AGNICO EAGLE

MELIADINE GOLD PROJECT

Water Management Plan

JANUARY 2019

VERSION 5

6513-MPS-11

DOCUMENT CONTROL

Version	Date	Section	Page	Revision	Author
5	January 2018	All	All	Update is to fulfill annual review requirement (NWB) and required submission of the Plan 90 days prior to Mine Operations phase (NWB)	Environment Department
		2.2	14	Update to Mine Development Plan information	
		3.1, 3.2, 3.4, 3.5, 3.6, 3.9, 3.11	16-26	Update to water management systems and designs, operation performance specs, and monitoring/inspections.	
		4.0, 4.1, 4.3	28-35	Updates to surface water management, groundwater management, washbay water management, and addition of EWTP values.	
		5.4	38	Discussion around 2019 Water Balance Forecast	
		7.0, 7.1, 7.2, 7.3	44-49	Addition of water quality monitoring program details, 2018 results pertaining to discharge to Mel. Lake and surface runoff, and 2018 discharge volumes, discussion around 2019 Water Quality Forecast	
		Figures		Addition Figure 3.2 (Saline pond 2), Figure 3.3 and 3.4 (rating curves), updated Figure 7.1a and b (sampling stations), and the addition of Figure 7.2 (daily Mel 14 effluent).	
		Appendix A		Updated to 2019 Groundwater Management Plan.	
		Appendix B		Updated to 2019 Freshet Action Plan.	
		Appendix C		Updates to water movement schematic to include recently constructed infrastructure and treatment systems.	
		Appendix D		Addition of the 2019 Sediment and Erosion Management Plan	
		Appendix E		Addition of the SWTP Design Report.	
		Appendix F		Addition of the 2019 Water Quality and Flow Monitoring Management Plan	
		Appendix G		Addition of the Water Management Structure Inspection Template	
		Appendix H		Addition of 2019 Water Balance and Quality Forecast Results	

EXECUTIVE SUMMARY (ENGLISH)

Agnico Eagle Mines Limited (Agnico Eagle) is developing the Meliadine Gold Project (the Mine), located approximately 25 kilometres (km) north of Rankin Inlet, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. The Mine Plan proposes open pit and underground mining methods for the development of the Tiriganiaq gold deposit, with two open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2) and one Underground Mine.

The water management objectives are to minimize potential impacts to the quantity and quality of surface water at the Mine. Water management structures (surface ponds, water retention dikes/berms, water diversion channels and culverts) are in place and will be constructed as needed to contain and manage the contact water from the areas affected by the Mine or mining activities. The major water management infrastructure include: water containment ponds, water retention dikes, berms, channels, a potable Water Treatment Plant (WTP), a Sewage Treatment Plant (STP), a Saline Water Treatment Plant (SWTP), a Reverse Osmosis (RO) Plant, and an Effluent Water Treatment Plant (EWTP).

During mine Construction and Operations, contact water originating from affected areas on surface will be intercepted, diverted and collected within the various containment ponds. The collected water at the Mine will be eventually pumped and stored in Containment Pond 1 (CP1), where the contact water will be treated by the EWTP for removal of Total Suspended Solids (TSS) prior to discharge to the outside environment or as make-up water by the Process Plant. Contact water from the Underground Mine will be collected in underground storage stopes and sumps. Some water from Underground will be reused for underground operations. In addition, due to high saline content, some underground mine water will be stored for treatment at the SWTP in two saline ponds.

The long-term, post-closure water quality in the containment ponds and in the flooded open pit lakes will meet Metal and Diamond Mining Effluent Regulations (MDMER) , Canadian Council of Ministers of the Environment Water Quality Guidelines (CCME-WQG) for the protection of aquatic life and/or the Site Specific Water Quality Objectives (SSWQO’s) developed for the Mine.

During mine closure, the water management infrastructure on site will remain in place until mine closure activities are completed and monitoring demonstrates that the water quality is acceptable for environmental discharge without treatment.

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ᐊᒡᓃᑯ ᐋᒍ ᐅᔭᕐᑕᓇᐊᒃᑯᑦ (ᐊᒡᓃᑯᒃᑯᑦ) ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᔭᕐᑕᓇᐊᓕᐅᖅᐸᓪᓕᐊᔪᑦ (ᐅᔭᕐᑕᓇᐊᖅ), 25 ᑭᓛᒥᑕᓂᒃ ᐅᖓᓯᒃᑎᕆᔪᖅ ᐅᐊᖕᓇᖓᓂᑦ ᑲᖏᖅᖠᓂᐅᑉ, ᐊᒻᒪ 80 ᑭᓛᒥᑕᓂᒃ ᐅᖓᓯᒃᑎᑉᐳᓂ ᓂᒡᕆᐊᓂᑦ ᐱᖓᙵᖅᐸᓯᐊᓂᑦ ᐃᒡᓗᓕᒑᕐᔫᑉ ᑭᕙᓪᓕᕐᒥᑦ ᓄᓇᕗᒻᒥᑦ. ᐅᔭᕐᑕᓇᐊᕐᒧᑦ ᐸᕐᓇᐅᑎ ᐅᔭᕐᑕᕐᓂᕐᒧᑦ ᐱᓕᕆᐊᖃᕈᒪᔪᑦ ᓄᓇᒥᑦ ᐅᒃᑯᐃᖓᔪᒥᑦ ᐊᒻᒪ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᓂᒃ ᐱᕙᓪᓕᐊᓗᒍ ᑎᑎᕋᓂᐊᖅ ᒎᓗᑕᓕᒃ, ᒪᕐᕉᖕᓂᒃ ᓄᓇᒥᑦ ᐅᒃᑯᐃᖓᔪᓂᑦ (ᑎᑎᕋᓂᐊᖅ 1 ᐊᒻᒪ ᑎᑎᕋᓂᐊᖅ 2) ᐊᒻᒪ ᐊᑕᐅᓯᖅ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐅᔭᕐᑕᕐᓂᖅ.

ᐃᒪᕐᒥᒃ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᐱᓕᕆᐊᖑᔪᒪᔪᑦ ᒥᑭᓛᒃᑰᖅᑎᓪᓗᒋᑦ ᐊᒃᑐᖅᓯᓂᐅᔪᖕᓇᖅᑐᑦ ᐃᒪᖃᖅᑎᕆᓂᖓ ᐊᒻᒪ ᖃᓄᐃᓐᓂᖓᑕ ᖄᖓᓅᑦᑐᑦ ᐃᒪᐃᑦ ᐅᔭᕐᑕᓇᐊᕐᒥᑦ. ᐃᒪᕐᒥᒃ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᐋᖅᑭᐅᒪᔪᑦ (ᓄᓇᐅᑉ ᖄᖓᓂᑦ ᐃᒪᖅᓯᐃᑦ, ᐃᒪᕐᒥᒃ ᐸᐸᑦᑎᓂᕐᒧᑦ ᐊᕙᓗᐃᑦ, ᐃᒪᕐᒥᒃ ᓴᖑᑎᑦᑎᓂᕐᒧᑦ ᓱᑉᐳᐃᑦ ᐊᒻᒪ ᓱᑉᐳᓃᑦ) ᑕᐃᒪᐅᔪᑦ ᐊᒻᒪ ᓴᓇᔭᐅᓂᐊᖅᑐᑦ ᐱᔭᓇᐊᖃᕐᒪᑕ ᓄᖅᑲᖓᑎᓪᓗᒍ ᐊᒻᒪ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᐊᒃᑐᖅᑕᐅᔪᑦ ᐃᒪᐃᑦ ᐃᓂᐅᔪᓂᑦ ᐊᒃᑐᖅᑕᐅᓯᒪᔪᓂᑦ ᐅᔭᕐᑕᓇᐊᕐᒥᑦ ᐅᕝᕙᓘᓐᓃᑦ ᐅᔭᕐᑕᖅᑎᓪᓗᒋᑦ. ᐊᖏᓛᖑᔪᑦ ᐃᒪᕐᒥᒃ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᐱᕐᑯᑎᒋᔭᐅᔪᓂᑦ ᐃᓚᐅᔪᑦ: ᐃᒪᕐᒥᒃ ᓄᖅᑲᖓᑎᑦᑎᓂᕐᒧᑦ ᑕᓯᕋᔭᐃᑦ, ᐃᒪᕐᒥᒃ ᐸᐸᑦᑎᓂᕐᒧᑦ ᐊᕙᓗᐃᑦ, ᓱᑉᐳᐃᑦ, ᐊᒻᒪ ᐃᒪᓕᓇᔾᔪᑎ (WTP), ᕐᑯᕐᕕᖕᒥᙳᖅᑐᓕᓇᔾᔪᑎ (STP), ᑕᓇᐅᓕᖕᒥᒃ ᐃᒪᓕᓇᔾᔪᑎ, ᐃᒪᑦᑎᐊᕙᓕᐅᕐᕕᒃ (SWTP), ᐃᒪᑦᑎᐊᕙᓕᐅᓇᕝᕕᒃ, ᐊᒻᒪ ᐃᒪᕐᒥᒃ ᑯᕕᔪᓕᓇᕝᕕᒃ (EWTP).

ᐅᔭᕐᑕᓇᐊᖅ ᓴᓇᔭᐅᑎᓪᓗᒍ ᐊᒻᒪ ᐊᐅᓚᖅᑎᓪᓗᒍ, ᐃᒪᖅ ᐊᑐᖅᑕᐅᔪᖅ ᐊᒃᑐᖅᑕᐅᓯᒪᔪᓂᑦ ᐃᓂᐅᔪᓂᑦ ᐱᔭᐅᑉᐳᓂ ᓄᓇᐅᑉ ᖃᖓᓂᑦ ᐱᓕᕆᐊᖑᓂᐊᖅᑐᑦ, ᓴᖑᑎᑕᐅᓗᑎᒃ ᐊᒻᒪ ᑲᑎᑕᐅᓗᑎᒃ ᐊᑦᔨᐱᓕᒻᒥᑦᑐᓄᑦ ᓄᖅᑲᖓᑎᑦᑎᓂᕐᒧᑦ ᑕᓯᕋᔭᖕᓄᑦ. ᑲᑎᑕᐅᔪᖅ ᐃᒪᖅ ᐅᔭᕐᑕᓇᐊᕐᒥᑦ ᑯᕕᑎᑕᐅᓕᕋᑦᑕᕐᓂᐊᖅᑐᖅ ᐊᒻᒪ ᓄᖅᑲᖓᑎᑦᑎᓂᕐᒧᑦ ᑕᓯᕋᔭᒃ 1-ᒧᐊᖅᑕᐅᓗᓂ, ᐊᒃᑐᖅᑕᐅᓯᒪᔪᖅ ᐃᒪᖅ ᐱᓕᕆᐊᖑᓂᐊᖅᑐᖅ EWTP-ᒧᑦ ᐲᖅᑕᐅᓗᓂ ᑲᑎᖕᒍᕆᑦ ᑖᓂᖅᑭᔪᑦ ᓯᑎᔪᑦ (TSS) ᑯᕕᑎᑕᐅᖅᑳᖅᑎᓐᓇᕆᑦ ᓯᓚᒧᑦ ᐅᕝᕙᓘᓐᓃᑦ ᐊᑐᖅᑕᐅᔪᒃᓴᓕᐊᖑᓂᐊᕐᓗᓂ ᐱᓕᐅᕆᕙᓪᓕᐊᕝᕕᖕᒧᑦ. ᐊᒃᑐᖅᑕᐅᓯᒪᔪᖅ ᐃᒪᖅ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐅᔭᕐᑕᓇᐊᕐᒥᑦ ᐱᔪᖅ ᑲᑎᑕᐅᓂᐊᖅᑐᖅ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᑐᖅᑯᖅᓯᓯᒪᕝᕕᖕᒧᑦ ᑯᕕᑎᑎᔾᔪᑎᓄᓪᓗ. ᐃᓚᖓ ᐃᒪᖅ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐱᔪᖅ ᐊᑐᖅᑕᐅᒃᑲᓂᕐᓂᐊᖅᑐᖅ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐊᐅᓛᖅᑎᑦᑎᓂᕐᓄᑦ. ᐃᓚᒋᔭᐅᓗᓂᓗ, ᑕᓇᐅᖅᑲᓗᐊᕐᓂᖓᓄᑦ, ᐃᓚᖓ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐅᔭᕐᑕᓇᐊᕐᒥᑦ ᐃᒪᖅ ᑐᖅᑯᖅᑕᐅᓂᐊᖅᑐᖅ ᐱᓕᕆᐊᖑᓂᐊᕐᓗ SWTP-ᒥᑦ ᒪᕐᕉᖕᓂᑦ ᑕᓇᐅᓕᖕᒧᑦ ᑕᓯᕋᔭᖕᓄᑦ.

ᐊᑯᓂᐅᔪᒥᑦ, ᐅᒃᑯᐊᖅᓯᒪᓕᖅᑎᓪᓗᒍ ᐃᒪᐅᑉ ᖃᓄᐃᓐᓂᖓ ᑐᖅᑯᖅᑕᐅᓯᒪᔪᓂᑦ ᑕᓯᕋᔭᖕᓂᑦ ᐊᒻᒪ ᐃᒻᒥᖅᑐᖅᑕᐅᓯᒪᔪᑦ ᓄᓇᒥᑦ ᐅᒃᑯᐃᖓᔪᒥᑦ ᑕᓯᕐᓄᑦ ᑎᑭᐅᑎᓯᒪᓂᐊᖅᑐᑦ ᓴᕝᕙᓂᒃ ᐊᒻᒪ ᓯᑎᔪᓂᒃ ᐅᔭᕐᓂᒃ ᐅᔭᕐᑕᓇᐊᕐᒥᑦ ᑯᕕᑦᑎᓂᕐᒧᑦ ᒪᓕᒐᕋᓛᓂᒃ (MDMER), ᑲᓇᑕᒥᑦ ᒥᓂᔅᑕᐅᑏᑦ ᑲᑎᒪᔩᑦ ᐊᕙᑎᒥᑦ ᐃᒪᐅᑉ ᖃᓄᐃᓐᓂᖓᓄᑦ ᒪᓕᒃᑕᐅᔪᒃᓴᖏᑦ (CCME-WQG)-ᒥᑦ ᒥᐊᓂᕆᓂᐊᕐᓗᒋᑦ ᐃᒪᕐᒥᐅᑕᐃᑦ ᐊᒻᒪ/ᐅᕝᕙᓘᓐᓃᑦ ᐃᓂᐅᔪᒥᑦ ᐱᔾᔪᑎᖃᖅᑐᒥᒃ ᐃᒪᕐᒧᑦ ᐱᓕᕆᐊᒃᓴᐃᑦ (SSWQO) ᐱᙳᖅᑎᑕᐅᓯᒪᔪᑦ ᐅᔭᕐᑕᓇᐊᕐᒧᑦ.

ᐅᔭᕐᑕᓇᐊᖅ ᐅᒃᑯᐊᖅᐸᓪᓕᐊᑎᓪᓗᒍ, ᐃᒪᕐᒥᒃ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᐱᕐᑯᐲᑦ ᐃᓂᐅᔪᒦᓐᓂᐊᖅᑐᑦ ᑭᓯᐊᓂ ᐅᔭᕐᑕᓇᐊᖅ ᐅᒃᑯᐊᖅᑕᐅᕙᓪᓕᐊᓂᖓ ᐱᐊᓂᒃᐸᑕ ᐊᒻᒪ ᖃᐅᔨᓴᖃᑦᑕᕐᓂᒃᑯᑦ ᖃᐅᔨᓇᖅᓯᒃᐸᑦ ᐃᒪᐅᑉ ᖃᓄᐃᓐᓂᖓ ᓈᒻᒪᓕᕐᓂᖓᓄᑦ ᐊᕙᑎᒧᑦ ᑯᕕᑎᓐᓂᐊᕐᓗᒍ ᐱᓕᕆᐊᖑᙱᓪᓗᓂ.

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ACRONYMS

Agnico Eagle	Agnico Eagle Mines Limited
AWAR	All Weather Access Road
CCME-WQG	Canadian Council of Ministers of the Environment Water Quality Guidelines
CP	Containment Pond
EMPP	Environmental Management and Protection Plan
EWTP	Effluent Water Treatment Plant
GWMP	Groundwater Management Plan
IDF	Inflow Design Flood
Licence	Type A Water Licence 2AM-MEL1631
MDMER	Metal and Diamond Mining Effluent Regulations
NWB	Nunavut Water Board
Mine	Meliadine Gold Project
SD	Support Document
SSWQO	Site Specific Water Quality Objectives
STP	Sewage Treatment Plant
SWTP	Saline Water Treatment Plant
TDS	Total Dissolved Solids
TSF	Tailings Storage Facility
TSS	Total Suspended Solids
WMP	Water Management Plan
WRSF	Waste Rock Storage Facility
WTP	Water Treatment plant

UNITS

%	percent
°C	degrees Celsius
°C/m	degrees Celsius per metre
mg/L	milligram per litre
km	kilometer(s)
km^2	kilo square meter(s)
m	metre
mm	millimetre
m^3	cubic metre(s)
m^3/day	cubic metre per day
m^3/s	cubic metre per second
m^3/hour	cubic metre per hour
m^3/year	cubic metre per year
Mm^3/year	million cubic metre (s) per year
Mm^3	million cubic metre(s)
masl	metres above sea level
Mt	million tonne(s)

SECTION 1 • INTRODUCTION

Agnico Eagle Mines Ltd. (Agnico Eagle) is developing the Meliadine Gold Project (the Mine) located approximately 25 kilometres (km) north of Rankin Inlet (Figure 1.1), Nunavut, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. The Mine is subject to the terms and conditions of both the Project Certificate issued by the Nunavut Impact Review Board (NIRB) in accordance with the Nunavut Land Claims Agreement Article 12.5.12 on February 26, 2015 and Type A Water Licence No. 2AM-MEL1631 (the Licence), issued by the Nunavut Water Board (NWB) on April 1, 2016 (NWB, 2016). This report presents an updated version of the Water Management Plan (WMP). The purpose of this update is to fulfill both the annual review requirement (NWB) and the required submission of the Plan 90 days prior to transition from the Mine Construction Phase to the Mine Operations phase (NWB). The principle updates to various sections include:

- Water Management Systems on Site (Section 3);
- CP3 and CP4 Design Criteria (Table 3);
- Contaminated Snow Cell specifications (Section 3.4);
- Specifications and expectations of a second Saline Pond (Section 3.5);
- Updates to water treatment practices on site (Section 3.9) including:
    - The application for discharge to sea as a management practice (Section 4.1.2);
    - Salt Water Treatment Plant operation specifications and performance expectations (Section 3.9.3);
    - EWTP operation strategies (Section 3.9.4);
- Details on water management structure inspections and thermal monitoring (Section 3.6 and Section 3.11);
- Updates to Water Management Strategies (Section 4) including:
    - Groundwater management and 2018 inflows (Section 4);
- Updates to the Water Balance forecast (Section 5); and
- Updates to the Water Quality forecast and 2018 results (Section 7).
- Updates to the 2019 Groundwater Management Plan (Appendix A).
- Updates to the 2019 Freshest Action Plan (Appendix B).
- Updates to the Site Water Movement Schematic (Appendix C).
- The addition of the 2019 Sediment and Erosion Plan (Appendix D).
- The addition of the SWTP Design Report (Appendix E).
- The addition of the Water Quality and Flow Monitoring Management Plan (Appendix F).
- The addition of the Water Management Structure Inspection Template (Appendix G).

1.1 Water Management Objectives

The water management objectives are to minimize potential impacts to the quantity and quality of surface water at the Mine and surrounding waterbodies. The purpose of the WMP is to provide information to applicable mine departments (Environment, Engineering, Mine, Energy and Infrastructure, etc.) for sound water management practices, proposed and existing infrastructure, the water balance model, water quality predictions, and for the water quality monitoring plan for the Mine.

Water management structures (culverts, sumps, pipelines, water diversion channels and water retention dikes/berms) are utilized to contain and manage contact water from areas affected by mining activities. Measures have been implemented for the Mine Construction and will be implemented for Mine Operation phases.

1.2 Management and Execution of the Water Management Plan

Revisions of the WMP can be initiated by changes in the Mine Development Plan (Mine Plan), operational performance, personnel or organizational structure, regulatory or social considerations, and/ or design philosophy. The WMP will be reviewed annually by Agnico Eagle and updated as necessary.

SECTION 2 • BACKGROUND

2.1 Site Conditions

The Mine is located in an area of poorly drained lowlands near the northwest coast of Hudson Bay. The dominant terrain in the area consists of glacial landforms such as drumlins (glacial till), eskers (gravel and sand), and many small lakes. The topography is gently rolling with a mean elevation of 65 metres above sea level (masl) and a maximum relief of 20 meters.

The local overburden consists of a thin layer of topsoil overlying silty gravelly sandy glacial till. Cobbles and boulders are present throughout the region at various depths. Bedrock at the Mine site area consists of a stratigraphic sequence of clastic sediments, oxide iron formation, siltstones, graphitic argillite, and mafic volcanic flows (Snowden, 2008; Golder, 2009).

The climate is extreme in the area, with long cold winters and short cool summers, and mean air temperatures of 12°C in July and -31°C in January. The mean annual air temperature at the Mine site is approximately -10.4 °C (Golder, 2012a). Strong winds blow from the north and north-northwest direction more than 30 percent of the time.

The mean annual precipitation in the area is approximately 412 mm and is typically equally split between rainfall and snowfall.

2.1.1 Local Hydrology

The Mine is located within the Meliadine Lake watershed. Meliadine Lake has a water surface area of approximately 107 square kilometres (km^2), a maximum length of 31 km, features a highly convoluted shoreline of 465 km, and has over 200 islands. Unlike most lakes, it has two outflows that drain into Hudson Bay through two separate river systems. It has a drainage area of 560 km^2 upstream of its two outflows. Most drainage occurs via the Meliadine River, which originates at the southwest end of the lake. The Meliadine River flows for a total stream distance of 39 km. The Meliadine River flows through a series of waterbodies, until it reaches Little Meliadine Lake and then continues into Hudson Bay. A second, smaller outflow from the west basin of Meliadine Lake drains into Peter Lake, which discharges into Hudson Bay through the Diana River system (a stream distance of 70 km). At its mouth, the Diana River has a drainage area of 1,460 km^2.

Watersheds in the Mine area are comprised of an extensive network of waterbodies, and interconnecting streams. The hydrology of these watersheds is dominated by lake storage and evaporation.

2.1.2 Ice and Winter Flows

Late-winter ice thicknesses on freshwater lakes in the Mine area range between 1.0 to 2.3 m with an average thickness of 1.7 m. Ice covers usually appear by the end of October and are completely formed in early November. The spring ice melt (freshet) typically begins in mid-June and is complete by early July (Golder, 2012b).

2.1.3 Spring Melt (freshet) and Freeze-up Conditions

With the exception of the main outlet of Meliadine Lake, which has been observed to flow continuously throughout the year, outlets of waterbodies near the Mine typically start flowing late May or early June, followed by freshet flows in mid-to-late-June. Flows steadily decrease in July and low flows are ongoing from August to the end of October, prior to winter freeze.

2.1.4 Permafrost

The Mine is located in an area of continuous permafrost. The depth of permafrost is estimated to be in the order of 360 to 495 m. The depth of the active layer ranges from about 1 m in areas with shallow overburden, up to 3 m adjacent to the lakes. The typical permafrost ground temperatures at the depths of zero annual amplitude (typically at the depth of below 15 m) are in the range of -5.0 to -7.5 °C in the areas away from lakes and streams. The geothermal gradient ranges from 0.012 to 0.02 °C/m (Golder, 2012b).

2.1.5 Local Hydrogeology

Groundwater characteristics at areas of continuous permafrost that are generally present in the Mine area include the following flow regimes:

- A shallow flow regime located in an active layer (seasonally thawed) near the ground surface and above permafrost; and,
- A deep groundwater flow regime beneath the base of the permafrost.

From late spring to early autumn, when temperatures are above 0 ˚C, the shallow active layer thaws. Within the active layer, the water table is projected to be a subdued replica of topography. Groundwater in the active layer flows to local depressions and ponds that drain to larger waterbodies. The talik beneath large waterbodies will be open. The open talik will connect to the deep groundwater flow regime beneath the permafrost.

Elongated waterbodies with terraces and a width of 340 to 460 m or greater are expected to have open taliks extending to the deep groundwater flow regime at the Mine. Meliadine Lake and Lake B7 are likely to have open taliks connected to the deep groundwater flow regime (Golder, 2012a). No impact is expected to Lake B7 by mine activities.

2.2 Mine Development Plan

The Mine Plan and key mine development activities, including mine waste management are currently used concurrently with the WMP.

The Mine Plan includes one underground mine (Tiriganiaq Underground Mine) and two open pits (Tiriganiaq Open Pit 1 and Tiriganiaq Open Pit 2) for the development of the Tiriganiaq gold deposit.

The Mine is expected to produce approximately 14.9 million tonnes (Mt) of ore, 31.8 Mt of waste rock, 7.4 Mt of overburden waste, and 14.9 Mt of tailings. The following phased approach is proposed for the development of the Tiriganiaq gold deposit;

- Phase 1: 3.5 years for Mine Construction (Q4 Year -5 to Q2 Year -1);
- Phase 2: 8.5 years for Mine Operations, beginning in 2019 (Q2 Year -1 to Year 8);
- Phase 3: 3 years Mine Closure (Year 9 to Year 11); and;
- Phase 4: Post-Closure (Year 11 forward).

Mining facilities on surface will include a plant site and accommodation buildings, two ore stockpiles, a temporary overburden stockpile, a tailings storage facility (TSF), three waste rock storage facilities (WRSFs), a water management system that includes containment ponds, water diversion channels, retention dikes/berms, and a series of water treatment plants. The general mine site layout plan is shown on Figure 1.2.

SECTION 3 • WATER MANAGEMENT CONTROLS AND STRUCTURES

A network of berms, dikes, containment ponds, channels, culverts and sumps are in place and maintained to facilitate water management. The following sections describe the water management design criteria for the infrastructure used at the Mine.

3.1 Water Management Systems

The water management systems, as shown in Figure 1.2, include the following components:

- Five water containment ponds (CP1, CP3, CP4, CP5, and CP6) and their associated dikes or thermal berms (D-CP1, D-CP3, D-CP4, D-CP5, and D-CP6)
- Three P-Area containment ponds (P1, P2, and P3) and four containment berms (DP1-A, DP1-B, DP2-A, and DP3-A)
- A surface Saline Pond and a proposed second saline storage pond to support Agnico's application to store, treat (SWTP) and discharge saline water to Melvin Bay in Rankin Inlet. An application was submitted to NIRB. The project is currently awaiting Minister's approval.
- Three diversion berms (Berm 1, Berm 2, and Berm 3)
- Eight water diversion channels (Channel 1 to Channel 8)
- Fourteen water passage culverts to convey water (Culverts 1 to 4, 6 to 8, 10 to 14, 16, 18, 19)
- Five evaporators
- A reverse osmosis (RO) treatment plant
- An effluent water treatment plant (EWTP)
- A saline water treatment plant (SWTP)
- A sewage treatment plant (STP)
- A potable treatment plant (WTP)
- A network of surface pumps and pipelines
- A freshwater intake causeway
- Three jetties and pumping infrastructure (CP1, CP5 and CP6)
- An effluent diffuser located in Meliadine Lake

Surface contact water is intercepted, diverted and contained within various containment ponds prior to evaporation or treatment. Water contained in CP5 is treated by an RO treatment plant prior to discharging to CP1. Water collected in the P-area is temporarily stored and then actively evaporated. At CP1, the water is treated for total suspended solids (TSS) at the EWTP and either transferred to the process plant for use as make-up water or discharged through the diffuser located in Meliadine Lake. Water treated through the RO treatment plant at CP5 is moved to CP1 prior to treatment through the EWTP.

Contact water from the Underground Mine is collected in underground sumps and stored in the underground water stope and the saline pond to be recirculated for use in various underground operations. The second saline pond will be used as addition underground water storage, pending approval (Section 3.5). Underground contact water that is not used for operations is treated for discharge.

Hatch (2013) investigated groundwater treatment options for the site and concluded that a combination chemical reverse osmosis (RO) and mechanical vapour compression evaporator plant would be the most efficient method of treating excess groundwater for discharge. Agnico Eagle has since acquired and constructed a Salt Water Treatment Plant (SWTP) consisting of two evaporator crystallizers (SaltMakers) that will be used to treat groundwater. Treatment details are found in Section 3.9.3.

As part of the strategy to manage excess groundwater infiltration of saline water within the underground portion of the mine, Agnico Eagle applied to the Nunavut Impact Review Board for approval to discharge saline water to the sea (Melvin Bay, Rankin Inlet). At this time, Agnico Eagle is awaiting approval from the Minister for the project.

During the mine closure, the water management infrastructure will remain in place until closure activities are completed and monitoring demonstrates that water quality is acceptable for discharge to the environment without treatment.

A list of the water management control structures are presented in Table 1 with the approximate Mine phase. Figure 1.2 shows the location of the respective structures at the different development stages (Year – 5 to Year 8) of the mine life. Final design details of these structures will be provided to the Regulators for approval at least 30 days prior to construction, as per the Licence.

Table 1: Water Management Control Structures

Mine Phase	Infrastructure Name
Pre-Production Construction (Y-5 to Y 1)	Culvert 2
	Channel 2
	D-CP1
	CP1 Jetty
	CP1
	CP5
	D-CP5
	CP5 Jetty
	Saline Pond
	Permanent Freshwater Intake Causeway and Pumping Station
	Channel 1
	Berm 3
	Channel 5
	Berm 1

	Channel 6
	Channel 7
	Channel 8
	Culvert 3
	Culvert 4
	Submerged Diffuser
	WTP Intake Causeway
	Culvert 1
	CP3
	CP4
	Berm 2
	D-CP3
	D-CP4
	Channel 3
	Channel 4
Sustaining Construction during Mine Operation (Y1 to Y8)	CP6 and D-CP6

3.2 Water Management Structures Design Criteria

The design of the various water management systems in place will meet the following criteria:

- Water quality guidelines will meet regulatory criteria of the Licence (described in Appendix F).
- Design capacity of the EWTP is sufficient to ensure that D-CP1 and CP1 will be able to manage the surface contact water from the entire site for a 1:100 wet year spring freshet or a 1:2 mean year spring freshet, plus a 1:1000 return 24-hour extreme rainfall.
- Design capacity of pumping from CP5 to CP1 is sufficient to ensure that D-CP5 and CP5 will be able to manage the water from its catchment area for 3/7 of a 1:100 wet year spring freshet or a 1:1000 return 24-hour extreme rainfall.
- Design pumping capacity of each of the other water management dikes (D-CP3, D-CP4, and D-CP6) and associated ponds (CP3, CP4, and CP6, respectively) will be able to manage the water from their respective catchment area for 3/7 of a 1:100 wet year spring freshet or a 1:1000 return 24-hour extreme rainfall.
- The daily pumping rate for each of the ponds (CP3 to CP6), Tiriganiaq Pit 1 sump, and Tiriganiaq Pit 2 sump will be designed to have sufficient pumping capacity to handle the runoff water, which would result from one day (24.4 mm) of a 1:100 return wet spring freshet plus a 1:2 return one-hour rainfall (9.8 mm).

Channel 2 to Channel 4 are designed to pass an extreme intensity flow under a 5-minute 1:100 return rainfall of 9.2 mm. Channel 1 and Channel 5 to Channel 8 are internal channels where any water overflowing the channels will remain within the catchment areas of various containment ponds. Hydraulic analyses indicated that very wide channels are required to pass an extreme intensity flow under a 5-minute 1:100 return rainfall of 9.2 mm. As a result, these channels were designed to have a reasonable bottom width to pass a flow with lesser intensity, but the water overflowing the channels can be safely managed by berms or temporarily stored in a lower basin nearby. For example, water overflowing Channel 5 can be contained by Berm 3. Water overflowing Channel 7 and Channel 8 can be stored in the lower basin in the drained Pond H13, and Berm 1 will protect Portal No.2 from flooding. Water overflowing Channel 1 will flow through the flat ground between Ore Pad 1 (OP1)/Ore Pad 2 (OP2) and WRSF2 into CP1.

Hydraulic analyses indicated that many more culverts or larger culverts would be required to pass an extreme intensity flow under a 5-minute 1:100 return rainfall of 9.2 mm for Culvert 1. As a result, Culvert 1 was designed to pass a flow with lesser intensity, but the excess water can be safely managed by berms or temporarily stored in a lower basin nearby. The excess water that cannot pass through Culvert 2 can be temporarily stored in the lower basin in the drained Pond H13, and Berm 1 will protect Portal No.2 from flooding. Other culverts are less critical and the excess water that cannot pass through the culverts can be temporarily stored in a lower basin nearby, within the water containment pond catchment area.

Table 2 presents the design parameters for CP1, CP5 and CP6.

Table 2: Design Parameters for CP1, CP5 and CP6

Pond	CP1	CP5	CP6
Pond Volume for Water Elevation at Projected Maximum Pond Operating Water Elevation under Normal Operating Conditions and Mean Precipitation Years (m^3)	742,075	46,674	19,154
Estimated Maximum Operating Water Elevation (m)	66.2	66.0	63.9
Dike for Pond	D-CP1	D-CP5	D-CP6
Design Crest Elevation of Dike Containment Element (liner system) (m)	66.50	66.30	64.30
Pond Volume for Water Elevation at Design Crest Elevation of Dike Containment Element (m^3)	778,502	66,231	49,627

CP3 and CP4 will be established through sub-excavation of the original ground to increase water storage capacity and help ensure dike OMM levels are not reached. The key design parameters for CP3 and CP4 are provided in Table 3 and are discussed in further detail within Tetra Tech (2018).

Table 3: Design Parameters for CP3 and CP4

Pond	CP3	CP4
Elevated Pond Bottom Elevation (m)	56.0	56.0
Estimated Maximum Water Elevation during IDF (m)	63.0	63.0
Pond Volume for Water Elevation at Estimated Maximum Water Elevation during IDF (m^3)	28,000	35,093
Pond Surface Area at Estimated Maximum Water Elevation during IDF (m^2)	6,583	8,805
Design Crest Elevation of Dike containment Element (liner system) (m)	68.5	68.5
Dike for Pond	D-CP3	D-CP4

3.3 Water Containment ponds

Three water containment ponds (CP1, CP3, and CP5) have been constructed to date as part of the water management infrastructure. Two more water containment ponds, CP4 and CP6, will be constructed in 2019 and 2023, respectively. Table 4 presents the locations and the required operational period of the containment ponds. The locations of the five water containment ponds are shown on Figure 1.2. CP1 and CP5 have been established within existing shallow ponds. CP6 will also be established within an existing shallow pond.

Table 4: Location of Containment Pond and Required Operation Periods

Containment Pond	Relative Location	Required Operation Period
CP1	Pond H17	Year 2017 to Mine closure
CP3	North of Lake B7 and southwest of TSF	Year 2019 to Mine closure
CP4	Southeast of Lake B7 and south of WRSF1	Year 2019 to Mine closure
CP5	North of Tiriganiaq Pit 2	Year 2017 to Mine closure
CP6	Pond H19 and north of WRSF3	Year 2023 to Mine closure

3.4 P-Area Containment Ponds

The P-area consists of three storage ponds, four water containment berms and five evaporators. This area contains surface runoff and is part of the surface water management system dedicated to saline water. The total storage capacity of the P-Area ponds is 46,041 m^3. P1 is divided by a berm and P1-A (6,131.8 m^3) is the southern section of P1 and P1-B (14,649 m^3) is the northern section. P2 is adjacent and located south of P1-A. P3 was constructed east of the existing south access road, with the primary purpose of collecting seepage originating from the P2 confining berm and its abutments. A pumping station was installed to collect and pump any collected water from P3 to P1.

P1, P2 and P3 are contained by water containment berms DP1-A, DP1-B, DP2-A, and DP3-A. Five evaporators have been installed on DP1-B. Table 5 summarizes the as-built capacities for the P-Area ponds and Figure 3.1 illustrates the P-Area plan view.

A contaminated snow cell was engineered and installed within the northwest extent of P1 in reaction to the April 8th 2017, 30,000 L diesel spill on Site. The contaminated snow cell was used to store contaminated snow from this event. Since then, the snow cell has been used to store snow containing hydrocarbons (i.e., snow on which spills occur) over the 2017 early spring and 2017/2018 winter. Upon snowmelt an oil-water separator was used to treat the water and move it to P1. The contaminated snow cell is currently in place as a contingency measure for contaminated snow storage over the 2018/2019 winter period (See Freshet Management Plan in Appendix B).

The snow cell is lined with a polyethylene liner to avoid transfer of melting snow into the other ponds part of the P-area. The cell is designed to contain a volume of 1500 m^3 of snow and to contain 930 m^3 of water at a water surface elevation of 69.5 m.

Table 5: As-Built Capacity for P-Area Ponds

Pond	P1	P2	P3
As-built Capacity (m^3)	20,781	6,828	18,432
Maximum Design Water Elevation (m)	68.5	67.5	67.0
Total P-Area Capacity (m^3)	46,041		

Increased water monitoring protocols for the P-Area, over and above that required by the Licence, have been implemented. The additional monitoring includes water quality and transfer data, such as locations and flow volumes for water pumped to and from the containment ponds. This is discussed further in Appendix F.

3.5 Saline Pond

The Saline Pond was constructed in Q3 2016 to accommodate excess saline water from the Underground Mine. The Saline Pond is located east of P3 and north of CP5 (Figure 1.2). Table 6 summarizes the Saline Pond capacity for storage and maximum designed operating water levels. The maximum saline water capacity is the volume that can be stored in the Saline Pond prior to winter freeze. Approximately 9,000 m^3 capacity should be available to accommodate precipitation that may accumulate throughout winter and at freshet.

Based on adaptive management strategies, the project will require a second saline water storage pond (Saline Pond 2). Saline Pond 2 will be temporary in nature and will be constructed in bedrock within the footprint of Tiriganiaq Pit 2 (Figure 3.2). Saline Pond 2 is designed to have a storage volume of 75,000 m^3. Groundwater will be pumped to Saline Pond 2 where it may then be treated for salinity removal at the SWTP. Once approved, more details will be developed in regard to treatment quantity and quality. This information will be incorporated in a Saline Water Management Plan. Inputs to the second saline pond would be similar in chemical nature to those input to the Saline Pond, mainly originating from the underground water storage system.

Table 6: As-Built Storage Capacity for the Saline Pond

Item	Water Balance Under Mean Precipitation Conditions
Maximum Design Water Elevation (m)	62.9
Maximum Saline Water Capacity (m^3)	23,686
Estimated Maximum Storage Capacity at Maximum Water Elevation (m^3)	32,686 *

* Includes the capacity for saline water to be pumped into the Saline Pond from Underground, a combined capacity for net precipitation, and potential seepage water into the pond.

3.6 Water Diversion Channels, Dikes and Berms

3.6.1 Water Diversion Channels

Eight water diversion channels (Channel 1 to Channel 8) have been constructed and form part of the water management infrastructure. The key information and design parameters for each channel are presented in Table 7.

Table 7: Design Parameters for Channels

Item	**Channel**							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Approximate Total Length (m)	493	270	619	710	429	69	214	315
Bottom Width (m)	3	1	1 or 2*	1 or 2*	3	1	1	1
Side Slopes	3(H):1(V)	1.82(H):1(V)	3(H):1(V)	3(H):1(V)	3(H):1(V)	3(H):1(V)	3(H):1(V)	3(H):1(V)
Rip-rap Thickness (m)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

Minimum Bottom Slope Gradient (%)	0.28	0.30	0.17	0.13	0.17	0.44	0.42	0.38

* 1 m bottom width for first 100 m upstream section, and 2 m bottom wide for the remaining channel section

3.6.2 Water Retention Dikes and Berms

In general terms, "dikes" will retain continuous water during normal operations and "berms" may retain short-term water during high level water events. At the end of Mine closure, when the water quality in the corresponding pond meets direct discharge criteria, each of the dikes and berms on site (except for Berm 2) will be breached to restore the original natural drainage paths. Berm 2 will remain in place to prevent non-contact water from flowing into the TSF.

Permafrost is expected to exist beneath the footprint of each dike and berm at the Mine. Each of the water retention dikes (D-CP1, D-CP3, D-CP4, D-CP5, and D-CP6) has been designed as a zoned earth fill dam with a geomembrane liner keyed into the expected permafrost foundation to limit the seepage through the dike and its foundation. The characteristics of the dikes and berms required for the WMP are summarized in Table 8.

3.6.2.1 Thermal Monitoring

Thermal monitoring of each dike is ongoing. Ground temperature cables (thermistors) for the dikes of each containment pond are installed to a minimum depth of 15 m along the centreline to verify that the foundations are frozen and dike integrity does not degrade. Thermal records also provide temporal analysis of vertical temperature profiles to assess increasing (or decreasing) temperatures within the dike structure. During 2018, thermistor readings were taken every 2 – 3 days during freshet and weekly following freshet until freeze-up. Following freeze-up readings were then taken monthly. Reading frequency for 2019 is currently under review by Agnico Eagle. The measured readings are consistently analyzed by an Agnico Eagle geotechnical engineer and will be reported in the annual geotechnical inspection report. This will continue into 2019.

Thermal monitoring will be undertaken at D-CP3 and D-CP4. The reading frequency is currently under review by Agnico Eagle in collaboration with Tetra Tech EBA and will likely follow the same reading pattern as that applied to D-CP1 and D-CP5. In addition to thermal monitoring, visual geotechnical inspections of water management structures are currently applied, as described in Section 3.11 below.

Table 8: Design Parameters for Water Retention Dike/Berm

Item	D-CP1	D-CP3	D-CP4	D-CP5	D-CP6	DP1-A	DP1-B	DP2-A	DP3-A	Berm1	Berm2	Berm3
Approximate Maximum Height (m)	5.6	2.0	2.0	3.3	1.8	3.7	3.4	4.0	3.4	1.6	2.5	2.76

Maximum Elevation (m)	67.5	66.1	65.4	67.3	65.3	70.5	70.7	69.5	69.0	68.5	varies	67.37
Maximum Head of Water Retained (m)	3.5	0.2	0.1	1.4	0.5	68.5	68.7	67.5	67.0	0	0	0

3.7 Evaporators

Five evaporators are installed on jetties constructed at DP1-B. The evaporator system is designed for vaporizing water contained at the P-Area. The evaporators are installed to accommodate the quantity of excess saline water before saline water treatment options and disposal plans have been implemented at the Mine. Based on data collected during 2016, the efficiency of one evaporator was estimated to be 22 m^3/hr.

3.8 Freshwater Intake

Freshwater usage at the Mine includes potable uses, fire suppression, make-up water for the mill, and other operational requirements, such as drilling water, batch plant use and use at the washbay. The main freshwater intake is housed within a rockfill causeway located northeast of the industrial pad in Meliadine Lake, as shown on Figure 1.2 and an additional freshwater intake pump is located at Lake A8. The intakes consist of vertical filtration wells fitted with vertical turbine pumps that supply water on demand. Both intake pipes are fitted with a screen of an appropriate mesh size to ensure that fish will not be entrained and shall withdraw water at a rate such that fish do not become impinged on the screen (NWB, 2016). The Meliadine Lake freshwater intake is connected to the pump house with piping buried under the rockfill causeway.

3.9 Water Treatment

Contact water will be treated (if necessary) to meet Licence requirements prior to being discharged to the environment. TSS mitigation techniques (i.e., attenuation ponds, silt screens, etc.), oil separation treatment, the STP, the SWTP, the RO Plant and the EWTP are used accordingly at various locations at the Mine prior to water being transferred to containment ponds and/or as effluent discharge to Meliadine Lake. Water quality criteria is discussed in Section 7 and Appendix F.

3.9.1 Freshwater Treatment Plant (WTP)

Freshwater from Meliadine Lake will be treated in the WTP before being directed to the camp areas for potable (domestic) water uses. The design flow rate for freshwater for the main camp and accommodations is 216 m^3/day. In the WTP, freshwater will be pumped through cartridge filters, then pumped through ultraviolet units, and finally treated with sodium hypochlorite (chlorine). The treated water will be stored within a potable water tank. Potable water will be monitored according to the Nunavut Health Regulations for total and residual chlorine and microbiological parameters. Operation and maintenance details for the WTP can be reviewed in the Process and Control Narrative (H2O Innovation, 2016).

3.9.2 Sewage Treatment Plant (STP)

Wastewater from the accommodation complex and from satellite sewage tanks will be treated in the STP before being directed to CP1. Operation and maintenance details for the STP can be reviewed in the Operational & Maintenance Manual – Sewage Treatment Plant (Agnico Eagle, 2017c).

3.9.3 Saline Water Treatment Plant (SWTP)

Saline water generated from the Underground Mine is currently being stored underground and on surface at the P-Area and the Saline Pond. The second saline pond will be an addition to this saline water storage system, upon approval. A Saline Water Treatment Plant was constructed in 2018 and is currently being commissioned. The system will be in full operation during Q1, 2019. The SWTP is located in a dome approximately 50 m to the southeast of Portal 1. The SWTP will be used to treat water from the Underground Mine, P-Area or from the saline ponds.

The SWTP will remove excessive total suspended solids (TSS), calcium chloride ($CaCl_2$), sodium chloride (NaCl), metals, phosphorous (P), and nitrogen compounds from the influent saline water. Effluent from the SWTP is currently being transported to CP1. Pre-treatment groundwater and effluent from the SWTP are monitored every 12 hours (night shift and day shift) for pH and TDS, and weekly for chloride (Cl), ammonia (NH_4), nitrite (NO_2), nitrate (NO_3), TDS, TSS, total phosphorus (P), total cyanide (Cn), total metals and total mercury (Hg). The SWTP Design Report can be found in Appendix E.

The SWTP consists of two parallel units. Each unit can be operated to produce brine or solid by-product. One (of two) units within the SWTP will be operated in Brine Mode for the month of December 2018. Brine-mode of one unit within the SWTP is expected to operate to the following specs:

- Inlet capacity of 115 m^3/day with a 95% expected operation availability for a corrected average input capacity of 109 m^3/day.
- With an input capacity of 109 m^3/day the effluent and brine will be discharged as follows:
    - 68 m^3/day to CP1
    - 24 m^3/day to Saline Pond as Brine
    - The 17 m^3/day difference is due to evaporation loss through treatment.

Solid-mode of one unit within the SWTP is expected to operate to the following specs:

- Inlet capacity of 69 m^3/day with a 95% expected operation availability for a corrected average input capacity of 66 m^3/day. This full inlet capacity will be discharged to CP1 as effluent
- Decisions regarding the management of solid salt by-product are ongoing by Agnico Eagle. One possible option would be use as a dust suppressant on roads as the material is similar to

Calcium Chloride currently approved for such use. Formal approval would be required from the Government of Nunavut Environment Department.

The saline effluent temperature from the SWTP is expected to be approximately 35 °C, with an approximate pH of 7.5 (Saltworks 2017). SWTP effluent is expected to meet the required Water Quality Output requirements defined in Agnico Eagle's Desalination Water Treatment Plan Design Criteria with the exception of ammonia, nitrite, total cyanide, and selenium (Saltworks 2017). However, the latest sampling results received (sampling event on January 3rd 2019) meet all of the aforementioned requirements. SWTP effluent and CP1 water quality will continue to be monitored according to the SWTP Design Report (Appendix E) to identify future exceedances and potential impacts to CP1. With respect to toxicology, the SWTP effluent passed acute toxicity tests on Rainbow trout, Three-spined stickleback and Daphnia magna (Saltworks 2017). Pilot testing predicted that TDS concentrations would be approximately 158 mg/L (condensed water after treatment; Saltworks 2017). The first set of results confirmed this prediction with a result of 147 mg/L. Commissioning of the SWTP is currently underway and as such pilot test values may vary from sample results and sample results will trend towards lower concentrations as the treatment process is refined for optimal treatment quantity and quality.

3.9.4 Effluent Water Treatment Plant (EWTP)

Approximately 715,000 m³ of contact water from CP1 was treated and discharged from the EWTP during 2018. The monthly and daily discharge averages are provided in Table 13 and Figure 7.2, respectively. Based on the anticipated water quality (Appendix F) and water quantity, the EWTP will be continue to be used to remove TSS at CP1 in 2019. The volume of water requiring treatment for TSS removal and discharge will increase to a maximum of 798,000 m³ in 2022 and then decrease to 673,000 m³ during the final year of the life of mine (2027). Based on the maximum flow rate of the Actiflo® system model ACP-600R, the EWTP has a maximum capacity of 520 m³/h (nominal flow). The system will have the capacity to treat the anticipated discharge from CP1 for the life of the mine.

TSS mitigation is ongoing with runoff water from ditch systems that have the potential to discharge directly to receiving waters and is described further in the Freshet Action Plan (Agnico Eagle, 2018b).

Beginning July 2018, water stored in pond CP5 was treated through a Reverse Osmosis (RO) system and then pumped through the EWTP for treatment (prior to discharge into Meliadine Lake). The resultant EWTP effluent was continually monitored for turbidity and electrical conductivity as a surrogate for TSS and TDS, respectively. In addition, Agnico Eagle conducted regular sample monitoring in accordance with the Type A Water License and the MDMER.

With respect to TSS monitoring during CP1 discharge events, Agnico has developed triggers for mitigation. Rating curves predicting TSS concentration as a function of turbidity and TDS as a function of conductivity were developed with simple linear regressions. The regressions applied *in situ* conductivity and turbidity readings and MEL-14 sample results. Rating curves are applied to continuous conductivity and turbidity readings taken from internal probes within the EWTP to predict TDS and TSS, respectively. Regarding conductivity, a trigger limit has been set to 1900 µS/cm which corresponds to 1,244 mg/L TDS (See rating curve in Figure 3.3). When this trigger is reached, discharge to Meliadine Lake will be stopped. The correlation strength pertaining to the TDS-conductivity rating curve is R^2 = 0.85. Thus, the trigger limit was set below the maximum allowable concentration (1400 mg/L - TDS limit) to allow for uncertainty associated with the correlation.

