLAN VIEW
WATER LINE
RECIRCULATION CONTAINER

DESIGNED BY: ROBIN LEMUEUX, tech. DATE: 2021/04/21
CHECKED BY: MARCO VINCENT, P.Eng. 2021/04/26
APPROVED BY: ISRAËL GAGNON, P.Eng. 2021/04/26

SCALE: INDICATED DATE: 2021/04/26

65-180-270-001

6526



1	2
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