Regarding turbidity, two trigger limits have been set. The first is set to 1.2 NTU which corresponds to approximately 15 mg/L TSS (See rating curve in Figure 3.4). When this first trigger is reached, sample frequency will be increased to twice per week for TSS at an accredited lab. The second trigger limit is set to 2.3 NTU which corresponds to approximately 25 mg/L TSS (Figure 3.4). When this second trigger is reached, discharge to Meliadine Lake will be stopped. The correlation strength pertaining to the TSS-turbidity rating curve is R2 = 0.79. Thus, the trigger limit was set below the maximum allowable concentration (15mg/L - TSS Max Ave Concentration and 30 mg/L - TSS Max Grab Concentration) to allow for associated uncertainty the correlation.

3.9.6 Oil Separators

An oil separation treatment system was installed in 2018 at the Maintenance Shop to collect and separate oil from water used for washing mining equipment. A second oil-water separator is installed at Landfarm A. In the event of water accumulation at Landfarm A due to rainfall or snowmelt, the ponded water will be pumped through the oil-water separator to remove PHC residue and will be analyzed for BTEX, lead, and oil and grease prior to discharge to CP1 or used on the windrows to increase moisture content, as required. Water accumulating in the landfarm will not be discharged directly to the receiving environment.

3.10 Discharge Diffuser

The discharge diffuser is the final effluent discharge location for the Mine. The overall purpose of the diffuser is to discharge water from CP1 (at sampling station MEL-14) to Meliadine Lake while providing minimal environmental impacts to the Lake. The effluent mixing will be dependent on ambient currents in Meliadine Lake, driven by wind during the open water period. The diffuser modelling was initially conducted by Golder Associates Ltd. (Golder, 2015) and updated design progress was reported by Tetra Tech EBA (Tetra Tech, EBA 2016).

3.11 Water Management Structure Monitoring

Pursuant to Part E, Item 15 of the Licence, Agnico Eagle will carry out weekly inspections of all Water management structures during periods of flow and monthly thereafter. The records will be maintained for review upon request of an Inspector. More frequent inspections may be required at the request of an Inspector. Inspections will focus on structures and conditions in Sections 3.11.1 to 3.11.5 to follow. The associated inspection template can be found in Appendix G.

3.11.1 Culvert and Water Crossing Inspections

Culverts listed in Section 3.1, as well as culverts and water crossings along the AWAR, Bypass Road, and at the Itivia site will be inspected for the following conditions. These inspections also satisfy the monitoring procedures outlined in the Sediment and Erosion Management Plan (Appendix D):

- Damage to the inlet or outlet of the culvert which may impede flow capacity;
- Bed erosion upstream and downstream of watercourse crossing structures;

- Scour under bridge abutments and abutment foundations;
- Erosion along cutslopes and fillslopes of embankments (rill and gully erosion);
- Blockages within the culvert including snow, ice, debris; and
- Snow cover or snow piles which would prevent routing of water towards the inlet of the culvert (only applicable one prior to freshet).

In the case that any of the above conditions are observed, corrective actions will be taken to optimize culvert/water crossing function and integrity.

3.11.2 Containment Pond Inspections

Water containment ponds discussed in Section 3.3 and P-Area containment ponds discussed in Section 3.4 will be inspected for the following conditions:

- Unplanned inputs via surface runoff which are not part of the water management system; and
- Water level elevation above the operating manual maximum (OMM).

In the case that any of the above conditions are observed, corrective actions will be taken to prevent unaccounted for losses of available water capacity or potential compromise to dike integrity.

3.11.3 Dike Inspections

Dikes discussed in Section 3.6.2 will be inspected in order to track natural (expected) movement of the structure. Furthermore, a 'master" sketch of all the issues that were documented in the past will be maintained as a means to spot any changes/new issues. Inspections will focus on the upstream slope, the crest, and the downstream slope and observations will include the following:

- New areas of movement/deterioration not previously documented;
- Changes to previously documented areas of movement/deterioration;
- Seepage through the downstream slope;
- Water presence in downstream channel/sump; and
- Areas of movement/deterioration of downstream channel/sump.

Any issues or potential problems identified will be addressed accordingly by a geotechnical engineer in order to mitigate risks and maintain dike integrity.

3.11.4 Water Diversion Channel and Berm Inspections

In addition to the water management structures requiring inspections under the Water Licence, Agnico Eagle will carry out inspections of all channels on site listed within Section 3.6.1 and Table 1 for the following conditions:

- Obstructions to flow (ice, debris);
- Inflows not part of the water management system;
- Structural failure of channel banks;
- Seepage through water diversion berms resulting in water movement to areas not planned within the water management system; and
- Erosion of diversion berms (i.e., undercutting, slope failure).

In the case that any of the above conditions are observed, corrective actions will be taken if there is potential for compromise effectiveness of the channel function or potential for unplanned impact to water quality or quantity in associated containment ponds.

SECTION 4 • WATER MANAGEMENT STRATEGY

There are four major sources of inflow water considered in the Mine water management system; freshwater pumped from Meliadine Lake and Lake A8, natural run off from precipitation, natural groundwater inflow to the Underground Mine and open pits, and water produced during freshet.

A brief summary of the water management strategy for the Mine is presented as follows:

- Contact water from key mine infrastructure will be diverted and/or collected in the containment ponds (CP1, CP3, CP4, CP5, CP6, the Saline Ponds and the P-Area).
- The collected water in CP3 to CP6 will be pumped to CP1. Water collected in CP1 will be reused by the process plant and the excess water will be treated by the EWTP prior to discharge via the diffuser into Meliadine Lake.
- Contact water from the Underground Mine will be contained in underground sumps and the water storage stopes and reused for mining operations. Excess water volumes will be stored in the Saline Ponds, treated by the SWTP to be transported to CP1, or will be discharged to Melvin Bay upon approval.
- Runoff water in the open pits will be collected in sumps and then pumped to the designated water containment ponds (CP1, CP5).
- Natural flooding of the open pits at end of mining will be supplemented by using freshwater from Meliadine Lake.
- Upon the completion of underground mining, the Underground Mine workings will be allowed to naturally flood by groundwater seepage.

Appendix B presents the Freshet Action Plan, which includes the Freshet Action Procedure and the Snow Management Procedure for the Mine. Table 9 summarizes the overall contact water management plan for the key infrastructure and presents the initial water collection locations and final water destinations. The plans for water management at key areas are described in following sections.

Table 9: Overall Site Surface Contact Water Management Plan

Contact Water Source	Initial Contact Water Collection Location	Final Contact Water Collection Location
Industrial Site Pad Area (camp/process plant area)	CP1	CP1
WRSF1 Area	CP1, CP4 and CP5	
WRSF2 Area	CP1 and CP5	
WRSF3 Area	CP6	
Dry Stack TSF Area	CP1 and CP3	
Ore Stockpiles OP1 to OP3	CP1	
Landfill	CP1	
Landfarm (biopile)	Sump within Landfarm	To CP1 after oil separation
Tiriganiaq Pit 1 Tiriganiaq Pit 2	Open pit sumps	First to CP5 and then to CP1
Tiriganiaq underground	Sumps in underground mine	Sumps in underground mine, surface saline water storage ponds (Saline Pond, P-Area), SWTP to CP1 and/or discharge to sea

The following sections describe the strategy for water management at different areas for the Mine.

4.1 Key Water Management Activities

The activities required for the WMP are summarized in Table 10. Water management activities during closure are described in Section 6.

Table 10: Key Water Management Activities

Mine Year	Major Water Management Activities and Sequence
Q4 of Yr -5 (2015)	• Started to re-use the underground water • Dewatered top 0.5 to 1.0 m of fresh water in Pond H17
Yr -4 (2016)	• Dewatered H17 into Meliadine Lake. • Dewatered Pond A54 in Q3 of Year -4 and pumped the water to CP1. • Started to store the excess groundwater from the underground mine at surface. • Implemented and tested evaporators at P-Area to reduce water volumes stored at surface. • Constructed trenches down gradient from DP1-B and DP3-A to be able to pump collected water and pump back to P1 and P3, respectively.

Mine Year	Major Water Management Activities and Sequence
Yr -3 (2017)	• Started to pump the water from CP1 to EWTP for treatment prior to discharge via the diffuser to Meliadine Lake. • Pumped the solids sludge from EWTPto CP1. To limit recirculation of the sludge within CP1, the discharge of the sludge was located away from the EWTP intake. • Started to treat sewage from STP and pump the treated sewage from STP to CP1. • Started to pump the contact water from CP5 to CP1 for treatment (solids removal) • Started to pump water collected in trenches, down gradient from D-CP1, D-CP5, DP1 and DP3 to CP1, CP5, P1 and P3, respectively. • Started to pump the water from the Type A Landfarm to CP1 after oil/water separator treatment. • Started to pump water from washbay to underground for storage until a biological treatment unit for hydrocarbon reduction/removal arrives at the site
Yr -2 (2018)	• Started diversion of the contact water from industrial pad to CP1 via Channel1 • Constructed and commissioned (in Q4) SWTP to discharge to CP1.
Yr -1 (2019)	• Commission wash bay water treatment unit, monitor water quality monthly and transport treated water to CP1 • Start to pump the contact water in CP3 to the partially drained Pond H13 where the water will flow through Channel1 into CP1 • Once approved, pump underground saline water to Melvin Bay in Rankin Inlet
Yr 1 (2020)	• Start to pump the contact water in CP4 to the partially drained Pond H13 where the water will flow though Channel1 into CP1
Yr 2 (2021)	• Start to pump contact water collected in Tiriganiaq Pit 1 to CP5
Yr 3 (2022)	• Dewater Ponds H19 and H20 in Q3 of Year 3 and pump the water to CP1
Yr 4 (2023)	• Start to pump contact water collected in Tiriganiaq Pit 2 to CP5 • Start to pump contact water in CP6 to CP1
Yr 5 (2024)	• Water management plan similar to Year 4
Yr 6 (2025)	• Water management plan similar to Year 4
Yr 7 (2026)	• Water management plan similar to Year 4 • Stop pumping water from the open pits when the pits are mined-out at end of year • Stop pumping excess water from underground when underground mine is completed
Yr 8 (2027)	• Start to fill the mined-out Tiriganiaq Pits 1 and 2 with active pumping from Meliadine Lake • Start natural flooding of Tiriganiaq Underground mine with groundwater seepage • Stop pumping water to process plant when the processing is completed

4.1.1 Pond Dewatering and Displacement

The initial dewatering at Lake H17 and Lake A54 was conducted in 2016 prior to constructing CP1 and CP5, respectively. The water from these ponds was pumped to Meliadine Lake through a temporarily installed diffuser. Preparation for construction of CP4 facility required dewatering of two shallow ponds into CP1, namely B8 and B9 at CP4. Volumes pumped to CP1 from B8 and B9 occurred in Q4 2018 at 3,150 m^3 and 7,200 m^3, respectively. Preparation for CP3 did not require dewatering as B28 contained insufficient volumes to dewater. Regarding dewatering of Ponds H19 and H20 for CP6 and WRSF3, it is assumed that approximately half the volume of water in these ponds will be pumped to Meliadine Lake if it meets discharge criteria, and the remaining volume of water will be pumped to CP1 to be stored for open water discharge to Meliadine Lake or for use in the Process Plant. Table 11 summarizes the estimated dewatering plan and estimated volume of water to be dewatered for future construction.

Table 11: Estimated Pond Dewatering Plan

Pond	H20	H19
Maximum Pond Water Depth (m)	1.6	1.4
Existing Pond Surface Area (ha)	9.58	2.91
Dewatering Schedule	Sept. to Oct. of Year 3	Sept. to Oct. of Year 3
Estimated Total Volume of Water to be Dewatered (m^3)	90,307	16,431

4.1.2 Underground Water Management

The Underground Mine will extend approximately 650 m below the ground surface and part of the underground workings will be operated below the base of continuous permafrost. The underground excavations will act as a sink for groundwater flow during mining, with water induced to flow through the bedrock to the Underground Mine workings once the Mine has advanced below the base of the permafrost.

Underground contact water is contained within underground sumps and the underground water stope. Excess underground water is pumped to surface to be managed in two saline storage ponds, the second of which is currently pending approval from the Minister. Beginning December 2018, the SWTP began treating groundwater to reduce stored saline water on Site (See Section 3 for details). Furthermore, as part of the strategy to manage excess groundwater infiltration of saline water within the underground portion of the mine, Agnico Eagle applied to the Nunavut Impact Review Board for approval to discharge saline water to the sea (Melvin Bay, Rankin Inlet). At this time, Agnico Eagle is awaiting approval from the Minister for the project.

The estimated volume of water to be managed is expected to range from a minimum of about 0.11 Mm^3/year to a maximum of 0.18 Mm^3/year depending on the production. Details of the underground dewatering system are provided in the Mine Plan (Agnico Eagle, 2017a).

Table 12 presents the predicted groundwater inflow rates estimated by Golder (2016) for passive groundwater inflow to the Underground Mine. These values do not include grouting efforts or ventilation loss. Actual inflow values to the Underground Mine, which included the impact of grouting, ventilation losses, loss of water in waste rock pore space, treatment by the SWTP, and loss due to re-use of water in mining operations, were estimated based on changes in water volumes stored in the underground water storage system. Changes in storage were calculated on a daily basis and used to produce monthly inflow rate estimates. Based on these monthly averages, mean inflow rate over 2018 was 51 m^3/day. This is not the groundwater inflow rate to the mine but rather the balance of inflows, the aforementioned water losses, and water used for operations. Thus, the 51 m^3/day estimate is the surplus of inflows that was placed in storage.

Table 12: Predicted Groundwater Inflow to the Underground Mine (2017 to 2032)

Period	Predicted Groundwater Inflow (m^3/day)
2017	230
2018	300
2019	280
2020	300
2021	340
2022	340
2023-2024	420
2025-2026	380
2027-2028	390
2029-2030	380
2031-2032	360

Source: Updated Predictions of Groundwater Inflow to Tiriganiaq Underground Mine (Golder 2016).

4.1.3 Water Management for Haul Road

A network of haul roads are to provide access to infrastructure at the Mine. The majority of the roadways servicing the mining area are located so that drainage is directed by berms, channels and culverts towards CP1, CP3 and CP5. Haulage roads in proximity to CP4 and CP6 will be constructed in similar fashion. As shown in Appendix C, water diverted to CP3, CP4, CP5 and CP6 will eventually be transferred to CP1. Detailed information about water management on roads is described in the Roads Management Plan (Agnico Eagle, 2014).

4.1.4 Water Management for Landfarm and Landfill

Any water that accumulates at the onsite Landfarm will be pumped through an oil/water separator prior to discharge into CP1. Additional details for Landfarm water management are described in the Landfarm Management Plan (Agnico Eagle, 2015b).

Leachate from the Landfill is anticipated to non- hazardous and non- toxic due to the controls placed on materials acceptable for the landfill. Drainage from the Landfill is expected to freeze within the WRSF with minimal amounts of leachate reporting to the water collection infrastructure placed around the WRSF. Annual Landfill operations will involve clearing of snow prior to spring melt. However, in the event there is leachate from the Landfill due to periods of heavy rainfall or spring freshet, the runoff will be collected, controlled and treated, if necessary (Agnico Eagle, 2015a), and sent to CP1.

4.1.5 Water Management for Emulsion Plant Area

Freshwater will be trucked to the emulsion plant and used for manufacturing emulsion as well as for washing vehicles. Water within the emulsion plant will be re-used when feasible, and excess water will be collected and disposed of either through the onsite STP or in the P-Area holding ponds.

4.1.6 Water Management for the Batch Plant

Freshwater is pumped from Lake A8 to the Batch Plant and used for concrete production. Water used in the Batch Plant will be re-used when feasible and excess used water will be collected and disposed of in the P-Area containment ponds.

4.1.7 Water Management for the Wash Bay

Freshwater is pumped from Lake A8 to the Wash Bay and used to wash equipment at the Mine. Water used in the Wash Bay is re-used when feasible and excess water is recycled through a biological treatment system designed to reduce or remove hydrocarbons. Waste from the treatment process is removed in the form of solids and disposed of appropriately (landfarm or landfill). Excess treated water that exceeds the system capacity will be transported to CP1 or discharged to the sanitary sewer system.

4.2 Freshwater and Sewage Management

Additional freshwater usage and sewage management is described in the following sections.

4.2.1 Freshwater Management

Major freshwater usages on site include potable use, fire suppression, a portion of make-up water for the mill, and other operational needs, such as drilling. Freshwater is sourced from Meliadine Lake through a freshwater intake and pump system. For dust suppression, water is sourced from any ponded water located along the All Weather Access Road (AWAR), small ponds proximal to the road and/or from the Meliadine River.

Freshwater is pumped through an overland pipeline to an insulated main storage tank located at the plant site. Under the Licence, up to 62,000 m^3/year of freshwater may be used during the construction phase. Approximately 318,000 m^3/year of freshwater will be required during operation phase. Additionally, approximately 4,000,000 m^3 of freshwater will be required per year to fill the mined-out open pits during the mine closure. These quantities are inclusive of water needs for dust suppression.

The design flow rate for the potable water for the main camp and accommodations (kitchen, laundry) is 136 m^3 per day (based on a 680-people camp capacity and a nominal consumption of 200 L/day/person). There is an onsite Potable Water Treatment System. Treated potable water is piped to areas in the process plant, service complex, and other facilities requiring potable water.

4.2.2 Sewage Management

Sewage is collected from the camp and change-room (dry) facilities and pumped to the STP. The objective of the STP is to treat sewage to an acceptable level for discharge to CP1 via a sewage water discharge pipeline. The STP is housed in a prefabricated (modular) structure, located at south-east of the service complex at the Industrial Pad, as shown in Figure 1.2. The sewage treatment system is designed based on a flow rate of 200 L per day per worker for a peak load of 680 people, for an average daily flow rate of 136 m^3 (5.67 m^3/h).

The STP for the camp facilities is designed to meet appropriate guidelines for wastewater discharge (Agnico Eagle, 2017c). Details regarding STP specifications and operation can be found in the Operation & Maintenance Manual Sewage Treatment Plant (Agnico Eagle, 2017c).

4.2.3 Process Water Management

Process water will be required in the mill for ore processing. Both contact water from CP1 and sludge water from the EWTP will be used as process water. When possible, water from CP1 will be the main source of water for the ore process. Additional water needs will be supplied by freshwater from Meliadine Lake. Approximately 816 m^3/day of process water will be required in Year 1 to Year 3 operations and approximately 770 m^3/day of process water will be required in Year 4 to Year 8.

4.3 Discharge Diffuser Effluent Flow Rates

Effluent is discharged from the EWTP into Meliadine lake via a diffuser at a design rate of 11,688 m^3/day (a water treatment rate of 12,000 m^3/day minus 312 m^3/day of sludge returned back to CP1). The pump does not operate continuously. The amount of effluent flow released over each month and over each year was based on the overall water balance for the feasibility study (Tetra Tech EBA, 2016).

Table 13 shows the estimated total volume of effluent released per month per year along with effluent released per month in 2018. Daily effluent discharge rates are provided in Figure 7.2 and discussed in Section 7.

Table 13: Estimated Effluent Flow Rates over Mine Operating Life

Year	Effluent Released Over the Course of the Month (m^3)				
	June	July	August	September	October
Year -2: 2018	133,797	425,562	153,066	2,632	0
Year -1: 2019	175,320	303,888	105,192	93,504	35,064
Year 1: 2020	175,320	292,200	105,192	163,632	70,128
Year 2: 2021	175,320	350,640	128,568	105,192	35,064
Year 3: 2022	175,320	350,640	128,568	93,504	35,064
Year 4: 2023	175,320	350,640	128,568	93,504	35,064
Year 5: 2024	175,320	350,640	128,568	93,504	35,064
Year 6: 2025	175,320	280,512	105,192	81,816	35,064
Year 7: 2026	175,320	292,200	116,880	93,504	35,064
Year 8: 2027	175,320	292,200	116,880	93,504	35,064
Year 9: 2028	175,320	280,512	116,880	93,504	35,064
Year 10: 2029	-	-	-	-	-
Year 11: 2030	-	-	-	-	-

SECTION 5 • WATER BALANCE

5.1 Global Water Balance

A water balance model was developed to assist in the evaluation of the water management infrastructure and estimation of the pumping requirements over the life of the Mine and under closure conditions. The model includes a water balance conducted on both a monthly and yearly basis. The model focuses specifically on contact water management infrastructure and areas that are affected by mining activities.

A monthly site-wide water balance was conducted for CP1, CP3, CP4, CP5, CP6, Tiriganiaq Pit 1, Tiriganiaq Pit 2, water in the underground mine operation, make-up water for the mill, water for the WTPs, and freshwater during mine construction period to mine closure under mean precipitation years.

The following sections present the parameters and assumptions adopted in the water balance model as well as a 2019 model update along with a summary of the water balance results.

5.2 Water Balance Framework

The water balance framework developed for the site-wide water balance model was presented in Version 1 of the WMP (Agnico Eagle, 2015a). To simulate a range of conditions, the model was run for the proposed mine life and closure conditions.

5.3 Water Balance Assumptions

The water balance was based on the following:

- snow accumulates throughout the months of November to May, and thaws in June during the annual spring freshet period;
- average precipitation year climate conditions;
- the open pits and water containment ponds (CP3 to CP6) are not to be used for long-term storage of water during operations;
- the water collection sumps and ponds are empty in the autumn prior to the spring freshet each year; and,
- other water management assumptions described in Section 4 of this WMP.

A general water management flow sheet illustration is presented in Appendix C.

5.4 2019 Water Balance Update

An update to the water balance model was generated to provide monthly water balance and water quality forecasts (Section 7.3) for the 2019 year. The purpose of this update is to identify potential changes to the site water balance as the mine transitions to commercial operation (Appendix H).

The 2019 water balance update is specific to waterbodies that will be affected by the commencement of operations and operational activities taking place throughout the remainder of the 2019 calendar year. The water containment facilities included in this update are CP1, CP3, CP5, Saline Pond, underground mine operation, and P-Area. Results of the water balance update are provided in Appendix H.

The framework of the 2019 water balance update was designed with the following assumptions:

- Precipitation is based off an average climate scenario;
- The Mine will not discharge saline water to Melvin Bay;
- Additional saline water storage on surface (i.e. Saline Pond 2) is not included;
- The SWTP will be used to treat saline water from the underground mine;
- Winter inputs (snow dumping activities) to CP1 are not accounted for; and
- TSF runoff includes a component of waste rock runoff originating through the waste rock cover.

5.5 Water Balance Results

The estimated maximum annual water input/output from each of the various water management facilities under mean precipitation conditions are summarized in Table 14. Results were also provided for 1:100 year wet and dry conditions, with corresponding basis and assumptions, in a separate technical memorandum (Tetra Tech EBA, 2015). Results of the 2019 water balance update are provided in Appendix H of the plan.

Table 14: Estimated Maximum Annual Volumes from Mine Site Water Balance

Item	Maximum Annual Water Volume (Mm³)
Contact Water from CP1	0.800
Contact Water from CP3	0.088
Contact Water from CP4	0.087
Contact Water from CP5	0.240
Contact Water from CP6	0.076
Water Pumped from CP1 to WTP for Treatment	0.798
Fresh Water Pumped from Meliadine Lake during Construction	0.062
Fresh Water Pumped from Meliadine Lake during Operation	0.318

Treated Water from WTP to be Discharged to Outside Environment	0.730
Underground Water Pumped to Underground TSS Removal Plant	0.696
Excess Water from Underground Mine to be Stored on Surface	0.155
Fresh Water Pumped from Meliadine Lake to Fill Mined-out Tiriganiaq Pit 1	3.068
Fresh Water Pumped from Meliadine Lake to Fill Mined-out Tiriganiaq Pit 2	0.749

5.6 Waterbody Inventory

Three watersheds (Watershed A, Watershed B and Watershed H) will be impacted by the Mine activities. Table 15 presents the waterbodies that are impacted by mining activities. Watersheds and waterbodies in proximity to the Mine location and waterbodies affected by Mine infrastructure are shown on Figure 5.1.

Table 15: Inventory of Waterbodies Impacted by Mining Activities

Watershed	Waterbody	Maximum Lake Water Depth, m	Total Area (ha)	Water Volume (m^3)	Notes
A	A9	N/A	0.18	-	Flow regimes impacted by the development of Tiriganiaq Pit 1
	A10	0.67	0.26	-	Ponds removed by development of Tiriganiaq Pit 1
	A11	0.45	0.40	-	
	A12	0.87	0.47	-	Pond drained due to construction of Channel 5
	A13	0.30	0.26	-	
	A17	0.30	0.16	-	Covered by WRSF 1
	A38	N/A	0.05	-	Flow regimes impacted by the development of Tiriganiaq Pit 2
	A39	0.48	0.12	-	Ponds removed by development of Tiriganiaq Pit 2
	A54	1.3	5.99	34,545	Dewatered for CP5
	A58	0.50	0.43	-	Covered by WRSF 2
B	B8	0.8	1.43	-	As part of CP4/D-CP4
	B9	1.40	0.64	-	Covered by WRSF1
	B10	0.8	0.33	-	Ponds removed by development of Tiriganiaq Pit 1
	B28	N/A	0.45	-	As part of CP3/D-CP3
H	H6	0.58	0.75	-	As part of CP1
	H7	0.67	0.11	-	
	H8	0.59	0.38	-	Partially covered by WRSF2 and haul road
	H9	0.40	0.42	-	Partially covered by WRSF2 and OP2
	H10	0.11	0.10	-	Partially covered by WRSF2 and OP2, drained due to construction of Channel1
	H11	0.27	0.28	-	
	H12	0.81	0.97	-	Drained due to construction of Channel1 and partially covered by OP1
	H13	1.04	3.49	-	Drained due to construction of Channel1 and partially covered by industrial pad
	H14A	0.37	0.15	-	Covered by industrial pad
	H15D	0.30	0.15	-	Partially covered by TSF
	H15G	0.40	0.38	-	
	H17	1.70	15.8	195,700	Dewatered for CP1
	H17A	1.50	0.13	1,365	Dewatered for Meliadine esker
	H17B	1.50	0.69	10,350	Dewatered for Meliadine esker
	H17C	1.50	0.23	3,450	Dewatered for Meliadine esker
	H18	0.67	0.74	-	Covered by OP2
	H19	1.40	2.91	16,431	Dewatered for CP6
	H20	1.60	9.58	90,307	Covered by WRSF3

"-" indicates that data not available or not applicable; grey shading: Ponds to be drained; tan shading: Ponds to be dewatered

SECTION 6 • WATER MANAGEMENT DURING CLOSURE

The detailed Mine closure and reclamation activities are provided in the Preliminary Closure and Reclamation Plan (Agnico Eagle, 2015d).

Water management during closure and reclamation will involve flooding the open pits using precipitation and freshwater from Meliadine Lake, flooding the Underground Mine workings with groundwater inflows (groundwater seepage), and maintaining contact water management systems on site until monitoring results demonstrate that water quality are acceptable for discharge of all contact water to the environment without further treatment. Once water quality meets the discharge criteria, the water management systems will be decommissioned to allow the water to naturally flow to the environment.

The key water management activities during Mine closure are summarized in Table 16. Figures 6.1 and 6.2 illustrate the WMP during and after Mine closure, respectively. Additional details for the activities are described in the following sections.

Table 16: Key Water Management Activities during Mine Closure

Mine Year	Figure	Key Water Management Activities and Sequence
Yr 9 to 11 (2028 to 2030)	6.1	• Finish flooding the mined-out Tiriganiaq Pit 1 and Tiriganiaq Pit 2 by Q4 of Year 10 • Continue to collect and manage the contact water in CP1, CP3, CP4, CP5 and CP6 • Continue to pump the contact water in CP1 to EWTP, if required, for treatment before being discharged to the outside environment • Remove non-essential site infrastructure • Pump the underflow sludge water from EWTP to CP1 • Continue natural flooding of Tiriganiaq Underground Mine with groundwater seepage • Remove Meliadine Lake pumping system
Post-Closure	6.2	• Treat the contact water until water quality meet direct discharge criteria and then decommission the water management system • Continue natural flooding of Tiriganiaq Underground (progressive reclamation since Year 8) • Breach water retention dikes D-CP1, D-CP3, D-CP4, D-CP5, and D- CP6 once water quality monitoring results meet discharge criteria to allow water to naturally flow to outside environment • Remove culverts and breach remaining water retention dikes/berms in Year 18

6.1 Open Pits Flooding

When flooding the open pits for closure, the maximum pumping rate from Meliadine Lake shall not exceed 4,000,000 m^3/year during closure of the Mine, as stated in Part E of the Licence. The planned pumping period will occur during the open water season from mid-June to end of September for each year. Table 17 summarizes the pit volume and expected water elevations at the completion of flooding activities. It will take approximately three years to fill the pits with an assumed pumping rate of 0.44 m^3/s (38,300 m^3/day). The assumed pumping rate of 0.44 m^3/s from Meliadine Lake during closure will have negligible effect to Meliadine Lake when compared to the average outflow rate at the outlet of Meliadine Lake. The pumping rate will be evaluated further to validate that any possible negative effects to Meliadine Lake do not occur.

Table 17: Pit and Underground Flooding

Pit	Volume (Mm^3)	Final Water Elevation (masl)	Water Source
Tiriganiaq Pit 1	9.20	64.14	Freshwater from Meliadine Lake
Tiriganiaq Pit 2	2.25	64.38	Freshwater from Meliadine Lake
Tiriganiaq Underground	1.4	Groundwater level	Groundwater seepage

The water quality model results indicated that water quality in the flooded pits will meet the discharge criteria and post closure treatment will not be required. The water quality within the pits will be monitored during flooding to verify the prediction of the water quality model. The information will be used to develop a strategy to minimize contamination of the regional surface water system.

6.2 Underground Mine Flooding

Passive flooding of the Tiriganiaq Underground Mine will occur following the completion of mining. The estimated total flooding volume of the underground workings is 1,372,000 m^3. Seepage water into the Underground Mine will be the main water source for flooding. At the predicted seepage rate it is estimated to take 6 years to flood the Underground Mine.

6.3 Containment Ponds, Dikes and Berms

The containment ponds, dikes and berms will remain in place to collect the surface runoff water and seepage from the Mine until the water quality meets discharge criteria. Once the water quality meets discharge criteria, dikes/berms will be breached to allow the water to naturally flow to the environment. Dikes/berms breaching will involve the removal of a portion of the dikes to a minimum depth of 1 m below average water level or back to original ground levels. Consideration will be given to breach staging, with the above water portions of the dike/berm in the breach area removed during winter periods, when there will be little surface water flow, thereby minimizing the potential release of sediments to the neighbouring waterbodies. The remainder of the breach would be conducted during the open water season following freshet. Turbidity curtains would be deployed to minimize any potential sediment release to surface water.

6.3 Channels and Sumps

Once monitoring results have indicated that contact water conveyed in channels and sumps meets acceptable water quality, the infrastructure will be graded and/or surface treated according to site-specific conditions to minimize wind-blown dust and erosion from surface runoff, if required. This closure activity is intended to enhance site area development for re-colonization by native plants and wildlife habitat.

SECTION 7 • WATER QUALITY

Water quality monitoring is an important part of the Water Management Plan to verify the predicted water quality trends, conduct adaptive management should differing trends be observed, and to ensure all water quality limits at discharge points are met (i.e., effluent to Meliadine Lake). Water quality results and water transfers (i.e., origin, destination, rate) at the Mine are monitored and documented pursuant the Licence.

Water quality monitoring was initiated at the pre-development stage and continued through construction. Monitoring will continue into operations, closure, and post-closure. Monitoring occurs at three levels:

1. Regulated discharge monitoring that occurs at monitoring points specified in the Licence or MDMER regulations.
2. Verification monitoring that is undertaken for operational and water management purposes by Agnico Eagle.
3. General monitoring that is commonly included in the Licence, specifying what is to be monitored according to a schedule. This monitoring is subject to compliance assessment to confirm sampling was carried out using established protocols, included quality assurance/quality control provisions, and addressing identified issues. General monitoring is subject to change as directed by an Inspector, or by the Licensee, subject to approval by the NWB.

Appendix F details the Water Quality and Flow Monitoring Plan, which will be further defined as the Mine advances. Figure 7.1a and Figure 7.1b depict Monitoring Program Stations on Site and at Itivia.

Water quality predictions for the Mine were generated using the GoldSim database management and simulations code (Version 11.1.2) where Mine contact water flows derived from the Meliadine water balance are combined with chemistry data from materials exposed in mine infrastructure (tailings storage facility, waste rock piles, etc.), and site baseline information. Where site-specific information is not available, data collected at other mine sites in the north were used to supplement input data.

Water quality estimates were generated for the operational and post-closure periods for effluent to Meliadine Lake, each contact water containment pond (CP1, CP3, CP4, CP5, and CP6), for sumps in the two open pits and for the two fully flooded open pit lakes post-closure. These results were submitted with the 2015 Water Management Plan.

The sensitivity of water quality to an added TSS load was evaluated outside of the GoldSim mass balance model. Total parameter concentrations were evaluated at ponds that discharge to the receiving environment (i.e., CP1 during operations, and CP1, CP3, CP4, and CP6 post-closure) based on an addition of 15 mg/L TSS. Given the uncertainties associated with the modelling exercise (i.e., the development stage of the Mine, laboratory-based input values, assumptions where data do not exist and consideration of an average climate year), the predicted concentrations are considered to be order-of-magnitude estimates. The estimates are sensitive to the assumptions and design elements considered.

Table 18 shows the various MEL-14 (effluent to Meliadine Lake) water quality limits listed under Part F, Item 3 of the Licence, the 2018 water quality results for MEL-14, and the predicted maximum values during operations with respect to end-of-pipe concentrations for MEL-14. As stated above, updated predictions of maximum MEL-14 values will be provided as an addendum to the Water Management Plan when completed.

7.1 Summary of Regulatory Guidelines

Water quality results are compared to MDMER criteria and effluent quality limits listed in the Licence. Water quality pertaining to MEL-14 will be compliant to Part F, Item 3 of the Licence prior to discharging to Meliadine Lake. All surface runoff and/or discharge from drainage management systems associated with the Mine, including laydown areas and All-Weather Access Road, where flow may directly or indirectly enter a Water body, shall not exceed the Effluent quality limits listed in Part D, Item 18 of the Licence. Furthermore, all waters from natural water body dewatering activities shall be directed to Meliadine Lake and shall not exceed the Effluent quality limits listed in Part D, Item 12.

Post-closure discharge water quality will be compared to Canadian Council of Ministers of the Environment Water Quality Guidelines (CCME-WQG) guidelines or the Meliadine SSWQO developed for aluminum, fluoride, and iron (Golder 2013a, 2013b, 2014). The Meliadine SSWQO criteria was developed as a conservative protection to the aquatic receiving environment and was developed by Golder (2013a, 2014) to assess whether waste rock consisted of a deleterious substance according to Environment Canada (2013). The outcome of the assessment was that Meliadine waste rock is not a deleterious substance (Environment Canada 2014).

7.2 Construction

7.2.1 2018 Discharge to Meliadine Lake (MEL-14) Results

With respect to discharge from CP1 to Meliadine Lake (MEL-14), there was one exceedance of the maximum grab sample total aluminum concentration in effluent under Part F, Item 3 of the Licence (3 mg/L; Table 18). This exceedance was reported to the GN. The sample was taken on July 23rd and produced total aluminum concentrations equal to 4.39 mg/L. Results of the adjacent sampling events, July 15th and July 29th, produced concentrations equal to 1.23 mg/L and 0.811 mg/L, respectively. On July 23rd, results showed a relatively high TSS concentration (21 mg/L) and total aluminum was made up of only 2.1% dissolved aluminum. Thus, the exceedance was attributed to uncommonly high TSS on the sampling date. There were no other exceedances under Part F, Item 3 of the Licence during Construction.

Daily MEL-14 discharge volumes over 2018 are shown in Figure 7.1 and monthly totals are provided in Table 13. Discharge began on June 21st and ended on September 3rd. Daily discharge ranged from 103 m^3/day during the late-season (late-august to early-September) to 18,998 m^3/day during peak discharge (mid- to late-July). Average discharge rate was 9,409 m^3/day between June 21st and September 3rd.

7.2.2 2018 Surface Runoff (MEL-SR-1 to MEL-SR-14) Results

With respect to surface runoff associated with the Mine, there were five TSS exceedances of maximum concentrations of any grab sample listed under Part D, Item 18 of the Licence (100 mg/L TSS). One of these occurred at MEL-SR-1 (500 mg/L TSS) and one at MEL-SR-9 (670 mg/L TSS) on May 27th, on June 17th, respectively. The remaining three occurred at MEL-SR-11 (1200 mg/L TSS, 420 mg/L TSS, 160 mg/L TSS) on May 27th, June 3rd and June 10th. The high levels of TSS present during these sampling events caused the moving averages to fall above the maximum average TSS concentration limit listed under Part D, Item 18 of the Licence (50 mg/L). Thus, there were four exceedances of maximum average TSS concentration, one at MEL-SR-1 (143 mg/L TSS) and three at MEL-SR-11 (450 mg/L TSS, 154 mg/L TSS, 56 mg/L TSS). The maximum average TSS concentration exceedances were all the direct result of grab sample maximum concentrations exceedances, which were reported to the GN. Once the moving average calculations progressed beyond the inclusion of the grab sample exceedances, the moving average decreased well below the 50 mg/L limit. Thus, the exceedances of average TSS values were not the result of consistently high TSS values, but rather the result of temporally discrete instances of high TSS results.

Visual assessment and upstream sampling suggests the main TSS source to the MEL-SR-1 exceedance originated from infrastructure to the East and Northeast of the Itivia Site, outside of the site boundaries. Upon 2019 snowmelt, sediment control methods (i.e., silt fences, straw logs) will be strategically installed to prevent sediment transport into and through the Itivia site to MEL-SR-1. Agnico Eagle is currently planning permanent structures for sediment control at Itivia. With respect to MEL-SR-11, the cause for the exceedances and source of runoff was sediment-rich snow piles accumulated during construction of the Bypass Road. The snow piles were located to the Southwest of the Itivia fuel storage tanks. Construction of the Bypass Road is now complete and snow will not be placed in this area over the 2018/2019 winter. Furthermore, based on 2018 runoff patterns snow will be managed strategically to prevent sediment rich snow piles and runoff with the potential to entrain TSS (Refer to Snow Management Procedure within the Freshet Management Plan; Appendix B).

7.3 2019 Water Quality Forecast Update

Results from the 2019 model update (Section 5.4) include TDS concentrations for CP1, CP3, CP5, Saline Pond, underground mine operation, and P-Area. These results were calculated through a mass balance model developed in conjunction with the 2019 water balance model update. Pending the commissioning of additional treatment options, the water quality model will be updated to include all additional parameters outlined in Part F of the licence. The results of the mass balance model are provided alongside the water balance results in Appendix H.

Model predictions exhibit heightened instances of TDS loading across the containment ponds. These values can be attributed to several factors, including those stated in the model assumptions (Section 5.4) as well as conservative volume inputs applied by the model to better understand the water balance expected in 2019. Additionally, water treatment strategies are expected to evolve rapidly as the operational phase commences. As such, the results provide more relative concentrations compared to what has been seen in previous years and reflect the magnitude of TDS concentrations that can be expected in 2019.

Table 18: Effluent Characteristics of MEL-14 (CP1 to Meliadine Lake)

	MDMER and Licence Part F, Item 3 Maximum Concentrations		2018 MEL-14 End-of-Pipe Concentrations		Maximum MEL-14 End-of-Pipe Concentrations Predictions based on Tiriganiaq Monthly Average	
	Maximum MEL-14 Average Concentration [mg/L]	Maximum MEL-14 Concentration of Any Grab Sample [mg/L]	Maximum MEL-14 Average Concentration [mg/L]	Maximum MEL-14 Concentration Grab Sample [mg/L]	Dissolved Concentration[mg/L]	Total Used in the Model (Dissolved + 15 mg/L TSS) [mg/L]
pH	6 to 9.5	6 to 9.5	7.1 to 7.4	6.8 to 7.5	-	-
Total Dissolved Solids	1400	1400	1254	1430*	204	204
Total Suspended	15	30	12	21	-	15
Total Ammonia as Nitrogen	14	18	2.4	4.1	4.6	4.6
Phosphorus (total)	2	4	0.0475	0.099	0.4	0.4
Total cyanide	0.5	1.0	<0.005	<0.005	0.005	0.005
Aluminum	2	3	1.8	4.39*	0.09	1.20
Arsenic	0.3	0.6	0.002	0.002	0.101	0.191
Copper	0.2	0.4	0.003	0.009	0.0011	0.0037
Lead	0.2	0.4	0.0003	0.0003	0.0011	0.0049
Nickel	0.5	1.0	0.003	0.003	0.0023	0.0032
Zinc	0.4	0.8	0.007	0.009	0.009	0.010
Radium-226	0.37 Bq/L	1.11 Bq/L	0.0058 Bq/L	0.008 Bq/L	-	-
Total Petroleum Hydrocarbon	5	5	1.2	1.8	-	-

*Exceeds effluent quality limit listed under Part F, Item 3 of the Licence (2AM-MEL1631).

Table 19: MEL-SR-1 to MEL-SR-14 runoff quality characteristics - Licence requirements & 2018 results

		TSS (mg/L)	Oil and Grease	pH
Licence Part D, Item 18 Maximum Concentrations	Max. Average Concentration	50	No Visible Sheen	6.0 - 9.5
	Max. Concentration of Any Grab Sample	100	No Visible Sheen	6.0 - 9.5
MEL-SR-1	Max. Average Concentration	143*	No Visible Sheen	7.8 - 8.0
	Max. Concentration of Any Grab Sample	500*	No Visible Sheen	7.5 - 8.1
MEL-SR-2	Max. Average Concentration	N/A[a]	No Visible Sheen	N/A[a]
	Max. Concentration of Any Grab Sample	38	No Visible Sheen	7.6
MEL-SR-7	Max. Average Concentration	12	No Visible Sheen	7.8
	Max. Concentration of Any Grab Sample	42	No Visible Sheen	8.0
MEL-SR-8	Max. Average Concentration	N/A[a]	No Visible Sheen	N/A[a]
	Max. Concentration of Any Grab Sample	3	No Visible Sheen	7.9
MEL-SR-9	Max. Average Concentration	N/A[a]	No Visible Sheen	N/A[a]
	Max. Concentration of Any Grab Sample	670*	No Visible Sheen	8.0
MEL-SR-11	Max. Average Concentration	450*	No Visible Sheen	7.9 - 8.0
	Max. Concentration of Any Grab Sample	1200*	No Visible Sheen	7.8 - 8.1
MEL-SR-12	Max. Average Concentration	N/A[a]	No Visible Sheen	N/A[a]
	Max. Concentration of Any Grab Sample	15	No Visible Sheen	7.0
MEL-SR-13	Max. Average Concentration	N/A[a]	No Visible Sheen	N/A[a]
	Max. Concentration of Any Grab Sample	3	No Visible Sheen	8.0
MEL-SR-14	Max. Average Concentration	N/A[a]	No Visible Sheen	N/A[a]
	Max. Concentration of Any Grab Sample	17	No Visible Sheen	7.9

[a] Insufficient quantity of sample results to calculate an average as it is defined in the Licence (requires 4 sample dates for moving average).
*Exceeds effluent quality limit listed under Part F, Item 3 of the Licence (2AM-MEL1631).

7.2.3 Dewatering and Other Monitoring Program Stations

There were no dewatering activities applicable to Part D, Item 12 of the Licence. Dewatering of Lake B8 and Lake B9 produced modest volumes (Section 4.1.1) and was directed to CP1.

The remaining Monitoring Program Station results will be provided in the 2018 Annual Water Licence Report. These stations are not final discharge points and thus do not have effluent quality limits applied within the Licence. A discussion of these results and trends will also be provided in the 2018 Annual Water Licence Report.

7.3 Operations

According to model predictions, CP3 arsenic concentration may exceed MDMER on occasion if precipitation events or the freshet flows generate drainage from the TSF (Golder, 2012c). The main source of arsenic in CP3 is predicted to be from residual process water that is assumed to be present in the filtered tailings. Arsenic transfer from process water to CP3 water will be minimized by effective dewatering of the tailings prior to placement into the TSF, and from freezing of the tailings in the TSF. Frozen tailings will act to limit infiltration and seepage. Water from CP3 will be pumped to CP1 where it will mix with other site waters before discharge. Dissolved arsenic concentration in CP1 is predicted to meet the MDMER monthly average maximum concentration. All other chemical parameters in CP3 and all chemical parameters in CP1, CP4, CP5, and CP6 are predicted to meet MDMER limits for chemical constituents.

7.4 Post-Closure

Long-term, post-closure water quality in the containment ponds (CP1, CP3, CP4, CP5, and CP6) and in the flooded open pit lakes are anticipated to meet MDMER limits and CCME-WQG for the protection of aquatic life or the SSWQO developed for the Mine for aluminum, fluoride, and iron. Arsenic concentrations in CP3 could slightly exceed the SSWQO post-closure, a criteria that is conservatively protective of the receiving aquatic environment (Golder, 2013a). Concentrations that exceed predictions are minor, much less than the mixing capacity in the receiving environment. These arsenic concentrations (Golder, 2013a) are within the tolerance levels that have been deemed non-deleterious by Environment Canada for the Mine (Environment Canada, 2014).

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FIGURES

Figure 1.1 General Mine Site Location Plan

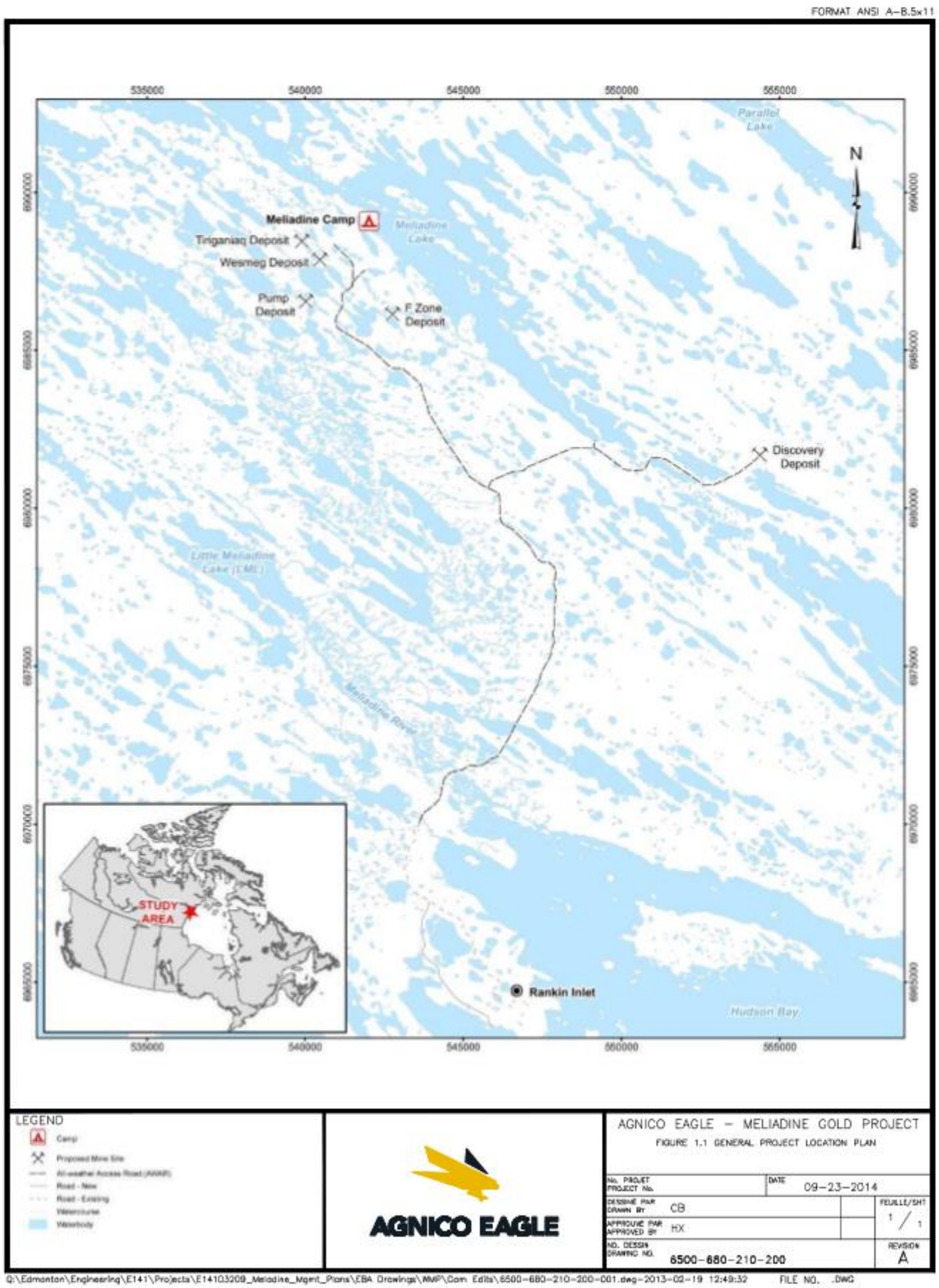


Figure 1.2 General Mine Site Plan Layout

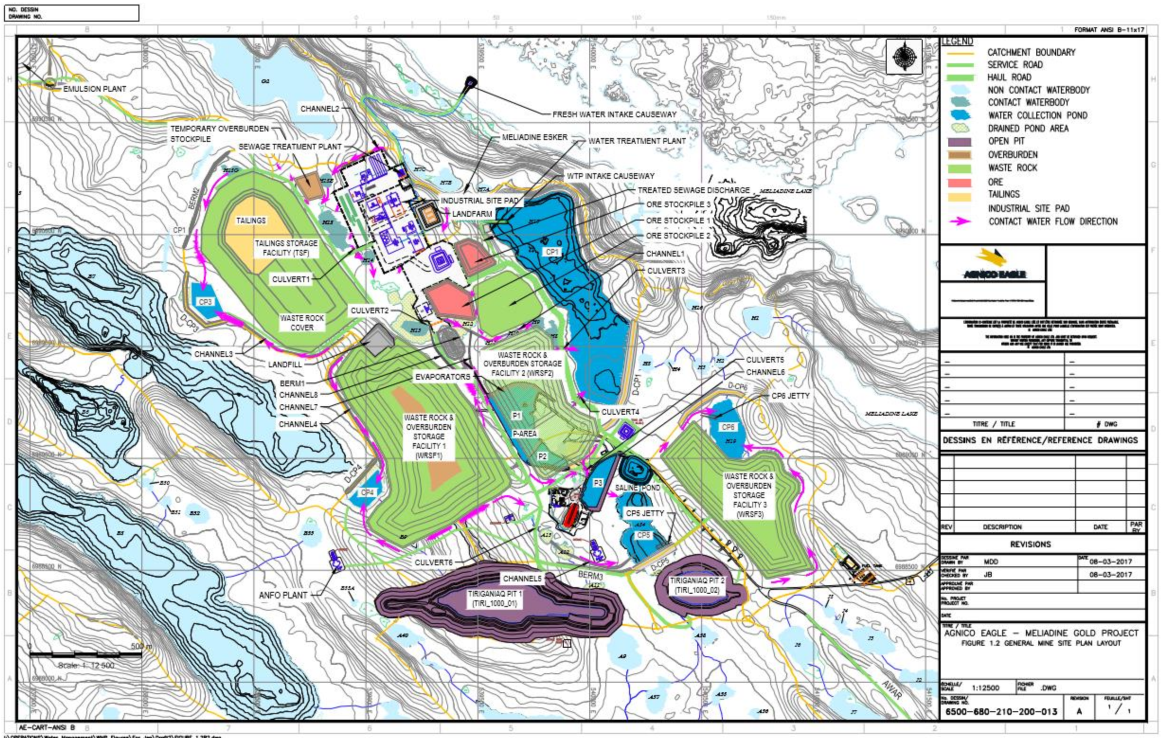


Figure 3.1 P-Area Plan View

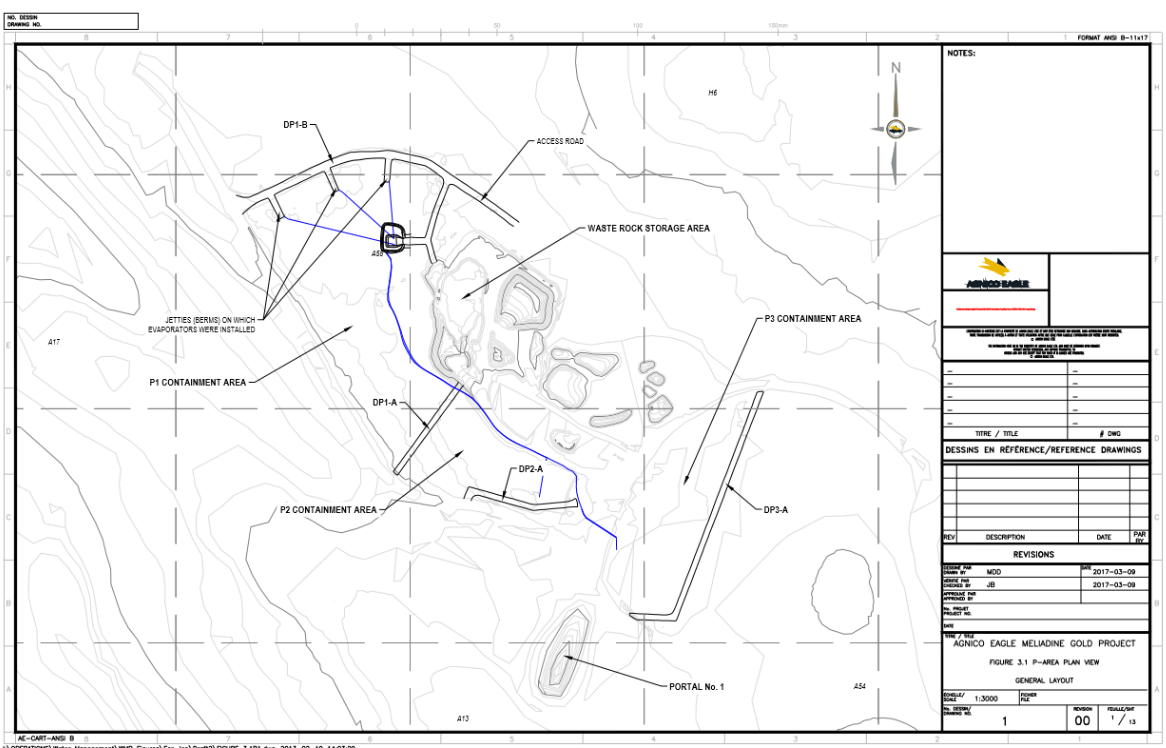


Figure 3.2 Location of Saline Pond 2 within Tiriganiaq Pit 2

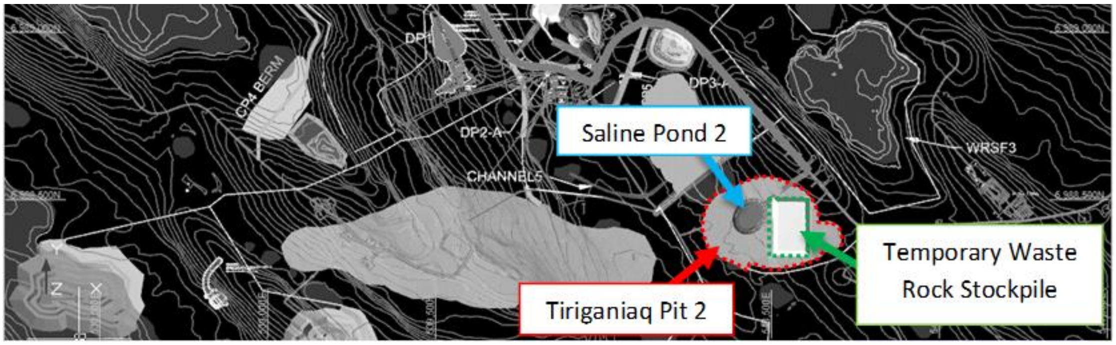


Figure 3.3 Rating curve applied to estimate TDS from conductivity

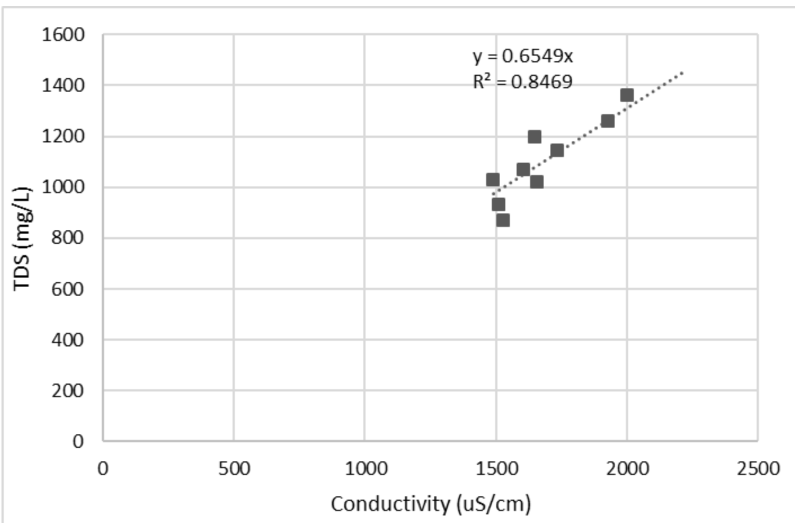


Figure 3.4 Rating curve applied to estimate TSS from turbidity

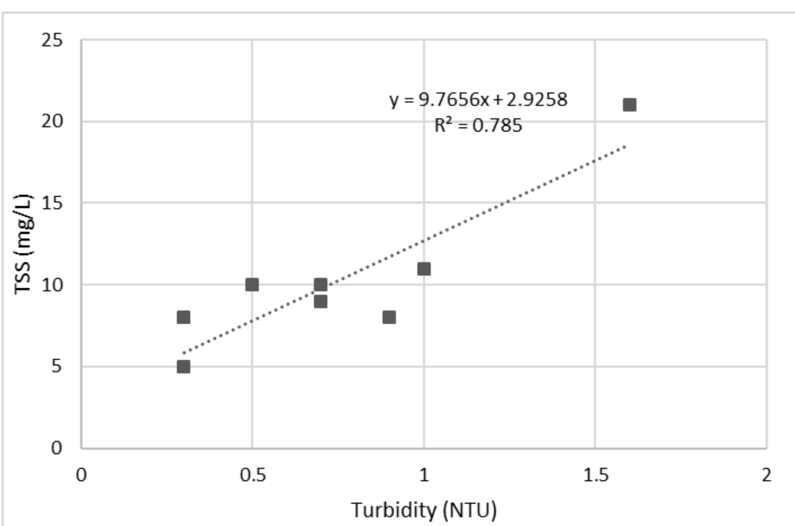


Figure 5.1 Watersheds and Waterbodies in Proximity of Mine Site

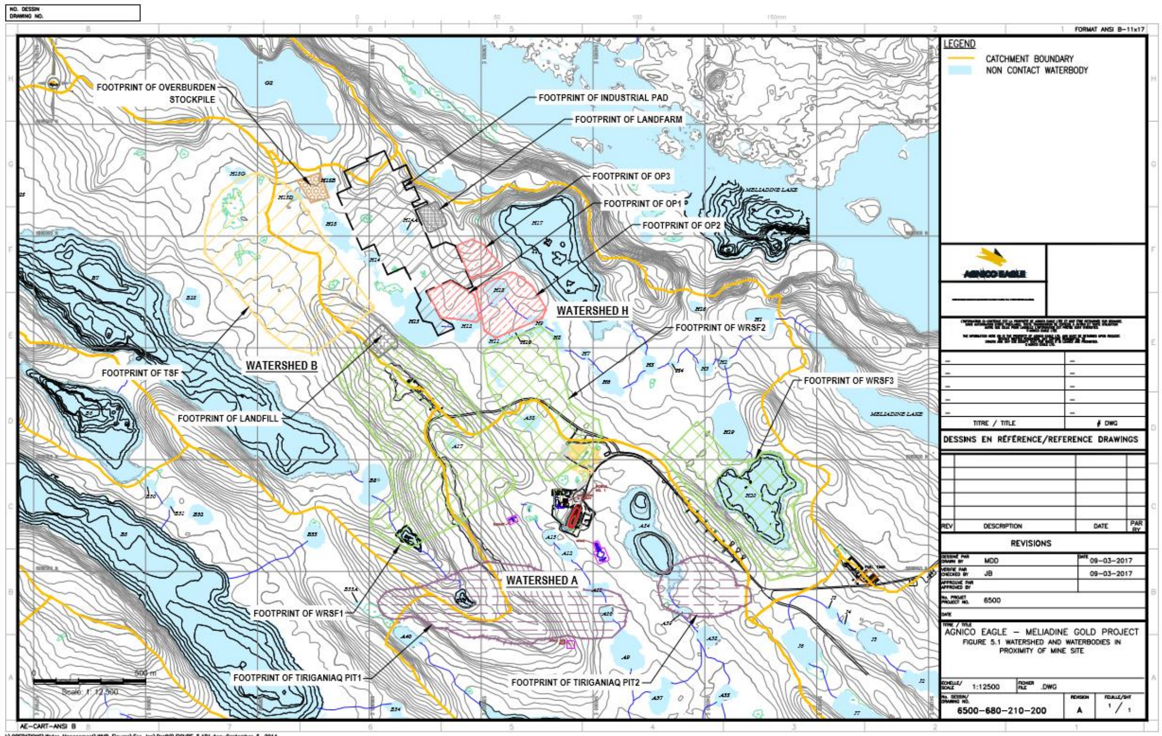


Figure 6.1 Mine Site Layout for Water Management During Closure

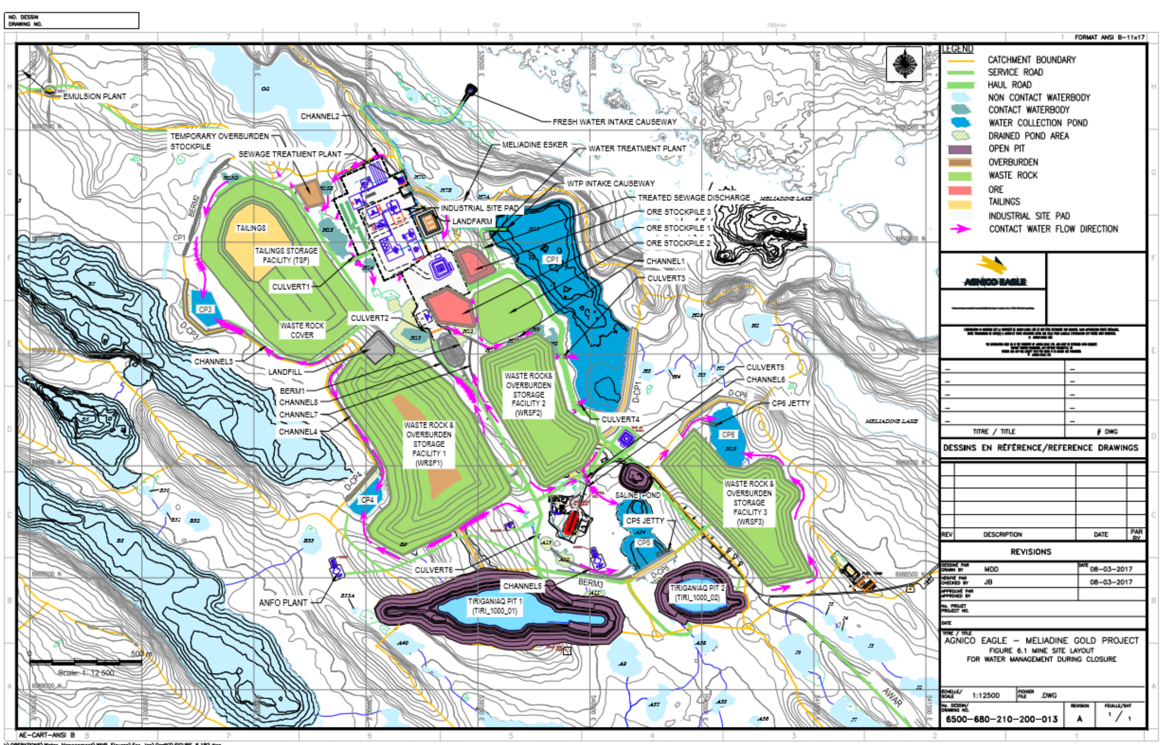


Figure 6.2 Mine Site Layout After Closure

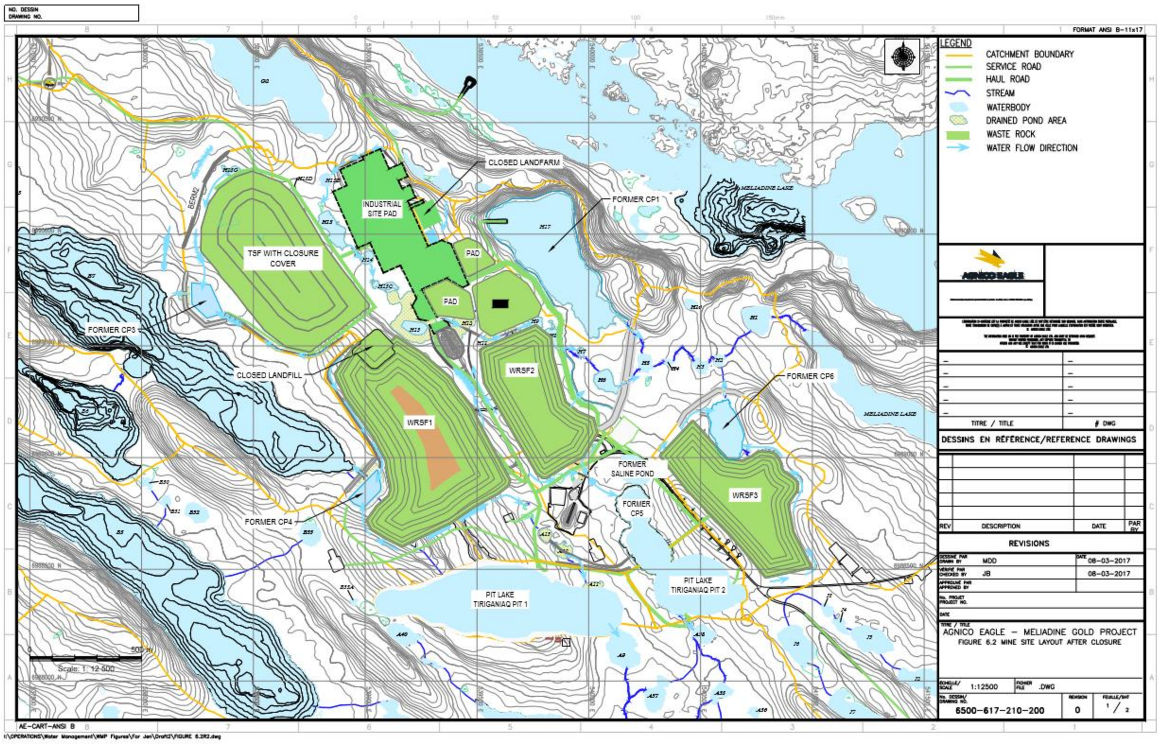


Figure 7.1a Water Quality Monitoring Locations on Site

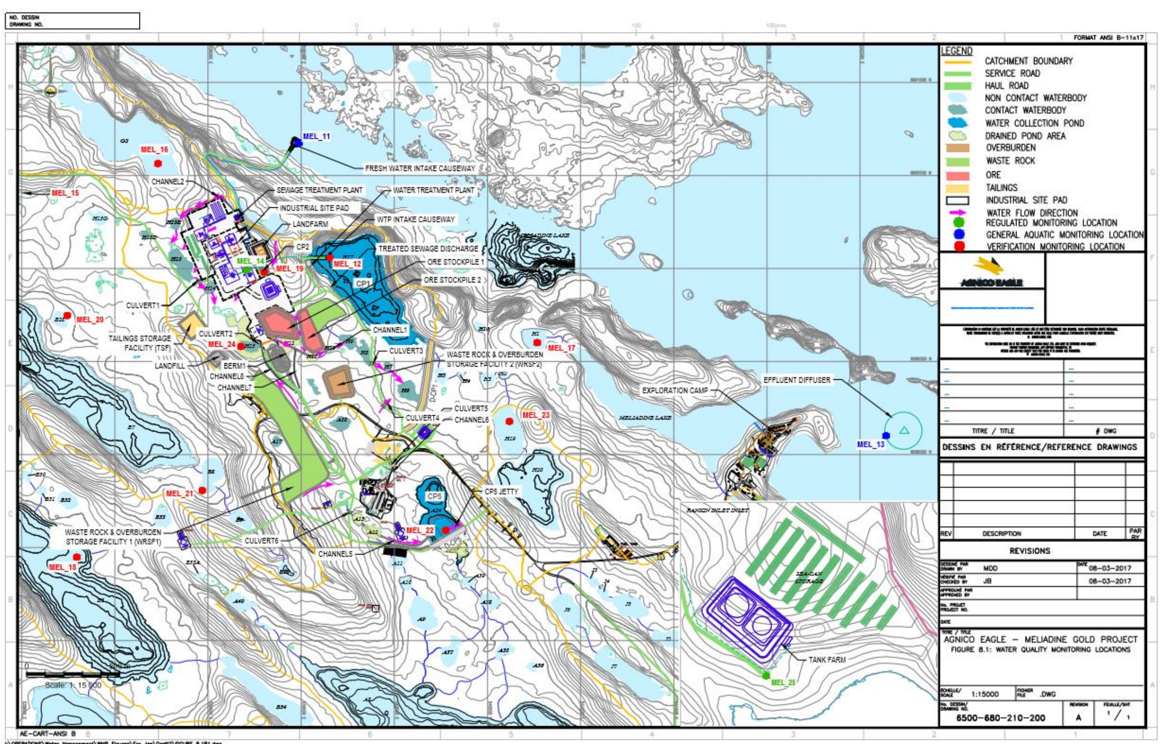
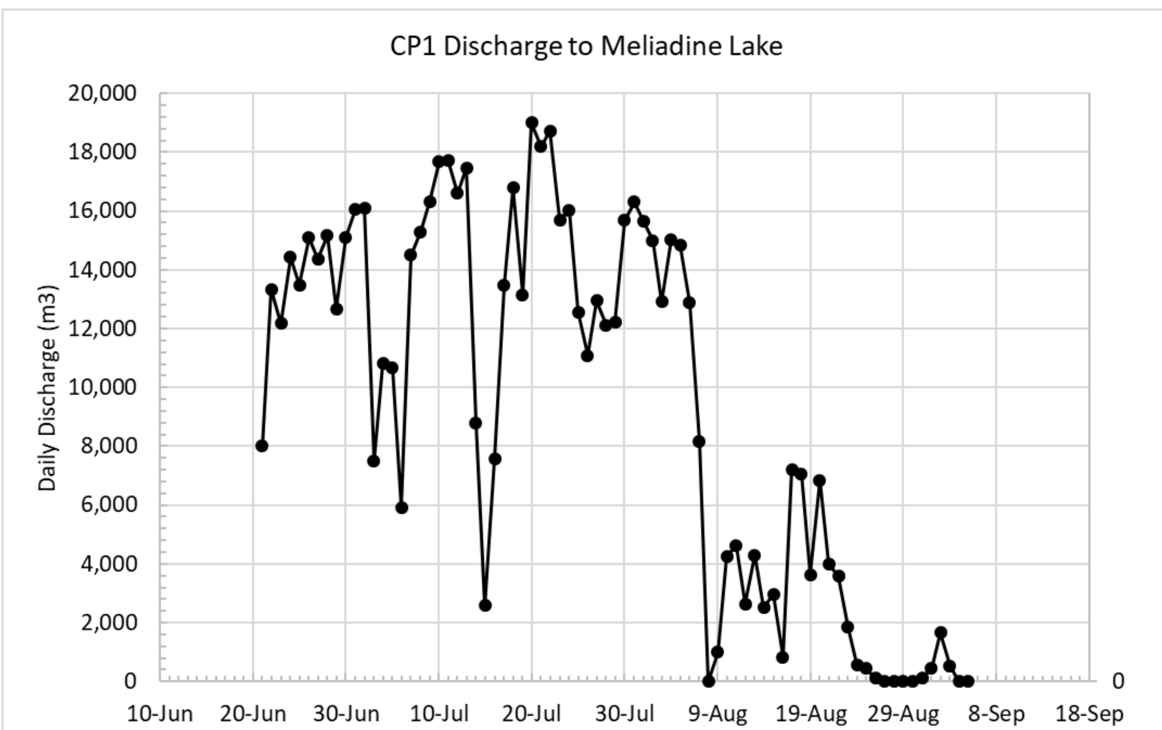


Figure 7.1b Water Quality Monitoring Locations at Itivia

Note – MEL-12 is located to the Northwest along the Bypass road but could not be efficiently included in this map due to its distance from Itivia.

Figure 7.2 Daily discharge volumes from through the EWTP at CP1 to Meliadine Lake



APPENDIX A • MELIADINE GROUNDWATER MANAGEMENT PLAN

AGNICO EAGLE

MELIADINE GOLD MINE

Groundwater Management Plan

JANUARY 2019
VERSION 3

EXECUTIVE SUMMARY

Agnico Eagle Mines Limited (Agnico Eagle) is developing the Meliadine Gold Mine (the Mine), located approximately 25 kilometres (km) north of Rankin Inlet, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut.

The Mine Plan proposes mining methods for the development of the Tiriganiaq gold deposit, with two open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2) and one Underground Mine. Based on the current Mine Plan, the Mine will produce approximately 14.9 million tonnes (Mt) of ore, 31.4 Mt of waste rock, 7.1 Mt of overburden waste, and 14.9 Mt of tailings (Agnico Eagle 2019). There are four phases to the development of the Mine; just over 4 years of construction (Q4 Year -5 to Q2 Year -1)), 8.5 years of Mine operation (Q2 Year 1 to Year 8), 3 years of closure (Year 9 to Year 11), and post-closure (Year 11 forwards).

Tiriganiaq Underground Mine is planned to extend to approximately 625 m below the ground surface; therefore, part of the Underground Mine will operate below the base of the continuous permafrost. The underground excavations will act as a sink for groundwater flow during operation, with water induced to flow through the bedrock to the Underground Mine workings once the Mine has advanced below the base of the permafrost. Over 2018, there was a net positive balance of stored underground water. The mean daily addition to underground water storage was estimated at 51 m^3/day. Groundwater quality data from samples taken underground 2017 through 2018 from diamond drillholes (DDHs) indicate TDS concentrations are less than predicted at an average concentration of 56,000 mg/L.

Saline water generated from the Underground Mine is currently being stored underground and on surface at the P-Area and the Saline Pond. A second saline pond will be an addition to the saline water storage system, upon approval from the Minister. Saline groundwater stored on site is currently pumped to the Saline Water Treatment Plan (SWTP) for treatment and discharge to CP1. As part of the strategy to manage excess groundwater infiltration of saline water within the underground portion of the mine, Agnico Eagle applied to the Nunavut Impact Review Board for approval to discharge saline water to the sea (Melvin Bay, Rankin Inlet). At this time, Agnico Eagle is awaiting approval from the Minister for the project.

This document presents the Groundwater Management Plan (GWMP) for the collection, treatment, storage and discharge of saline groundwater in accordance with Agnico Eagle's Type A Water Licence 2AM-MEL1631, Part E, Item 14.

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ᐊᒡᓂᖁ ᐄᒍ ᐅᔭᕋᒃᑕᕆᐊᒃᑯᑦ (ᐊᒡᓂᖁᒃᑯᑦ) ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᔭᕋᒃᑕᕆᐊᓕᐅᖅᐸᓪᓕᐊᔪᑦ (ᐅᔭᕋᒃᑕᕆᐊᖅ), 25 ᑭᓛᒥᑕᓂᒃ ᐅᖓᓯᒃᑎᒋᔪᖅ ᐅᐊᖕᓇᖓᓂᑦ ᑲᖏᖅᖠᓂᐅᑉ, ᐊᒻᒪ 80 ᑭᓛᒥᑕᓂᒃ ᐅᖓᓯᒃᑎᑉᐳᓂ ᓂᒡᑭᐊᓂᑦ ᐱᖓᖕᓇᖅᐸᓯᐊᓂᑦ ᐃᒡᓗᓕᒫᕐᔫᑉ ᑭᕙᓪᓕᕐᒥᑦ ᓄᓇᕗᒻᒥᑦ.

ᐅᔭᕋᒃᑕᕆᐊᕐᒧᑦ ᐸᕐᓇᐅᑎ ᐅᔭᕋᒃᑕᕐᓂᕐᒧᑦ ᐱᓕᕆᐊᖃᕈᒪᔪᑦ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᓂᒃ ᐱᕙᓪᓕᐊᓗᒍ ᑎᕆᒐᓂᐊᖅ ᒎᓗᑕᓕᒃ, ᒪᕐᕗᖕᓂᒃ ᓄᓇᒥᑦ ᐅᒃᑯᐃᖓᔪᓂᑦ (ᑎᕆᒐᓂᐊᖅ 1 ᐊᒻᒪ ᑎᕆᒐᓂᐊᖅ 2) ᐊᒻᒪ ᐊᑕᐅᓯᖅ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐅᔭᕋᒃᑕᕐᓂᖅ. ᒪᓕᒃᓗᒍ ᒫᓐᓇᐅᔪᖅ ᐅᔭᕋᒃᑕᕆᐊᕐᒧᑦ ᐸᕐᓇᐅᑎ, ᐅᔭᕋᒃᑕᕆᐊᖅ 14.9 ᒥᓕᔭᓐ ᑕᓐ-ᓗᐊᓂᒃ ᐅᔭᕋᒃᑕᖃᑦᑕᕐᓂᐊᖅᑐᑦ, 31.4 ᒥᓕᔭᓐ ᑕᓐ-ᓂᒃ ᐊᒃᑕᑰᖅᑕᐅᔪᓂᒃ ᐅᔭᖅᑲᓂᒃ, 7.1 ᒥᓕᔭᓐ ᑕᓐ-ᓂᒃ ᐅᖓᑕᐅᑦᑎᔪᓂᒃ ᐊᒃᑕᑰᖅᑕᐅᔪᓂᒃ, ᐊᒻᒪ 14.9 ᒥᓕᔭᓐ ᑕᓐ-ᓂᒃ ᕿᒪᒃᑎᑦᑐᓂᒃ (ᐊᒡᓂᖁᒃᑯᑦ 2019). ᓯᑕᒪᐅᓕᖓᓂᐊᖅᑐᖅ ᐱᕙᓪᓕᐊᓂᖅ ᐅᔭᕋᒃᑕᕆᐊᕐᒥᑦ; ᓯᑕᒪᐅᑦ ᐅᑭᐅᖏᓐᓇᕐᓄᑦ ᓴᓇᔭᐅᓗᓂ (Q4 ᐅᑭᐅᖅ - 5-ᒥᑦ Q2 ᐅᑭᐅᖅ - 1-ᒧᑦ)), 8.5 ᐅᑭᐅᓂᒃ ᐊᐅᓚᕐᓗᓂ ᐅᔭᕋᒃᑕᕆᐊᕐᓂᖅ (Q2 ᐅᑭᐅᖅ 1-ᒥᑦ ᐅᑭᐅᖅ 8-ᒧᑦ), ᐱᖓᓱᓂᒃ ᐅᑭᐅᓂᒃ ᐅᒃᑯᐊᖅᐸᓪᓕᐊᓗᒍ (ᐅᑭᐅᖅ 9-ᒥᑦ ᐅᑭᐅᖅ 11-ᒧᑦ), ᐊᒻᒪ ᐅᒃᑯᐊᖅᓯᒪᓕᖅᑎᓪᓗᒍ (ᐅᑭᐅᖅ 11-ᒥᑦ ᐅᖓᑖᓄᑦ).

ᑎᕆᒐᓂᐊᖅ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐅᔭᕋᒃᑕᕐᓂᖅ ᐊᑦᑎᒃᓯᑭᐊᖅᑕᐅᒃᑲᓂᕐᓂᐅᔭᖅᑐᖅ 625 ᒦᑕᓂᒃ ᓄᓇᐅᑉ ᖄᖓᑕ ᐊᑖᓄᑦ; ᑕᐃᒪᓐᓇᒧᑦ, ᐃᓚᖓ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐅᔭᕋᒃᑕᕆᐊᖅ ᐊᐅᓚᕐᓂᐊᖅᑐᖅ ᑭᒡᓕᒋᔭᐅᔪᖅ ᕿᐊᖑᐃᓐᓇᐅᔭᖅᑑᑉ ᐊᑖᓂᑦ. ᓄᓇᐃᔭᐃᓂᖅ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐃᒻᒥᖅᑐᕐᓂᐊᖅᑐᖅ ᑯᕕᔪᒥᒃ ᐃᒪᕐᒥᒃ ᐊᐅᓚᖅᑎᑦᑎᓂᐅᑎᓪᓗᒍ, ᐃᒪᖅ ᑯᕕᑎᑕᐅᓗᓂ ᐅᔭᕋᕐᒧᑦ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐅᔭᕋᒃᑕᕆᐊᕐᒥᑦ ᐱᓕᕆᕝᕕᐅᔪᒥᑦ ᕿᐊᖑᐃᓐᓇᐅᔭᖅᑑᑉ ᐊᑖᓄᑦ ᐅᔭᕋᒃᑕᕆᐊᖅ ᓯᕗᓪᓗᒃᓯᒪᓕᖅᑎᓪᓗᒍ. 2018-ᒥᑦ, ᐲᖅᓯᕝᕕᐅᖅᑳᖅᑎᓪᓗᒍ ᐱᐅᔪᒥᒃ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᑐᖅᑯᖅᑕᐅᓯᒪᔪᖅᑲᓚᐅᖅᑐᖅ ᐃᒪᕐᒥᒃ. ᖃᐅᑕᒫᒃᑯᑦ ᐃᓚᕙᓪᓕᐊᔪᖅ ᓄᓇᐅᑉ ᐃᓗᐊᓃᑦᑐᒧᑦ ᐃᒪᕐᒧᑦ ᑐᖅᑯᖅᓯᒪᔪᖅ ᓇᓚᐅᑦᑖᖅᑕᐅᔪᖅ 51 m^3-ᖑᐸᓗᓂ/ᖃᐅᑕᒫᖅ. ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐃᒪᐅᑉ ᖃᓄᐃᓐᓂᖓᓄᑦ ᓈᓴᐅᐄᑦ/ᑎᑎᖅᑲᐃᑦ ᐆᒃᑐᕋᕈᑎᓂᑦ ᐱᔭᐅᔪᑦ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ 2017-ᒥᑦ 2018-ᒧᑦ ᓯᑎᔪᓂᒃ ᐅᔭᖅᑲᓂᒃ ᐃᑰᑕᖅᑕᐅᓯᒪᔪᓂᑦ, ᓇᓗᓇᐃᖅᓯᔪᑦ TDS ᑲᑎᑎᓯᒪᔪᑦ ᐊᒥᓲᙳᑭᓐᓂᖅᓴᐅᓂᖏᓐᓄᑦ ᓇᓚᐅᑦᑖᖅᑕᐅᓚᐅᖅᑐᓂᐅᖓᓂᑦ ᐊᑕᐅᓯᙳᖅᓗᒍ ᓈᓴᐅᑎ ᑲᑎᓯᒪᔪᓂᑦ 56,000 mg/L-ᖑᐸᓗᓂ.

ᑕᕆᐅᓕᒃ ᐃᒪᖅ ᐱᔭᐅᔪᖅ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐅᔭᕋᒃᑕᕆᐊᕐᒥᑦ ᒫᓐᓇᐅᔪᖅ ᑐᖅᑯᖅᑕᐅᖃᑦᑕᖅᑐᖅ ᓄᓇᐅᑉ ᐃᓗᐊᓄᑦ ᐊᒻᒪ ᓄᓇᐅᑉ ᖄᖓᓄᑦ P-ᐃᓂᐊᓂᑦ ᐊᒻᒪ ᑕᕆᐅᓕᒃ ᑕᓯᕋᔭᖕᒧᑦ. ᑐᓕᐊ ᑕᕆᐅᓕᒃ ᑕᓯᕋᔭᒃ ᐃᓚᒋᔭᐅᓂᐊᖅᑐᖅ ᑕᕆᐅᓕᖕᒥᒃ ᐃᒪᕐᒥᒃ ᑐᖅᑯᖅᓯᓯᒪᕝᕕᖕᒥᑦ, ᓈᒻᒪᒋᔭᐅᒃᐸᑦ ᒥᓂᒃᑕᒥᑦ. ᑕᕆᐅᓕᒃ ᓄᓇᐅᑉ ᐃᓚᐅᓂᑦ ᐃᒪᖅ ᑐᖅᑯᖅᑕᐅᖃᑦᑕᖅᑐᖅ ᐃᓂᒋᔭᐅᔪᒥᑦ ᒫᓐᓇᐅᔪᖅ ᑯᕕᑎᑕᐅᔪᖅ ᑕᕆᐅᓕᖕᒥᒃ ᐃᒪᓕᕆᕝᕕᖕᒥᑦ ᐸᕐᓇᐅᑎᒧᑦ ᐱᓕᕆᐊᖑᓂᐊᕐᓗᓂ ᐊᒻᒪ ᑯᕕᑕᐅᓗᓂ CP1-ᒧᑦ. ᐃᓚᒋᔭᐅᑉᐳᓂ ᖃᓄᖅᑑᕈᑎᒧᑦ ᐊᐅᓚᓐᓂᐊᕐᓗᒍ ᐱᑕᖃᓗᐊᕐᓂᐅᔪᖅ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐲᔭᐃᓂᕐᒧᑦ ᑕᕆᐅᓕᒃ ᐃᒪᕐᒥᑦ ᓄᓇᐅᑉ ᐃᓗᐊᓃᑦᑐᒥᑦ ᐅᔭᕋᒃᑕᕆᐊᕐᒥᑦ, ᐊᒡᓂᖁᒃᑯᑦ ᑐᒃᓯᕋᐅᓯᐅᓚᐅᖅᑐᑦ ᐊᕙᑎᓕᕆᔨᒃᑯᓐᓄᑦ ᓈᒻᒪᒋᔭᐅᓂᐊᕐᓗᓂ ᑯᕕᑦᑎᓂᖅ ᐃᒪᕐᒥᒃ ᑕᕆᐅᓕᖕᒥᒃ ᐃᑎᕝᕙᐊᓄᑦ, ᑲᖏᖅᖠᓂᕐᒥᑦ. ᒫᓐᓇᐅᔪᖅ, ᐊᒡᓂᖁᒃᑯᑦ ᐅᑕᖅᑭᔪᑦ ᓈᒻᒪᒋᔭᐅᓂᐊᕐᓂᖓᓄᑦ ᐱᓕᕆᐊᖅ ᒥᓂᒃᑕᒧᑦ.

ᑖᓐᓇ ᑎᑎᖅᑲᖅ ᐱᔾᔪᑎᖃᖅᑐᖅ ᓄᓇᒥᑦ ᐃᒪᕐᒥᒃ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᐸᕐᓇᐅᑎᒥᒃ ᑲᑎᖅᓱᐃᓂᕐᒧᑦ, ᐱᓕᕆᐊᕆᓗᒍ, ᑐᖅᑯᕐᓗᒍ ᐊᒻᒪ ᑯᕕᑎᓪᓗᒍ ᑕᕆᐅᓕᒃ ᓄᓇᒥᑦ ᐃᒪᖅ ᒪᓕᒡᓗᒋᑦ ᐊᒡᓂᖁᒃᑯᑦ Type A ᐃᒪᕐᒧᑦ ᓚᐃᓴᓐᓯᖓᑦ 2AM-MEL1631, ᐊᕕᒃᓯᒪᓂᖓ E, ᑎᑎᕋᖅᓯᒪᔪᖅ 14.

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DOCUMENT CONTROL

Version	Date	Section	Page	Revision	Author
1	February 2018	All		In compliance with Agnico Eagle's Type A Water Licence 2AM-MEL1631, Part E, Item 14	Golder Associates Ltd. on behalf of Agnico Eagle Mines Limited
2	June 2018	4		In compliance with ECCC comments from 16 March 2018	Golder Associates Ltd. on behalf of Agnico Eagle Mines Limited
3.	December 2018	All		In compliance with Agnico Eagle's Type A Water Licence 2AM-MEL1631, Part E, Item 11	Agnico Eagle Mines Ltd.
		Exec Summary		Updated dates and quantities	
		2.4		Revised mine development plan bullets	
		3.3		Updated saline GW quality	
		3.4		Updated groundwater mngmt strategies	
		4.1		Updated GW monitoring program quantity and quality data	
		4.4		Expanded table 5 monitoring to include SWTP	

ACRONYMS

Agnico Eagle	Agnico Eagle Mines Limited
ANFO	Ammonium Nitrate/Fuel Oil
CP	Collection Pond
DDH	Diamond Drillhole(s)
EMPP	Environment Management and Protection Plan
EWTP	Effluent Water Treatment Plant
FEIS	Final Environmental Impact Statement
GWMP	Groundwater Management Plan
MDMER	Metal and Diamond Mining Effluent Regulations
NWB	Nunavut Water Board
Mine	Meliadine Gold Mine
QA	Quality Assurance
QC	Quality Control
RO	Reverse Osmosis
SD	Support Document
SSWQO	Site Specific Water Quality Objectives
SWTP	Saltwater Treatment Plant
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
WMP	Water Management Plan

UNITS

%	percent
°C	degrees Celsius
°C/m	degrees Celsius per metre
ha	hectare(s)
mg/L	milligram(s) per litre
km	kilometer(s)
km^2	kilo square meter(s)
m	metre(s)
m/day	metre(s) per day
mm	millimetre(s)
m^3	cubic metre(s)
m^3/day	cubic metre(s) per day
m^3/s	cubic metre(s) per second
m^3/hour	cubic metre(s) per hour
m^3/year	cubic metre(s) per year
Mm^3/year	million cubic metre(s) per year
Mm^3	million cubic metre(s)
t	tonne(s)
tpd	tonne(s) per day
Mt	million tonne(s)

SECTION 1 • INTRODUCTION

Agnico Eagle Mines Limited (Agnico Eagle) is developing the Meliadine Gold Mine (Mine), located approximately 25 kilometres (km) north of Rankin Inlet, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. The Mine is subject to the terms and conditions of both the Mine Project Certificate (No. 006) issued by the Nunavut Impact Review Board in accordance with the Nunavut Agreement Article 12.5.12 on February 26, 2015 and Nunavut Water Board Type A Water Licence (No. 2AM-MEL1631, 2016) issued by the Nunavut Water Board (NWB) on April 1, 2016.

This document presents the Groundwater Management Plan (GWMP) for the collection, treatment, storage and discharge of saline groundwater in accordance with the Type A Water Licence 2AM-MEL1631 (Licence). Overall water management for the life of the Mine and post-closure is described in the Agnico Eagle Meliadine Gold Mine 2019 Water Management Plan (WMP) (Version 5). The WMP provides descriptions of the Mine water control structures and associated design criteria. The WMP was updated in January 2019 and reflects the groundwater management strategy presented in this document.

1.1 Concordance

The Mine is subject to the land and resource management processes established by the Nunavut Agreement and other Federal laws and regulations. Agnico Eagle submitted a Licence Application for a Mining and Milling Undertaking (Application) required to use water and to deposit waste in development of the Mine, in accordance with the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and Nunavut Water Regulations.

The Licence was issued on April 1, 2016 and signed by the Minister on May 19, 2016. The GWMP reflects the commitments made with respect to submissions provided during the technical review of the Application, as well as final submissions and issues raised during the Public Hearing Process, where applicable, to comply with Part B Section 13, and Part E Section 14 of the Licence.

1.2 Objectives

The objective of the GWMP is to provide consolidated information on groundwater management for the Meliadine Gold Mine. The GWMP is divided into the following components:

- Introductory section (Section 1);
- A brief summary of the physical setting at the mine site and the mine development plan (Section 2);
- A description of groundwater management strategies (Section 3); and
- A description of the groundwater monitoring program (Section 4).

The GWMP will be updated as required to reflect any changes in operations or economic feasibility that occurs, and to incorporate new information and latest technology, where appropriate, to comply with Part B Section 15 of the Licence.

SECTION 2 • BACKGROUND

2.1 Site Conditions

The Mine is located in an area of poorly drained lowlands near the northwest coast of Hudson Bay. The dominant terrain in the Mine area consists of glacial landforms such as drumlins (glacial till), eskers (gravel and sand), and many small lakes. The topography is gently rolling with a mean elevation of 65 metres above sea level (masl) and a maximum relief of 20 metres (m).

The local overburden consists of a thin layer of topsoil overlying silty gravelly sand glacial till. Cobbles and boulders are present throughout the region at various depths. Bedrock at the mine site area consists of a stratigraphic sequence of clastic sediments, oxide iron formation, siltstones, graphitic argillite and mafic volcanic flows (Snowden 2008; Golder 2009).

The climate is extreme in the area, with long cold winters and short cool summers, and mean air temperatures of 12 °C in July and -31 °C in January. The mean annual air temperature at the Mine site is approximately -10.4 °C (Golder 2012a). Strong winds blow from the north and north-northwest direction more than 30 percent of the time.

The mean annual precipitation in the area is approximately 412 mm and is typically equally split between rainfall and snowfall.

Late-winter ice thicknesses on freshwater lakes in the mine site area were recorded from 1998 to 2000. The measured data indicated that ice thickness ranges from 1.0 to 2.3 m with an average thickness of 1.7 m. Ice covers usually appear by the end of October and are completely formed in early November. The spring ice melt typically begins in mid-June and is complete by early July (Golder 2012b).

2.2 Local Hydrology

The Mine is located within the Meliadine Lake watershed. Meliadine Lake has a surface water area of approximately 107 square kilometres (km^2), a maximum length of 31 km, features a highly convoluted shoreline of 465 km and has over 200 islands. Unlike most lakes, it has 2 outflows that drain into Hudson Bay through two separate river systems. It has a drainage area of 560 km^2 from its two outflows. Most drainage occurs via the Meliadine River, which originates at the south west end of the lake. The Meliadine River flows for a total stream distance of 39 km. The Meliadine River flows through a series of waterbodies, until it reaches Little Meliadine Lake and then continues into Hudson Bay. A second, smaller outflow from the west basin of Meliadine Lake drains into Peter Lake, which discharges into Hudson Bay through the Diana River system (a stream distance of 70 km). At its mouth, the Diana River has a drainage area of 1,460 km^2.

Watersheds in the Mine area are comprised of an extensive network of waterbodies, and interconnecting streams. The hydrology of these watersheds is dominated by lake storage and evaporation.

2.3 Hydrogeology

The Mine is located in an area of continuous permafrost. Based on thermal studies and measurements of ground temperatures, the depth of permafrost at the mine site is estimated to be in the order of 360 to 495 m. The depth of the active layer ranges from about 1 m in areas with shallow overburden, up to about 3 m adjacent to the lakes. The depth of the permafrost and active layer varies depending on proximity to the lakes, overburden thickness, vegetation, climate conditions, and slope direction (Golder 2012b). The typical permafrost ground temperatures at the depths of zero annual amplitude are in the range of -5.0 to -7.5 °C in the areas away from lakes and streams. The geothermal gradient ranges from 0.012 to 0.02 °C/m (Golder 2012c).

Groundwater characteristics at the Mine are detailed in Final Environmental Impact Statement (FEIS) Volume 7, Section 7.2 Hydrogeology and Groundwater, and in an updated hydrogeological assessment completed for the Mine (Golder 2016). The groundwater characteristics for the Mine are briefly summarized herein.

Two groundwater flow regimes in areas of continuous permafrost are generally present:

- a deep groundwater flow regime beneath the base of the permafrost; and
- a shallow flow regime located in an active (seasonally thawed) layer near the ground surface.

From late spring to early autumn, when temperatures are above 0 ˚C, the active layer thaws. Within the active layer, the water table is expected to be a subdued replica of topography, and is expected to parallel the topographic surface. Mine area groundwater in the active layer flows to local depressions and ponds that drain to larger lakes.

Taliks exist beneath waterbodies that have sufficient depth such that they do not freeze to the bottom over the winter. Beneath small waterbodies that do not freeze to the bottom over the winter, a talik bulb that is not connected to the deep groundwater flow regime will form (a closed talik). Elongated waterbodies with terraces (where the depth is within the range of winter ice thickness), a central pool(s) (where the depth is greater than the range of winter ice thickness), and a width of 340 to 460 m or greater are expected to have open taliks extending to the deep groundwater flow regime at the Mine site. A review of bathymetric data, ice thickness data, and results of thermal modelling suggests that Meliadine Lake and Lake B7 are likely to have open taliks connected to the deep groundwater flow regime (Golder 2012a).

Tiriganiaq Underground Mine is planned to extend to approximately 625 m below the ground surface; therefore, part of the underground mine will be operated below the base of the frozen permafrost (top of the cryopeg). The underground excavations will act as a sink for groundwater flow during operation, with water induced to flow through the bedrock to the underground mine workings once the mine has advanced below the base of the frozen permafrost.

Both Tiriganiaq Pit 1 and Tiriganiaq Pit 2 will be mined within the frozen permafrost, therefore, groundwater inflows to the open pits is expected to be negligible and were not considered in the WMP.

2.4 Mine Development Plan

The Mine Plan proposes mining methods for the development of the Tiriganiaq gold deposit, with two open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2) and one Underground Mine. Based on the current Mine Plan, the Mine will produce approximately 14.9 million tonnes (Mt) of ore, 31.4 Mt of waste rock, 7.1 Mt of overburden waste, and 14.9 Mt of tailings (Agnico Eagle 2019). The following phased approach is proposed for the development of the Tiriganiaq gold deposit:

- Tiriganiaq underground mine will be developed and operated from Year -5 to Year 7;
- Tiriganiaq Pit 1 will be mined from Year 2 to Year 7; and
- Tiriganiaq Pit 2 will be mined from Year 4 to Year 7.

Mine facilities on surface include a plant site and accommodation buildings, two ore stockpiles, a temporary overburden stockpile, a tailings storage facility, three waste rock storage facilities, a water management system that includes containment ponds, water diversion channels, retention dikes/berms, a final Effluent Water Treatment Plant (EWTP) and a Saline Water Treatment Plant (SWTP). The general location and site layout of the Mine are shown in Appendix A.

SECTION 3 • GROUNDWATER MANAGEMENT STRATEGY

3.1 Groundwater Volumes

In the WMP of the water licence application (Agnico Eagle 2015a) it was stated that supplemental hydrogeological investigations were to be undertaken to provide additional information on potential volumes and quality of the saline groundwater to be managed. These investigations were undertaken in 2015 and 2016 and are summarized in Golder (2016). They included the completion of 24 packer tests, two pumping tests, two injection tests, 11 groundwater samples, and seven surface water samples. The work plan for the field work was developed in consultation with two independent technical advisors, Dr. Shaun K. Frape and Dr. Walter A. Illman (both of the University of Waterloo).

The additional hydraulic conductivity measurements resulted in a refined interpretation on the variability of hydraulic conductivity between geological formations and data on the storage properties of the bedrock. A summary of predicted groundwater inflows between 2017 and 2032, based on this refined interpretation, are provided in Table 1. An update to the numerical model based on observed inflows and updated mine plans is currently being constructed. The purpose of this update is to provide more accurate estimates to better inform planning of management strategies. The results will be submitted in the 2020 WMP or as an addendum to the 2019 WMP.

Table 1: Predicted Groundwater Inflow to Underground Mine (2017 to 2032)

Period	Predicted Groundwater Inflow (m^3/day)
2017	230
2018	300
2019	280
2020	300
2021	340
2022	340
2023-2024	420
2025-2026	380
2027-2028	390
2029-2030	380
2031-2032	360

Source: Updated Predictions of Groundwater Inflow to Tiriganiaq Underground Mine (Golder 2016).

The groundwater inflow predictions presented in Table 1 do not account for grouting currently being conducted as a mitigation to reduce groundwater inflows to the underground development, water being removed in waste rock, or potential losses through the ventilation system. Both mechanisms reduce the actual groundwater inflows to the Underground Mine relative to that which was predicted. As such, these predicted inflows to the underground development represent unmitigated estimates.

Actual inflow values to the Underground Mine, which included the impact of grouting, ventilation losses, loss of water in waste rock pore space, treatment by the SWTP, and loss due to re-use of water in mining operations were estimated based on changes in water volumes stored in the underground water storage system. Changes in storage were calculated on a daily basis and used to produce monthly inflow rate estimates. Based on these monthly averages, mean inflow rate over 2018 was 51 m^3/day. This is not the groundwater inflow rate to the mine but rather the balance of inflows, the aforementioned water losses, and water used for operations. Thus, the 51 m^3/day estimate is the surplus of inflows that was placed in storage.

3.2 Existing Groundwater Management Control Structures

Contact water in the Underground Mine is contained within underground sumps. A proportion of the underground water is recirculated as make-up water for underground drilling. The remaining underground water is stored for treatment by the SWTP and discharge to sea, pending approval (Section 3.4.3). Calcium chloride is currently not added to the underground water but has been used in the past to prevent freezing in drill holes when drilling in permafrost with low salinity drill water. The potential for use again in the future is low due to the existing calcium chloride levels in the groundwater that is used for drilling.

Groundwater inflows to the Underground Mine since 2015 have not been discharged to the environment and are being stored underground or in structures approved by the NWB on the surface; the Saline Pond, the P-Area, Collection Pond 5 (CP5). Based on adaptive management strategies, the project will require a second saline water storage pond (Saline Pond 2). Saline Pond 2 will be temporary in nature and will be constructed in bedrock within the footprint of Tiriganiaq Pit 2. Saline Pond 2 is designed to have a storage volume of 75,000 m^3. Agnico Eagle recently submitted application for Saline Pond 2 and is awaiting approval. Pending approval, Saline Pond 2 will be installed in Q1 of 2019. Details of the underground dewatering system are provided in the Mine Plan (Agnico Eagle 2015a) and details of the ponds are provided in the WMP (Agnico Eagle 2019). The pond capacities and maximum water elevation for storage of the saline water are presented in Table 2. The locations of the ponds are shown on Figure 1 of Appendix A.

Table 2: Salt Water Storage Capacity at the Mine for Groundwater and Water Primarily Influenced by Underground Workings

Surface Pond	Capacity (m^3)	Maximum Water Elevation (m)
CP5	46,674	66.0
Saline Pond	32,686	62.9
Saline Pond 2 (Q1, 2019)	Approximately 75,000	TBD
P1	20,781	68.5
P2	6,828	66.5
P3	18,432	67.0

Source: Agnico Eagle (2017).

3.3 Groundwater Quality

Previous groundwater investigations suggested that total dissolved solids (TDS) concentrations are relatively consistent below the permafrost at approximately 64,000 mg/L (Golder 2016). Groundwater quality data from samples taken underground 2017 through 2018 from diamond drillholes (DDHs) indicates mostly stable concentrations for several parameters (Table 3) and indicate that TDS concentrations are less than predicted at an average concentration of 56,000 mg/L. The assumption by Golder of TDS at 64,000 mg/L likely represents a more conservative estimate. It should also be noted that mining operations include drill-and-blast excavation for the development of the Underground Mine, which results in certain parameters in groundwater to be influenced by explosives (particularly ammonia and nitrate due to emulsion explosives).

Table 3: Average Saline Groundwater Quality

Source: Groundwater quality data from DDH sample location (Agnico Eagle, December 2018)

Representative Months (average per month)		Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18
Parameters (total metal)	**Units**																							
pH	pH	7.08	6.87	7.11	7.32	7.38	7.27	8.27	7.45	7.33	7.41	7.26	7.18	7.35	7.49	7.80	7.26	7.26	7.79	7.08	3.99	6.99	7.02	7.28
Alkalinity	mg/L	57	61.7	51	64.5	68	68	75	68.2	64	64	69	66	73	73	78	70	62	67	65	85	71	67	57
Conductivity	µmhos/cm	77000	76500	77000	79000	79000	76308	74385	72200	72667	78667	85000	80667	81083	82667	81200	83000	69500	83125	83333	83000	78000	69571	81000
Total Hardness (as $CaCO_3$)	mg/L	13200	18267	12700	18400	12433	12623	12500	12583	11700	12600	14100	12733	13164	14367	12680	13550	13100	13538	13450	13925	13500	11131	16500
Turbidity	NTU	123.75	69	88	90	51	75	61	47.02	104.33	55.00	30.00	53.00	74.83	72.89	27.18	49.33	75.50	27.51	52.00	2.48	83.95	69.43	52
Total Dissolved Solids (TDS)	mg/L	54350	66433	54900	57500	57300	55123	57815	57520	54567	57867	62000	55133	53975	52233	55460	51367	56900	58325	55917	60975	56900	49229	57600
Total Suspended Solids (TSS)	mg/L	45	75.7	63	248.5	102.7	102.2	156	86	102	316.7	30.0	56.0	181.8	108.1	31.0	38.7	37.5	85.4	58.5	1845.5	216.0	42.4	46
Aluminum (Al)	mg/L	0.21	0.1	6.02	1.29	0.51	1.45	0.73	0.97	1.75	2.063	0.150	0.250	2.979	1.466	0.270	0.290	0.128	0.798	0.245	0.261	4.145	0.353	0.15
Ammonia Nitrogen (NH_3-NH_4)	mg/L	4.125	7.9	4.5	4.95	5.2	5.508	11.08	4.87	4.7	6.100	4.800	4.700	5.825	4.711	5.180	4.800	4.300	5.250	4.233	6.925	4.550	5.714	6.55
Arsenic (As)	mg/L	0.003	0.005	0.01	0.008	0.004	0.016	0.016	0.102	0.013	0.047	0.006	0.009	0.027	0.057	0.009	0.010	0.004	0.024	0.006	0.005	0.011	0.009	0.0138
Barium (Ba)	mg/L	0.06	0.61	0.1	0.27	0.07	0.09	0.25	0.1	0.07	0.113	0.082	0.094	0.109	0.109	0.098	0.072	0.073	0.100	0.058	0.073	0.170	0.110	0.163
Beryllium (Be)	mg/L	0.003	0.002	0.01	0.002	0.002	0.005	0.008	0.01	0.01	0.008	0.005	0.008	0.010	0.009	0.009	0.007	0.004	0.004	0.006	0.004	0.005	0.009	0.005
Boron (B)	mg/L	1.6	4.98	5	4.9	1.5	2.7	3.97	5	2.5	4.17	2.50	4.17	4.79	4.72	4.50	3.33	2.10	2.28	2.92	2.35	2.80	4.64	3
Total Organic Carbon (TOC)	mg/L	2.23	11.67	2.1	2.95	2.63	3.2	5.3	2.57	2.5	16.27	3.00	2.67	2.50	2.42	2.36	2.47	2.20	3.00	1.97	1.36	2.95	2.73	5.3
Dissolved Organic Carbon	mg/L	1.9	10.17	1.7	2.3	2.37	2.7	4.9	2.32	2.1	13.70	2.80	2.33	2.38	2.27	2.36	2.27	1.90	2.55	1.90	2.38	2.55	2.53	5
Calcium (Ca)	mg/L	1710	3777	1650	3737	1593	1608	1771	1610	1565	1720	1770	1587	1646	1777	1656	1737	1690	1748	1653	1715	2165	1487	2960
Cadmium (Cd)	mg/L	0.0003	0.0002	0.001	0.0003	0.0002	0.0005	0.001	0.001	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0005
Chloride (Cl - dissolved)	mg/L	31250	38000	31000	31500	32000	31385	31538	32800	29333	32333	34000	33000	33833	34444	34800	34333	32500	33875	33333	36250	33500	27143	35000
Chromium (Cr)	mg/L	0.025	0.017	0.01	0.02	0.017	0.05	0.075	0.1	0.88	0.083	0.050	0.083	0.096	0.094	0.090	0.067	0.035	0.043	0.058	0.043	0.052	0.093	0.05
Copper (Cu)	mg/L	0.01	0.008	0.05	0.01	0.01	0.02	0.04	0.05	0.03	0.042	0.025	0.032	0.048	0.048	0.045	0.028	0.018	0.021	0.029	0.021	0.040	0.046	0.025
Cyanide (CN)	mg/L	0.005	0.19	0.005	0.028	0.005	0.006	0.01	0.005	0.008	0.005	0.025	0.015	0.017	0.033	0.021	0.012	0.025	0.005	0.005	25.003	0.005	0.005	–
Iron (Fe)	mg/L	4.76	8.96	3.6	8.78	6.19	9.81	6.33	8.24	4.1	10.67	6.46	6.50	14.84	12.79	5.50	5.37	6.36	5.94	7.96	5.36	18.80	5.64	6.81
Lead (Pb)	mg/L	0.005	0.005	0.02	0.004	0.003	0.009	0.015	0.02	0.018	0.017	0.010	0.017	0.020	0.019	0.018	0.013	0.007	0.009	0.012	0.009	0.010	0.019	0.01
Magnesium (Mg)	mg/L	2168	2150	2080	2200	2050	2092	1962	2105	1975	2017	2350	2150	2208	2411	2078	2220	2150	2229	2267	2335	1970	1800	2200
Mercury (Hg)	mg/L	0.00001	0.00001	0.00001	0.000001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
Molybdenum (Mo)	mg/L	0.025	0.055	0.01	0.25	0.026	0.047	0.075	0.1	0.17	0.083	0.050	0.083	0.096	0.094	0.090	0.067	0.035	0.043	0.058	0.043	0.050	0.093	0.061
Nickel (Ni)	mg/L	0.025	0.04	0.1	0.07	0.017	0.05	0.08	0.1	0.35	0.083	0.050	0.083	0.096	0.094	0.090	0.067	0.035	0.043	0.058	0.043	0.050	0.093	0.05
Nitrate (NO_3) as N	mg/L	0.5	116.39	0.1	2.58	0.23	0.89	4.35	0.17	0.34	0.293	0.100	0.213	2.015	0.376	0.240	0.297	0.300	0.420	0.517	0.608	0.455	2.929	0.1
Nitrite (NO_2) as N	mg/L	0.05	8.01	0.1	0.125	0.086	0.14	0.391	0.042	0.027	0.032	0.024	0.023	0.120	0.043	0.042	0.028	0.030	0.044	0.052	0.065	0.039	0.109	0.061
Total Kjeldahl Nitrogen (TKN)	mg/L	3.78	8.7	4.6	5.2	7.83	7.4	12	72.02	4.5	9.00	5.60	4.87	6.12	4.97	5.90	5.27	4.95	5.54	4.18	6.30	4.60	6.77	6.5
Phosphorous (P)	mg/L	0.07	0.14	0.04	0.13	0.12	0.08	0.09	0.1	—	0.390	0.080	0.080	0.075	0.083	0.162	0.073	0.200	0.173	0.118	59.000	0.420	0.154	0.1
Potassium (K)	mg/L	496	595	407	609	433	463	518	488	763	502	528	465	490	532	512	479	474	500	491	539	444	391	680
Radium-226 (Ra 226)	mg/L	0.49	0.33	0.3	1.2	1.95	1.8	1.9	2.2	0.29	2.200	2.400	1.673	1.853	3.678	3.880	2.633	2.050	1.938	1.833	2.450	0.670	0.906	1.8
Selenium (Se)	mg/L	0.003	0.002	0.01	0.002	0.002	0.005	0.0075	0.01	0.007	0.008	0.005	0.008	0.010	0.009	0.009	0.007	0.004	0.004	0.006	0.016	0.005	0.009	0.005
Silver (Ag)	mg/L	0.001	0.0003	0.002	0.0009	0.0004	0.0012	0.0018	0.0002	0.018	0.003	0.001	0.002	0.002	0.004	0.002	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.001
Sodium (Na)	mg/L	14625	14700	13400	15400	13900	14369	14654	14417	9433	14900	17000	15300	15183	16389	14860	14967	14750	15725	15333	16450	13550	12629	16600
Strontium (Sr)	mg/L	43.1	171	38.4	136	40	39	43.5	36.5	23.6	40.03	35.10	35.70	37.24	37.30	37.14	40.10	47.65	43.85	40.00	41.33	61.90	47.40	83.4
Sulphate (SO_4 – dissolved)	mg/L	3125	2700	3100	3100	3233	3169	2969	3120	3067	3200	3500	3433	3367	3500	3320	3367	3350	3250	3467	1800	3200	2829	3200
Thallium (Tl)	mg/L	0.001	0.001	0.001	0.0002	0.0002	0.0005	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.001	0.000	0.001	0.001	0.0005
Uranium (U)	mg/L	0.003	0.002	0.01	0.006	0.002	0.005	0.008	0.01	0.09	0.008	0.005	0.008	0.010	0.009	0.009	0.007	0.004	0.004	0.006	0.006	0.005	0.009	0.005
Vanadium (V)	mg/L	0.13	0.08	0.5	0.1	0.08	0.23	0.38	0.5	0.33	0.417	0.250	0.417	0.479	0.472	0.450	0.333	0.175	0.213	0.292	0.213	0.250	0.464	0.25
Zinc (Zn)	mg/L	0.125	0.1	0.5	0.12	0.08	0.23	0.38	0.5	0.34	0.417	0.250	0.417	0.479	0.472	0.450	0.333	0.175	0.259	0.292	0.213	0.250	0.464	0.25

3.4 Groundwater Management Strategy and Associated Control Structures

Based on the Type A Water Licence 2AM-MEL1631 Terms and Conditions, Part E: Conditions Applying to Water Use and Management, No. 14, Agnico Eagle has reviewed the Mine alternatives to apply to the GWMP. Condition No. 14 specifically states:

> *"The Licensee shall submit a Groundwater Management Plan to the Board for approval in writing, at least six (6) months prior to the discharge of any Groundwater. The Plan shall take into consideration all comments raised and commitments made with respect to submissions received during the technical review of the Application as well as final submissions and issues raised during the Public Hearing Process, where applicable."*

Groundwater management alternatives were considered for the Mine based on the potential range of groundwater flows and quality that could be generated (Agnico Eagle 2015a).

Based on the groundwater inflow volume, the following options were considered and form part of the short and long-term management of groundwater inflows to the Underground Mine:

- Short-term Strategy: treat saline groundwater and store/use the brine from the treatment process on-site (Section 3.4.1)
- Current Long-term Strategy: treated discharge to receiving environment in Meliadine Lake in combination with treated surface contact water (Section 3.4.2)
- Potential Future Long-term Strategy: discharge to sea (see Section 3.4.3)

The short and long-term groundwater management strategies are described below.. The potential future long-term strategy of discharge to sea has been submitted to NIRB The application is currently with the federal Minister for approval.

3.4.1 Short-Term Management Strategy - Treat and Store/Use Groundwater On-site

This alternative was considered as part of the Type A Water Licence Application and is currently implemented on-Site as part of the short-term management of groundwater inflow. It involves storing all excess groundwater in underground sumps and in surface water ponds at the Mine. As outlined in the WMP (Agnico Eagle 2019), a total of nine water containment ponds are planned on-site at the Mine surface (CP1, CP3, CP4, CP5 and CP6, the P-Area [P1, P2, and P3], and the Saline Pond), seven of which have been constructed and are in use (CP1, CP3, CP5, P-Area [P1, P2, and P3], and the Saline Pond). Application for the Second Saline Pond has been submitted and is pending approval from the Minister. Additional to this are all associated water retention dykes, water diversion berms, channels, and culverts, to manage surface water and underground water (Appendix A).

Five saltwater evaporators have been in-use on site since mid-2017 at P1 to reduce saline groundwater volumes stored in surface water ponds. While evaporators have been used with some success, the combined volumes of realized groundwater inflows with anticipated surface water volumes influenced by underground waste rock to be managed is greater than the available long-term storage at the Mine, and therefore, discharge to environment is required.

3.4.2 Current Long-Term Management Strategy - Treated Groundwater Discharge to Meliadine Lake

Hatch (2013) investigated groundwater treatment options for the site and concluded that a combination chemical reverse osmosis (RO) and mechanical vapour compression evaporator plant would be the most efficient method of treating excess groundwater for discharge. Agnico Eagle has since acquired and constructed a Salt Water Treatment Plant (SWTP) consisting of two evaporator crystallizers (SaltMakers) that will be used to treat groundwater. The SWTP will remove excessive total suspended solids (TSS), calcium chloride ($CaCl_2$), sodium chloride (NaCl), metals, phosphorous (P), and nitrogen compounds from the influent saline water.

The SWTP consists of two parallel units. Each unit can be operated to produce brine or solid by-product. Brine-mode of one unit within the SWTP is expected to operate to the following specifications:

- Inlet capacity of 115 m^3/day with a 95% expected operation availability for a corrected average input capacity of 109 m^3/day.
- With an input capacity of 109 m^3/day the effluent and brine will be discharged as follows:
    - 68 m^3/day to CP1
    - 24 m^3/day to Saline Pond as Brine
    - The 17 m^3/day difference is due to evaporation loss through treatment

Solid-mode of one unit within the SWTP is expected to operate to the following specifications:

- Inlet capacity of 69 m3/day with a 95% expected operation availability for a corrected average input capacity of 66 m3/day. This full inlet capacity will be discharged to CP1 as effluent
- Decisions regarding the management of solid salt by-product are ongoing by Agnico Eagle. One possible option would be use as a dust suppressant on roads as the material is similar to calcium chloride currently approved for such use. Formal approval would be required from the Government of Nunavut Environment Department.

SWTP effluent is currently transferred to CP1 where it will be treated by the EWTP prior to discharge to Meliadine Lake. EWTP effluent discharge to Meliadine Lake was performed in 2018 in accordance with the conditions outlined in Part F, Item 3 of the Water Licence. Discharge to Meliadine Lake is expected to be carried out in 2019. Total discharge to Meliadine Lake, including the treated groundwater, will remain within the permitted daily volume and meet the discharge criteria defined in the License, as well as MDMER discharge limits. Additionally, SSWQO's for EWTP effluent (including treated groundwater) will be met at the edge of the mixing zone in Meliadine Lake. Further details regarding the EWTP are provided in Sections 3.9.4 and Section 4.3 of the WMP.

The saline effluent temperature from the SWTP is expected to be approximately 35 °C, with an approximate pH of 7.5 (Saltworks 2017). According to pilot testing, SWTP effluent meets the required Water Quality Output requirements defined in Agnico Eagle's Desalination Water Treatment Plan Design Criteria with the exception of ammonia, nitrite, total cyanide, and selenium (Saltworks 2017). However, results from the first sampling event (December 13, 2018) upon SWTP commissioning meets the aforementioned ammonia requirements and was below detection limit for the selenium analysis. SWTP effluent and CP1 water quality will continue to be monitored according to the SWTP Design Report to identify future exceedances and potential impacts to CP1. Pilot testing predicted that TDS concentrations would be approximately 158 mg/L (condensed water after treatment; Saltworks 2017). The first set of results confirmed this prediction with a result of 147 mg/L. Commissioning of the SWTP is currently underway and as such pilot test values may vary from sample results and sample results will trend towards lower concentrations as the treatment process is refined for optimal treatment quantity and quality. With respect to toxicology, the SWTP effluent passed acute toxicity tests on Rainbow trout, Three-spined stickleback and Daphnia magna (Saltworks 2017).

3.4.3 Potential Future Long-Term Management Strategy - Treated Groundwater Discharge to Melvin Bay at Itivia Harbour

Based on the realized volumes of groundwater inflow, it is anticipated that a second discharge location will be required for long-term groundwater management. Agnico Eagle has proposed to treat groundwater and discharge it as saline effluent to the ocean, either as a direct discharge and/or after temporary on-site storage in one or more of the water containment ponds at the Mine. Agnico Eagle applied to the Nunavut Impact Review Board for approval to discharge saline water to the sea (Melvin Bay, Rankin Inlet). Agnico Eagle is currently awaiting approval from the Minister for the project.

For the discharge to sea option, the saline effluent would be trucked from the Mine and discharged in Melvin Bay at Itivia Harbour. The discharge facility will include an unheated saline water storage tank at the Itivia Fuel Storage Facility and a pipeline extending to an engineered diffuser located in Melvin Bay during the open water season from 2019 to 2035. The saline effluent will be discharged in a controlled manner through the diffuser in compliance with the required discharge criteria to allow for maximum dilution and minimum environmental impact to the marine environment. Saline effluent quality will be required to meet the Canadian federal end-of-pipe discharge criteria (Metal and Diamond Mining Effluent Regulations – or MDMER [GC 2017]), and Site-Specific Water Quality Objectives, if applicable, at the edge of the mixing zone for the diffuser discharge into Melvin Bay. As per MDMER (GC 2017) Section 9 and Section 10, Agnico Eagle will submit information regarding the final discharge point 60 days before discharge.

3.5 Discharge Schedule

Table 4 outlines the timeline for key activities on the Mine related to the management of saline groundwater, including tasks and facilities for the current short-term and long-term management strategies for discharge to Meliadine Lake (Section 3.4.1 and 3.4.2). A detailed Mine schedule for the overall Mine Water Management (e.g., building of culverts, berms and containment ponds) are presented in the 2019 WMP.

Table 4: High Level Mine Schedule

Activity	Timeline	Notes
On-site water storage	Ongoing	—
Update Groundwater Management Plan (Current Document)	Six months prior to discharge	Type A Water Licence 2AM-MEL1631 requirement
Commissioning of Salt Water Treatment Plants (SaltMaker #1 and #2)	Q4-2018 to Q1-2019	—
Discharge saline water to the sea (Melvin Bay, Rankin Inlet), pending approval by the Minister	2019 open water season (Q2)	
Active Discharge to Meliadine lake	Annually May thru October to 2032	—
Operation of Salt Water Treatment Plant	24 hr. a day / 7 days a week, year round	In-service as required
Inactive Discharge	Annually November thru April to 2032	Water will be stored underground and in surface containment ponds during the winter
Final Effluent Discharge to Meliadine Lake	End of Mine life 2032	—

Source: Agnico Eagle (2017).

SECTION 4 • GROUNDWATER MONITORING PROGRAM

4.1 Water Quality and Quantity Monitoring

Water quality monitoring is an important part of the Mine water management to verify the predicted water quality and quantity trends and conduct adaptive management should differing trends be observed. Water quality and quantity monitoring has been initiated and will continue during construction, operations, closure and post-closure. Monitoring will occur at three levels:

- Regulated discharge monitoring that occurs at monitoring points specified in the Licence or regulations.
- Verification monitoring that is carried out for operational and water management purposes by Agnico Eagle. This monitoring data will not be reported to the Regulators in the Annual Water License Report, but can be provided upon request by the Regulators.
- General monitoring that is included in the Licence requirements and is subject to compliance assessment to confirm sampling was carried out using established protocols, including quality assurance/quality control provisions, and addressing identified issues. General monitoring is subject to change as directed by an Inspector, or by the Licensee, subject to approval by the NWB.

All three types of monitoring will be used at the Mine. The WMP and Water Quality and Flow Monitoring Plan present the conceptual water quality monitoring plan during construction, operations and closures and more detailed information on monitoring programs.

The groundwater quality monitoring plan summarized in Section 4.4, will be further defined as the Mine advances and will be conducted in agreement with the WMP for the Mine (Agnico Eagle 2019). Required monitoring and frequency for pre- and post- treatment (i.e., monitoring above ground) is presented in the WMP (Agnico Eagle 2019).

4.2 Water Quantity

The volume of groundwater inflow being collected and transferred to surface water management systems is measured using a flow meter installed at the Portal 1 entrance and is fed by Water Stope 75. This data is supplemented by monthly seepage surveys in which visually observed groundwater inflows in the Underground Mine are recorded.

Observed groundwater inflow rates are compared to model predictions (Table 1) on an annual basis. If significant variations from model predictions are observed, the assumptions behind the analysis will be reviewed and the analysis updated if required. In addition, updates to the groundwater model may be required based on operational changes as the Underground Mine advances.

Variations that would be considered significant and would indicate the need to consider recalibrating the model and updating the inflow analysis include:

- Groundwater inflows to the mine, based on a monthly average of inflow over six consecutive months, is 80% of the model predictions while active grouting is being utilized to mitigate groundwater inflows.
- Groundwater inflows to the mine, based on a monthly average of inflow over six consecutive months, is 30% higher than the predicted groundwater inflows once grouting is ceased.

Changes in underground storage were calculated on a daily basis and used to produce monthly net inflow rate estimates. Based on these monthly averages, mean net inflow rate over 2018 was 51 m^3/day. Golder (2016) predicted a gross inflow rate of 300 m^3/day (Table 1).

Identification of a potential long-term effect associated with the groundwater flow is to be conducted and based on a detailed examination of the groundwater data to assess the potential causes of greater than expected groundwater quantity. If the greater than predicted flows could be correlated to a short term effect such as freshet or transient drainage of a high storage feature, then no further action would be required. However, if the greater than predicted flows could not be correlated to a short term effect, than the effect would be considered to be potentially long term. The duration of six months is based on observed seasonal variations in inflow quantities in mines situated permafrost regions.

If model re-calibration is deemed necessary, future groundwater inflow quantity would be predicted using this re-calibrated model and results considered as part of the adaptive management of the groundwater quantity contribution to the WMP. Currently, an update to the numerical model is underway. The update is not the result of either of the two conditions listed above, but rather is intended to provide more accurate estimates to better inform planning of management strategies.

4.3 Water Quality

4.3.1 Underground Mine Sump Water and Groundwater Inflows

Water accumulating in sumps underground is sampled on a monthly basis at Sump 125, which is the main collection sump prior to recirculation for underground use. Sump water samples are analyzed for the following parameters: conductivity, TDS, pH, temperature, oil and grease, major anions, radium 226, dissolved and total metals, nitrate and nitrite, ammonia, volatile organic compounds (i.e., benzene, xylene, ethylene, and toluene).

Groundwater quality is also monitored at mine seeps and/or diamond drill holes (DDHs) to verify the quality of formation water flowing into the mine prior to contact and potential contamination by mining and drilling fluids. The DDHs consist of underground holes drilled in advance of mining for ore body delineation purposes. These DDHs are sampled if there is sufficient flow to flush the borehole prior to initiation of grouting. Flushing and sampling techniques used to ensure samples are taken without contamination are described in Section 2.2.3 of the Quality Assurance/Quality Control Plan. Samples are collected quarterly at a minimum but actual sampling frequency may be greater depending on rate of progress, frequency of water intersects, and observed trends in groundwater quality with time. Water samples are analyzed for the following parameters: conductivity, TDS, pH, temperature, major anions, radium 226, dissolved and total metals and toxicity testing.

If water samples are collected that indicate that the TDS is more than 20% higher than the estimated 64,000 mg/L, the water quality predictions for underground will be reviewed and results considered as part of the adaptive management of the groundwater quantity contribution to the WMP.

4.3.2 Saline Water Treatment Plant Influent and Effluent

Water samples are collected weekly at both the inlet and outlet of the SWTP. Samples taken at the inlet of the SWTP represent the water quality of either Sump 75 or the Saline Pond, which will vary depending on the treatment priority for saline water storage. The results of the sample analysis are used by SWTP operators to fine-tune the treatment process and ensure its optimal performance. Samples taken at the outlet of the SWTP are analyzed to provide the quality of treated water produced by the SWTP that is transferred to CP1.

Water samples are analyzed for the following parameters: pH, conductivity, temperature, Total Suspended Solids (TSS), Total Dissolved Solids (TDS), chloride, ammonia, nitrite, nitrate, total phosphorus, total metals, total cyanide, and total mercury.

4.4 Groundwater Monitoring Plan

Table 5 presents a summary of the underground monitoring plan presented in Sections 4.2 and 4.3. Additional sampling at the surface will be conducted, including pre- and post- SWTP sampling as outlined in the WMP and the Water Quality and Flow Monitoring Plan.

Table 5: Groundwater Monitoring Plan

Monitoring Type	Monitoring Location	Purpose	Frequency
Verification	Portal Water Stope L75	Quantity - Monitor underground water quantity pumped to surface.	Totalized Flow Tabulated Monthly
Verification	Underground Seeps	Quantity - Seepage survey to verify underground flow estimates.	Monthly
Verification	Sump 125	Quality - Monitor underground water quality prior to recirculation for underground use.	Monthly

Monitoring Type	Monitoring Location	Purpose	Frequency
Verification	Underground seeps/DDHs	Quality – Verify quality of groundwater flowing into underground	Quarterly
Verification	SWTP Inlet and Outlet	Quality – Verify quality of groundwater being treated and monitor final treated effluent prior to continued transfer to CP1	Weekly

Source: Agnico Eagle (2018).

SECTION 5 • QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

Quality Assurance (QA) refers to plans or programs that encompass a wide range of internal and external management and technical practices designed to ensure the collection of data of known quality that matches the intended use of the data. Quality Control (QC) is a specific aspect of QA that refers to the internal techniques used to measure and assess data quality. Specific QA and QC procedures that will be followed during sampling performed for the Groundwater Monitoring Program are described in Section 5.1 and 5.2.

5.1 Quality Assurance

Quality assurance protocols will be diligently followed so data are of known, acceptable, and defensible quality. There are three areas of internal and external management, which are described in the following three sections.

5.1.1 Field Staff Training and Operations

To make certain that field data collected are of known, acceptable, and defensible quality, field staff will be trained to be proficient in standardized field groundwater sampling procedures, data recording, and equipment operations applicable to the Groundwater Monitoring Program. All field work will be completed according to specified instructions and established technical procedures for standard sample collection, preservation, handling, storage, and shipping protocols.

5.1.2 Laboratory

To make sure that high quality data are generated, accredited laboratories will be selected for sample analysis. Accreditation programs are utilized by the laboratories so that performance evaluation assessments are conducted routinely for laboratory procedures, methods, and internal quality control.

5.1.3 Office Operations

A data management system will be utilized so that an organized consistent system of data control, data analysis, and filing will be applied to the Groundwater Monitoring Program. Relevant elements will include, but are not limited to the following:

- all required samples are collected;
- chain-of-custody and analytical request forms are completed and correct;
- proper labelling and documentation procedures are followed, and samples will be delivered to the appropriate locations in a timely manner;
- laboratory data will be promptly reviewed once they are received to validate data quality;
- sample data entered into a Mine-specific groundwater quality database will be compared to final laboratory reports to confirm data accuracy; and

- appropriate logic checks will be completed to ensure the accuracy of the calculations.

5.2 Quality Control

The QC component will consist of applicable field and sample handling procedures, and the preparation and submission of two types of QC samples to the various laboratories involved in the program. The QC samples include blanks (e.g., travel, field, equipment) and duplicate/split samples.

Sample bottle preparation, field measurement and sampling handling QC procedures include the following:

- Sample bottles will be kept in a clean environment, capped at all times, and stored in clean shipping containers. Samplers will keep their hands clean, wear gloves, and refrain from eating or smoking while sampling.
- Where sampling equipment must be reused at multiple sampling locations, sampling equipment will be cleaned appropriately between locations.
- Temperature, pH, and specific conductivity will be measured in the field using hand held meters.Samples will be cooled to between 4 °C and 10˚C as soon as possible after collection. Care will be taken in when packaging samples for transport to the laboratory to maintain the appropriate temperature (between 4°C and 10˚C) and minimize the possibility of rupture. Where appropriate, samples will be treated with preservatives to minimize physical, chemical, biological processes that may alter the chemistry of the sample between sample collection and analysis.
- Samples will be shipped to the laboratory as soon as reasonably possible to minimize sample hold times. If for any reason, samples do not reach the laboratory within the maximum sample hold time for individual parameters, the results of the specific parameters will be qualified, or the samples will not be analysed for the specific parameters.
- Chain of custody sample submission forms will be completed by field sampling staff and will be submitted with the samples to the laboratory.
- Only staff with the appropriate training in the applicable sampling techniques will conduct water sampling.

Quality control procedures implemented will consist of the preparation and submission of QA/QC samples, such as field blanks, trip blanks, and duplicate water samples. These are defined as follows:

- Field Blank: A sample will be prepared in the field using laboratory-provided deionized water to fill a set of sample containers, which will then be submitted to the laboratory for the same analysis as the field water samples. Field blanks will be used to detect potential sample contamination during collection, shipping and analysis.
- Travel Blank: A sample will be prepared and preserved at the analytical laboratory prior to the sampling trip using laboratory-provided deionized water. The sample will remain unopened

throughout the duration of the sampling trip. Travel blanks will be used to detect potential sample contamination during transport and storage.

- Duplicate Sample: Two samples will be collected from a sampling location using identical sampling procedures. They will be labelled, preserved individually and submitted for identical analyses. Duplicate samples will be used to assess variability in water quality at the sampling site. Duplicate will be collected and submitted for analyses at approximately, 10% of sampling locations. For smaller batches of samples (less than 10), at least one duplicate will be collected and submitted for analysis.

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APPENDIX A • SITE LOCATION AND MINE SITE LAYOUT

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LEGEND

- CATCHMENT BOUNDARY
- SERVICE ROAD
- HAUL ROAD
- NON CONTACT WATERBODY
- CONTACT WATERBODY
- WATER COLLECTION POND
- DRAINED POND AREA
- OPEN PIT
- OVERBURDEN
- WASTE ROCK
- ORE
- TAILINGS
- INDUSTRIAL SITE PAD
- CONTACT WATER FLOW DIRECTION

AGNICO EAGLE

TITRE / TITLE	# DWG
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DESSINS EN RÉFÉRENCE/REFERENCE DRAWINGS

REV	DESCRIPTION	DATE	PAR BY

REVISIONS

DESSINÉ PAR / DRAWN BY	MDD	DATE	08-03-2017
VÉRIFIÉ PAR / CHECKED BY	JB		08-03-2017
APPROUVÉ PAR / APPROVED BY			
No. PROJET / PROJECT NO.			
DATE			

TITRE / TITLE
AGNICO EAGLE – MELIADINE GOLD PROJECT
FIGURE 1.2 GENERAL MINE SITE PLAN LAYOUT

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APPENDIX B • FRESHET ACTION PLAN AND SNOW MANAGEMENT PLAN

AGNICO EAGLE

MELIADINE GOLD PROJECT

FRESHET ACTION PLAN

DECEMBER 2018
VERSION 4

DOCUMENT CONTROL

Revision				Pages Revised	Remarks
#	Prepared by	Revised	Date		
01	AGNICO EAGLE	Internally	March 2016	All	
02	AGNICO EAGLE	Internally	March 2017	All	
03	AGNICO EAGLE	Internally	March 2018	All	
04	AGINICO EAGLE	Internally	December 2018	All	

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1 INTRODUCTION

The purpose of this Freshet Action Plan (Plan) is to provide Agnico Eagle with specific management and mitigation measures to address and manage water associated with the freshet season (Freshet), a response plan and procedures to prevent and to minimize potential negative impacts to the surrounding environment at the Meliadine Site (Site).

The term freshet refers to spring thaw, which can result in inundation of floodplains. Freshet at Meliadine typically takes place between May 15 and July 30. In some years, Freshet can also happen in early fall, when freezing re-occurs (mid-October) and then thaws. There are areas at the Site that are vulnerable to excess water produced during Freshet; the objective of this document is to identify those areas, and to develop a plan with defined roles and responsibilities to manage excess water produced on site.

The following guiding principles are applicable to the Plan:

- To ensure that mine contact water from runoff or seepage is managed to prevent adverse environmental impacts;
- To ensure the health and safety of Agnico Eagle employees and contractors; and
- To ensure the Site is in compliance with the Nunavut Water Board (NWB) Type A Water Licence No.: 2AM-MEL1631 (Type A Licence).

The Plan identifies areas of risk during Freshet, risk management and the procedures necessary to address potential concerns.

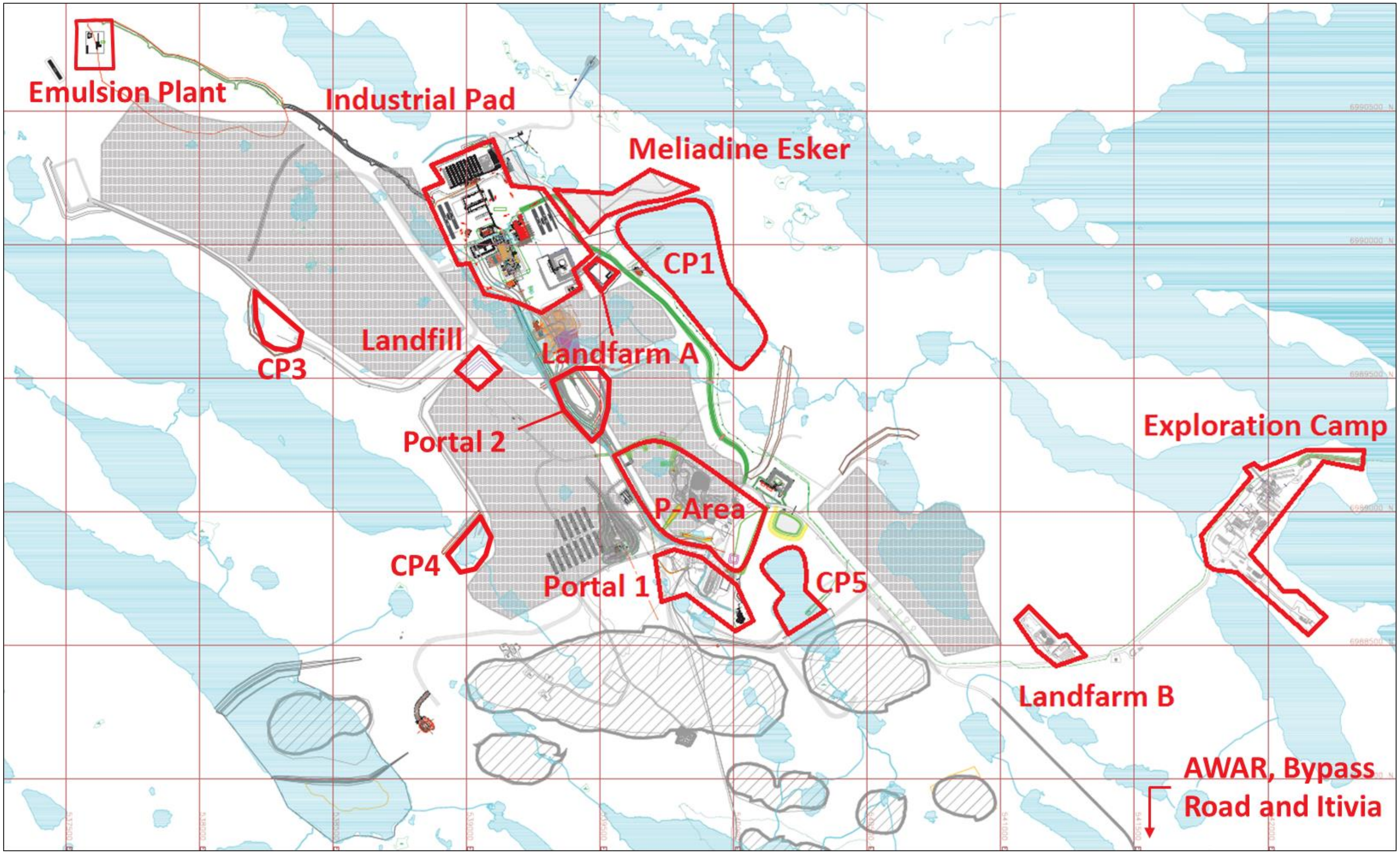
2 AREAS OF RISK DURING FRESHET

The key areas of risk during Freshet at the Site include the following:

- P-Area
- Portal 1 Sump 1 (Sump LV50)
- Portal 2 Sump 1 (Sump LV50)
- New (Type A) and old (Type B) Landfarms
- Landfill
- All Weather Access Road (AWAR) and Quarries along the road
- Infrastructure Areas; including the Exploration Camp area, Portal 1 and the Industrial Pad Areas
- Containment Pond 1 (CP1), Containment Pond 3 (CP3), Containment Pond 4 (CP4), and Containment Pond 5 (CP5)
- Meliadine Esker Quarry
- Bypass Road
- Itivia laydown and fuel handling facility (Itivia)

Identified areas of risk at Site are shown in Figure 1, and are described in the following section.

Figure 1: Site Plan View with Areas of Risk at Site during Freshet



2.1 P-AREA

The P-Area is the initial containment area identified for precipitation events; snow melt or Freshet water that has come in contact with mine waste rock or surface works in the area of the Underground Portals (contact water).

The P-Area includes three containment areas (Figure 2); P1 Containment Area (P1), P2 Containment Area (P2), and P3 Containment Area (P3) and has a cumulative capacity of 46,041 m^3. Periodic pumping to P1, from P2 and P3, is planned to manage water levels and to assist with active evaporation at P1.

2.1.2 P1

P1 is the largest containment of the three ponds that make up the P-Area (20,781 m^3). Precipitation, water drainage from the adjacent waste rock pile, and any water pumped from P2 or P3 will also be contained within P1. Surface water that flows to Portal 2 is pumped to P1. Three evaporators are installed at P1 to assist with active evaporation of water contained at P1 during the open water season at Site.

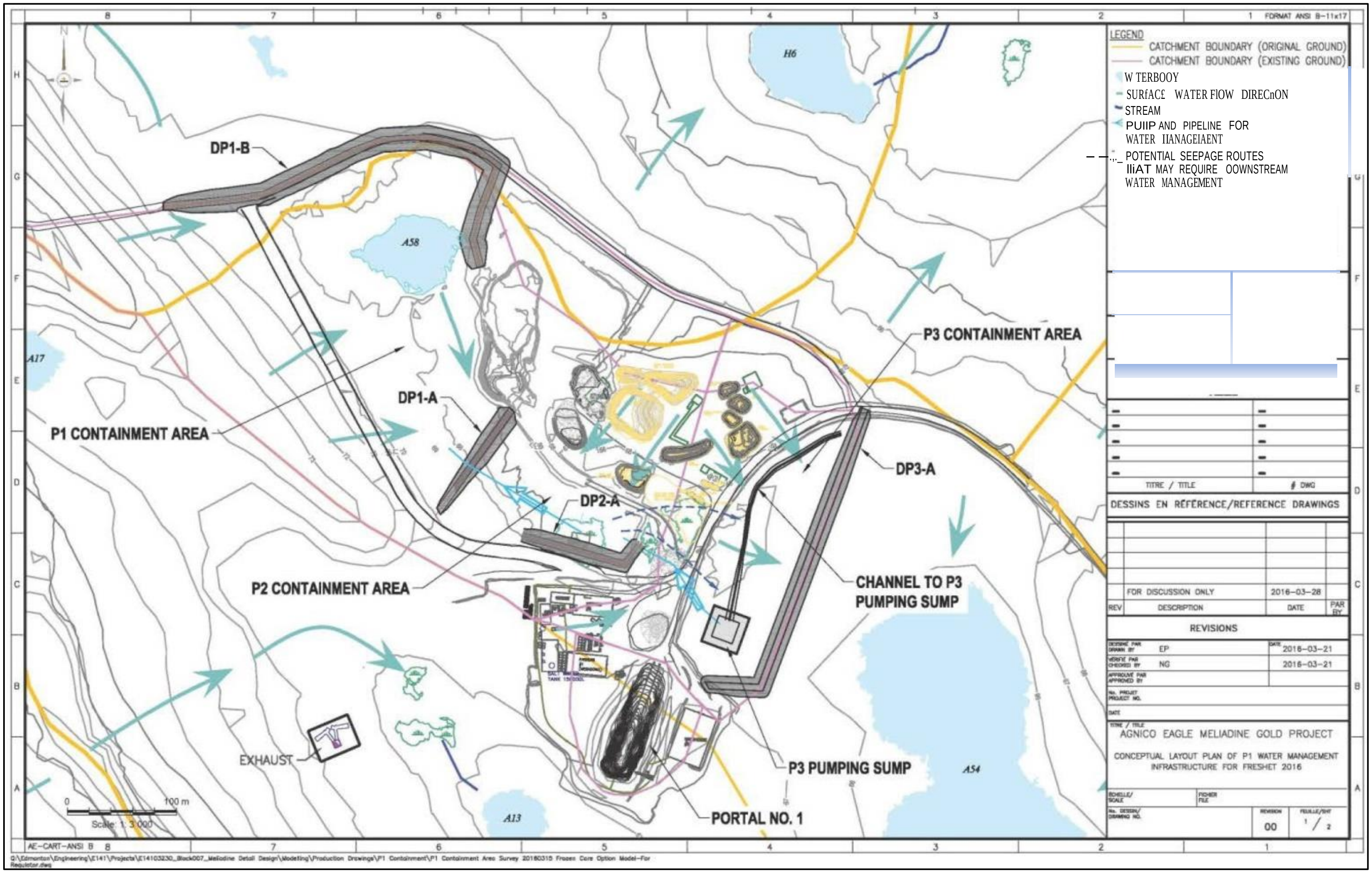
2.1.3 P2

P2 is directly adjacent and down-gradient to P1. P2 allows for additional contact water, precipitation and waste rock drainage water management with a capacity of 6,828 m^3. Additionally, P2 is the main containment area for water pumped to surface from underground Sump 1 (LV50). LV50 is the receptor of surface water that flows from the surface to Portal 1. Water from P2 is pumped to P1 to be actively evaporated.

2.1.3 P3

P3 is down-gradient to P1 and P2. P3 contains surface runoff from the surrounding portal entrance surface area, precipitation, and inflow water from Waste Rock Storage Facility 2 (WRSF2) and temporary ore piles to the north-northwest of P3. Snow removed from the selected areas at the Site throughout winter months, will be directed to P3. Water from P3 is pumped to P1 to be actively evaporated.

Figure 2: P-Area Plan View



2.3 Portal 1 Sump 1 (LV50 SUMP)

LV50 is located 50 meters below grade (mbg) and is the first sump, closest to the entrance of Portal 1. Snowmelt and surface run-off that flows to the portal entrance (the lowest elevation at the Site), down the underground haulage ramp to sump LV50, is pumped from LV50 to the P-Area. The overall capacity for Portal 1 Sump 1 is 29 m^3. Water pumped from Portal 1 Sump 1 to P2 is measured with a volumetric flow meter and recorded daily.

2.4 Portal 2 Sump 1 (LV50 SUMP)

LV50 is located 50 meters below grade (mbg) and is the first sump, closest to the entrance of Portal 2. Snowmelt and surface run-off that flows to the portal entrance, down the underground haulage ramp to sump LV50 is pumped from LV50 to the Channel 1. The overall capacity for Portal 2 Sump 1 is 55 m^3. Water pumped from Portal 2 Sump 1 to Channel 1 is measured with a volumetric flow meter and recorded daily.

2.5 Landfarm

The Type A Licence Landfarm is located adjacent and east of the Industrial Site Pad and is designed to receive soils, rock, snow, and ice contaminated with petroleum hydrocarbons. This will include light hydrocarbons such as diesel and gasoline (Agnico Eagle 2016). It was assumed that an annual volume of 500 m^3 of contaminated ice and snow would require management and the landfarm has been designed to account for this volume.

The Landfarm has geotextile liners and are filled with soil. Water that pools, collects or flows from the Landfarm needs to be collected for monitoring (as per the Licence requirements) and treated before it is discharged to CP1.

2.6 All Weather Access Road (AWAR)

The All-Weather Access Road (AWAR) was built in 2013 to connect the Site to the hamlet of Rankin Inlet. The road is approximately 23.8 km long with twenty-two water crossings; three bridge crossings and nineteen culverts installed (Figure 3).

2.7 Infrastructure Areas

Infrastructure Areas represent buildings, pads and towers installed at the Site and include the Industrial Pad, Exploration Camp, and Emulsion Plant (Figure 1).

2.8 CP1, CP3, CP4 and CP5

Engineered water containment dikes constructed in 2017 at lakes A54 and H17 were developed as CP5 and CP1, respectively. The dikes are designed to contain contact water within the footprint of the Site and prevent pollution provisions of the *Fisheries Act*. Both CP1 and CP5 will be used for Site contact water and snow and ice collection prior to Freshet. CP1 and CP5 are illustrated in Figure 1 and discussed in Section 4 of this report.

CP3 and CP4 are containment ponds designed to collected runoff from the Tailings Storage Facility (TSF) area and Waste Rock Storage Facility 1 (WRSF1) area, respectively. CP3 construction is scheduled to be complete by January 2019 and CP4 construction is scheduled to be complete by March 2019. CP3 and CP4 design plans implement engineered dikes designed to contain contact water within the footprint of the Site and prevent pollution provisions of the *Fisheries Act*.

2.9 BYPASS ROAD

The Bypass Road is a 5.9 km access road that provides a means to divert site-related traffic around the community of Rankin Inlet. The Bypass Road spans from the northwest margin of Itivia to km 2.9 on the AWAR (Figure 4).

2.9 ITIVIA

Itivia is located in Rankin Inlet and is accessed by Site from the AWAR and Bypass Road. In combination with the Bypass Road, Itivia is intended to support the Site to divert site-related traffic around the community of Rankin Inlet. Itivia is also intended for fuel storage and as a laydown area for barge shipments. The location of Itivia is shown on Figure 3 and the plan view of the Itivia Site is presented as Figure 5. A culvert is installed to divert runoff around the Itivia Site and to allow passage of run-off from the Itivia laydown area (Figure 5).

Figure 3: AWAR Map Showing Water Crossing Location

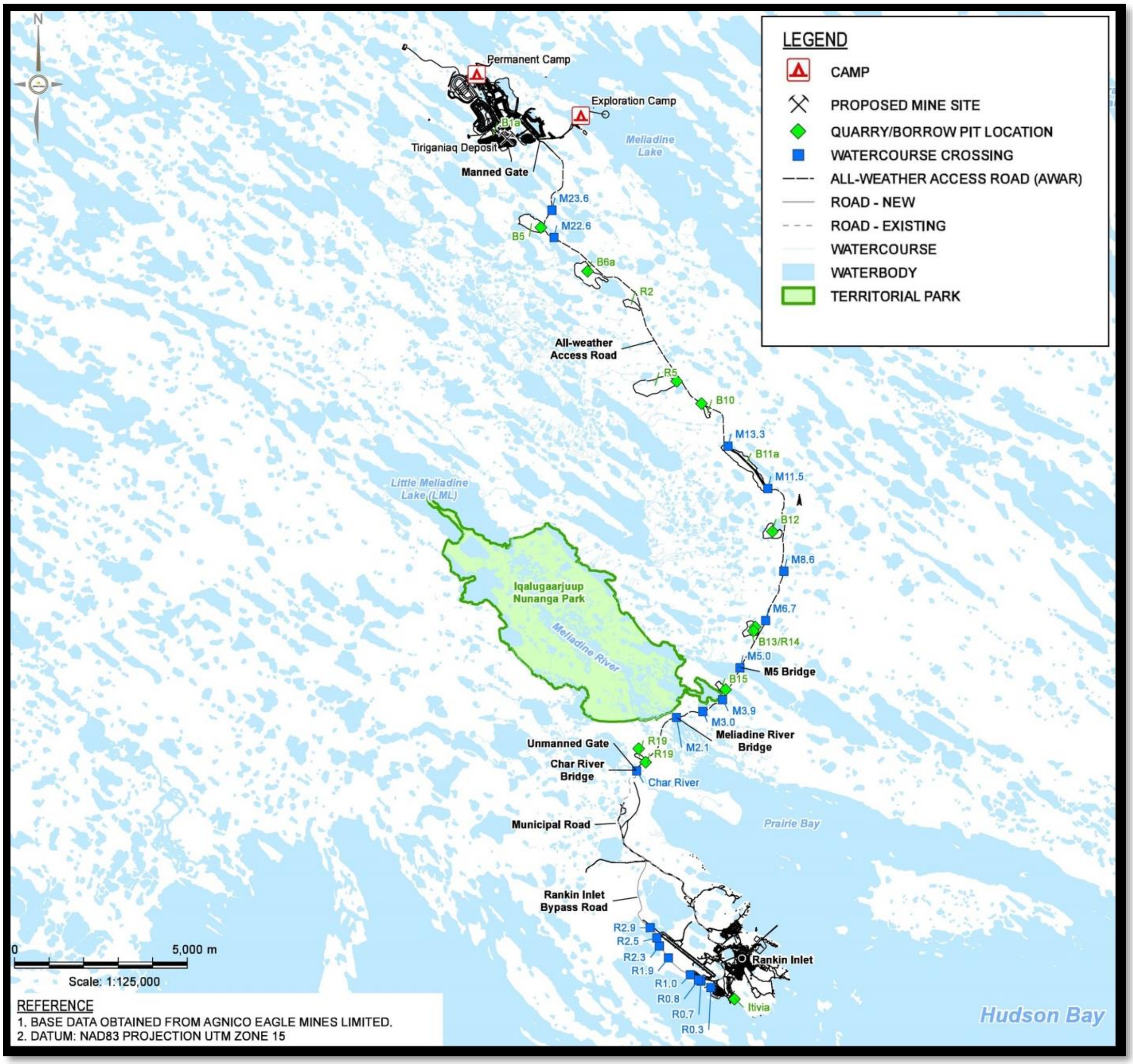


Figure 4: Bypass Road and Culvert Locations

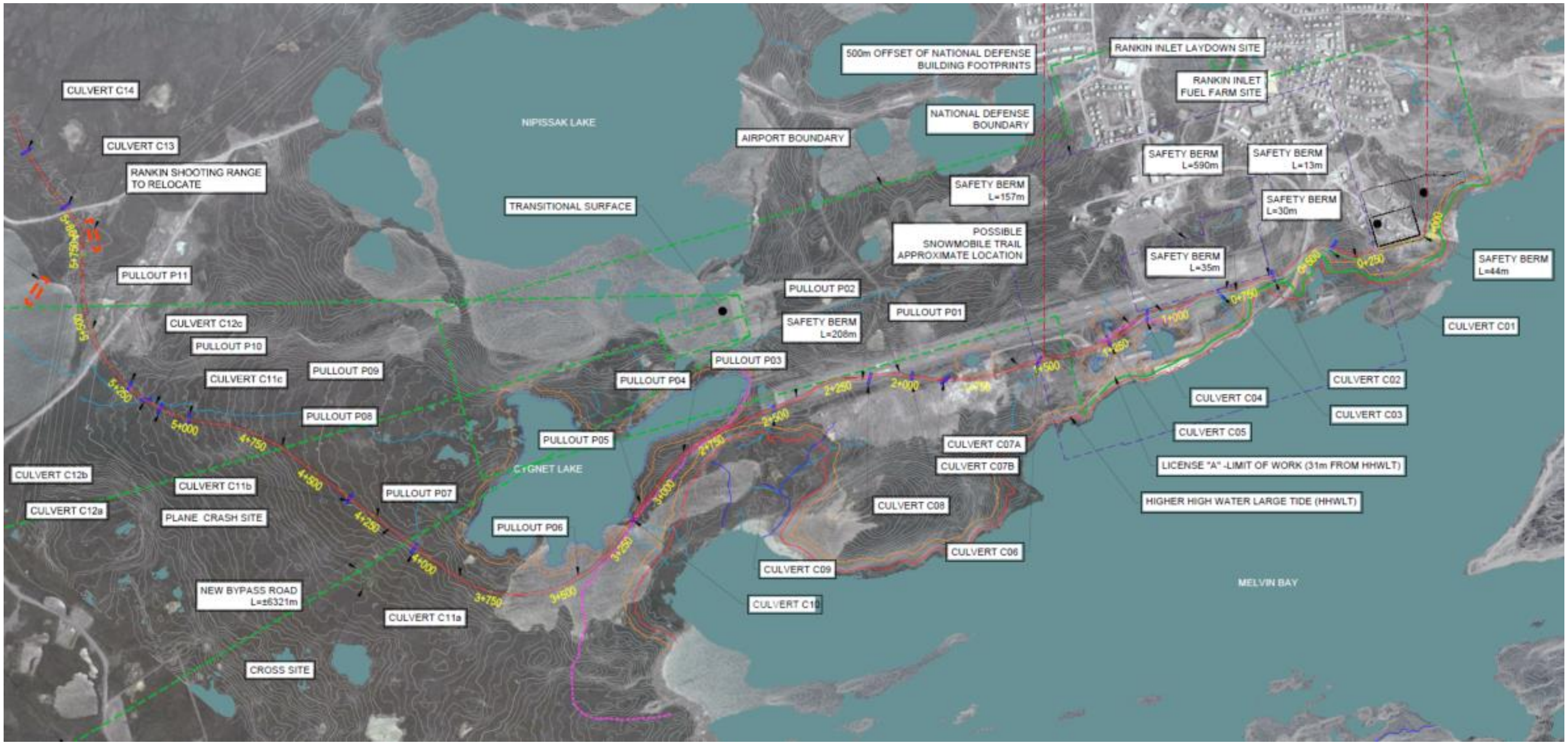
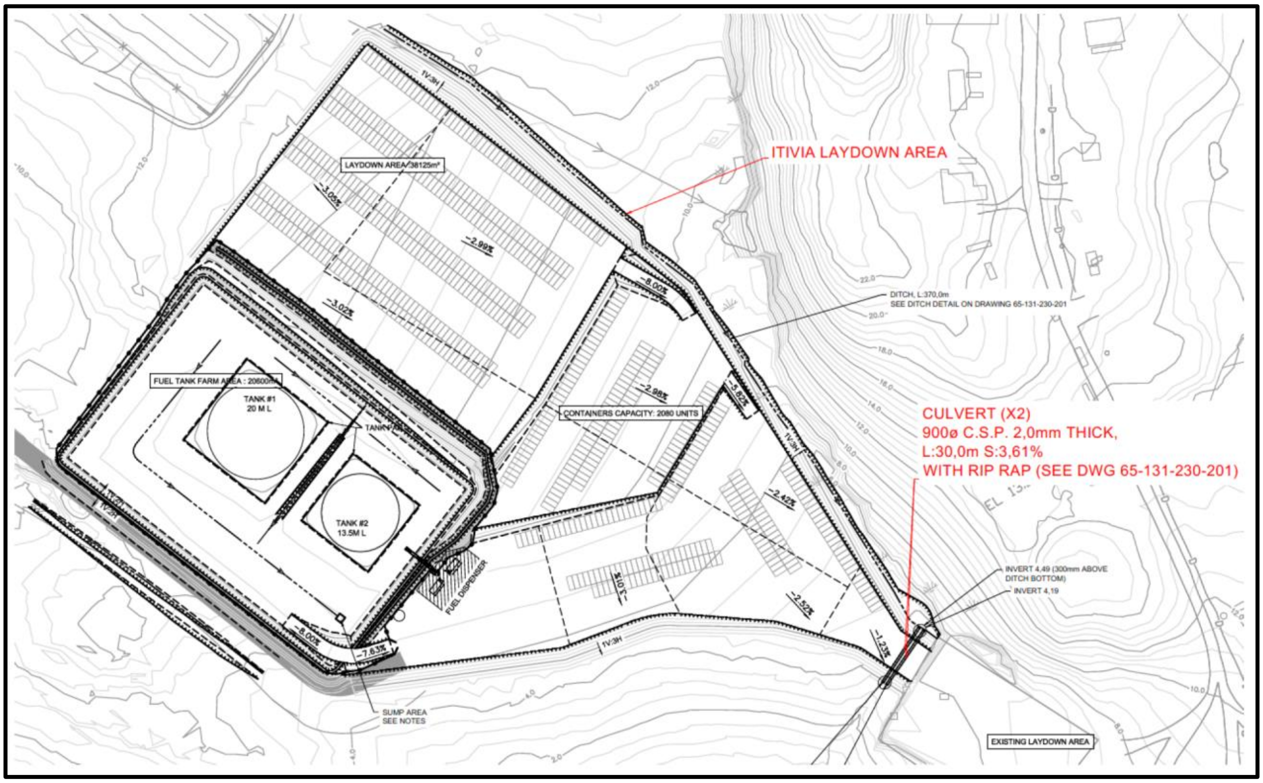


Figure 5: Itivia Laydown Area and Culvert Location



3 FRESHET RISK MANAGEMENT

Managing the risks prior to Freshet is a primary objective at Site. Planning and preparing before Freshet alleviates some of the risk from excess water that may suddenly occur, and ensures compliance with applicable regulations. This is managed by removing water (pumping) at containment pond areas prior to winter freeze (fall) to allow for increased capacity from precipitation, snow and ice removal on roads, road water crossings, culverts, ditches, and select containment ponds after winter freeze and before Freshet (winter and spring).

Risk management for the Site areas during Freshet are described below and Appendix A presents the Freshet Action Plan Procedure for preparation prior to, during and after Freshet. Section 4 describes snow management at Site and Appendix B presents the Snow Management procedure.

3.1 P-AREA RISK MANAGEMENT

The following management practices are maintained at the P-Area during Freshet and are described in more detail in Appendix A:

- Water levels will be monitored. The water level will not exceed the maximum design elevation in any of the three containment ponds (P1, P2 or P3).

- Agnico Eagle will conduct daily visual inspections of the P-Area. This will include visually monitoring the base of the downstream side of dikes DP1-B and DP3-A (see Figure 2) for seepage, sedimentation deposition, and erosion. If seepage or water with increased total suspended solids (TSS) is noted during inspections, water will be sampled, contained, and pumped back to the P-Area. These volumes pumped will be recorded and documented.
- Engineering will undertake weekly structural inspections of the dikes and note observed seepage.
- Active evaporation from use of the evaporators will contribute to managing the quantity of water contained at P-Area.
- Weekly water sampling during Freshet.

If an emergency occurs, such as the dikes indicating compromised integrity, Agnico Eagle will discharge the water to CP5. The definition and associated design criteria for managing the integrity of the dikes is defined by Golder and Associates during an annual geotechnical inspection.

If CP5 does not have the capacity for water from the P-Area, water will be diverted to the Saline Pond or to the Underground Water Stope for storage until a system for suitable water treatment to meet the Type A Licence and/or MMER discharge criteria.

3.2 Portal 1 Sump 1 Risk Management

If the P-Area becomes filled to capacity and LV50 sump needs to be pumped, the water from LV50 will flow down gradient to the Underground Water Stope.

3.3 Landfarm Risk Management

If there is any excess water collected at the Landfarm during freshet and treatment is not immediately possible, the excess volume will be transferred to the contaminated snow cell located in the Northeast extent of P1. If the snow cell is at capacity and the Landfarm contains excess water, the water will be sampled and, pending acceptable results, the water will be moved to CP1. If results do not allow transfer to CP1, water will be stored in totes until treatment is possible.

In the event that the water sample results do not allow transfer to CP1, potential treatment methods are as follows:

- Oil/water Separator
- CI Agent E-VAC Waste Water Filter System
- Carbon Filter System

If a suitable treatment cannot be completed, the water will be shipped south in totes or bladders for disposal in a certified disposal facility.

3.4 AWAR, Bypass Road and CP3/CP4 access road Risk Management

The following management practices are maintained to ensure the integrity of the AWAR, Bypass Road and CP3/CP4 access roads before and during the Freshet and are described in further detail in Appendix A:

- Large culverts will be heated / steamed as necessary to allow the free flow of Freshet.
- Prior to Freshet, water crossings and culverts will have snow removed from ice surface on the up and downstream side of the crossing to allow free flow of water.
- Visual inspections of AWAR will be undertaken as to the structural integrity of the abutments and road integrity by the E&I Supervisor.

- Weekly (minimum) written inspections throughout freshet and daily during rainfall response including TSS transport, culvert/crossing function, flow rates, and integrity of roads will be completed by the Environment Department in conjunction with the E&I Department.
- As per the Type A Water Licence, monthly water samples are collected at the following locations (Figure 3) and during Freshet if TSS transport is observed:
  - Mel-River (M2.1)
  - M3.0
  - M5.0
  - M11.5
  - M23.6
  - Any significant water seeps or ponding on the road will be sampled

If soil erosion or ground surface scouring are observed, the E&I Department will be notified for repairs. TSS barriers, silt fences, straw logs or other sediment control methods will be implemented as required.

3.5 Infrastructure Areas

Risk management practices for the main Infrastructure Areas at the Site during Freshet are described in the following sections.

3.5.1 Camp Pads and Surroundings

Risk management practices are maintained at the Exploration Camp, Main Camp and surrounding camp areas as follows:

- Clearing off ice and debris from culverts prior to and during freshet;
- Daily visual inspections for excessive water pooling. If pooled water is observed to flow into a water body, a water sample will be collected and monitored for TSS. Follow-up samples will be collected on a weekly basis thereafter;
- Daily visual inspections for snowmelt runoff. If runoff is observed to flow into a water body, a water sample will be collected and monitored for TSS. Follow-up samples will be collected on a weekly basis thereafter;
- Daily visual inspections to ensure flow through culverts and along channels is not impeded; and
- TSS transport will also be monitored at the culvert beside the garage that flows straight to Meliadine Lake. This area will be monitored for TSS, and preventative measures (install straw wattles and/or booms) will be installed to prevent deleterious substances from entering Meliadine Lake.

3.5.2 Industrial Pad and Access Road

The following management practices are maintained to ensure the integrity of the industrial pad and access road:

- The culvert between Lake H12 and H13 will be heated/steamed prior to freshet and will be monitored closely for turbidity.
- This area will be monitored for turbidly and preventative measures (install straw wattles and/or booms) will be implemented to prevent deleterious substances from entering Meliadine Lake.

3.6 CP1, CP3, CP4, CP5, and Quarries

Risk management practices for CP1, CP3, CP4, CP5, the Meliadine Esker and Quarries include discharging/pumping the water prior to winter freeze to be treated and/or discharged as per the Type A Water Licence and the Water Management Plan. If water is observed to be flowing or ponding, it will be sampled to ensure deleterious substances and TSS is not released to surrounding water bodies (Part I, Item 11 of the Type A Water Licence). Inspections of CP1, CP3, CP4 and CP5, and associated water management structures, will be conducted following Part E Item 15 of the Type A Water Licence and Section 3.11 of the Water Management Plan.

3.7 Itivia

The following management practices are maintained to ensure the integrity of Itivia and the Bypass Road:

- The culvert installed between the Itivia laydown and the existing laydown areas (Figure 4) will be cleared of snow and ice prior to freshet and will be monitored closely for TSS transport;
- Rip rap installed around the culvert to control erosion;
- The upstream and downstream extents of the culvert area will be monitored for turbidly and preventative measures (install straw wattles and/or booms) will be implemented to prevent deleterious substances from entering Hudson's Bay; and
- Weekly water sampling at locations of runoff.

4 Snow Management

Proper snow management during the winter contributes to risk mitigation from excess water during Freshet and prevents possible environmental impacts. *The Snow Management Procedure* (Procedure Number MEL-ENV-0017) (Appendix B) presents the plan to efficiently manage snow at the Site.

Snow that is collected and moved from the fuel farm, landfarm, the area surrounding the Portal 1 and Portal 2 entrances, waste rock piles and surrounding P-Area will be moved and collected at P3. Snow and ice from the other areas at the Site are removed from roadways with a snow blower or plow and /or collected and transported to the CP1 or CP5. Figure 5 illustrates the locations for snow collection during the winter and prior to Freshet. Figure 6 illustrates the snow management and storage areas for Itivia.

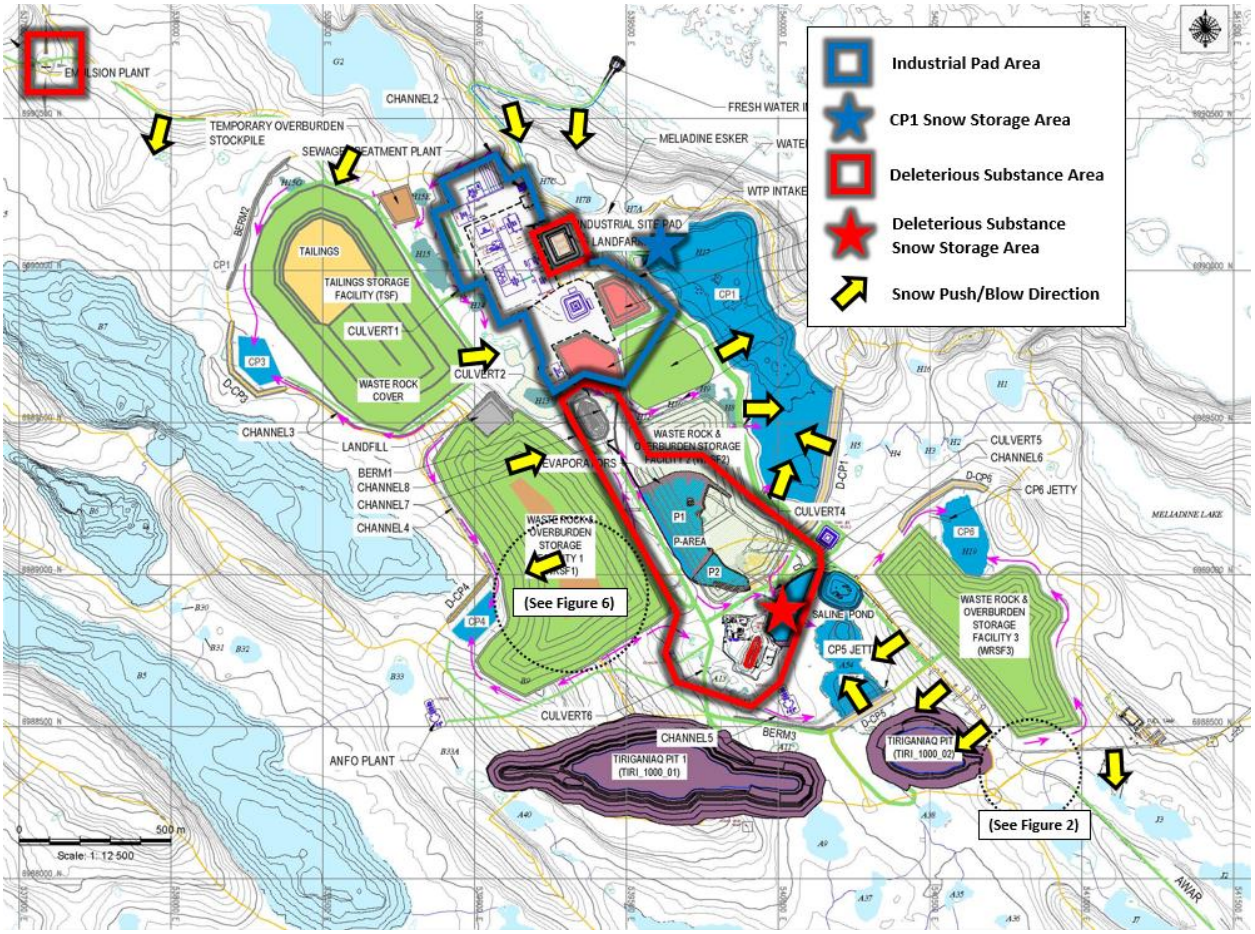


Figure 6: Snow Management Plan on Site

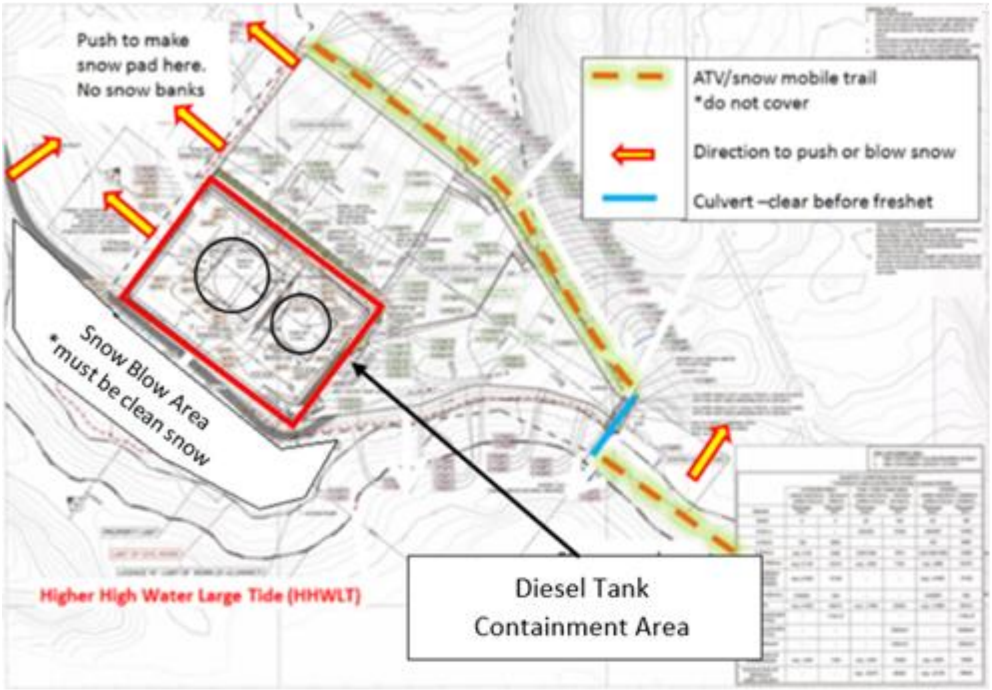


Figure 7: Itivia Snow Management Areas

5 REFERENCES

Agnico Eagle. 2015. Meliadine Gold Project: Landfarm Management Plan. Version 1. April 2015. 6513-MPS-15.

Agnico Eagle. 2016. Meliadine Gold Project: Water Management Plan. Version 2. March 2017.

Nunavut Water Board (NWB). 2015. Type A Water Licence No: 2AM-MEL1631.

APPENDIX A: FRESHET ACTION PLAN PROCEDURE

	DOCUMENT ID: MEL-ENV-Freshet Management Plan Procedure
People concerned: Agnico Eagle employees, contractors, visitors on the Meliadine site	**Effective Date: March 28, 2018**

This procedure corresponds to the required minimum standard. Each and everyone also have to comply with the rules and regulations of the Nunavut Government in terms of health and safety at work.

Rev #	Date	Description	Initiator
1	2018-03-28	Change to Intelex Format	Matt Gillman
2	2018-12-14	Updated for 2019 Season	Matt Gillman

Objective:

- To provide a plan to prevent potential environmental incidents at the Meliadine Site (Site) caused by the freshet season (Freshet) by recognizing specific areas for risk at the Site, possible actions to be undertaken and the departmental responsibilities to address the required actions.

Definitions (If applicable):

Tool/Equipment Required	PPE Required
• N/A	• N/A

Procedure

Winter and Spring – Preparation Prior to Freshet[1]

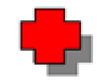
Area for Risk		Action	Responsible Department	Approximate Dates	*Risks/ Impacts*
P-Area	P1, P2 & P3	• Snow must not be stockpiled to be greater than the containment capacity	Environment to coordinate with Energy & Infrastructure, Engineering and Construction	March - May	
AWAR, Bypass Road & CP3/CP4 Service Roads	Culverts	• Weekly Inspections	Environment	March - May	
	Culverts Major Crossings Overall Roads	• Snow and ice clearing[1], including ice and snow that may impede free water flow through culverts (including the culvert at Itivia) and at major water crossings • Effort is to be made to ensure road surface material is not removed during snow clearing. • Ensure snow is not stockpiled along roadside • Repairs (mark culvert locations, add armouring at downstream around culverts and bridges, replace pipe as needed, and document maintenance and repairs) • Monitor signs of erosion (especially downstream at culverts 14.9 and 16 Km on AWAR) • Notify the Environmental Department about any areas for concern[2, 3]	Energy & Infrastructure	Winter Freeze to May (start of thaw)	
Industrial Pad	Culverts	• Weekly Inspections	Environment		
	Culverts Channels and ditches Access Road	• Snow and ice clearing[1], including ice and snow that may impede free water flow through culverts and at major water crossings • Repairs • Notify the Environmental Department about any areas for concern[2, 3]	Energy & Infrastructure		
Quarries		• Snow and ice clearing[1], including ice and snow that may impede free water flow through culverts and at major water crossings • Re-grade disturbed areas to provide appropriate drainage	Construction Environment (for Sampling)	Winter Freeze to May (start of thaw)	

Note:

[1] See the *Snow Management Procedure* (Procedure No.: MEL-ENV-0017) for additional information for snow removal at the Site.

[2] The Environmental Department will assess the area of concern and action will be undertaken to comply with the Nunavut Water Board (NWB) Water Licence No.: 2AM-MEL1631 (Licence)(i.e. collect field parameters or water samples for analysis of total suspended solids, turbidity, or any deleterious substance).

[3] Areas of concern are defined as high water areas on roads, near the up gradient opening of a culvert, flowing water with sediment, spills, wildlife, etc.

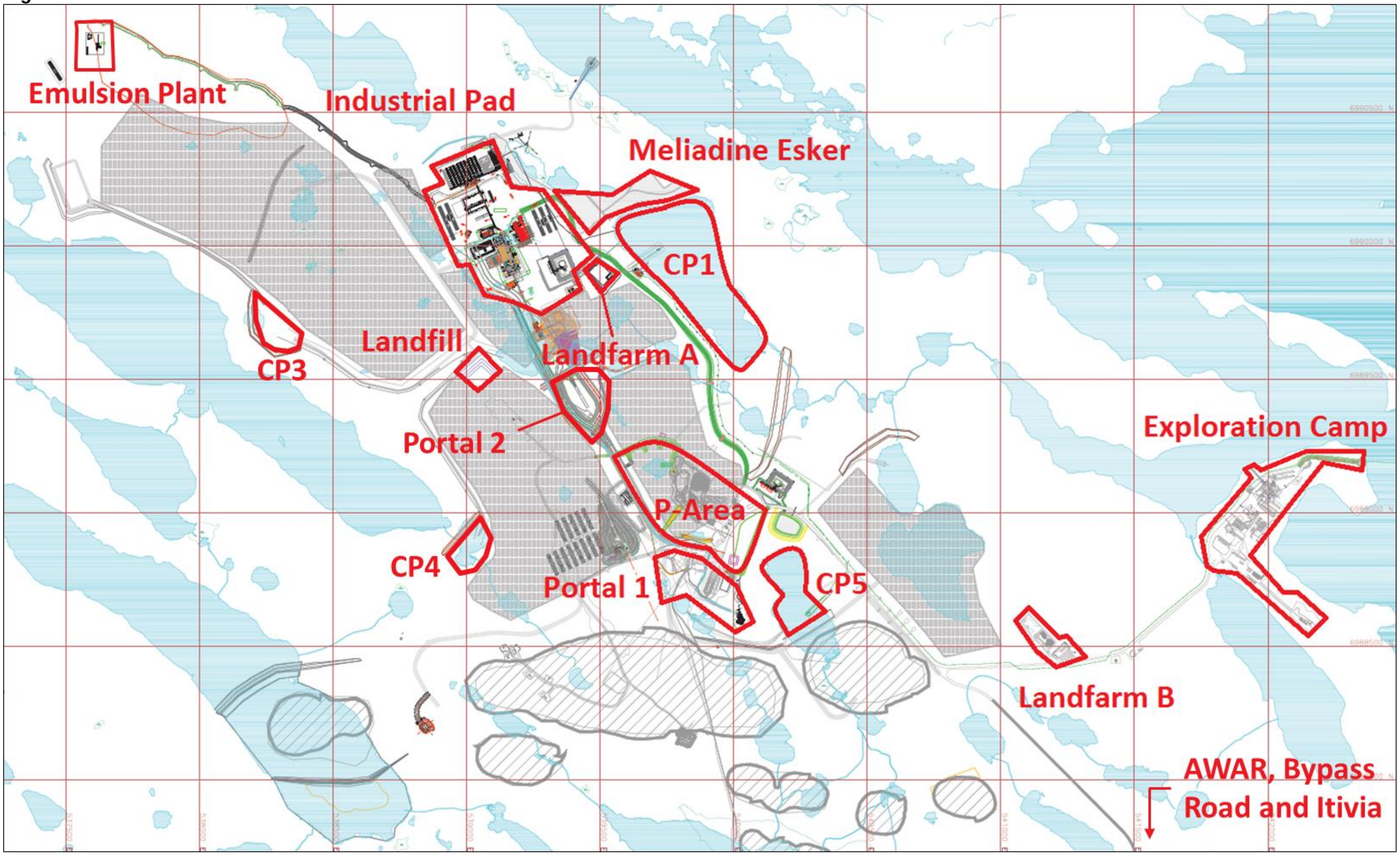
Spring and Summer – During Freshet or During Heavy Rainfall				***Risks/ Impacts***
Area for Risk	**Action**	**Responsible Department**	**Approximate Dates**	
P-Area				   
P1, P2, and P3	• Daily visual inspection • Daily monitor and record water levels • Weekly written inspection • Water sampling	Environment	May - October	
	• If water levels or structural integrity of berms are observed to be compromised, immediate action is required. Notify Supervisor	Engineering		
	• P2 and P3 water volume should be kept as minimal as possible. Pumping of this water should occur regularly (daily) • Measure and record pumping volumes daily and report to Environment weekly	Energy & Infrastructure		
Evaporators	• Commission after sub-zero temperatures no longer occur • Operate as efficient as possible	Energy & Infrastructure		
DP1 and DP3 Trenches /Seep	• Install pump and flow meter at trench to collect seep • Pump water to respective containment area (P1 or P3) • Measure and record pumping volumes daily and report to Environment weekly	Energy & Infrastructure		
AWAR, Itivia, Bypass Road, CP3/CP4 Access Roads				
Culverts	• Inspections for free flow water through culverts and major crossings, pooling water on road, and integrity of road and abutments (Weekly (minumum) or after heavy rainfall between May and October and daily during peak flow) • Sample as required[2]	Environment	May - October	
AWAR Major Crossings Overall Roads and Itivia	• Snow and ice clearing[1], including ice and snow that may impede free water flow through culverts and at major water crossings • Repairs and erosion/sediment control implementation • Notify the Environmental Department about any areas for concern [2,3]	Energy & Infrastructure Environment (for Sampling)		
Quarries	• Repairs and erosion/sediment control implementation • Re-grade disturbed areas to provide appropriate drainange • Notify the Environmental Department about any areas for concern [2,3]	Construction Environment (for Sampling)		

Spring and Summer – During Freshet or During Heavy Rainfall			
New Camp Pad/Industrial Pad			
Culverts	• Daily inspections for free flow water through culverts and major crossings, pooling water on road, and integrity of road and abutments	Construction Environment (for Sampling)	May - October
Channels and Ditches Access Road	• Snow and ice clearing[1], including ice and snow that may impede free water flow through culverts and at major water crossings • Repairs and erosion/sediment control implementation • Notify the Environmental Department about any areas for concern [2, 3]	Construction Environment (for Sampling)	May - October
Infrastructure Pads			
Exploration Camp	• Daily visual inspections • Water sampling as required	Environment	May - June
Landfarm Structure	• Daily inspection of the landfarm retaining wall • Daily visual inspection for seepage • Collect a seepage water sample for hydrocarbon analysis. If seepage is present it should be immediately sampled and the seep be controlled. Whether by creating a sump and pumping back the water or by other methods.	Environment	May - June
Landfarm	• Visually monitor excess water in containment area • Monitor seep (weekly) and collect water sample • Sample water according to the Licence	Environment	Mid-June and September
Landfarm	• If excess water is present and cannot be treated immediately, sample in preparation for discharge to CP1	Environment	10 days prior to pumping
Landfarm	• Once sample results have received, and if water is acceptibe to be pumped to CP1 meets, water can be pumped to CP1 at a low flow to avoid erosion • Measure and record pumped volume	Energy & Infrastructure	Mid-June and September
Garage (Agnico Eagle)	• Install sump to contain excess water • Install straw wattles for sediment control on the other side of the road	Energy & Infrastructure	May
Garage (Agnico Eagle)	• Daily monitoring of TSS and turbidity and possible contaminant runoff	Environment	May - June
Core Box Cemetery and Culvert	• Install straw wattles for sediment control on the other side of the road	Energy & Infrastructure	May
Core Box Cemetery and Culvert	• Daily monitoring of TSS and turbidity and possible contaminant runoff	Environment	May - June
Emulsion Plant Pad	• Weekly Inspections • Water sampling of runoff as required for ammonia, nitrates, turbidity and TSS	Environment	May - June
Emulsion Plant Pad	• Daily visual inspection for pooling water and water run off form pad to tundra, if noticed immediately contact environment department	Dyno Nobel	May - June

Note:
[1] See the *Snow Management Procedure* (Procedure No.: MEL-ENV-0017) for additional information for snow removal at the Site.
[2] The Environmental Department will assess the area of concern and action will be undertaken to comply with the Nunavut Water Board (NWB) Water Licence No.: 2AM-MEL1631 (Licence)(i.e. collect field parameters or water samples for analysis of total suspended solids, turbidity, or any deleterious substance).
[3] Areas of concern are defined as high water areas on roads, near the up gradient opening of a culvert, flowing water with sediment, spills, wildlife, etc.

Fall – Preparation Prior to Winter Freeze					***Risks/ Impacts***
Area for Risk		**Action**	**Responsible Department**	**Approximate Dates**	
LV50		• Survey water level and calculate water volume and provide to Environment, and/or • Measure and record flow meter volume prior to pumping and after pumping and provide to Environment • Remove pumps and prepare equipment for maintenance and winter storage	Mining	Prior to pumping to P2 (Late September)	
		• Pump to P2		Late September/Early October	
Lv75/Water Stope		• Pump to Saline Pond or SWTP		June - September	
P-Area	P2 and P3	• Pump water to P1 for active evaporation	Energy & Infrastructure	June - September	
	P1, P2 & P3	• Remove pumps and prepare equipment for maintenance and winter storage		At beginning of winter freeze	
	Evaporators	• Decommission for winter and prepare equipment for maintenance and winter storage		Prior to any sub-zero temperatures	
A8		• Move pump house/pump closer to Site		Late September	
CP1		• Weekly (during flow) or monthly (baseflow) written inspection • Water sampling • Discharge approval	Environment	June - September	
		• Pump water to discharge at Meliadine Lake	Process Plant		
		• Remove pumps and prepare equipment for maintenance and winter storage		Late September/Early October	
Downstream D-CP1		• Pump water to CP1	Energy & Infrastructure	June - September	
		• Remove pumps and prepare equipment for maintenance and winter storage		Late September/Early October	
CP5		• Pump water to CP1/SWTP		Late September	
Downstream D-CP5		• Pump water to CP5		June - September	
		• Remove pumps and prepare equipment for maintenance and winter storage		Late September/Early October	
Saline Pond		• Remove pumps and prepare equipment for maintenance and winter storage		First week of October	

Figure 1: Areas of Risk



Related Documentation (If applicable):
• 2018 Freshet Management Plan • MEL-ENV-0017 - Snow Management Procedure

References (If applicable):
• N/A

Authorization (Print Name)			
Approved:	______________________ Name JOHSC Worker Rep.	Date:	____________
Approved:	______________________ Name Department Superintendent / Delegate	Date:	____________
Approved:	______________________ Name Health & Safety Superintendent / Delegate	Date:	____________

APPENDIX B: SNOW MANAGEMENT PROCEDURE

	DOCUMENT ID: MEL-ENV-Snow Management DRAFT	
People concerned: All Departments		**Effective Date: 24 November, 2018**
This procedure corresponds to the required minimum standard. Each and every person must comply with the rules and regulations of the Nunavut Government in terms of health and safety at work.		

Rev #	Date	Description	Initiator
1	2018-03-28	Change to Intelex Format	Matt Gillman
2	2018-09-30	Updated for next season	John Baechler Matt Gillman
3	2018-10-11	Updated to include changes to snow management methods at Itivia, bypass road, CP3 and CP4 access roads, and Itivia Gas Boy.	Dan Gorton John Baechler

Objective:

The overall purpose of the snow management procedure (SMP) is to provide an outline for snow management that will assist with preventing adverse environmental impacts to the Meliadine Project (Site) and to mitigate risks from excess water during the freshet season (Freshet).

Definitions (If applicable):

Snow pad area - an area where snow can be pushed and compacted over an existing structure, such as an access road or a rock pad.

Snow storage area - an area where snow can be taken from another area and stockpiled without causing a negative impact at the freshet.

Negative impact of snow melting during freshet - the transport of fine sediments or deleterious substances from Site to the natural environment, body of water, or within 31 m of a water body.

Tool/Equipment Required	PPE Required
• Snow blower • Shovel and haul truck • Grader	• Standard site PPE

Specific Training Requirements
• Equipment operator training

Procedure
Snow Removal at Meliadine Site 1. Prior to starting any snow removal, supervisors and snow removal equipment operators must discuss a removal plan based on the criteria outlined in this procedure. 2. If uncertain, supervisors or snow removal equipment operators must receive authorization from the Environment Department to move snow to a non-designated area. 3. Supervisors must determine if the snow receiving location is: • Safe for the snow removal equipment operators • Outside a 31 m buffer zone around any water body • A designated snow storage area • A safety sensitive area 4. Designated snow storage areas are as follows (see Figure 1 in the Appendices): • Snow collected from areas of potential contact with contaminants (i.e. the Fuel Farm, Landfarm, Gas Boy, Emulsion Plant, Waste Rock Storage Facility 2 (WRSF2), areas surrounding the Portal 1 and Portal 2 entrances, and areas surrounding the P-Area) must be stockpiled in P3. • Clean snow from other areas at Site must be removed from roadways with a snow blower or plow, and/or collected and stockpiled at CP1.

5. The Fuel Farm, Gas Boy locations, Landfarm, and Itivia Diesel Tanks are safety sensitive areas. The valves and piping/hosing must be protected and available for inspection at all times. Snow should NOT be removed with a snow plow or heavy equipment. To improve safety and reduce risk of any contact with fuel tanks, valves, or equipment within these areas, snow must be removed by hand shovelling. The area surrounding the fuel tank valves must be carefully hand shovelled.
6. Snow accumulated at Channel 2 must be left to melt at freshet, as the use of snow removal or plow equipment can damage the synthetic liner that is installed.
7. Snow storage areas are not authorized along any roadways, including the All Weather Access Road (AWAR), and CP3 and CP4 service roads. Efforts must be made to ensure road surface material is not removed during snow clearing. Snow must be blown, plowed, or maintained as a snow pad area to reduce snow drifts across the road and allow for increased visibility. A level snow pad area may be created over the tundra provided that:
   - Clean snow is used for the pad construction
   - The surface is cleaned after use
   - Is not obstructing existing culverts, structures, or roadways
   - Is within the footprint of the mine
8. Snow storage areas are not authorized at the Exploration Camp. Snow must be maintained as a snow pad, as not to create long-term snow banks (Figure 2). Any snowbanks must be plowed and leveled.
9. Snow between the Main Camp dormitory wings must be removed to mitigate drifting against the wings, which creates confined space under the camp and wildlife habitats. (Figure 3).
10. Snow removed by Contractors at their designated worksite will be stockpiled at the worksite and subsequently removed by the Energy and Infrastructure department (E&I). E&I will collaborate with the Environment department to determine the correct location of the storage area if it is not outlined within this procedure.
11. Snow removal from the Tiriganiaq esker must be pushed or blown to the west side of the road running north-south. Snow from the Batch Plant must be padded on the north side, and any excess snow removed and stockpiled in the south end of P1 (Figure 4).

Snow Removal at Itivia Site

1. Snow storage areas are not authorized at the Itivia Laydown. Snow at the Laydown must be maintained as a snow pad area as not to create-long term snow banks. Any snowbanks must be plowed and leveled. Efforts must be made to ensure road surface material is not removed during snow clearing. The existing ATV/snowmobile trail must not be blocked by snow removal (Figure 5).

2. Snow along the bypass road will be removed by blowing. Operators will adjust the skid height of the snow blower to ensure a sufficient layer of snow remains to create an ice road. Operators will then scarify the road with a grader to improve traction. Sand will not be used along the Bypass road as the blown snow must be clean and free of debris.
3. Snow removal from the Itivia Diesel Tank Farm secondary contaminant area must not be done using heavy equipment as to not damage the installed synthetic liner.
4. Snow accumulated in the Gas Boy secondary containment is to be removed using suitable equipment, to maintain capacity for fuel spill mitigation. Diesel contaminated snow will be disposed of appropriately at the snow cell or landfarm.

Appendix:

Figure 8: Authorized Snow Removal and Snow Storage Areas

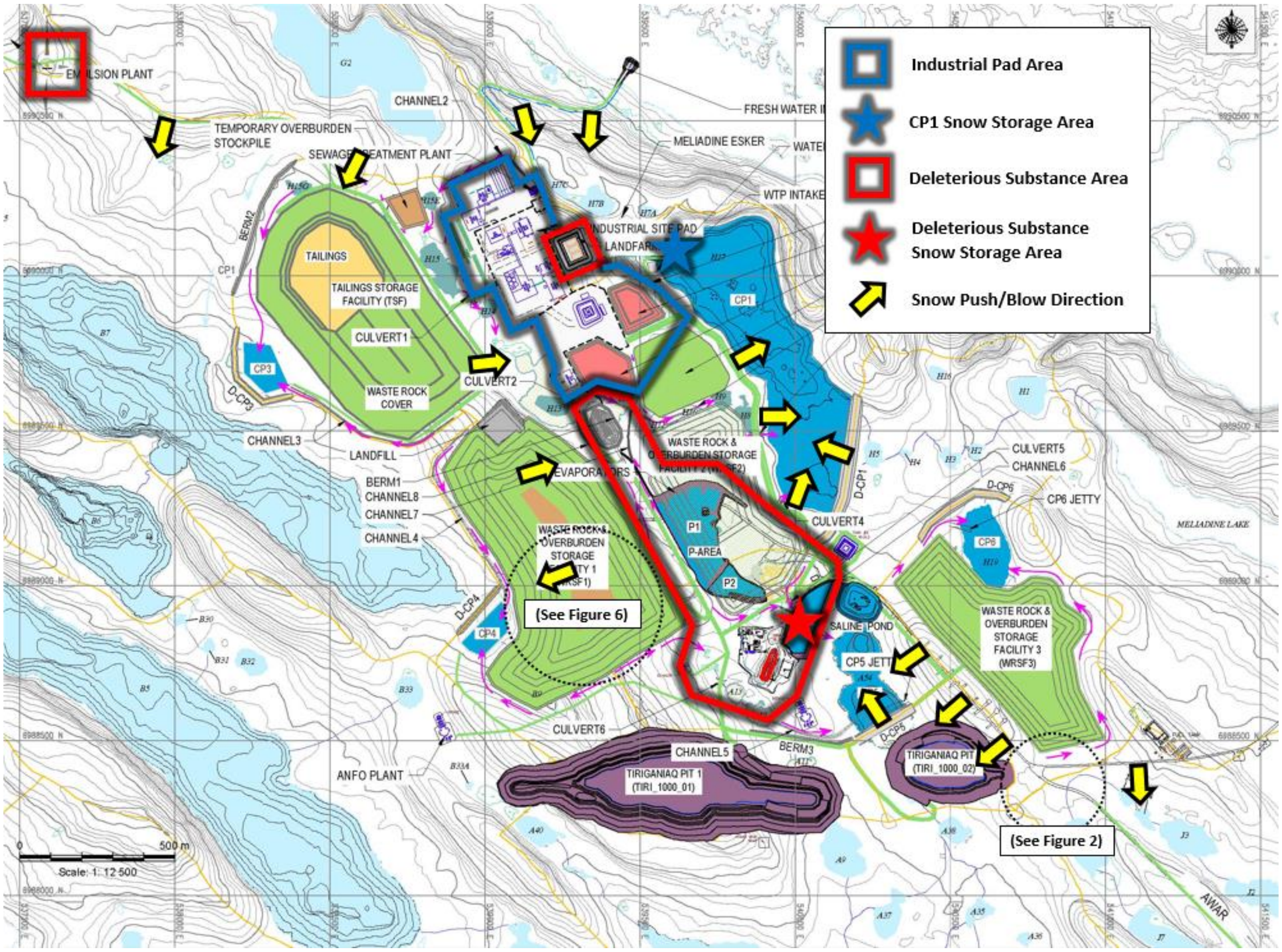


Figure 2: Exploration Camp Snow Pad Area and No Plow Zone Example

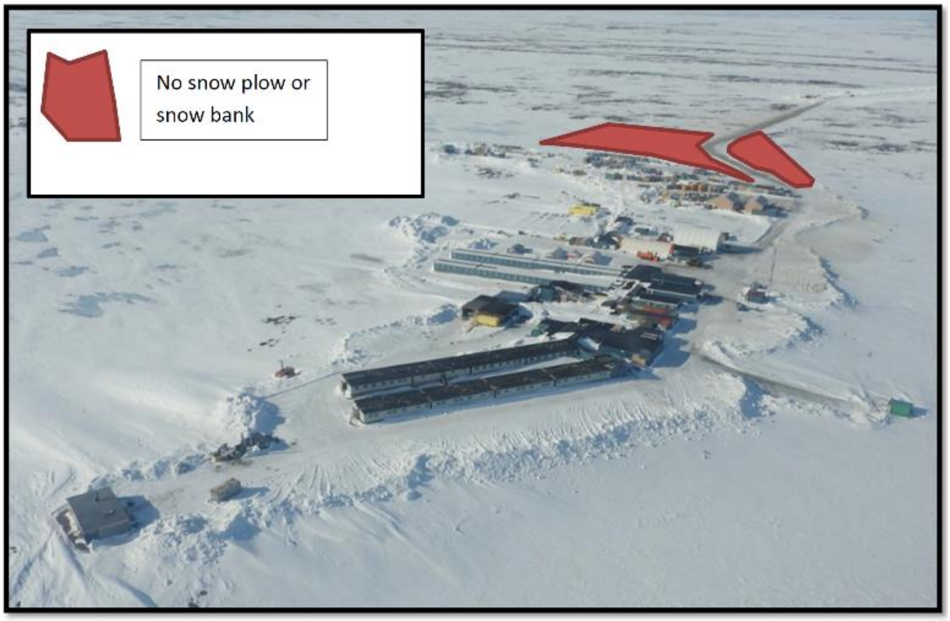


Figure 3: Snow removal from between camp accommodation trailers

Figure 4: Tiriganiaq Esker and Batch Plant Snow Removal Direction

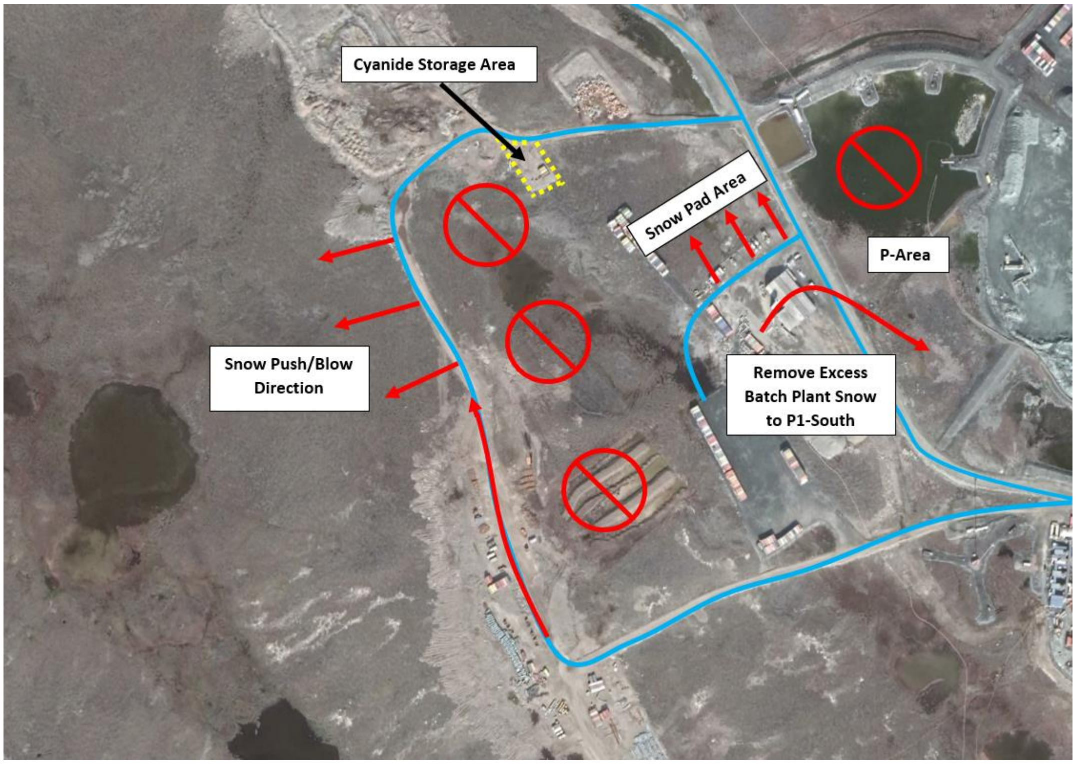
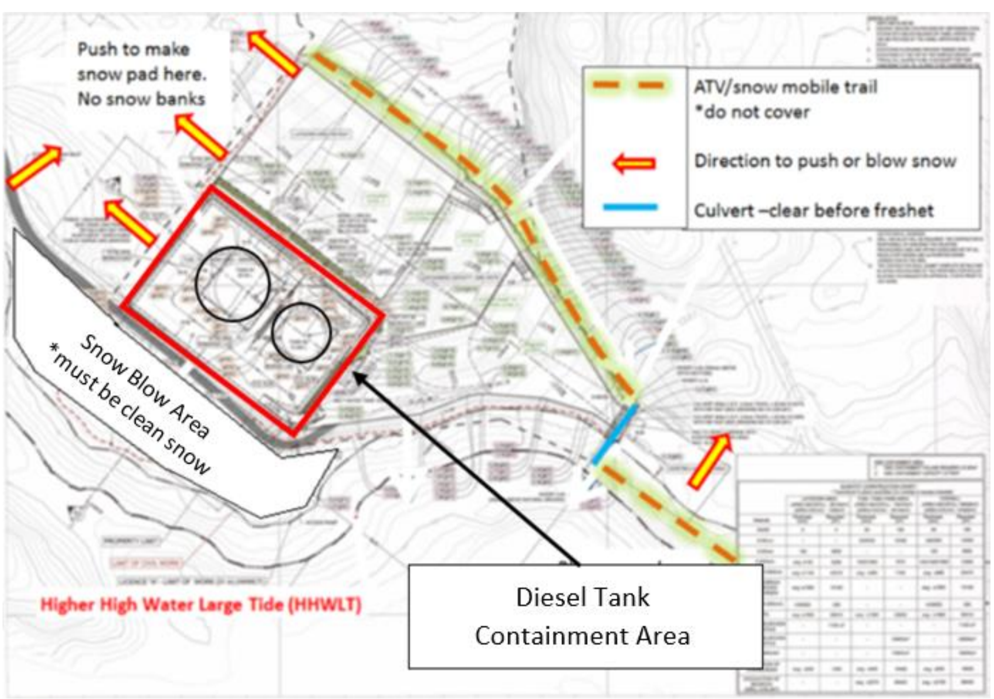
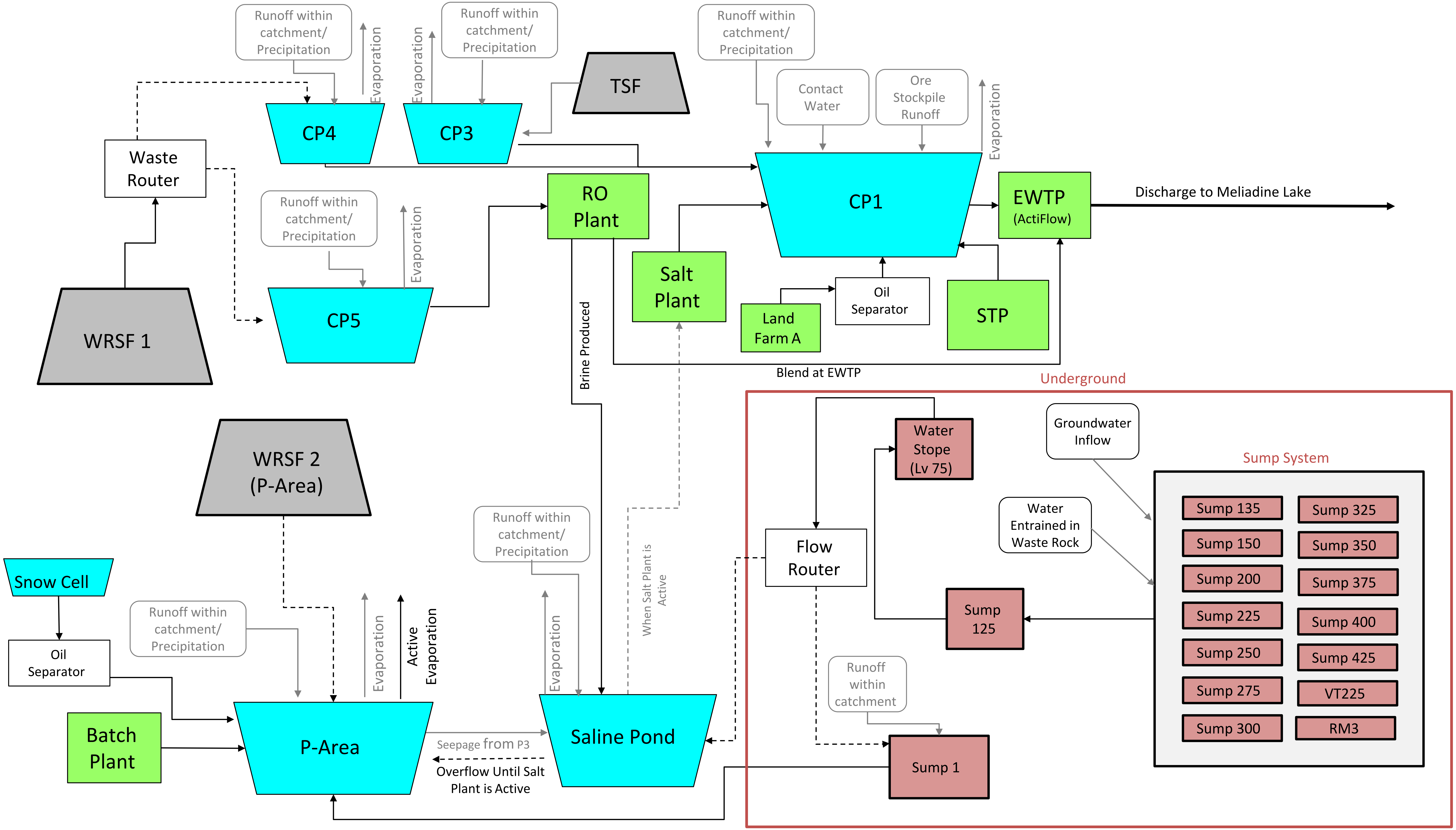


Figure 5: Itivia Snow Pad Area and ATV Access Trail



Authorization (Print Name)
Approved: ______________________________ Date: ______________   Name   JOHSC Worker Rep.   Approved: ______________________________ Date: ______________   Name   Department Superintendent / Delegate   Approved: ______________________________   Name Date: ______________   Health & Safety Superintendent / Delegate

APPENDIX C • WATER MANAGEMENT SCHEMATIC FLOW SHEET



Runoff within catchment/ Precipitation
Evaporation
TSF
Runoff within catchment/ Precipitation
Contact Water
Ore Stockpile Runoff
Waste Router
CP4
CP3
CP1
EWTP (ActiFlow)
Discharge to Meliadine Lake
RO Plant
Salt Plant
Land Farm A
Oil Separator
STP
CP5
WRSF 1
Brine Produced
Blend at EWTP
Underground
WRSF 2 (P-Area)
Water Stope (Lv 75)
Groundwater Inflow
Sump System
Water Entrained in Waste Rock
Flow Router
Sump 125
When Salt Plant is Active
Active Evaporation
Snow Cell
Oil Separator
Batch Plant
P-Area
Saline Pond
Seepage from P3
Overflow Until Salt Plant is Active
Runoff within catchment
Sump 1
Sump 135
Sump 150
Sump 200
Sump 225
Sump 250
Sump 275
Sump 300
Sump 325
Sump 350
Sump 375
Sump 400
Sump 425
VT225
RM3

APPENDIX D • SEDIMENT AND EROSION MANAGEMENT PLAN

AGNICO EAGLE

Meliadine Division

Sediment and Erosion Management Plan

DECEMBER 2018
VERSION 1

EXECUTIVE SUMMARY

This document presents the proposed Sediment and Erosion management plan (the Plan) at the Meliadine Gold Project. The purpose of this Plan is to provide consolidated information on the management and monitoring of potential areas subjected to erosion. This is accomplished by presenting first a review of the potential effects of total suspended solids (TSS) and turbidity, the Federal guidelines and the license requirements, followed by the periods and type of activities subjected to erosion, and the specific monitoring and mitigating measures.

General findings on the effects of TSS on fish and fish habitat have been listed, such as sublethal and lethal effects on fish and their eggs. Federal TSS Guidelines have been cited, distinguishing the short-term and long-term exposure thresholds. Turbidity guidelines are also discussed in the present document. The Plan presents the monitoring and mitigating actions related to three (3) specific periods of activity: Periods of construction near water – during construction and operation; periods of freshet or significant runoff events – during construction, operation and closure; periods of potential impact to waterbodies – during operation. The proposed monitoring and mitigating measures are discussed for those periods of activity.

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AGNICO EAGLE

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ACRONYMS

Agnico Eagle	Agnico Eagle Mines Limited – Meadowbank Division
CCME	Canadian Council of Ministers of the Environment
DFO	Fisheries and Oceans Canada
NIRB	Nunavut Impact Review Board
NTU	Nephelometric Turbidity Units
NWB	Nunavut Water Board
Plan	Sediment and Erosion Management Plan
TSS	Total Suspended Solids

UNITS

h	hour
km	kilometre
km^2	square kilometre
mg/L	milligram per litre

SECTION 1 • INTRODUCTION

Agnico Eagle Mines Limited (Agnico Eagle) is developing the Meliadine Gold Project (Project), located approximately 25 kilometres (km) north of Rankin Inlet, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. Situated on the western shore of Hudson Bay, the proposed 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 lands. The Project is located within the Meliadine Lake watershed of the Wilson Water Management Area (Nunavut Water Regulations Schedule 4).

As presented in Table 1.1, there are four phases to the development of the Tiriganiaq deposit: 3.5 years construction (Q4 Year -5 to Q2 Year -1), 8.5 years mine operation (Q2 Year -1 to Year 8), 3 years closure (Year 9 to Year 11), and post-closure (Year 11 forwards).

Table 1.1 Overview of Timeline and General Activities

Phase	Year	General Activities
Construction	Year -5 to year -1	• Construct site infrastructure • Develop the underground mine ramp • Stockpile ore
Operations	Year -1 to 8	• Mining operations • Stockpile ore • Dry stack tailing deposition
Closure	Year 9 to 11	• Decommission of underground mine surface opening • Cover on top of tailing • Decommission non-essential mine infrastructure • Fill open pits with active pumping
Post-Closure	Year 11 forwards	• Site and surrounding environment monitoring

This document presents the Sediment and Erosion Management Plan (the Plan). The purpose of this Plan is to provide consolidated information on the management and monitoring of potential areas subjected to erosion. This is accomplished by presenting first a review of the potential effects of total suspended solids (TSS) and turbidity, the Federal guidelines and the license requirements, followed by the periods and type of activities subjected to erosion, and the specific monitoring and mitigating measures.

As per Nunavut Impact Review Board (NIRB) Meliadine Project Certificate No.006 Condition 28, the Sediment and Erosion Management Plan should be developed to prevent or minimize the effects of destabilization and erosion that may occur due to Project activities. The plan should also detail sediment control plans to prevent and/or mitigate sediment loading into surface water within the Project area

The objectives of the plan are:

- To prevent the release of sediment into streams and waterbodies during construction activities;
- To reduce and mitigate erosion and the release of sediment during operations activities;
- To specify erosion and sediment control measures that, if implemented and maintained, will help Agnico Eagle maintain compliance with the Federal Fisheries Act, specifically with Section 36(3) of the Act, which prohibits the deposition of deleterious substances into waterbodies frequented by fish;
- To provide references to approvals, relevant standards, control plans and procedures for training, communications, investigation and corrective action, and audits that are required under the Project Agreement.

SECTION 2 • TOTAL SUSPENDED SOLIDS/TURBIDITY EFFECTS, FEDERAL GUIDELINES AND LICENSE REQUIREMENTS

2.1 Effects of Total Suspended Sediments on Fish Habitat

Suspended sediments, and associated effects on water clarity, have the potential to affect fish and fish habitat in a variety of ways, including but not limited to:

- Smothering of deposited eggs or siltation of spawning habitats;
- Smothering of benthic invertebrate communities;
- Decreased primary productivity caused by reduced light penetration;
- Reduced visibility, which may decrease feeding efficiency and/or increase predator avoidance; and
- Clogging and abrasion of gills.

Moreover, the general findings for effects of TSS on fish and fish habitat indicate the following:

- Effects of TSS depend on both the concentration of TSS and duration of exposure;
- Effects of TSS can also be influenced by the size and shape of suspended particles;
- Lethal concentration of TSS to fish over acute exposure range from hundreds to hundreds of thousands of mg/L;
- Sublethal effects on fish (reduced growth, changes in blood chemistry, histological changes) associated with chronic exposures tend to be exhibited at TSS concentrations ranging from the tens to hundreds of mg/L;
- There is considerable uncertainty about potential effects of low TSS concentrations over long time periods;
- Overall, the most sensitive group of aquatic organisms to TSS appears to be salmonids, and guidelines are developed to protect this group;
- Adult salmonids are generally more sensitive to short duration, high concentration of suspended sediments than juvenile salmonids; and
- Low suspended sediment levels are known to cause egg mortality (40 %) to rainbow trout at long durations (7 mg/L at 48 days). Guidelines for long-term exposure reflect these findings.

More details are located in the report from Fisheries and Oceans Canada (DFO) on the effects of sediments on fish and their habitat (Fisheries and Oceans Canada, 1999).

2.2 Federal Guidelines

2.2.1 TSS Guidelines

The Canadian Council of Ministers of the Environment (CCME) specifies separate guidelines for TSS for clear flow and high flow periods. The guidelines are derived primarily from Caux *et al*. (1997), with application intended mainly for British Columbia streams. In the case of application to the Meliadine Project lakes, the clear flow guidelines would be most relevant; even during freshet, one would not expect to see large natural fluctuations in TSS except in localized areas for short periods.

The guidelines put forth by the CCME recognize that the severity of effects of suspended sediments is a function of both the concentration of suspended sediments and the duration of exposure. Guidelines are intended to protect the most sensitive taxonomic group and the most sensitive life history stages.

Table 2.1 Existing Federal TSS Guidelines (after Agnico Eagle, 2018)

Source	Short-Term Exposure	Long-Term Exposure
CCME (1999)	Anthropogenic activities should not increase suspended sediment concentrations by more than 25 mg/L over background levels during any short-term exposure period (e.g., 24-h).	For longer term exposure (e.g., 30 days or more), average suspended sediment concentrations should not be increased by more than 5 mg/L over background levels.
MMER (2002)	Maximum authorized concentration in a composite effluent sample = 22.5 mg/L. Maximum authorized concentration in a grab sample of effluent = 30 mg/L.	Maximum authorized monthly mean effluent concentration = 15 mg/L.

2.2.2 Turbidity Guidelines

Turbidity guidelines put forth by the CCME (1999) are based on extrapolation from the TSS guidance above, adjusted by a factor of about 3:1 (a typical average ratio for TSS: turbidity). In the case of turbidity for clear water, CCME (1999) recommends a maximum increase of 8 Nephelometric Turbidity Units (NTU) from background levels for a short-term exposure (e.g., 24-hour period), and a maximum average increase of 2 NTU from background levels for a longer term exposure (e.g., 30-day period).

CCME (1999) notes that in some cases short-term resuspension of sediments and nutrients in the water column can augment primary productivity, and in other cases, changes in light penetration may be inconsequential if a system is limited by other factors such as nutrients. The Caux *et al*. (1997) study considered effects of suspended sediment not only on fish but also on algae and zooplankton. In summary, the recommendations put forth by Caux *et al*. (1997) are based mainly on the most sensitive taxonomic group, which is salmonids.

However, research has shown that widespread, chronic turbidity can result in reduced light penetration and subsequent reductions of primary productivity (Fisheries and Oceans Canada, 1999; Canadian Council of Ministers of the Environment, 1999; Lloyd, Koenings, & Laperriere, 1987). Consequently, water clarity is of concern at broader spatial scales and longer timeframes. It should be noted that DFO's report on effects of sediment on fish and their habitat (DFO, 1999) endorses the guidelines for TSS put forth by the CCME (1999), but does not recommend following guidelines for turbidity. Rather, turbidity may be used as a surrogate for suspended sediment only when the relationship between the two parameters is established for a particular waterbody.

2.3 License Requirements for the Protection of Fish and Fish Habitat at Meliadine

The Nunavut Water Board (NWB) Type A Water License for the Meliadine Project includes:

All surface runoff and/or discharge from drainage management systems, at the Monitoring Program Stations MEL-SR-1 to MEL-SR-TBD referred to in Part I, Item 11, during the Construction/Operation of any facilities and infrastructure associated with this project, including laydown areas and All-weather Access Road, where flow may directly or indirectly enter a Water body, shall not exceed the following Effluent quality limits:

Parameter	Maximum Average Concentration	Maximum Concentration of Any Grab Sample
Total Suspended Solids (TSS) (mg/L)	50.0	100.0
Oil and Grease	No Visible Sheen	No Visible Sheen
pH	Between 6.0 and 9.5	Between 6.0 and 9.5

SECTION 3 • SEDIMENT AND EROSION MONITORING AND MITIGATION

3.1 Sediment and Erosion During Specific Periods

The purpose of the Plan is to ensure that Agnico Eagle will successfully monitor signs of sedimentation and erosion and minimize its resulting effects. This plan presents the monitoring and mitigating actions related to three (3) specific periods of activity for Meliadine:

- Periods of construction near water – during construction and operation;
- Periods of freshet or significant runoff events – during construction, operation and closure;
- Periods of potential impact to waterbodies – during operation.

The construction of water management infrastructure could potentially lead to excess TSS. Therefore, erosion control must be considered during construction of water management infrastructure. In addition, erosion control must be considered during any dewatering activity.

The freshet season at Meliadine occurs approximately from mid-May until the end of June. In addition, there can be periods of high water flow due to rainfall events from late May – early October. As most site construction has been completed at the Meliadine site there are new areas and infrastructure that have become potentially vulnerable to excess of water during the freshet season and in response to rainfall, such as, but not limited to:

- Culverts and other water management infrastructures;
- Newly constructed embankments, such as roads and berms;
- Water channels; and
- Surface runoff.

Water transfer and water discharge during operation can also lead to erosion and sedimentation.

3.2. Erosion and Sediment Monitoring

In order to monitor potential erosion and sedimentation, smaller water management infrastructure such as culverts, cross drains, surface runoff and ditches will be inspected daily during freshet, on a monthly basis thereafter and after significant rain events. Larger culverts and bridges will be inspected more often if they represent a risk for daily operations, for the receiving environment or for the health and safety of workers. More specifically, the following aspects should be monitored during visual inspections:

- Accumulation of debris near the inlet of the crossings, impeding the free flow of water at those locations;
- Bed erosion upstream and downstream of watercourse crossing structures;
- Scour under bridge abutments and abutment foundations; and
- Erosion along cutslopes and fillslopes of embankments (rill and gully erosion), etc.

Newly excavated channels will be inspected on a regular basis and after significant rain events. Erosion signs along the channel flow will be monitored and documented. Inspections will be carried out during the spring when surficial ice moves towards the inlet of the diversion channels to ensure that no ice blockage cause water buildup upstream of the channel, which could lead to subsequent erosion problems. An inspection template is currently being created to document all inspections. It is important to develop a database to determine if adverse trends are occurring. If adverse trends are observed then mitigation will be undertaken to prevent a major incident.

The frequency of water and turbidity sampling will be in accordance with the requirements of the Type A Water License. The frequency will be increased if required during the freshet season or during heavy rainfall events. Procedures for turbidity monitoring include:

- Collection of water at the site of sediment entrance (exposure), and at a reference site (i.e., in the same watercourse/waterbody in an area unaffected by the sedimentation [upstream, at least 50 m away where water does not appear to be impacted]).
- Analyze samples for turbidity using a field turbidity meter and compare the exposure sample to the reference sample.
- If the exposure sample results are higher than the reference then mitigation will be undertaken (ie installation of silt fencing, silt barrier booms, etc) to prevent any impact to watercourses.

If Agnico Eagle is actively working in an area with elevated turbidity – the work will stop until the level of clarity returns to an acceptable level.

Monitoring will be documented with site photographs and inspection forms.

3.3 Mitigating Measures

The following mitigation measures could be used if required to reduce risks associated with erosion and sedimentation.

- Riprap or clean non-acid generating/non-metal leaching rockfill could be used to armor shorelines, bridge abutments, culverts inlets and outlets and toe berms;
- Ditches managing high volumes of water could be armored for erosion control and reduce the speed of water flow;
- Sedimentation basins could be constructed at sensitive locations to allow settlement of finer sediments;
- Ditches, culverts and other water crossing structures should be maintained free of debris to allow free flow of runoff water;
- Installation of erosion control material such as turbidity barriers, silt curtains or straw booms;
- Site-specific erosion issues may arise during the mine operation that require specific local corrective actions;
- In-stream construction during periods when streams are expected to be dry or frozen to the bottom (i.e., during winter or fall). Isolation methods will be used for work below the high water mark for streams with flowing water at the time of construction;
- Materials installed below the high water mark (i.e., riprap) will be cleaned prior to installation to avoid adding deleterious substances to watercourses. Where concrete is installed, it will be allowed to cure fully prior to installation;

- Riparian areas will be maintained whenever possible to minimize erosion and impacts to fish habitat, with vegetation removal limited to the width of the workspace footprint. Disturbed areas along the streambanks will be stabilized and allowed to re-vegetate upon completion of work to minimize future erosion;
- Debris and excess materials resulting from construction will be removed from the work site to prevent them reaching water bodies; and
- When using equipment that creates tracks on the surface, run the equipment slowly to create grooves running perpendicular the slope and not parallel to the slope. This type of texture on slopes can slow the speed of runoff and reduce the amount of erosion and sediment transported downhill. This method must also be combined with an additional method of catching sediment at the base of the slope, such as a silt fence, straw log, etc.

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APPENDIX E • SALINE WATER TREATMENT PLAN DESIGN REPORT

Design Report
Saline Water Treatment Plant

6515-E-132-013-105-REP-035

In Accordance with Water Licence 2AM-MEL1631

Prepared by:
Agnico Eagle Mines Limited – Meliadine Division

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1 INTRODUCTION

1.1 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 of Rankin Inlet, and 80 km southwest from Chesterfield Inlet in the Kivalliq Region of Nunavut. The project 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.

A general location plan for the project is shown in Figure 1.

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 or proposed mining facilities to support this development include a plant site and accommodations, tailings storage facility and water management infrastructures.

Several infrastructures such as water retention dikes, berms, culverts, channels, collection ponds, pumping stations, fresh water intake and water treatment plants are required to manage water during pre-production, operation, and interim mine closure.

Facilities that are planned to be constructed for the operation of the future Meliadine Mine include a process plant, power plant, maintenance facilities, tank farms for fuel storage, water treatment plant, sewage treatment plant, saline water treatment plant (SWTP), accommodations, and kitchen facilities for 520 people.

The Nunavut Water Board (NWB) has issued Type “A” Water License No. 2AM-MEL1631 (Water license “A”) to Agnico Eagle Mines Limited (Agnico Eagle) for the Meliadine Gold Project site authorizing the use of water and the disposal of waste required by mining and milling and associated uses.

Figure 2 shows the location of the future SWTP including the pipeline between the Saline Water Pond pumping station and the SWTP, then to the final discharge into the collection pond named CP1.

1.3 PURPOSE OF DOCUMENT

This report includes the final design and construction drawings for the SWTP, including the feed pump and discharge pump to CP1. The water treated at the SWTP will be sourced from the Saline Water Pond. The effluent water from the SWTP will be pumped back through a pipeline in CP1.

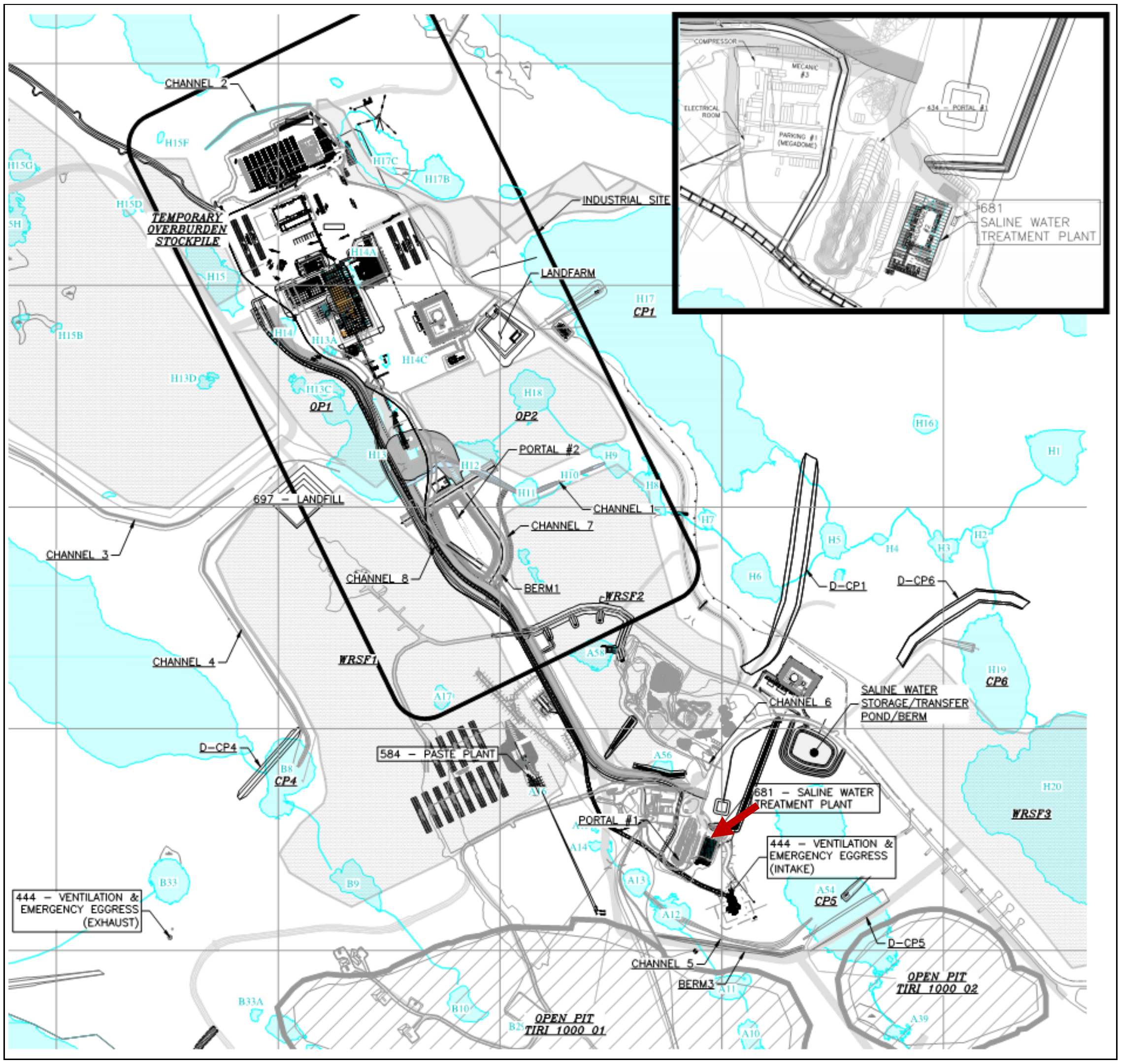


Figure 1 : Location of the SWTP

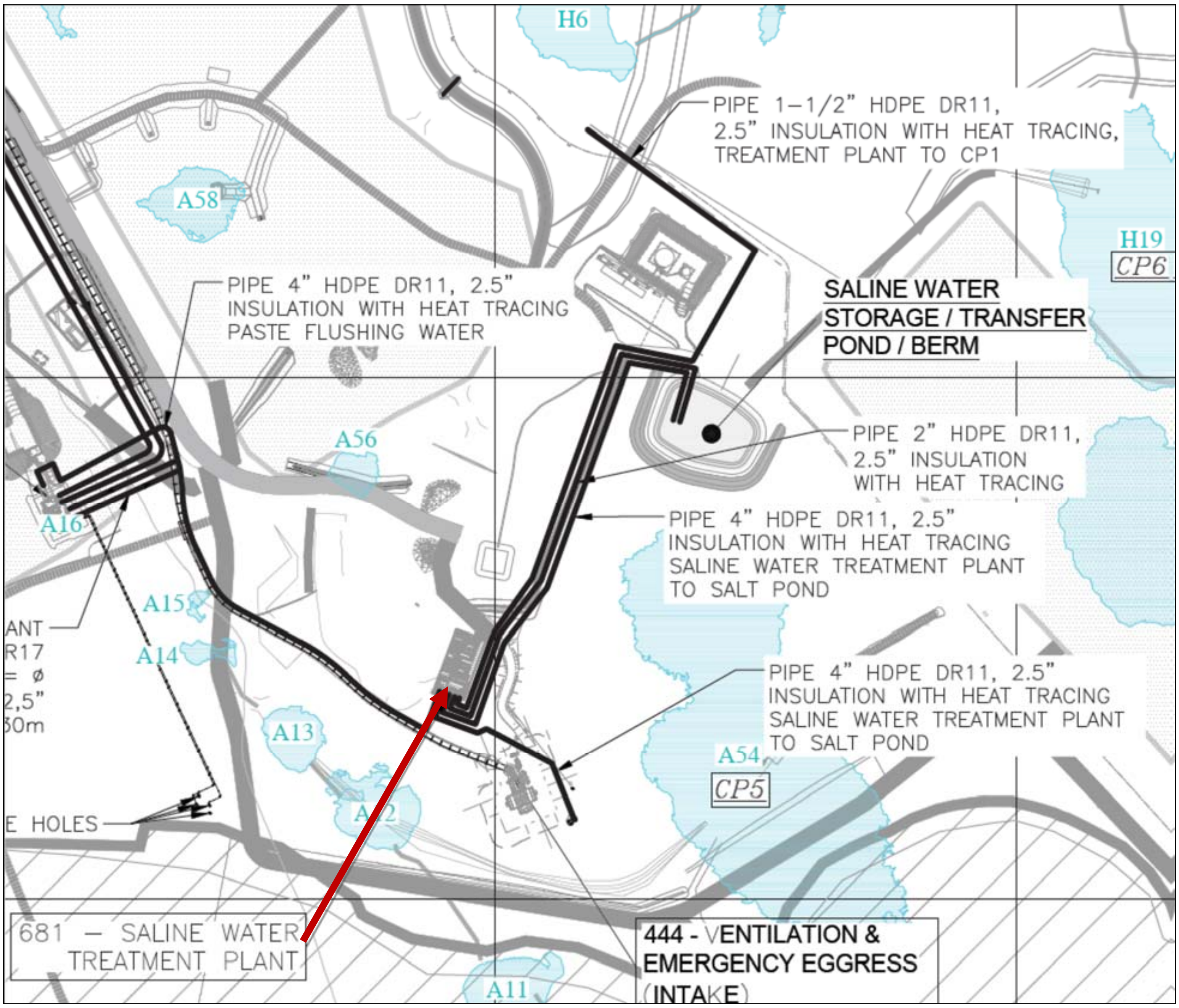


Figure 2 : Location of SWTP and Pipeline

2 DESIGN METHODOLOGY

2.1 SALINE WATER MANAGEMENT STRATEGY

Underground saline water is firstly stored in an underground stope that has a total capacity of approximately 11 000 m^3 and is then transferred to the surface Saline Pond which has a total storage capacity of approximately 33 000 m^3. From there, the saline water will be transferred to the SWTP for treatment. The storage capacity is managed to keep the saline pond and stope volumes as low as possible, in order to have enough space for abnormal flow condition or SWTP shutdown.

2.2 METHODOLOGY

The SWTP design was based on hydrogeology and underground water quality data collected on a regular basis in the underground mine that is currently under development. Effluent quality of the SWTP are set to comply with the Licence A requirements.

2.1 WATER CHARACTERISTICS

The SWTP is designed based on water quality of underground water inflow. Table 1 presents the water quality used for the design of the SWTP.

Table 1 : Feed Water Quality[1]

Representative Months		May 2016	June 2016	August 2016	September 2016	October 2016	November 2016	December 2016	February 2017	March 2017
Parameters (total metal)	**Units**									
Aluminum (Al)	mg/L	9.55	12.5	3.9	0.1	5.85	12.2	6.81	1.2	4.02
Ammonia Nitrogen (NH_3-NH_4)	mg/L	885	827	596	545	230	260	290	400	440
Arsenic (As)	mg/L	6.551	<0.1	0.4	0.22	0.252	0.0646	0.0355	0.011	0.024
Cadmium (Cd)	mg/L	0.00197	0.67	0.37	0.55	0.0002	0.00052	0.00182	<0.0010	0.0017
Chloride	mg/L	86 824	59 000	32 000	39 000	33000	45000	61000	67000	77000
Copper (Cu)	mg/L	0.14	0.15	0.08	0.17	0.014	0.03	0.029	<0.050	<0.050
Iron (Fe)	mg/L	28.5	15.2	1.31	0.37	12.4	23.7	13.4	<1.0	5.4
Lead (Pb)	mg/L	0.0097	0.37	0.32	0.2	0.0081	0.0151	0.0241	<0.020	0.022
Mercury (Hg)	mg/L	0.00154	<0.01	<0.01	<0.01	0.00001	0.00003	<0.00001	nd	<0.00001
Molybdenum (Mo)	mg/L	0.0886	N/A	N/A	N/A	0.059	0.055	0.056	<0.10	<0.10
Nickel (Ni)	mg/L	1.514	0.71	0.41	0.35	0.032	0.061	0.059	<0.10	0.13
Nitrate (NO_3) as N	mg/L	884	928	622	533	235	296	272	435	406
Nitrite (NO_2) as N	mg/L	5.97	71.4	97.5	49	35.9	36.8	31.6	27.2	27.1
Selenium (Se)	mg/L	1.67	0.002	0.002	0.003	0.0025	0.0015	0.008	<0.010	<0.010
Total Dissolved Solids (TDS)	mg/L	144 400*	110 000	62 700	69 000	69 800	74 400	102 000	123 000	163 000
Total Suspended Solids (TSS)	mg/L	806	N/A	136.2	45.4	260	1100	520	1900	260
Thallium (Tl)	mg/L	0.087	0.018	0.005	0.0007	0.00053	0.0155	0.0547	0.0519	0.0872
Uranium (U)	mg/L	0.006	0.006	0.008	0.002	0.0019	0.0029	0.0044	<0.010	<0.010
Zinc (Zn)	mg/L	0.338	0.49	0.43	0.23	0.096	0.091	<0.10	<0.50	<0.50
Silver (Ag)	mg/L	N.A.	<0.01	<0.01	<0.01	0.00023	0.00049	0.00086	<0.0020	<0.0020

Treated water will be sampled for water quality periodically (pH, Total Suspended Solids (TSS), C10-C50, aluminum, arsenic, boron, cadmium, chloride, copper, chromium, mercury, ammonia, nickel, nitrite, nitrate, phosphorus, lead, selenium, total dissolved solids (TDS), thallium, total cyanides and zinc) and sent to a certified laboratory for analysis. Table 2 presents the treatment target which should be reached by the SWTP.

[1] Used for Tender request.

Table 2 : Treatment Objectives of the SWTP[2]

Parameter (Total, mg/L)	Maximum Allowable Salt Plant Effluent Concentration[3]
Aluminum	6
Arsenic	1
Boron	4
Cadmium	0.0003
Chloride	2500
Copper	0.7
Chromium	0.003
Mercury	0.0001
N-NH4	35
Nickel	1.3
N-NO2	0.2
N-NO3	2
Phosphorous	0.1
Lead	0.6
Selenium	0.0025
TDS[4]	1400
Thallium	0.003
Total Cyanide	1.5
Zinc	1.3
pH[5]	5-8
TSS[6]	<10
Temperature[7]	<40°C

2.2 EFFLUENT FLOW RATE

In order to maintain the saline water balance, a treatment flow rate of 120 m^3/d is required which corresponds to the average inflow of saline water underground.

3 DESCRIPTION

3.1 SALINE WATER TREATMENT PLANT (SWTP)

3.1.1 Process Summary

The purpose of the SWTP is to remove total dissolved solids (TDS), which is also referred to as salinity, in underground saline water. The expected TDS in underground water varies from approximately 60 000 to 160 000 mg/L. The treated water will be discharged into CP1. The equipment has an operational flow rate of 120 m^3/d. It is expected that the SWTP will be in use 24 hours, 7 days per week.

[2] Treatment objective values come from geochemical model made by Golder (2017) for a dry climate, taking into account the dilution occurring into CP1 (Ref: 6515-E-132-013-105-DGC-003).
[3] Treatment objective values come from geochemical model made by Golder (2017) for a dry climate, taking into account the dilution occurring into CP1 (Ref: 6515-E-132-013-105-DGC-003). Theses concentrations are guaranteed by the supplier.
[4] Maximum concentration for the final effluent (ref: Water License No. 2AM-MEL1631).
[5] Possibility to adjust pH if required. Will depend on the CP1 alkalinity.
[6] Value expected to be low since effluent is treated in a reverse osmosis process prior to be discharged to CP1.
[7] Reverse osmosis post treatment should be perform below 35-40°C .

The treatment concept is presented in Figure 3. Water is pumped from the underground sump to the saline storage pond or directly into the SWTP. Water then flows into the two SaltMaker S125 units. Three products are generated during the process: distilled water, a salt slurry and a high-salinity blowdown.

The distilled water is treated in an oxidation reactor for nitrite removal, followed by a reverse osmosis (RO) step used to remove ammonia. The RO permeate is then discharged into CP1. The RO brine containing high ammonia concentration is stored in a tank and oxidized with chorine before being cycled back to the two SaltMaker S125 units.

The salt slurry is discharged into a big bag rack. Free water is drained from the bag and recycled to the SaltMaker. The expected solid content into the big bag after drainage is estimated at approximately 80%.

The blowdown is a by-product containing high concentrations of nitrate. Evaporation efficiency depends on the viscosity of the water which can be affected by the high concentrations of nitrate that can occur within the SaltMaker due to its high degree of solubility. Nitrate accumulates within the system as a consequence of the different streams being recirculated.

The SWTP will be installed in the third quarter of 2018 and operational in the last quarter 2018.

The SWTP general flow diagram is illustrated in Figure 4.

The following sections describe the SWTP components.

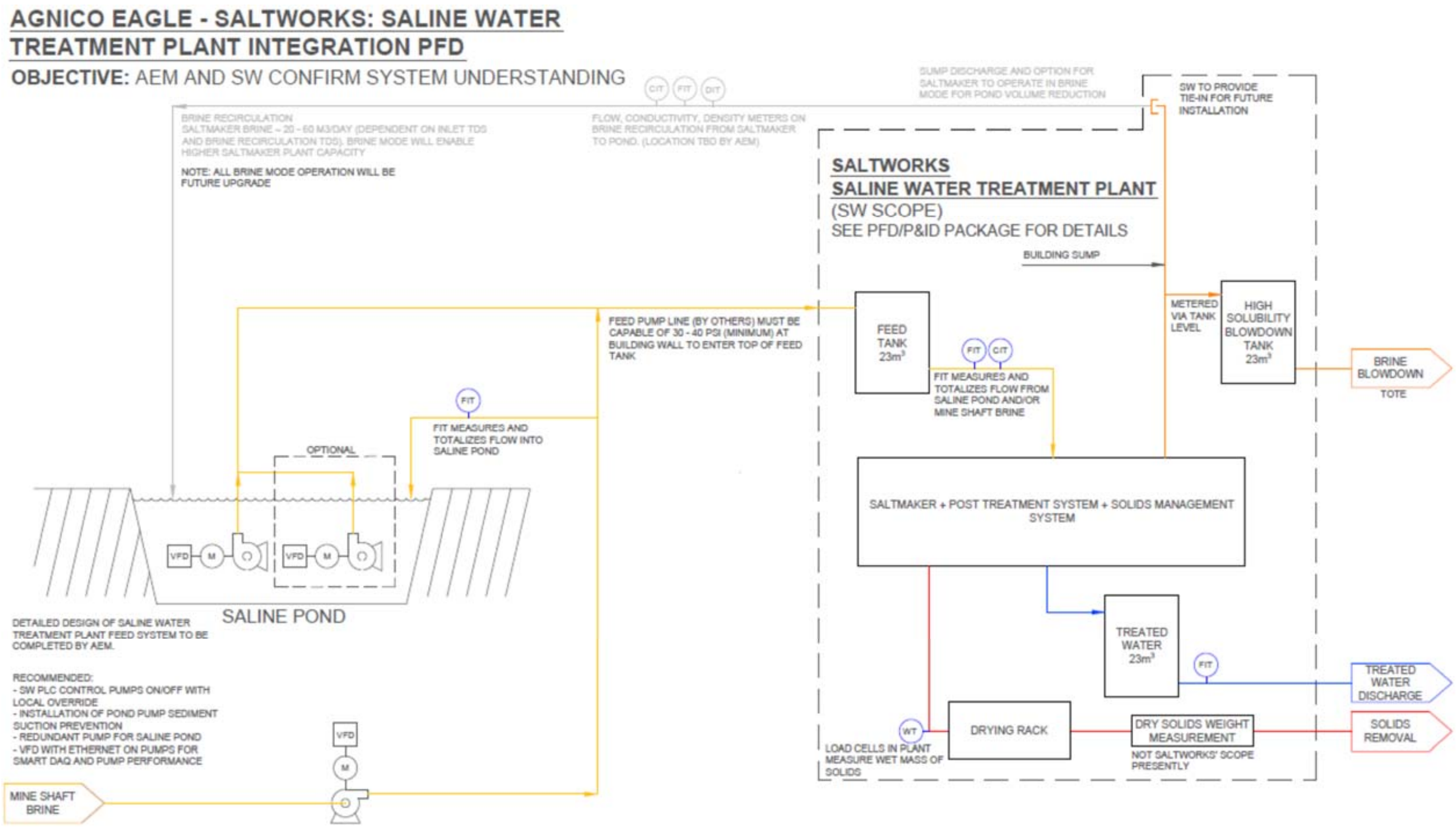


Figure 3 : SWTP Overall Process Concept

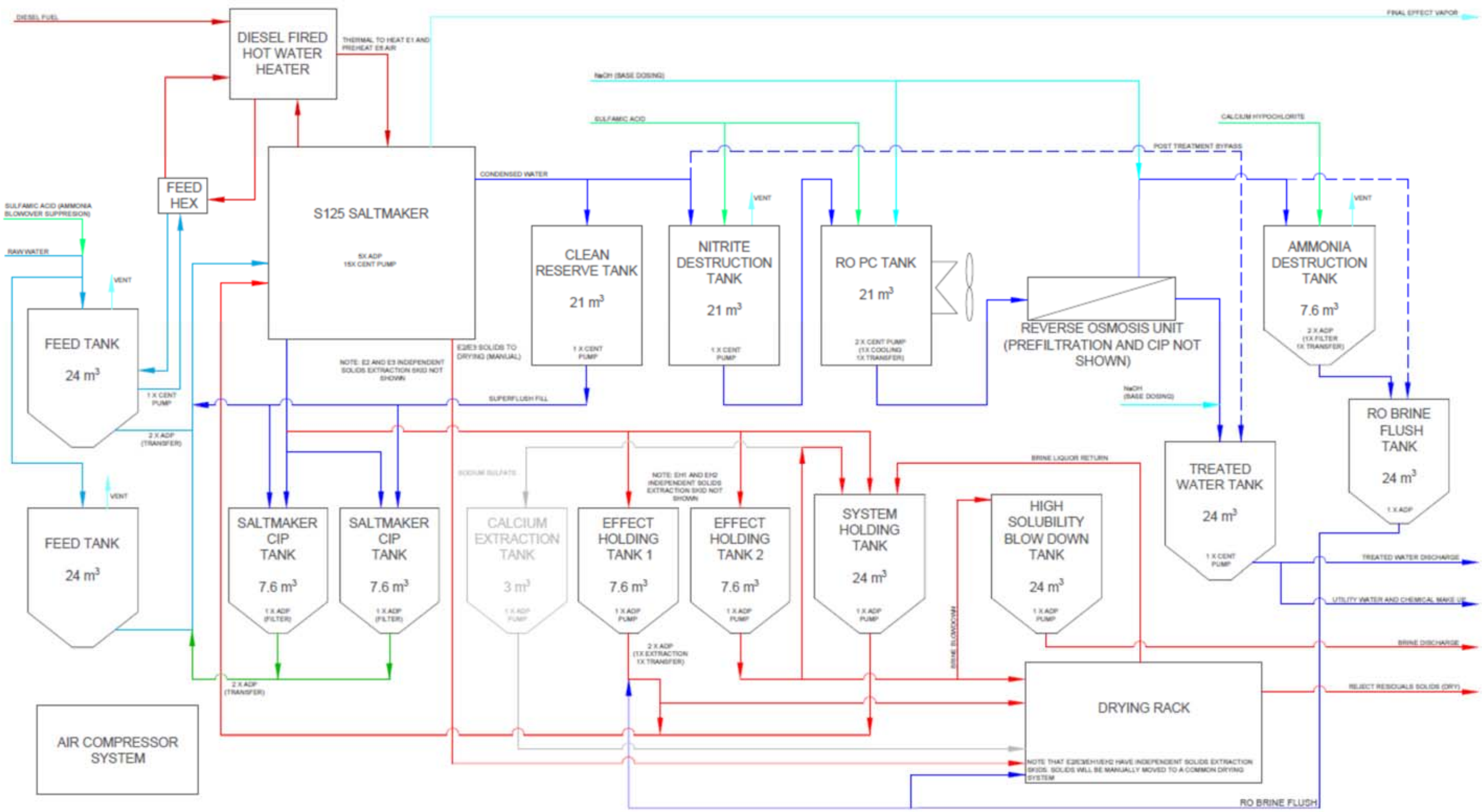


Figure 4 : SWTP Overall Process Flow Diagram

3.2 PRE-TREATMENT

Before being fed to the SaltMaker, water is filtered through strainers, in-line filters and heated to a specific temperature.

3.3 SALTMAKER

The SaltMaker uses a Humidification-Dehumidification (HDH) cycle to concentrate saline water and produce freshwater. The use of a humidified air cycle enables operation at temperatures below 90ºC and pressures near atmospheric (1 bar). These attributes allow the use of engineered plastics in place of more costly corrosion-resistant metallic parts, thereby saving capital cost while also reducing scaling risk due to the much lower surface energy of plastics. In addition, evaporation occurs on a non-heated surface, further reducing scaling and enhancing reliability.

The SaltMaker is a thermally driven plant, producing freshwater and highly concentrated discharge and/or solids via a multiple-effects HDH cycle. The thermal energy is used to evaporate and condense water in successive “effects”. The latent heat of condensation is recycled as it is downgraded, with each effect operating at a temperature approximately 15°C lower than the previous one. Each effect produces freshwater and successively concentrates the saline water. The final effect uses the downgraded heat (<40°C) to concentrate brine into solids.

A simplified process diagram is shown in **Erreur ! Source du renvoi introuvable.**. This diagram describes a four-effect concentration in which the first three effects entail a closed air loop and the fourth effect is open to the atmosphere. The S125 for this application is a five-effect plant which recycles the heat an additional time. The final effect can be a closed air loop for zero air emissions and more water recovery.

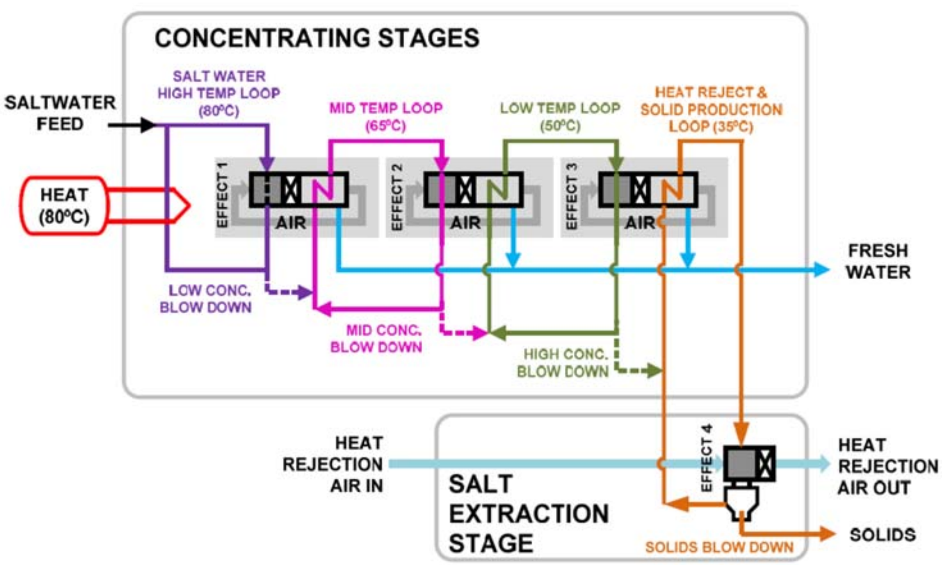


Figure 5 : Conceptual Operation

SaltMaker can accept any wastewater salinity; lower inlet TDS increases system freshwater recovery. Additionally, the scaling potential of the wastewater impacts the frequency of the wash cycles and the plant’s production capacity. However, the built-in cleaning systems are flexible enough to accept almost any water type.

The SaltMaker general flow diagram is illustrated in Figure 6.

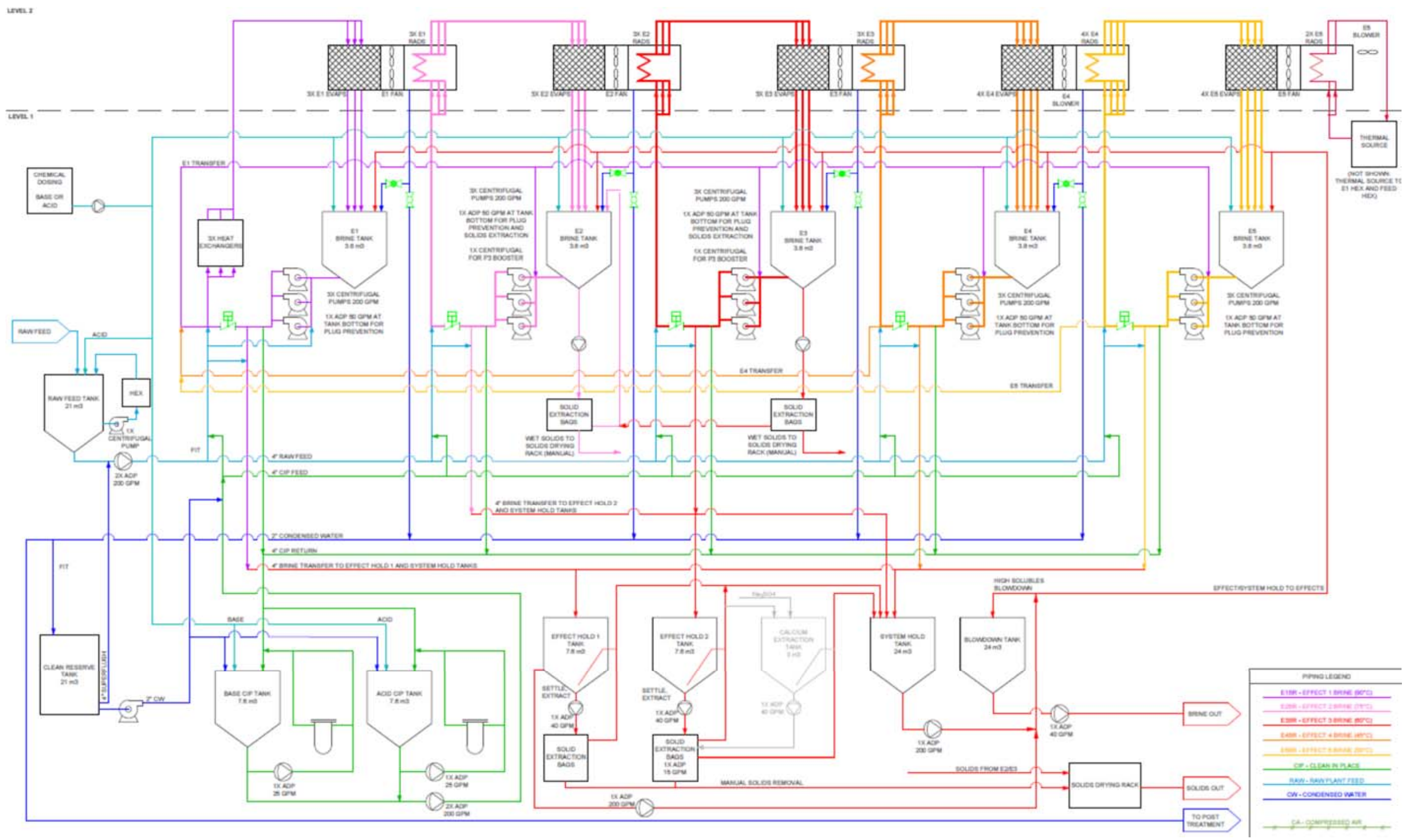


Figure 6 : Saltmaker Process Flow Diagram

3.4 POST-TREATMENT

Distilled water from the SaltMaker unit needs to be treated mainly for volatiles such as ammonia and nitrite (resulting from ammonia oxidation). The proposed chain is a chemical oxidation of nitrite with sulfamic acid followed by a reverse osmosis filtration step.

3.4.1 Nitrite Removal

The overall reaction between nitrite and sulfamic acid is presented below:

$NaNO_2 + H_3NSO_3 \rightarrow N_2 + NaHSO_4 + H_2O$

This reaction leads to the formation of nitrogen as the final product of nitrite removal.

Distilled water from the two SaltMaker units is stored in two 21 m^3 tanks. Sulfamic acid is then added in batch mode to remove nitrite (one reactor is treated while the second one stores distilled water). Acid dosage is controlled by a pH sensor. An optimum pH of 2-3 needs to be reached for effective nitrite removal. The reaction time is about 1-2 minutes in the reactor. The pH of the water from the nitrite removal tank is then adjusted to 4.5 using caustic soda prior to the reverse osmosis process.

3.4.2 Ammonia Removal by Reverse Osmosis

Reverse osmosis (RO) is a water purification technology that uses a semi-permeable membrane to remove ions and molecules. In RO, an applied pressure is used to overcome osmotic pressure. Normally, water to be treated with RO has to be pretreated for suspended solids, bacteria, and scaling compound. In the present case, as the water comes from an evaporation process, no specific pre-treatment would be required. A recovery of 96% is expected.

The RO system operates at variable recovery based on the conductivity (salt and ammonia content) of permeate. If the permeate conductivity is too high, the RO will lower recovery by opening the concentrate valve, allowing more water to flow to the concentrate stream and less water to be directed to the product stream.

Filtration is done at low pH (approximately 5.5) to promote the ammonium form which is best retained by the RO step.

The flowsheet for the RO process is presented in Figure 7.

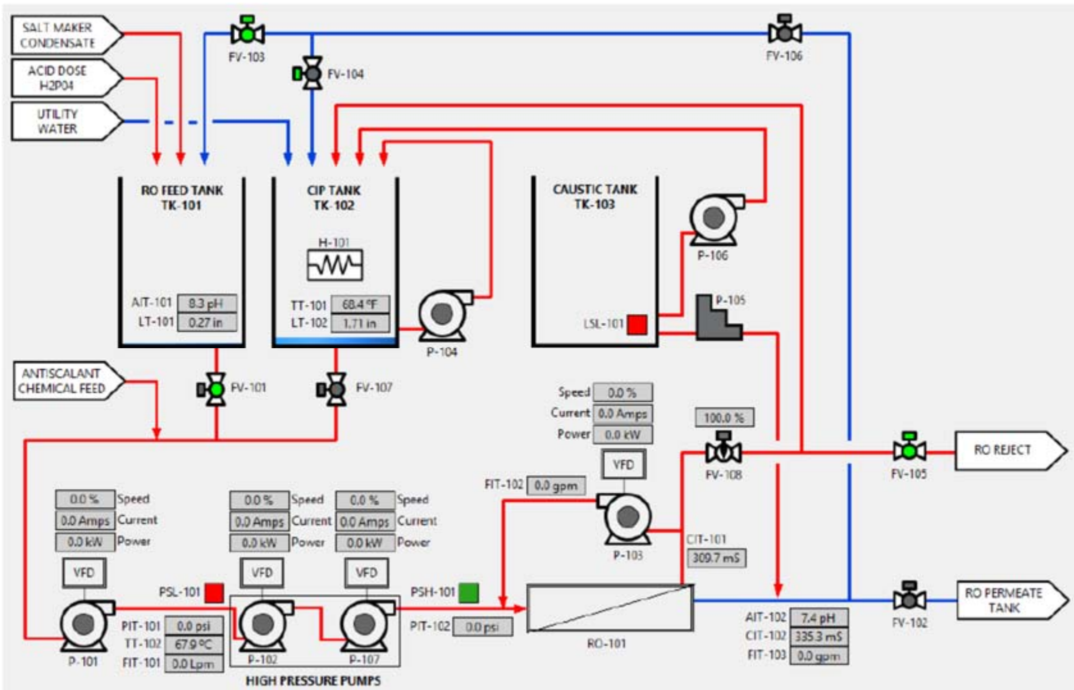


Figure 7 : RO Treatment

3.5 REVERSE OSMOSIS BRINE TREATMENT

Brine from the RO process contains a high concentration of ammonia. In order to prevent a build-up of ammonia in the process, this compound is oxidized with calcium hypochlorite in a 7.6 m^3 tank (this reaction is also commonly called 'breakpoint chlorination'). Two tanks are available for brine storage (one in ammonia destruction mode; the second in brine storage mode). The treatment is done manually in batch mode by the operator. The pH is adjusted to alkaline values. The required quantity of calcium hypochlorite is determined by the operator on the basis of the ammonia analysis obtained with a colorimetric test kit. Calcium hypochlorite is added directly in solid form. The retention time is also determined by the operator and is typically around 10 minutes.

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

$NH_4^+ + 1.5\ HOCl \rightarrow 0.5\ N_2 + 1.5\ H_2O + 2.5\ H^+ + 1.5\ Cl^-$
$NH_4^+ + 4\ HOCl \rightarrow NO_3^- + H_2O + 6\ H^+ + 4\ Cl^-$

Treated water is recirculated back to the SaltMaker units.

3.6 SALT BAGGING SYSTEM

Salt slurry is discharged into a big bag rack. Loading of each big bag is controlled by load cells. An automatic valve discharges the slurry into a big bag until it is full. Once the bag is full, another big bag is positioned to be filled. The big bag is left to drain of free water until it only contains solid salts. Free water (high salinity leachate) is recycled to the SaltMaker unit for further treatment. Figures 8 and 9 present the concept for the salt bagging system. The expected dryness is between 80 and 90 %.

Solid salt produced will be placed in double bags which will be stored into seacans to prevent dissolution of the salt. When required, the salt will be reused for underground mining activities. The exceeding bags of solid salt will be sent south on the barges for final disposal in accordance with regulations.

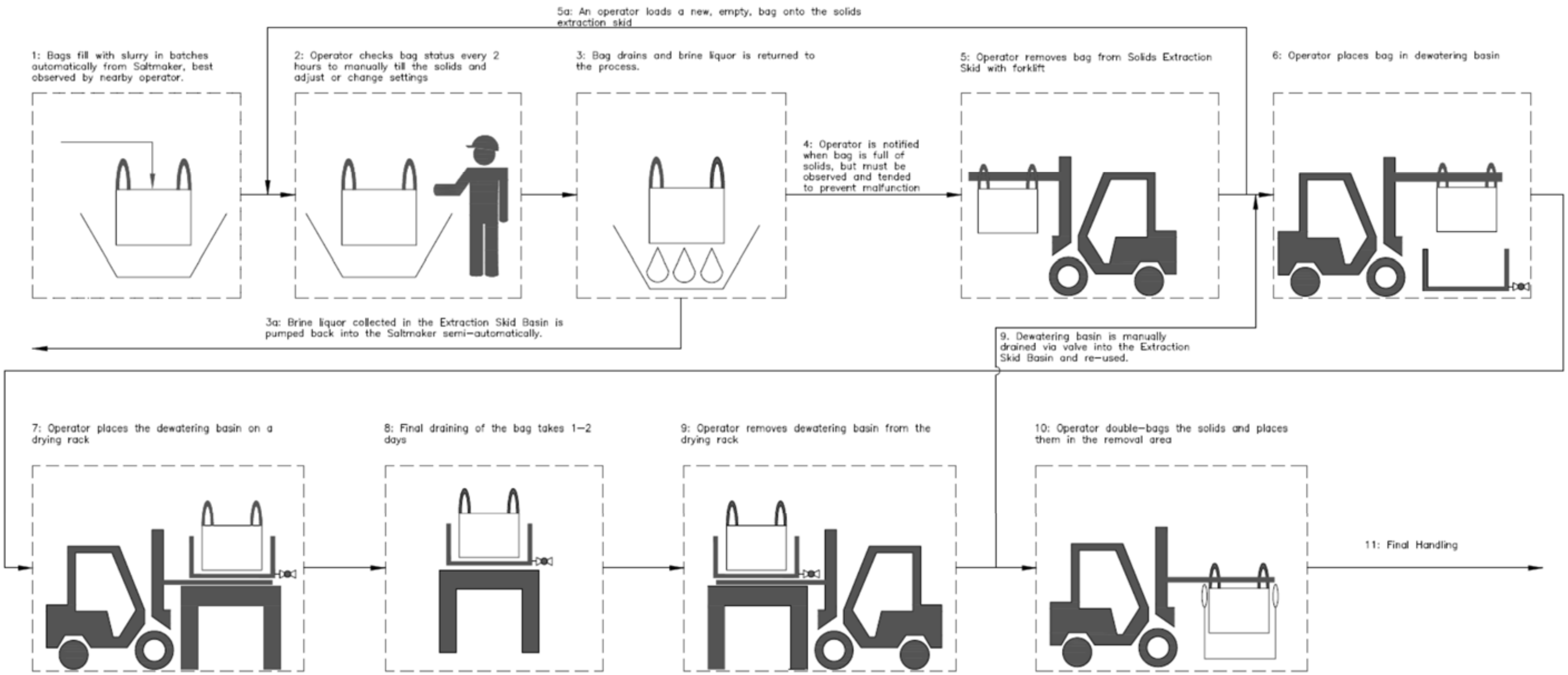


Figure 8 : Salt Bagging Concept

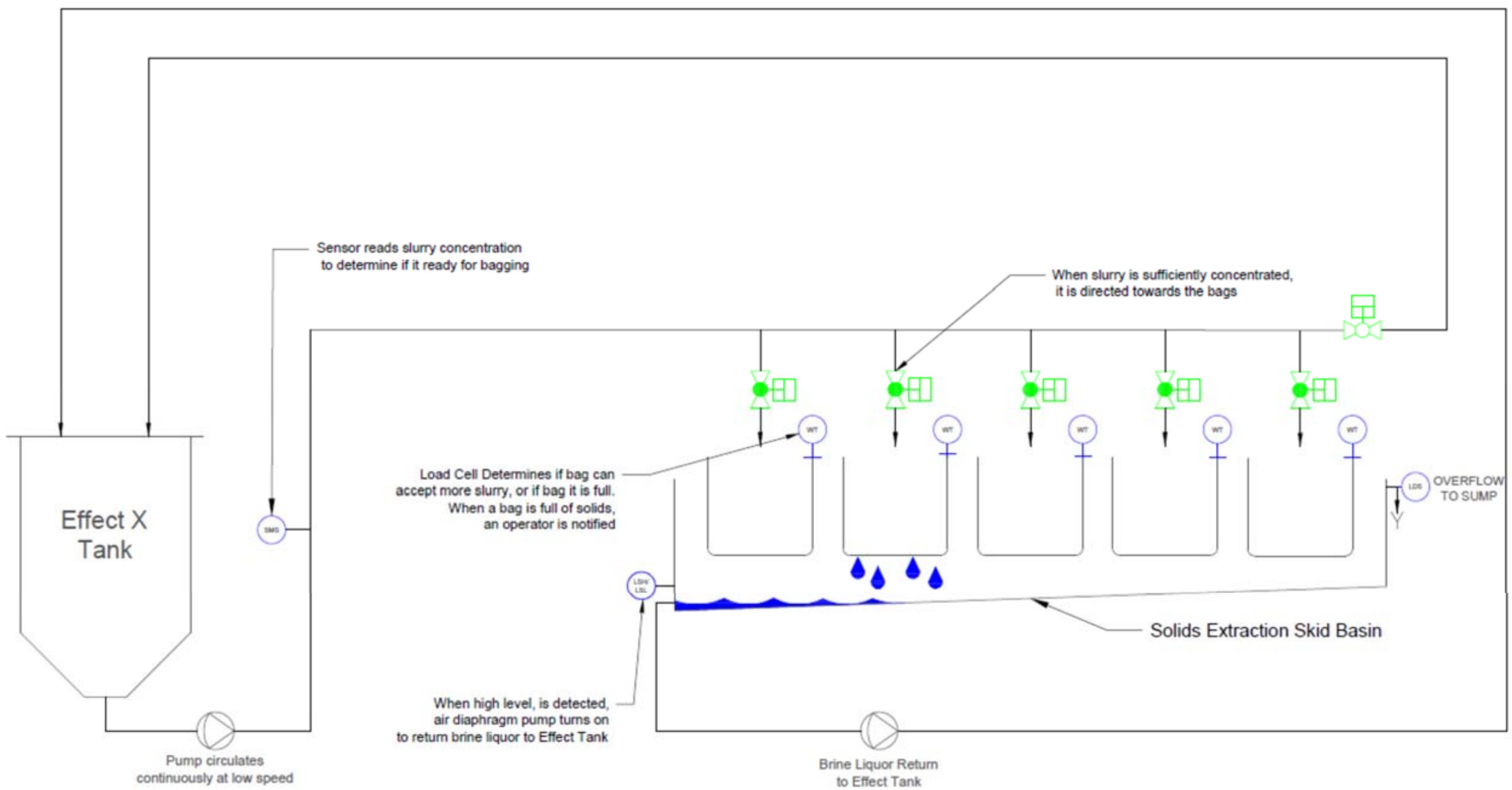


Figure 9 : Salt Bagging Flow Diagram

3.7 BLOWDOWN MANAGEMENT

The salt is mainly composed of Ca, Na and Cl. Underground water also contains a non-negligible amount of nitrate which does not precipitate during the salt production step. Therefore, the nitrate is recirculated in the SaltMaker where it accumulates. Overly high concentrations of nitrate leads to an increase in the viscosity of the water to be treated, causing the efficiency of the Saltmaker to decrease significantly. To prevent a nitrate build-up, approximately 1% of the feed flow should be removed. This corresponds to a volume of approximately 1.2 m^3 per day. During the operation, a volume of 10 m^3 is periodically removed and stored in a blowdown tank.

The blowdown solution is stored in tote tanks within sea cans. Once a year, the sea cans are sent back south whereby the totes are dealt with by a subcontractor who disposes of the solution according to regulations.

3.8 WATER HEATER

Three water heaters are required to heat water to approximately 80ºC (first effect of the SaltMaker unit). Heat plate exchangers are used to transfer heat between the water to be treated and the thermal source. The thermal units are diesel driven.

3.9 SERVICE WATER SYSTEM

The service water system is mainly based on reusing distilled water produced within the plant. A 21 m^3 clean water reserve tank is being used for storage.

3.10 CONTROLS

The SWTP Pump is equipped with a variable frequency drive (VFD) that allows the flow to be modulated.

The SaltMaker system and post-treatment use a variety of sensors and automation hardware to achieve reliable plant operations. Sensors include temperature, pressure, flow, level, conductivity, and pH.

The electrical and control system for the post-treatment consists of a main control panel with multiple alternating current (AC) drives, switch gear, terminal blocks as well as the Programmable Logic Control (PLC) and modules. AC drives allow variable speed on the feed pump, high pressure pumps, and RO recirculation pump. The drives allow the control system to make flow and pressure adjustments to maximize RO recovery and efficiency. The panel houses the Human Machine Interface (HMI), conductivity and pH transmitters for operators. All instrumentation and automation functions are carried out by the PLC based on signals from sensors.

Saltworks is standardized on 4-20 mA analogue sensor outputs to minimize signal loss issues. 4-20 mA signals are read by input/output (I/O) modules on the PLC or Remote I/O units.

The SaltMaker and post-treatment use the following types of instruments:

Pressure:

These sensors are used to measure pump discharge pressure on main water lines on each effect. Trends in pressure readings can help the operator identify pipe scaling issues. They can also be used to identify pump problems. These pressure sensors use piezoresistive measuring cells (similar to a strain gauge) to measure pressure being applied on the sensor connector. A built-in transmitter amplifies this signal and converts it into 4-20 mA to communicate with the PLC modules.

For the post-treatment, these sensors are used to measure the pump inlet/discharge pressures. Trends in pressure readings can help the operator identify filter clogging or membrane fouling issues. They can also be used to identify pump problems.

Level:

These sensors are used to measure the level on SaltMaker tanks and post-treatment. Different types of sensors are used depending on the fluid and process conditions.

> ***Pressure:*** These sensors use piezoresistive measure cells that are calibrated at high resolution to measure level changes in tanks. They are mounted near the bottom of the tank. Because they measure hydrostatic pressure, they are affected by density changes of the fluid.
>
> ***Ultrasonic:*** These sensors send ultrasonic sound pulses and measure the time it takes for the pulses to reflect and bounce back from the process medium below and return to the sensor. This is translated into a level measurement. These sensors are mounted on top of the tank and do not come into direct contact with process fluids.
>
> ***Radar:*** These sensors send radar pulses and measure the time it takes for the pulses to reflect and bounce back from the process medium below and return to the sensor. This is translated into a level measurement. These sensors are mounted on top of the tank and do not come into direct contact with process fluids. In general, radar has performance and reliability advantages over ultrasonic. Suitability of radar versus ultrasonic sensors depends on actual tank conditions and is outside the scope of this manual.

Level sensor feedback allows for automated level control by filling and transfer of water in process tanks. The system is vital to continuous operation of the SaltMaker. Proper SaltMaker operations produce a unique saw-tooth pattern on main effect tanks, with a slow decrease in tank level due to evaporation and a fast increase in levels due to the transfer of process fluids into the tank. Automated level warnings help operators locate issues before they become serious enough to interrupt operations.

For the post-treatment, level sensor feedback allows for automated level control by filling and transfer of water in process tanks. The system is vital to continuous operation of the Post-Treatment RO. Automated level warnings help operators locate issues before they become serious enough to interrupt operations.

Conductivity:

These sensors are used to measure the conductivity of water, which is proportional to the ionic or salt concentration of the water. The SaltMaker deploys two different types of conductivity sensors:

> ***Contacting Conductivity Sensors:*** These sensors employ a potentiometric method. Two or four electrodes are submersed in the sample fluid. The sample fluid completes the electrical

circuit. A potential is proportional to the conductivity of the fluid. Saltworks uses this type of sensor to measure a conductivity range from 0-5 mS.

Inductive Conductivity Sensors: Two coils are wound inside the ring-shaped sensor. One coil drives a magnetic field with a known voltage and induces a current on the second coil. This current is proportional to the conductivity of the measured fluid. This type of sensor is suitable for measuring conductivity in the 5-1000 mS range.

Conductivity sensor signals help operators monitor the concentration of process water in different effects. By tracking an increase in concentration of brine over time, these sensors ensure that the SaltMaker is functioning normally.

For the post-treatment, conductivity sensor signals help operators monitor the concentration of the concentrate and permeate process streams. By tracking conductivity changes over time, these sensors ensure that the Post-Treatment RO is functioning normally.

pH:

These sensors contain a potentiometric cell made of pH-sensitive electrodes. Voltage is measured across the electrodes and the signal is amplified and processed into a 4-20 mA signal. pH sensors help monitor the condition of treated and untreated water. They are also used in optional acid and base dosing systems to monitor and control pH to adjust the solubility of the process water to different salts.

Temperature:

These sensors measure the temperature of the process streams. The SaltMaker and post-treatment use resistive RTDs (resistance temperature detectors) which are sensors that measure a change in resistance due to a change in temperature. This signal is amplified and processed into a 4-20 mA signal with a transmitter. Temperature differences between the effects provide the main driving force for the humidification-dehumidification (HDH) process. Abnormal temperature differences would indicate problems with heat transfer between one effect and the other. These sensors help operators track temperature across all the effects to confirm normal operations.

Weight:

Load cells measure the mass of the salt produced and stored in big bags. This information lets the operator know when to replace the big bag.

3.11 REAGENTS

The following reagents will be used at the SWTP:

- sulfamic acid
- calcium hypochlorite
- trisodium phosphate
- sodium meta-bisulfite
- caustic soda
- Antifoam (AF-64)
- Antisclant (CC 7430)
- Biocide (KATHON™ CF150 BIOCIDE, AQUCAR™ DB 20 Water Treatment Microbiocide)

- Cleaning chemical (BAR COR CWS-55, ROclean L211 and P303, E-Series Blends.

Most of the chemicals are supplied in liquid form (and dosed using a dosing skid pump directly into the process) except for the sulfamic acid, calcium hypochlorite, sodium meta-bisulfite and trisodium phosphate which must be prepared manually before dosing. The solutions made with these products are prepared according to the MSDS provided by the suppliers.

The application for each of these reagents is detailed in the Operation and Maintenance Manual (OMM). The MSDS are available in the OMM as well.

4 PUMPING AND PIPING

For the operation of the SWTP, pumping and piping are required to convey water:

- from underground stope to the Saline Water Pond;
- from the Saline Water Pond to the SWTP;
- treated water from SWTP to the containment pond 1 (CP1).

Appendix A: SWTP Drawings

Client: Agnico Eagle Mines

Project: SaltMaker SM-AEM-01

The following engineering document package contains work completed under the guidance and supervision of professional engineers, P.Eng..

The package includes:

1) AEM Integration PFD Revision 3, dated 30-Oct-2017
2) Solids Extraction:

    Infographic Revision B, dated 13-Mar-2018

    Solids Extra Extraction System – Simplified Revision A, dated 23-Nov-2017
3) SW_EN_AEM-01_GAD SaltMaker GAD Revision F, dated 13-Jul-2018
4) Agnico Eagle Minds P&ID Drawing Package Revision N, dated 06-Jul-2018
5) System 100: Post Treatment RO P&ID Revision 3, Project Number 17041-100D, Nav Number: 49-0462, dated 23-Jan-2018

REGISTERED PROFESSIONAL ENGINEER
K.K.H. TSIN
LICENSEE
NT/NU

Aug 16, 2018

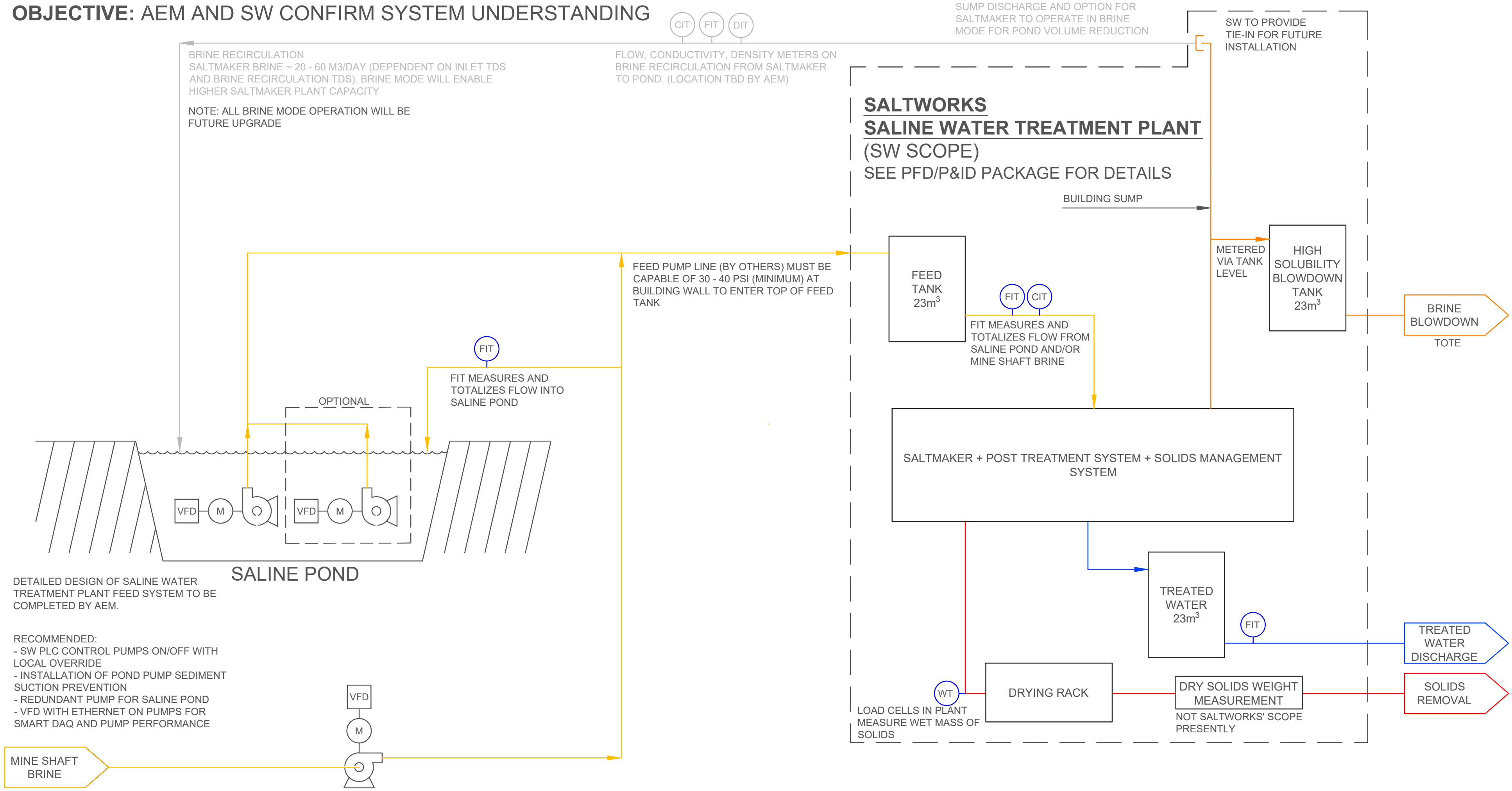
PERMIT TO PRACTICE
SALTWORKS TECHNOLOGIES INC.
Signature
Date Aug 16, 2018
PERMIT NUMBER: P 1239
NT/NU Association of Professional Engineers and Geoscientists

REGISTERED PROFESSIONAL ENGINEER
B.S. SPARROW
LICENSEE
NT/NU

Aug 16, 2018

AGNICO EAGLE - SALTWORKS: SALINE WATER TREATMENT PLANT INTEGRATION PFD

OBJECTIVE: AEM AND SW CONFIRM SYSTEM UNDERSTANDING



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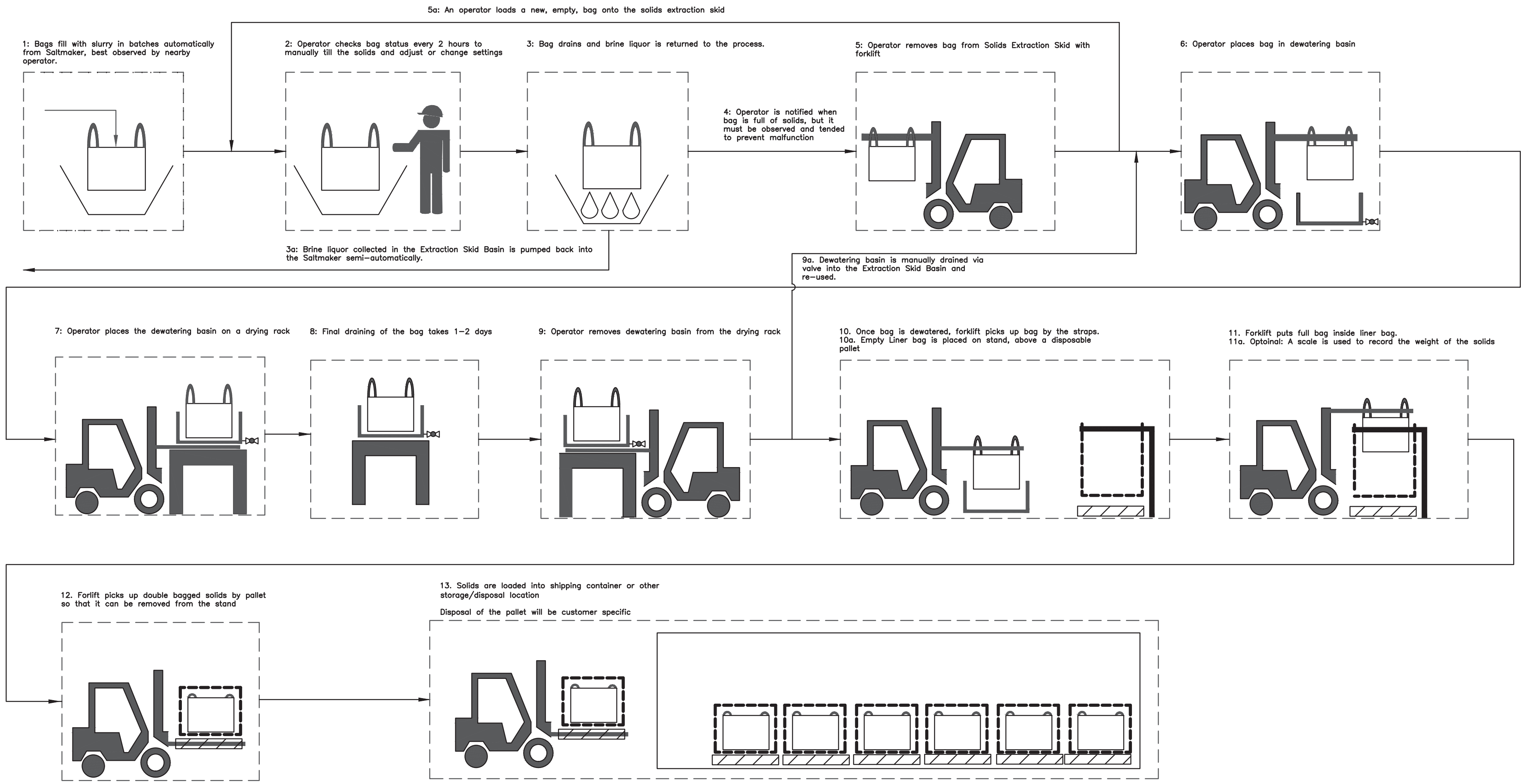
2	06-OCT-2017	UPDATED PER AEM COMMENTS	XX
3	30-OCT-2017	UPDATED PER AEM COMMENTS	ML

TITLE: AEM INTEGRATION PFD			
PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION 3
PREPARED BY: XX	DATE: 26-SEP-2017	DWG. NO: SW_EN_SM_GEN III_PID_DWG_INTEGRATPFD	
CHECKED BY:	DATE:	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: # OF #	



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www.saltworkstech.com

DRAWING STATUS: Sketch to explain processes

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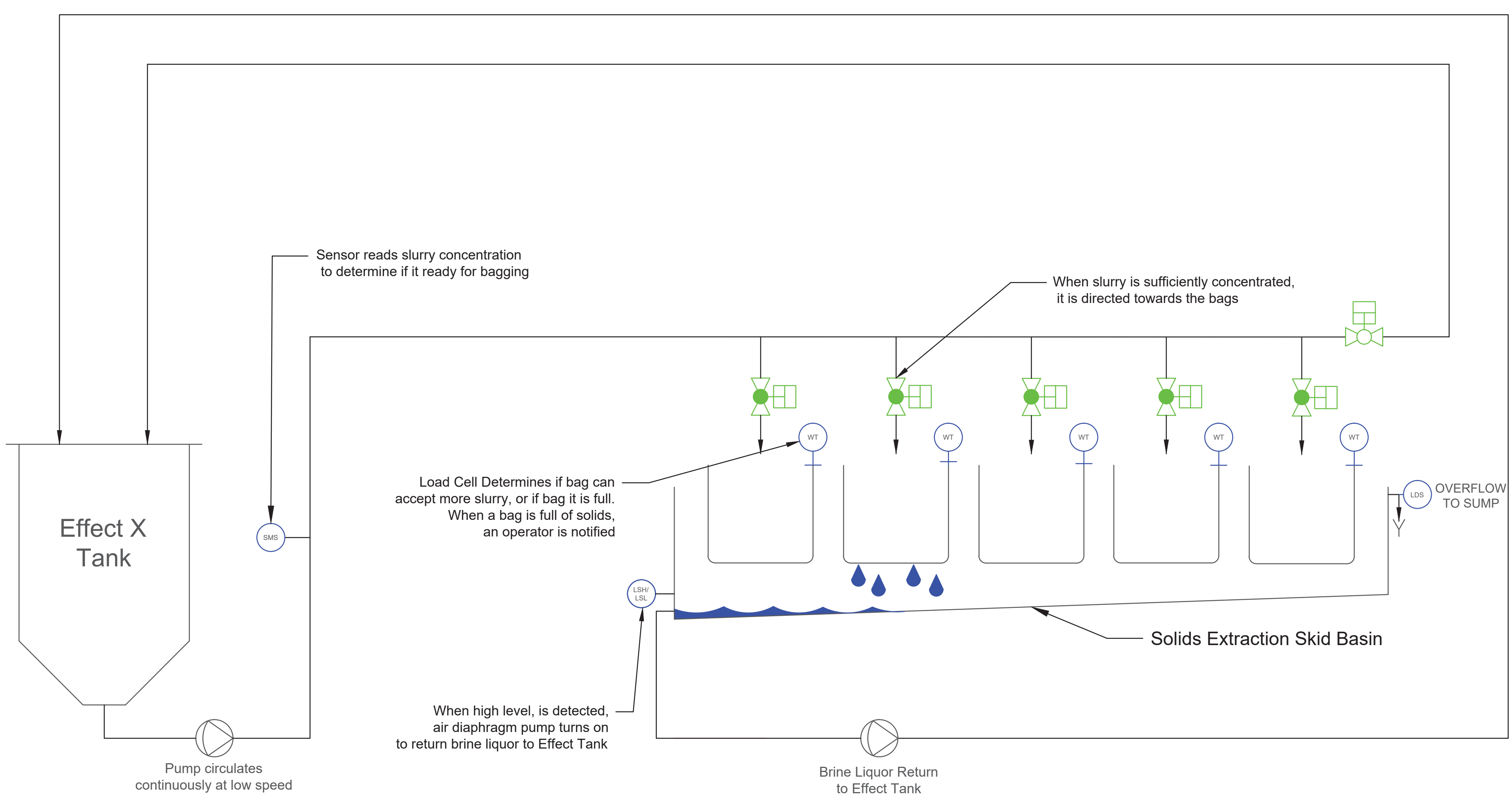
LTR	DATE	DESCRIPTION	REV. BY:

TITLE: SOLIDS EXTRACTION INFOGRAPHIC

PROJECT: SOLIDS EXTRACTION		CUSTOMER: AEM	REVISION B
PREPARED BY: DS	DATE: 03/13/2018	DWG. NO: (DWG. NO)	
CHECKED BY: DM	DATE: 03/13/2018	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 1 OF 3	



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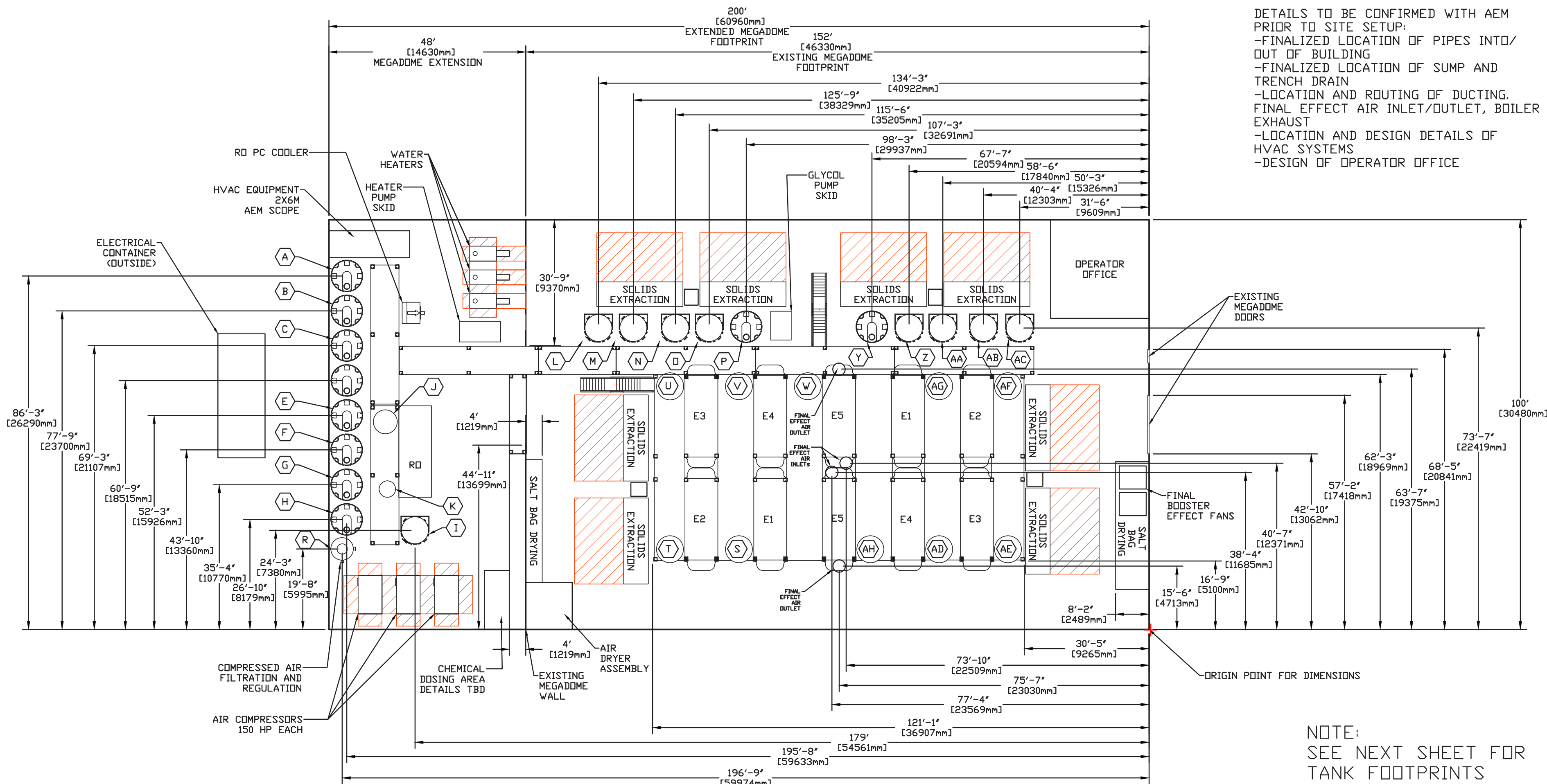
LTR	DATE	DESCRIPTION	REV. BY:

TITLE: SOLIDS EXTRACTION SYSTEM – SIMPLIFIED

PROJECT: SOLIDS EXTRACTION		CUSTOMER: AEM	REVISION: A
PREPARED BY: DS	DATE: 11/23/2017	DWG. NO: (DWG. NO)	
CHECKED BY: CHECKED BY	DATE: CHECKED DATE	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 2 OF 3	

DETAILS TO BE CONFIRMED WITH AEM PRIOR TO SITE SETUP:
-FINALIZED LOCATION OF PIPES INTO/OUT OF BUILDING
-FINALIZED LOCATION OF SUMP AND TRENCH DRAIN
-LOCATION AND ROUTING OF DUCTING, FINAL EFFECT AIR INLET/OUTLET, BOILER EXHAUST
-LOCATION AND DESIGN DETAILS OF HVAC SYSTEMS
-DESIGN OF OPERATOR OFFICE



NOTE:
SEE NEXT SHEET FOR TANK FOOTPRINTS AND LOADS

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F	13-JULY-2018	TANK LOCATIONS UPDATED TO AS BUILT. RELEASED FOR CONSTRUCTION.	AMB
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D	26-JAN-2018	PIPE RACK TO CHEM DOSING AREA, FINAL BOOSTER EFFECT FANS, GLYCOL HEATER ADDED	AMB
C	22-DEC-2017	SM2 NOT GRAYED OUT. LAYOUT UPDATE	AMB

UNLESS OTHERWISE SPECIFIED:
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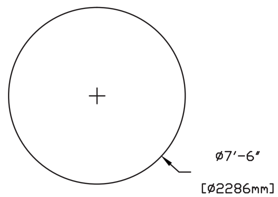
FRACTIONAL: ± 1/16 INCHES
ANGULAR: MACH: ± 1°
BEND: ± 1°
TWO DECIMAL PLACE: ± 0.01
THREE DECIMAL PLACE: ± 0.001

TITLE: SALTMAKER GAD PLANT VIEW LAYOUT			
PROJECT: SM-AEM-01		CUSTOMER: AEM	REVISION: F
PREPARED BY: REC	DATE: 27-OCT-2017	DRAWING NO: SW_EN_AEM-01_GAD	
CHECKED BY:	DATE:	JOB/CO NO: 6515-S-265-069	
APPROVED BY:	DATE:	SHEET: 1 OF 5	

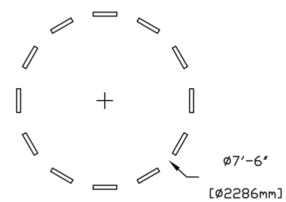
FLAT BOTTOM –
HDPE – 21m3

MAX LOAD:
71 000 LBS [32 205 KG]



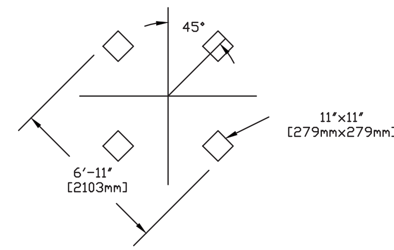
30 DEG CONE BOTTOM –
HDPE – 24m3

MAX LOAD: 85 000 LBS
[38 555 KG] ON 12 FEET



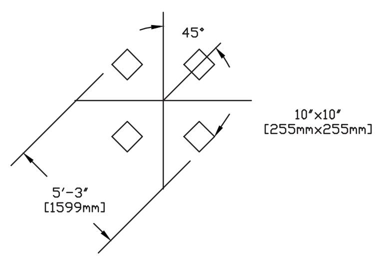
45 DEG CONE BOTTOM –
FRP – 7.6m3

MAX LOAD 31 000 LBS
[14 061 KG] ON 4 FEET



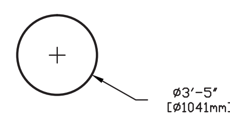
45 DEG CONE BOTTOM –
FRP – 3.6m3

MAX LOAD 15 000 LBS
[6 804 KG] ON 4 FEET



VERTICAL RECEIVER –
STEEL – 11m3

MAX LOAD 3 600 LBS
[1 633 KG] ON 41" DIAMETER
BASE RING ~1/4" THICK



NOTE:
ALL LOADS ARE NON
FACTORED

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C	22-DEC-2017	SM2 NOT GRAYED OUT. LAYOUT UPDATE	AMB

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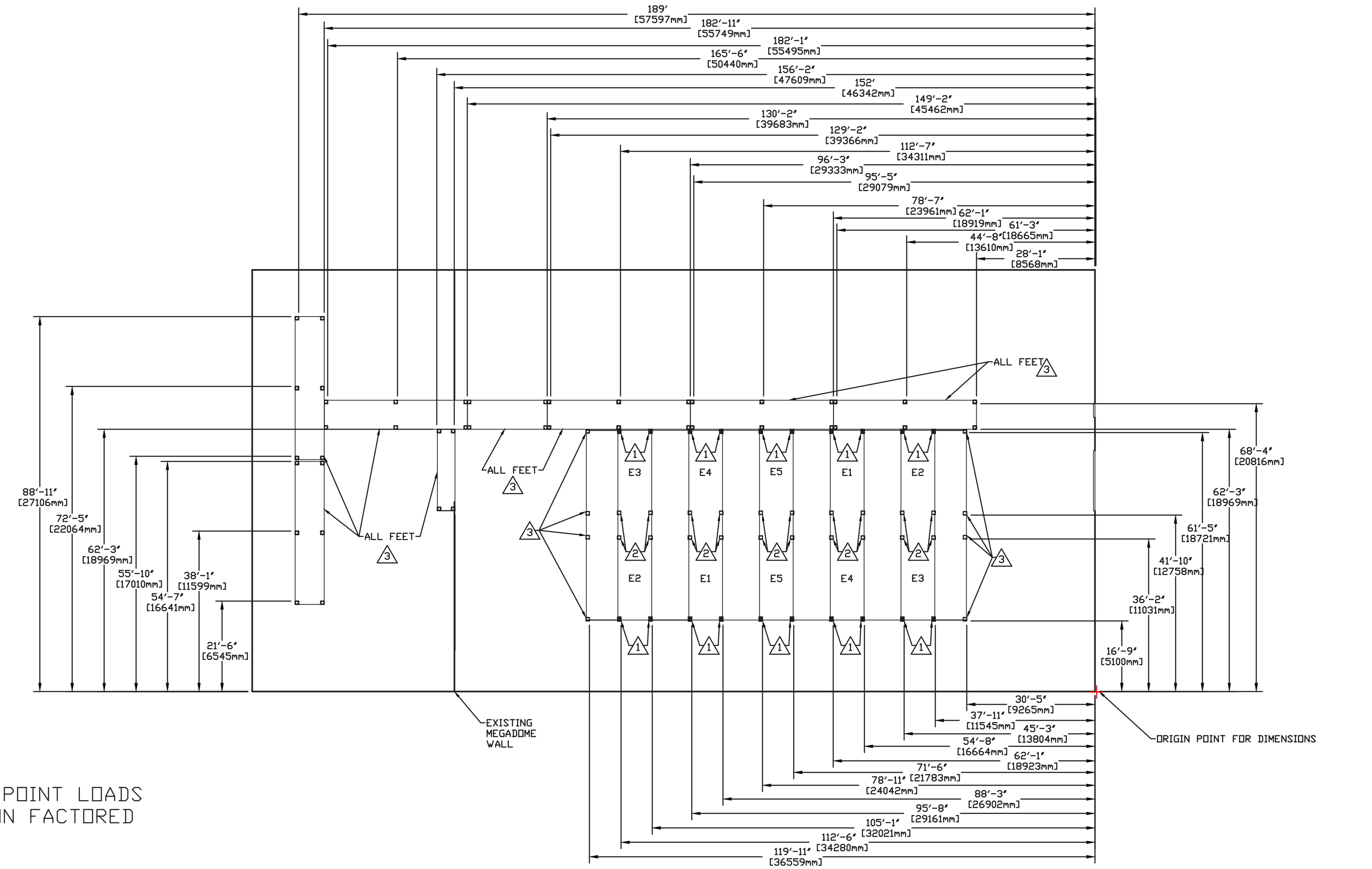
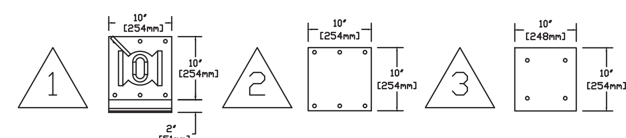
BEND: ± 1°
TWO DECIMAL PLACE: ± 0.01
THREE DECIMAL PLACE: ± 0.001

TITLE: SALTMAKER GAD TANK FOOTPRINTS AND LOADST
PROJECT: SM-AEM-01
CUSTOMER: AEM
REVISION: F
PREPARED BY: REC DATE: 27-OCT-2017
CHECKED BY: DATE:
APPROVED BY: DATE:
DRAWING NO: SW_EN_AEM-01_GAD
JOB/CO NO: 6515-S-265-069
SHEET: 2 OF 5



NOTE:
- ALL POINT LOADS
ARE NON FACTORED

LABEL	DESCRIPTION	LOAD	TOTAL QTY
1	BOP CONTAINER TWIST LOCK BASE PLATE	15 000 LBS [6 804 KG] PER TWIST LOCK	20
2	BOP CONTAINER CENTER SUPPORT	15 000 LBS [6 804 KG] PER SUPPORT	20
3	WORK PLATFORM SUPPORT COLUMN	5 000 LBS [2268 KG] PER SUPPORT	52



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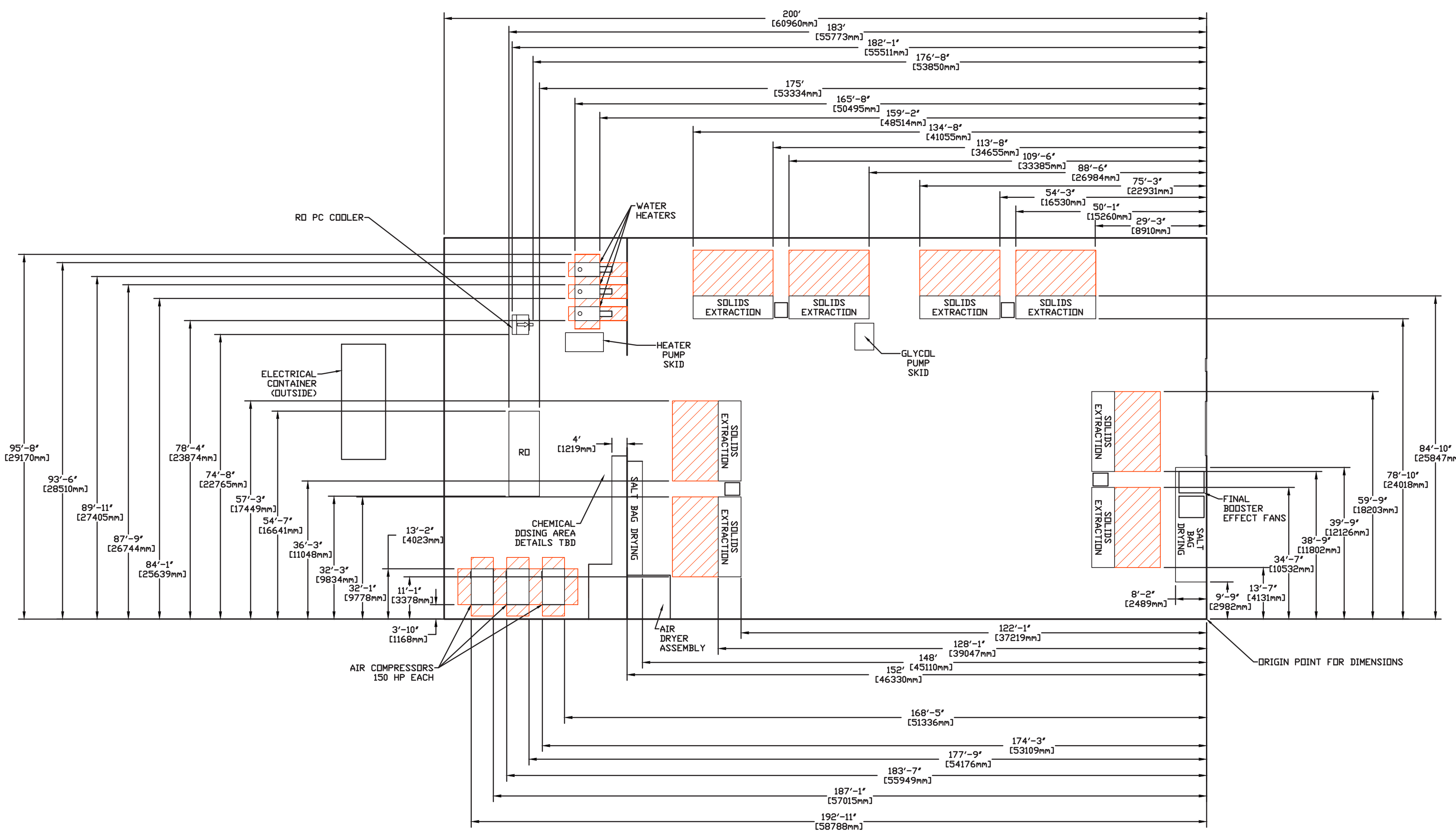
THREE DECIMAL PLACE: ± 0.001

TITLE:	SALTMAKER GAD PLANT FRAME AND PLATFORM POINT LOADS		
PROJECT:	SM-AEM-01	CUSTOMER:	AEM
REVISION	F		
PREPARED BY: REC	DATE: 27-OCT-2017	DRAWING NO	SW_EN_AEM-01_GAD
CHECKED BY:	DATE:	JOB/CO NO	6515-S-265-069
APPROVED BY:	DATE:	SHEET:	3 OF 5



DESCRIPTION	LOAD
SOLIDS EXTRACTION	20 000 LBS [9 072 KG]
SALT BAG DRYING	WILL BE STANDARD PALLET RACKING
AIR COMPRESSORS	7 050 LBS [3 198 KG]
RO	20 000 LBS [9 072 KG]
HEATER PUMP SKID	TBD (APPROX 5 000 LBS / 2 268 KG)
WATER HEATERS	7 000 LBS [3 175 KG]
RO PC COOLER	1 000 LBS [454 KG]

NOTE:
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TITLE: SALTMAKER GAD PLANT EQUIPMENT POINT LOADS

PROJECT: SM-AEM-01		CUSTOMER: AEM	REVISION: F
PREPARED BY: REC	DATE: 27-OCT-2017	DRAWING NO: SW_EN_AEM-01_GAD	
CHECKED BY:	DATE:	JOB/CO NO: 6515-S-265-069	
APPROVED BY:	DATE:	SHEET: 4 OF 5	

SaltMaker Site Requirements	
All specifications are for a single SaltMaker installation unless noted otherwise	
Capacity	1X (2X) SaltMaker: 66 m^3/day (132 m3/day) Saline Water
Electrical	See SW_EN_ELEC_AEM_LOADS_RD1 for details
Communications	Cat6 or Cat5e Ethernet cable connection enabling access to site SCADA system and internet access at 25Mbps upload/download speeds
Compressed Air	Built into plant Instrument air dried to: -40°C Dew Point Process air dried to: 4°C Dew Point
Feedwater	Saline water feed at 4X capacity for "slug feed" 206-275 kPa (30-40 psi) minimum to feed SW Feed tank 2" ANSI flange connection point SW PLC controls AEM feed pumps ON/OFF with local override
Treated Water Discharge	80% of "Capacity" discharged as treated water, 20% to atmosphere for cooling 206-275 kPa (30-40 psi) either continuously or batched 2" ANSI flange connection point
Solids Removal	Depends on inlet total dissolved solids (TDS), roughly: "Capacity" * TDS/1E6 5,000 kg - 13,000 kg per day removed via bulk salt bags 5 - 25 bags / day
High Solubility Blowdown Water	1% of total plant inlet volume removed as liquid via tote
Building Ventilation & Freeze Protection	AEM to provide freeze protection, and sufficient ventilation for standard industrial building occupancy in addition to combustion air requirements for diesel fired hot water heaters outlined below
Final Effect Inlet / Outlet Duct Requirements for Each SaltMaker	Detailed design of ducting to be finalized with AEM and Megadome Manufacturer. Sizes of ducts below are best estimates, and may be adjusted during the detailed design process. SaltMaker Final Effect Air Intake (process air for one (1) SaltMaker only): 36 in diameter duct Material: Galvanized steel or equivalent SaltMaker Final Effect Air Discharge (process air for one (1) SaltMaker only): 36 inch diameter duct 22,000 cfm, approximately 25°C, 95% relative humidity (+/- 20%). Material: SS304 or equivalent Saltworks notes exhaust air freezing risk. AEM advised Saltworks that atmospheric conditions will carry away moisture. AEM noted that changes to the final effect exhaust could be made if a problem emerged.
Thermal	Total nameplate hot water heater output: 2999kW Fuel: #2 Fuel Oil Temperature: Minimum 20°F (-6.6°C) All fuel lines and oil filters must be sized to provide pump suction capacities, not max operating capacities. Hot Water Heater 1 (Unilux 350Z): Burner Pump Suction Capacity: 105 GPH (397.5 l/hr). Maximum 10" W.C. Suction Pressure (Vacuum) at oil pump suction port Burner Max Operating Capacity: 33.7 GPH (127.6 l/hr). Maximum 10" W.C. Suction Pressure (Vacuum) at oil pump suction port Hot Water Heater 2 (Unilux 350Z): Burner Pump Suction Capacity: 105 GPH (397.5 l/hr). Maximum 10" W.C. Suction Pressure (Vacuum) at oil pump suction port Burner Max Operating Capacity: 33.7 GPH (127.6 l/hr). Maximum 10" W.C. Suction Pressure (Vacuum) at oil pump suction port Hot Water Heater 3 (Unilux 500Z): Burner Pump Suction Capacity: 135 GPH (511.0 l/hr). Maximum 10" W.C. Suction Pressure (Vacuum) at oil pump suction port Burner Max Operating Capacity: 56.0 GPH (212.0 l/hr). Maximum 10" W.C. Suction Pressure (Vacuum) at oil pump suction port Combined 3 Water Heaters Total: Burner Pump Suction Capacity: 345 GPH (1306.0 l/hr). Maximum 10" W.C. Suction Pressure (Vacuum) at oil pump suction port Burner Max Operating Capacity: 123.4 GPH (465.6 l/hr). Maximum 10" W.C. Suction Pressure (Vacuum) at oil pump suction port
Diesel Fired Burner Combustion Air Requirements	Single Hot Water Heater (plant idle + building heat): 730 scfm air at 18°C - 29°C Single SaltMaker: 1460 scfm air at 18°C - 29°C Two SaltMakers: 2920 scfm air at 18°C - 29°C
Diesel Fired Burner Exhaust Requirements	Single Hot Water Heater: 12 - 20 inch inner diameter exhaust stack (diameter may changed depending on total length of exhaust stack) Single SaltMaker: 2 x 12 - 20 inch diameter exhaust stacks (diameter may changed depending on total length of exhaust stacks) Two SaltMakers: 3 x 12 -20 inch diameter exhaust stacks (diameter may changed depending on total length of exhaust stacks)
Building Containment	8" curb around entire perimeter of building Sump installed in low points on floor. Sized to allow sump pump and allow cleanout of pit as required for servicing Trench drain along length of building. Location of trench drain to be determined based on low points in existing floor.
Sump Discharge	Sump return to feed pond via XX" ANSI connection. Details to be confirmed with AEM
Assembly	AEM to provide equipment required to lift all components of the SaltMaker into place. Saltworks notes assembly risk to AEM lifting frames in place within the Megadome. AEM to plan machinery on site capable and if needed the rent roof would be removed. Saltworks proceeded with layout design on this basis.

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TITLE:	SALTMAKER GAD	PLANT EQUIPMENT POINT LOADS	
PROJECT:	SM-AEM-01	CUSTOMER: AEM	REVISION: F
PREPARED BY: REC	DATE: 27-OCT-2017	DRAWING NO: SW_EN_AEM-01_GAD	
CHECKED BY:	DATE:	JOB/CO NO: 6515-S-265-069	
APPROVED BY:	DATE:	SHEET: 5 OF 5	

Saltworks

AGNICO EAGLE MINES
P&ID DRAWING PACKAGE

SALTMAKER 1 (SM1)
REVISION N

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LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	AS MARKED BY REVISION CLOUDS	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	AS MARKED BY REVISION CLOUDS	JLAU
M	20–APR–2018	AS MARKED BY REVISION CLOUDS	JLAU

TITLE:	COVER SHEET		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	1–SEP–2017
CHECKED BY:	MLOW	DATE:	5–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	COVER SHEET		
JOB/CO NO:	(JOB NO.)		
SHEET:	# OF #		

DRAWING LIST 1

SHEET NO.	DRAWING NO.	DESCRIPTION
		COVER SHEET
		DRAWING LIST 1
		DRAWING LIST 2
		LEGEND
		COMMON
1	SW_EN_SM_AEM-01_PID_COMMON_DWG_000	MASTER PFD
2	SW_EN_SM_AEM-01_PID_COMMON_DWG_010	PROCESS FLOW DIAGRAM
3	SW_EN_SM_AEM-01_PID_COMMON_DWG_020	CONTAINER LAYOUT
4	SW_EN_SM_AEM-01_PID_COMMON_DWG_030	MODULES LAYOUT
5	SW_EN_SM_AEM-01_PID_COMMON_DWG_040	PLANT FEED TANKS
6	SW_EN_SM_AEM-01_PID_COMMON_DWG_041	PLANT FEED PUMP SKIDS
7	SW_EN_SM_AEM-01_PID_COMMON_DWG_050	CLEAN RESERVE AND BLOWDOWN SYSTEMS
8	SW_EN_SM_AEM-01_PID_COMMON_DWG_060	ACID DOSING SYSTEM
9	SW_EN_SM_AEM-01_PID_COMMON_DWG_061	BASE DOSING SYSTEM
10	SW_EN_SM_AEM-01_PID_COMMON_DWG_062	BIOCIDE DOSING SYSTEM
11	SW_EN_SM_AEM-01_PID_COMMON_DWG_063	ANTIFOAM DOSING SYSTEM
12	SW_EN_SM_AEM-01_PID_COMMON_DWG_064	ANTISCALANT DOSING SYSTEM
13	SW_EN_SM_AEM-01_PID_COMMON_DWG_070	UTILITY WATER DISTRIBUTION
		SALTMAKER 1 (SM1)
14	SW_EN_SM_AEM-01_PID_SM1_DWG_110	THERMAL SOURCE PRIMARY HEAT EXCHANGERS
15	SW_EN_SM_AEM-01_PID_SM1_DWG_120	CONDENSED WATER SYSTEM
16	SW_EN_SM_AEM-01_PID_SM1_DWG_130	FEED DISTRIBUTION
17	SW_EN_SM_AEM-01_PID_SM1_DWG_150	CIP TANKS
18	SW_EN_SM_AEM-01_PID_SM1_DWG_151	CIP PUMP SKID
19	SW_EN_SM_AEM-01_PID_SM1_DWG_160	EFFECT HOLD 1
20	SW_EN_SM_AEM-01_PID_SM1_DWG_161	EFFECT HOLD 2
21	SW_EN_SM_AEM-01_PID_SM1_DWG_162	SYSTEM HOLD
22	SW_EN_SM_AEM-01_PID_SM1_DWG_163	CALCIUM EXTRACTION
23	SW_EN_SM_AEM-01_PID_SM1_DWG_164	EH1 SOLIDS EXTRACTION
24	SW_EN_SM_AEM-01_PID_SM1_DWG_165	EH2 SOLIDS EXTRACTION
25	SW_EN_SM_AEM-01_PID_SM1_DWG_180	DRIP TRAYS
26	SW_EN_SM_AEM-01_PID_SM1_DWG_210	EFFECT 1 TANK AND PUMPS
27	SW_EN_SM_AEM-01_PID_SM1_DWG_211	EFFECT 1 MODULES
28	SW_EN_SM_AEM-01_PID_SM1_DWG_213	EFFECT 1 PUMP SEAL FLUSH
29	SW_EN_SM_AEM-01_PID_SM1_DWG_214	EFFECT 1 AIR SEALS
30	SW_EN_SM_AEM-01_PID_SM1_DWG_220	EFFECT 2 TANK AND PUMPS
31	SW_EN_SM_AEM-01_PID_SM1_DWG_221	EFFECT 2 MODULES
32	SW_EN_SM_AEM-01_PID_SM1_DWG_222	EFFECT 2 SOLIDS EXTRACTION
33	SW_EN_SM_AEM-01_PID_SM1_DWG_223	EFFECT 2 PUMP SEAL FLUSH
34	SW_EN_SM_AEM-01_PID_SM1_DWG_224	EFFECT 2 AIR SEALS

SHEET NO.	DRAWING NO.	DESCRIPTION
35	SW_EN_SM_AEM-01_PID_SM1_DWG_230	EFFECT 3 TANK AND PUMPS
36	SW_EN_SM_AEM-01_PID_SM1_DWG_231	EFFECT 3 MODULES
37	SW_EN_SM_AEM-01_PID_SM1_DWG_232	EFFECT 3 SOLIDS EXTRACTION
38	SW_EN_SM_AEM-01_PID_SM1_DWG_233	EFFECT 3 PUMP SEAL FLUSH
39	SW_EN_SM_AEM-01_PID_SM1_DWG_234	EFFECT 3 AIR SEALS
40	SW_EN_SM_AEM-01_PID_SM1_DWG_240	EFFECT 4 TANK AND PUMPS
41	SW_EN_SM_AEM-01_PID_SM1_DWG_241	EFFECT 4 MODULES
42	SW_EN_SM_AEM-01_PID_SM1_DWG_243	EFFECT 4 PUMP SEAL FLUSH
43	SW_EN_SM_AEM-01_PID_SM1_DWG_244	EFFECT 4 AIR SEALS
44	SW_EN_SM_AEM-01_PID_SM1_DWG_250	EFFECT 5 TANK AND PUMPS
45	SW_EN_SM_AEM-01_PID_SM1_DWG_251	EFFECT 5 MODULES
46	SW_EN_SM_AEM-01_PID_SM1_DWG_253	EFFECT 5 PUMP SEAL FLUSH
47	SW_EN_SM_AEM-01_PID_SM1_DWG_254	EFFECT 5 AIR SEALS
		THERMAL SYSTEM
48	SW_EN_SM_AEM-01_PID_DWG_310	THERMAL SKID: WATER LOOP
49	SW_EN_SM_AEM-01_PID_DWG_311	THERMAL SKID: WATER LOOP
50	SW_EN_SM_AEM-01_PID_DWG_312	THERMAL SKID: GYLCOL LOOP
		POST TREATMENT
51	SW_EN_SM_AEM-01_PID_COMMON_DWG_320	NITRITE DESTRUCTION AND RO PC SYSTEM
52	SW_EN_SM_AEM-01_PID_COMMON_DWG_321	AMMONIA DESTRUCTION SYSTEM
53	SW_EN_SM_AEM-01_PID_COMMON_DWG_322	RO BRINE FLUSH TANK
54	SW_EN_SM_AEM-01_PID_COMMON_DWG_323	TREATED WATER TANK
		COMPRESSED AIR-COMMON PACKAGE
55	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_400	COMPRESSED AIR SYSTEM
56	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_401	AMMONIA DES, BRINE BLOWDOWN AND PLANT FEED AIR
57	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_402	CHEMICAL DOSING AND ANCILLARY STAND PIPE AIR
58	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_403	COMMON AND POST TREATMENT AIR BANK 1
59	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_404	COMMON AND POST TREATMENT AIR BANK 2
		COMPRESSED AIR-SM1
60	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_410	SM INSTRUMENT AND PROCESS AIR
61	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_411	EH1/EH2 EXTRACT AND CIP AIR

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N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE:	DRAWING LIST 1
PROJECT:	SALTMAKER GEN III
CUSTOMER:	AGNICO EAGLE MINES
REVISION	N
PREPARED BY:	JLAU
DATE:	01–SEP–2017
CHECKED BY:	MLOW
DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY
DATE:	APPROVED DATE
DWG. NO:	DRAWING LIST 1
JOB/CO NO:	(JOB NO.)
SHEET:	# OF #

DRAWING LIST 2

SHEET NO.	DRAWING NO.	DESCRIPTION
62	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_412	EH1/EH2 EXTRACT AND CIP AIR
63	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_413	PLUG PREVENTION PUMP AIR
64	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_414	AIR SEAL, STAND PIPE AND E2/E3 SE AIR
65	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_415	UTILITY AIR
66	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_416	BOP1 AIR SOLENOID BANK
67	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_417	E2/E3 SE AIR SOLENOID BANK
68	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_418	BOP2 AIR SOLENOID BANK
69	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_419	BOP3 AIR SOLENOID BANK
70	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_420	CIP, EH/SY AIR SOLENOID BANK
71	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_421	H1/H2 SE AIR SOLENOID BANK
		COMPRESSED AIR-SM2
72	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_450	SM INSTRUMENT AND PROCESS AIR
73	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_451	EH1/EH2 EXTRACT AND CIP AIR
74	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_452	EFFECT/SYSTEM HOLD AND CAL EXTRACTION AIR
75	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_453	PLUG PREVENTION PUMP AIR
76	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_454	AIR SEAL, STAND PIPE AND E2/E3 SE AIR
77	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_455	UTILITY AIR
78	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_456	BOP1 AIR SOLENOID BANK
79	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_457	E2/E3 SE AIR SOLENOID BANK
80	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_458	BOP2 AIR SOLENOID BANK
81	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_459	BOP3 AIR SOLENOID BANK
82	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_460	CIP, EH/SY AIR SOLENOID BANK
83	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_461	H1/H2 SE AIR SOLENOID BANK

SHEET NO.	DRAWING NO.	DESCRIPTION
		SALTMAKER 2 (SM2)
84	SW_EN_SM_AEM-01_PID_SM2_DWG_510	THERMAL SOURCE PRIMARY HEAT EXCHANGERS
85	SW_EN_SM_AEM-01_PID_SM2_DWG_520	CONDENSED WATER SYSTEM
86	SW_EN_SM_AEM-01_PID_SM2_DWG_530	FEED DISTRIBUTION
87	SW_EN_SM_AEM-01_PID_SM2_DWG_550	CIP TANKS
88	SW_EN_SM_AEM-01_PID_SM2_DWG_551	CIP PUMP SKID
89	SW_EN_SM_AEM-01_PID_SM2_DWG_560	EFFECT HOLD 1
90	SW_EN_SM_AEM-01_PID_SM2_DWG_561	EFFECT HOLD 2
91	SW_EN_SM_AEM-01_PID_SM2_DWG_562	SYSTEM HOLD
92	SW_EN_SM_AEM-01_PID_SM2_DWG_563	CALCIUM EXTRACTION
93	SW_EN_SM_AEM-01_PID_SM2_DWG_564	EH1 SOLIDS EXTRACTION
94	SW_EN_SM_AEM-01_PID_SM2_DWG_565	EH2 SOLIDS EXTRACTION
95	SW_EN_SM_AEM-01_PID_SM2_DWG_580	DRIP TRAYS
96	SW_EN_SM_AEM-01_PID_SM2_DWG_610	EFFECT 1 TANK AND PUMPS
97	SW_EN_SM_AEM-01_PID_SM2_DWG_611	EFFECT 1 MODULES
98	SW_EN_SM_AEM-01_PID_SM2_DWG_613	EFFECT 1 PUMP SEAL FLUSH
99	SW_EN_SM_AEM-01_PID_SM2_DWG_614	EFFECT 1 AIR SEALS
100	SW_EN_SM_AEM-01_PID_SM2_DWG_620	EFFECT 2 TANK AND PUMPS
101	SW_EN_SM_AEM-01_PID_SM2_DWG_621	EFFECT 2 MODULES
102	SW_EN_SM_AEM-01_PID_SM2_DWG_622	EFFECT 2 SOLIDS EXTRACTION
103	SW_EN_SM_AEM-01_PID_SM2_DWG_623	EFFECT 2 PUMP SEAL FLUSH
104	SW_EN_SM_AEM-01_PID_SM2_DWG_624	EFFECT 2 AIR SEALS
105	SW_EN_SM_AEM-01_PID_SM2_DWG_630	EFFECT 3 TANK AND PUMPS
106	SW_EN_SM_AEM-01_PID_SM2_DWG_631	EFFECT 3 MODULES
107	SW_EN_SM_AEM-01_PID_SM2_DWG_632	EFFECT 3 SOLIDS EXTRACTION
108	SW_EN_SM_AEM-01_PID_SM2_DWG_633	EFFECT 3 PUMP SEAL FLUSH
109	SW_EN_SM_AEM-01_PID_SM2_DWG_634	EFFECT 3 AIR SEALS
110	SW_EN_SM_AEM-01_PID_SM2_DWG_640	EFFECT 4 TANK AND PUMPS
111	SW_EN_SM_AEM-01_PID_SM2_DWG_641	EFFECT 4 MODULES
112	SW_EN_SM_AEM-01_PID_SM2_DWG_643	EFFECT 4 PUMP SEAL FLUSH
113	SW_EN_SM_AEM-01_PID_SM2_DWG_644	EFFECT 4 AIR SEALS
114	SW_EN_SM_AEM-01_PID_SM2_DWG_650	EFFECT 5 TANK AND PUMPS
115	SW_EN_SM_AEM-01_PID_SM2_DWG_651	EFFECT 5 MODULES
116	SW_EN_SM_AEM-01_PID_SM2_DWG_653	EFFECT 5 PUMP SEAL FLUSH
117	SW_EN_SM_AEM-01_PID_SM2_DWG_654	EFFECT 5 AIR SEALS
		VENDOR DRAWINGS
	USW_17041_100D	POST TREATMENT RO

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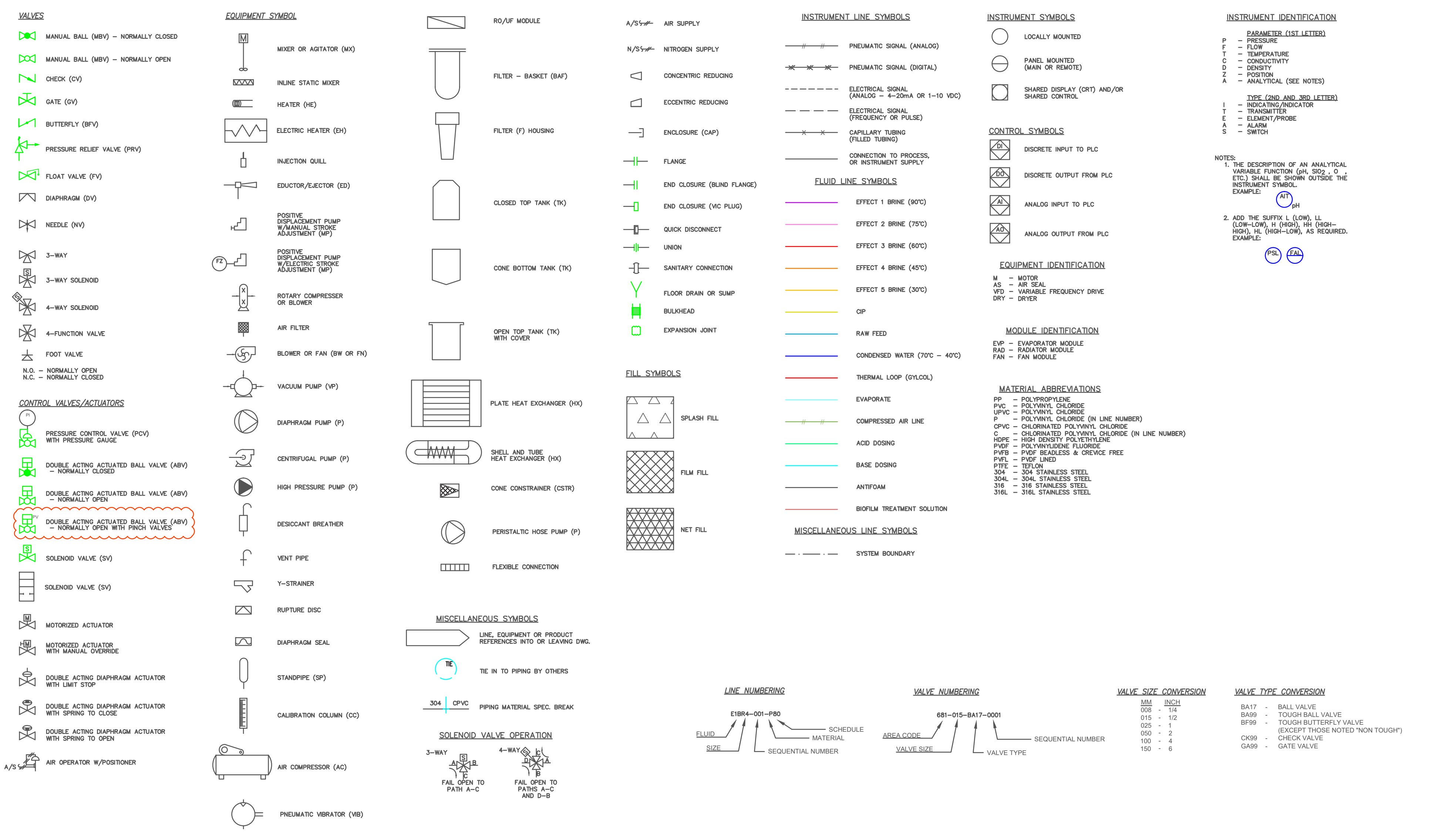
N	06-JUL-2018	NO CHANGES	–
K	23-FEB-2018	NO CHANGES	–
L	16-MAR-2018	NO CHANGES	–
M	20-APR-2018	NO CHANGES	–

TITLE: DRAWING LIST 2
PROJECT: SALTMAKER GEN III
CUSTOMER: AGNICO EAGLE MINES
REVISION: N
PREPARED BY: JLAU DATE: 01-SEP-2017
CHECKED BY: MLOW DATE: 05-SEP-2017
APPROVED BY: APPROVED BY DATE: APPROVED DATE
DWG. NO: DRAWING LIST 2
JOB/CO NO: (JOB NO.)
SHEET: # OF #



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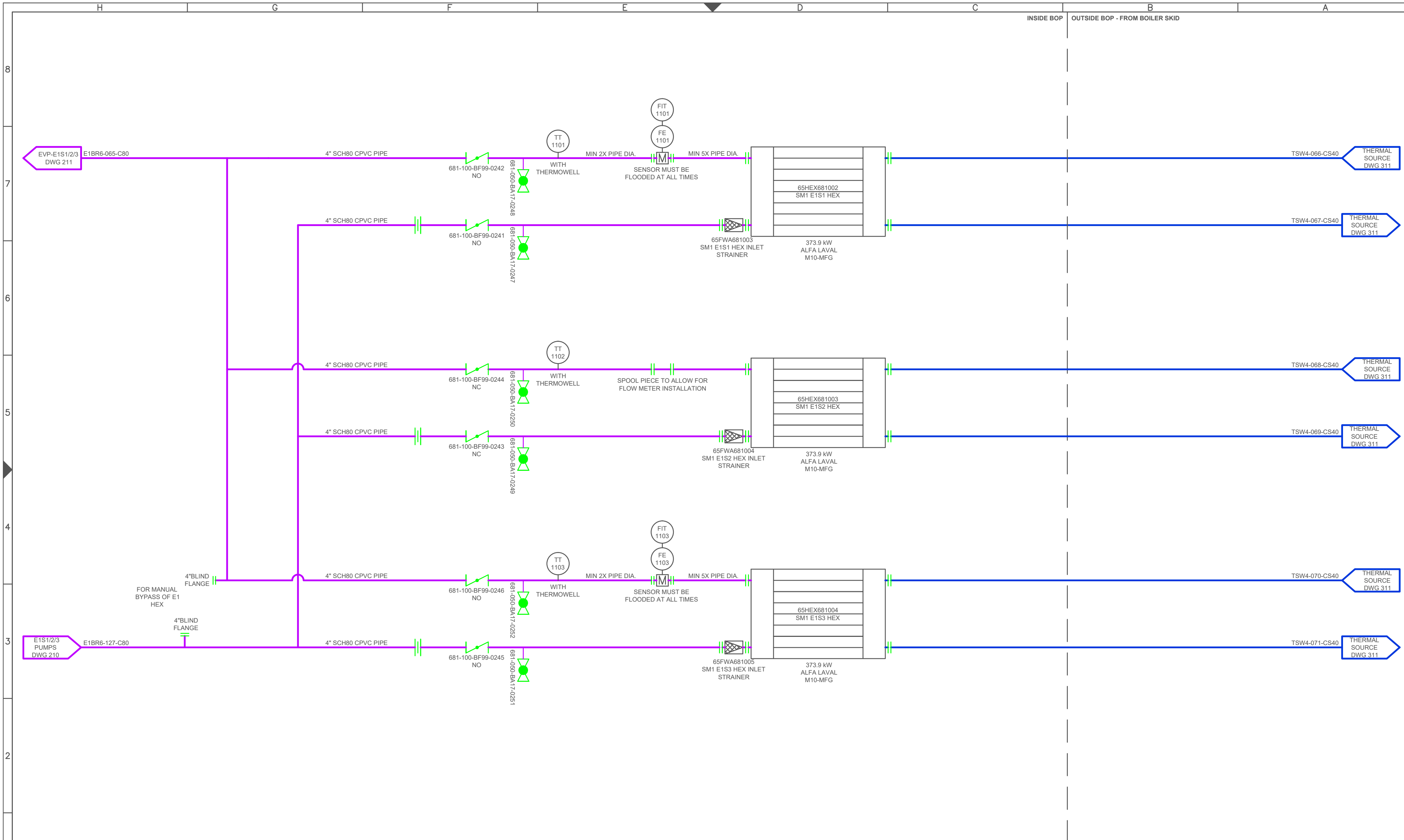
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	PINCH VALVE LEGEND ADDED	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: LEGEND

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: LEGEND	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: # OF #	



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LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	TAGS UPDATED PER AEM MARK UP	JLAU
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 110: THERMAL SOURCE PRIMARY HEAT EXCHANGER

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: PH	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_SM1_DWG_110	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
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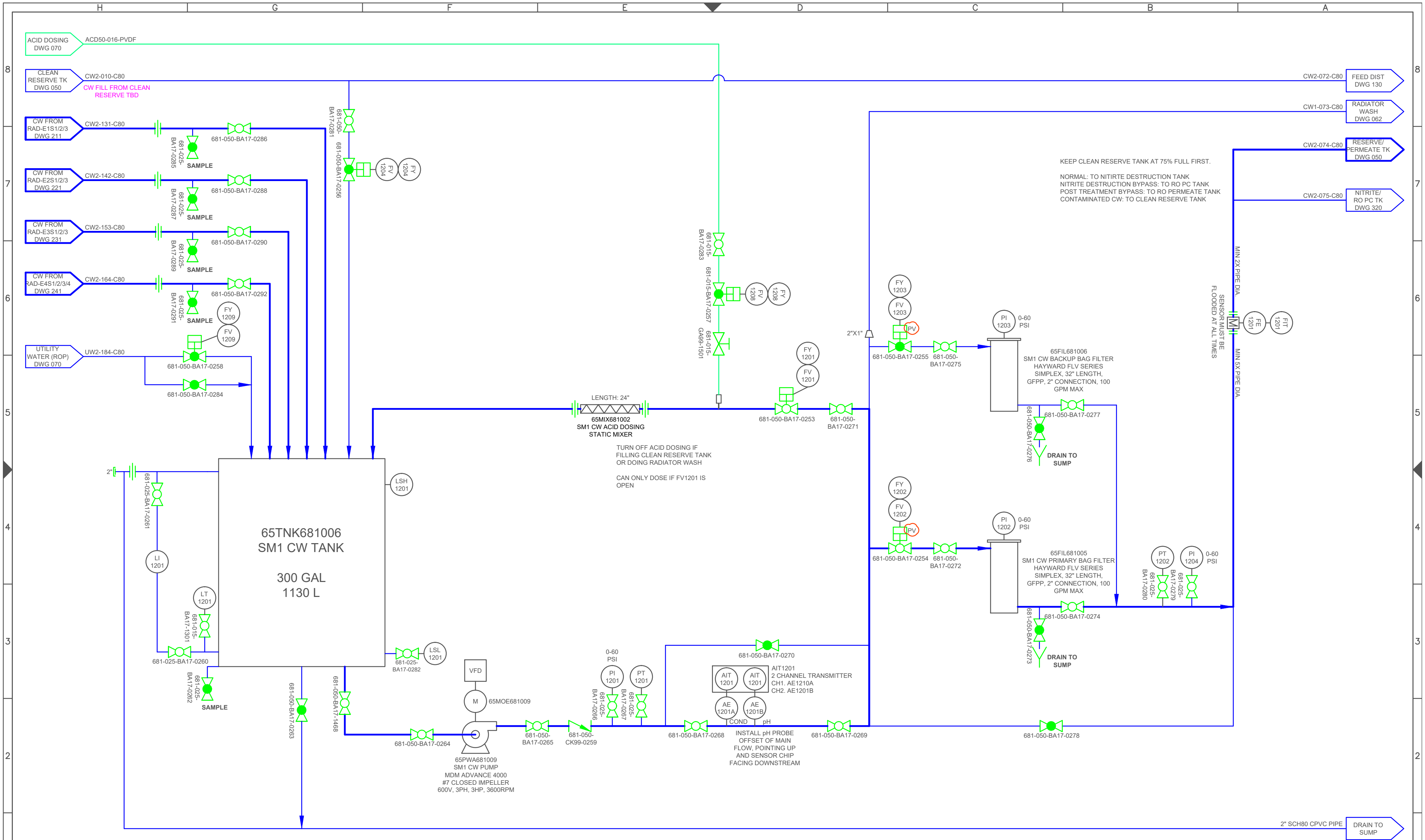

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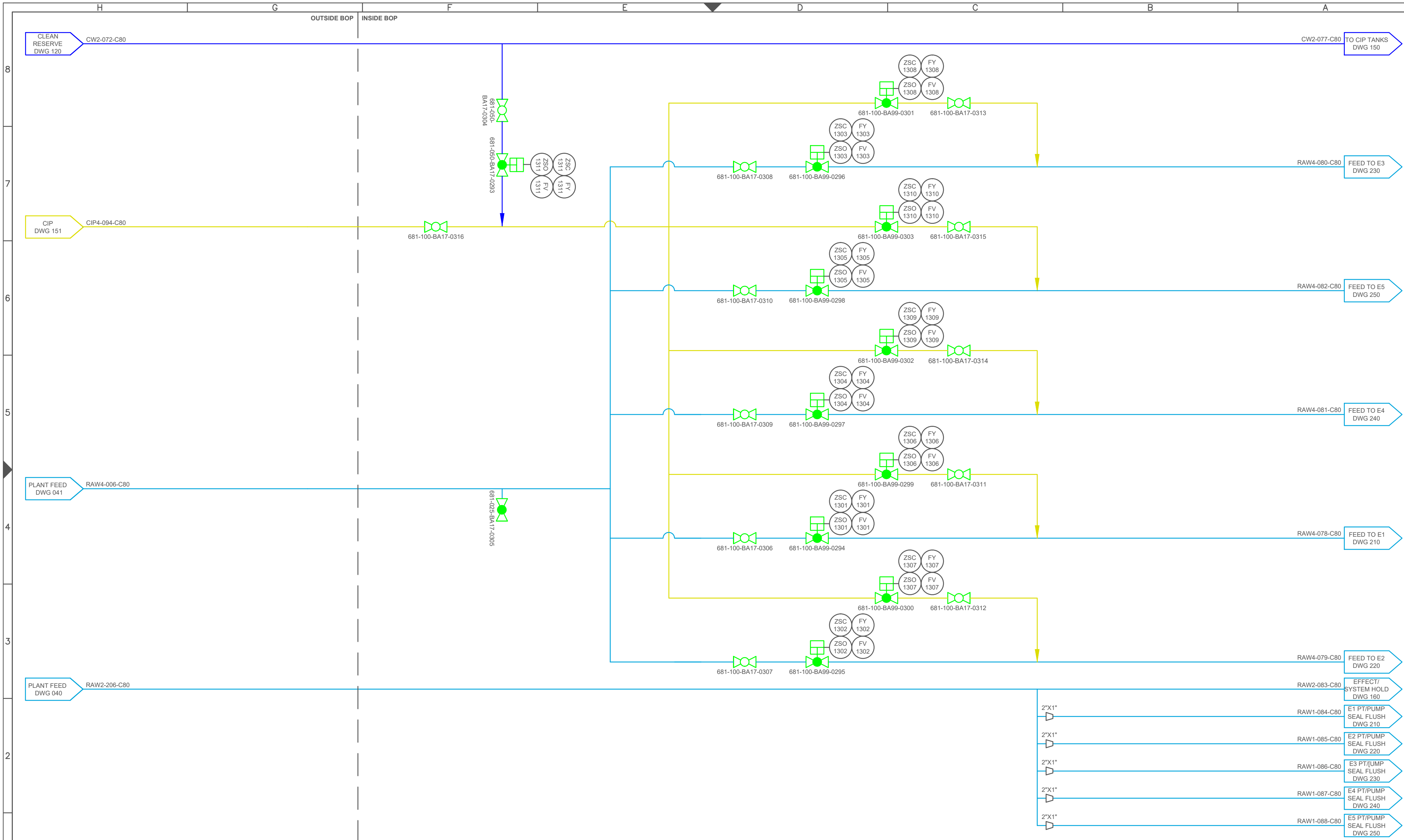
N	06-JUL-2018	PINCH VALVES ADDED	JLAU
K	23-FEB-2018	TAG UPDATED PER AEM MARK UP	JLAU
L	16-MAR-2018	NO CHANGES	–
M	20-APR-2018	GATE VALVE ADDED	JLAU

TITLE: (SM1) 120: CONDENSED WATER SYSTEM

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01-SEP-2017	DWG. NO: SW_EN_SM_AEM-01_PID_SM1_DWG_120	
CHECKED BY: MLOW	DATE: 05-SEP-2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 15 OF117	



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LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 130: FEED DISTRIBUTION

PROJECT: SALTMAKER GEN III

CUSTOMER: AGNICO EAGLE MINES

REVISION: N

PREPARED BY: JLAU DATE: 01–SEP–2017

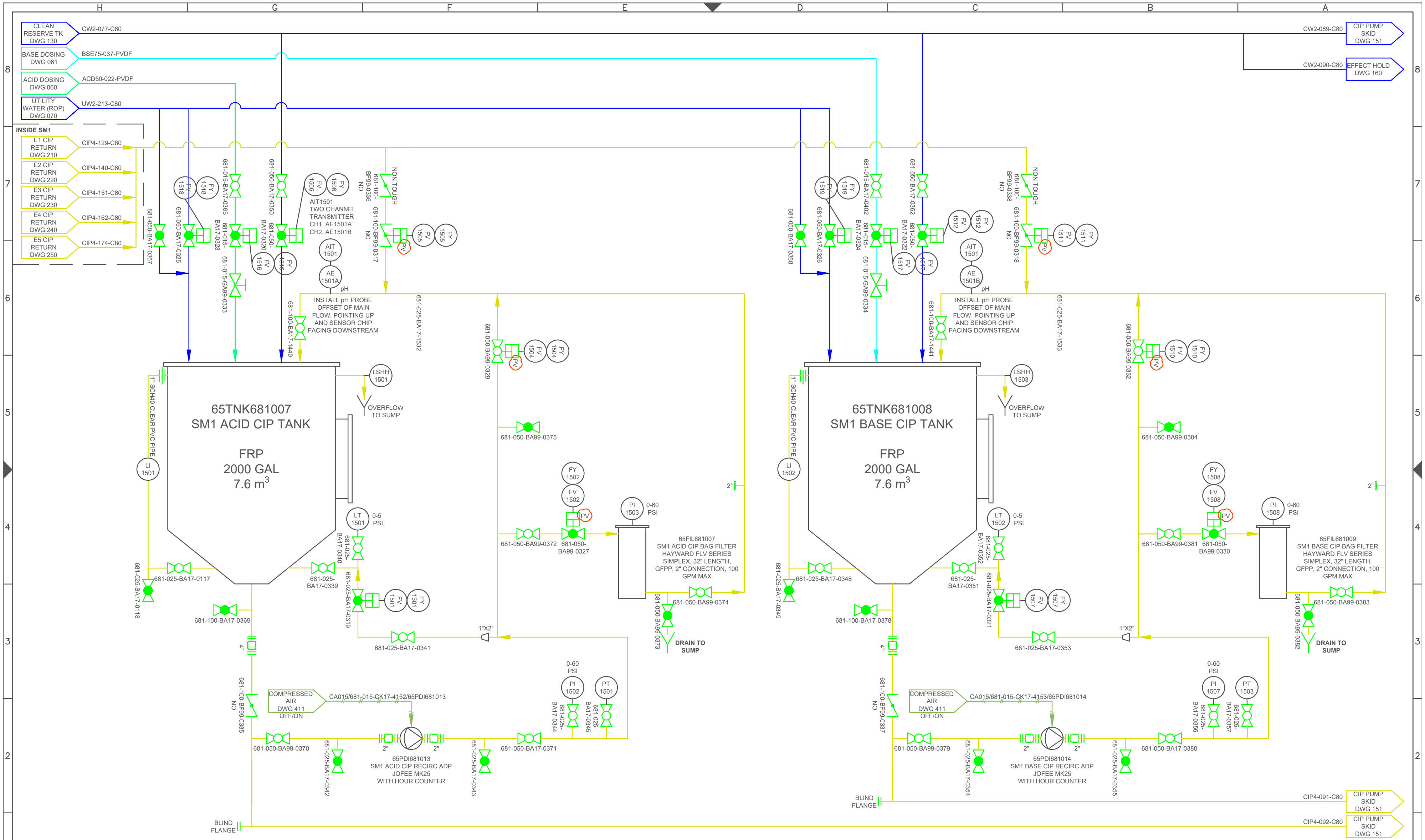
CHECKED BY: MLOW DATE: 05–SEP–2017

APPROVED BY: APPROVED BY DATE: APPROVED DATE

DWG. NO: SW_EN_SM_AEM–01_PID_SM1_DWG_130

JOB/CO NO: (JOB NO.)

SHEET: 16 OF117



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N	06–JUL–2018	PINCH VALVES ADDED	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	RECIRC VALVES CHANGED TO NO	JLAU
M	20–APR–2018	AS BUILT UPDATES	JLAU

TITLE: (SM1) 150: CIP TANKS

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM-01_PID_SM1_DWG_150	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
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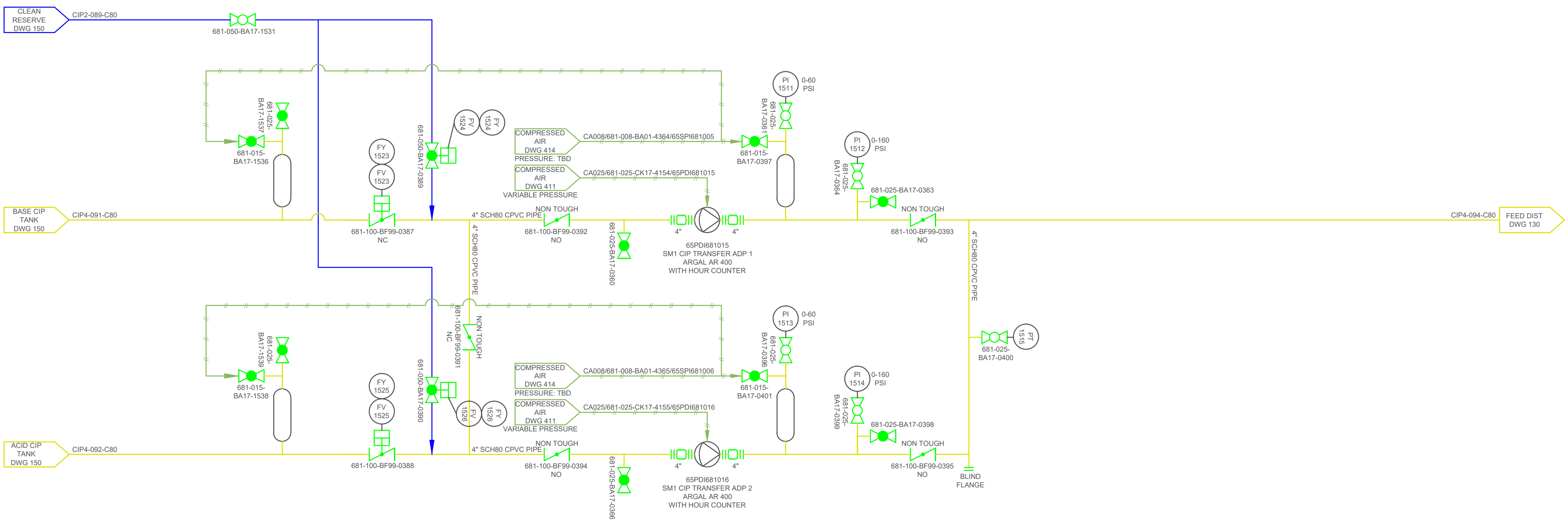

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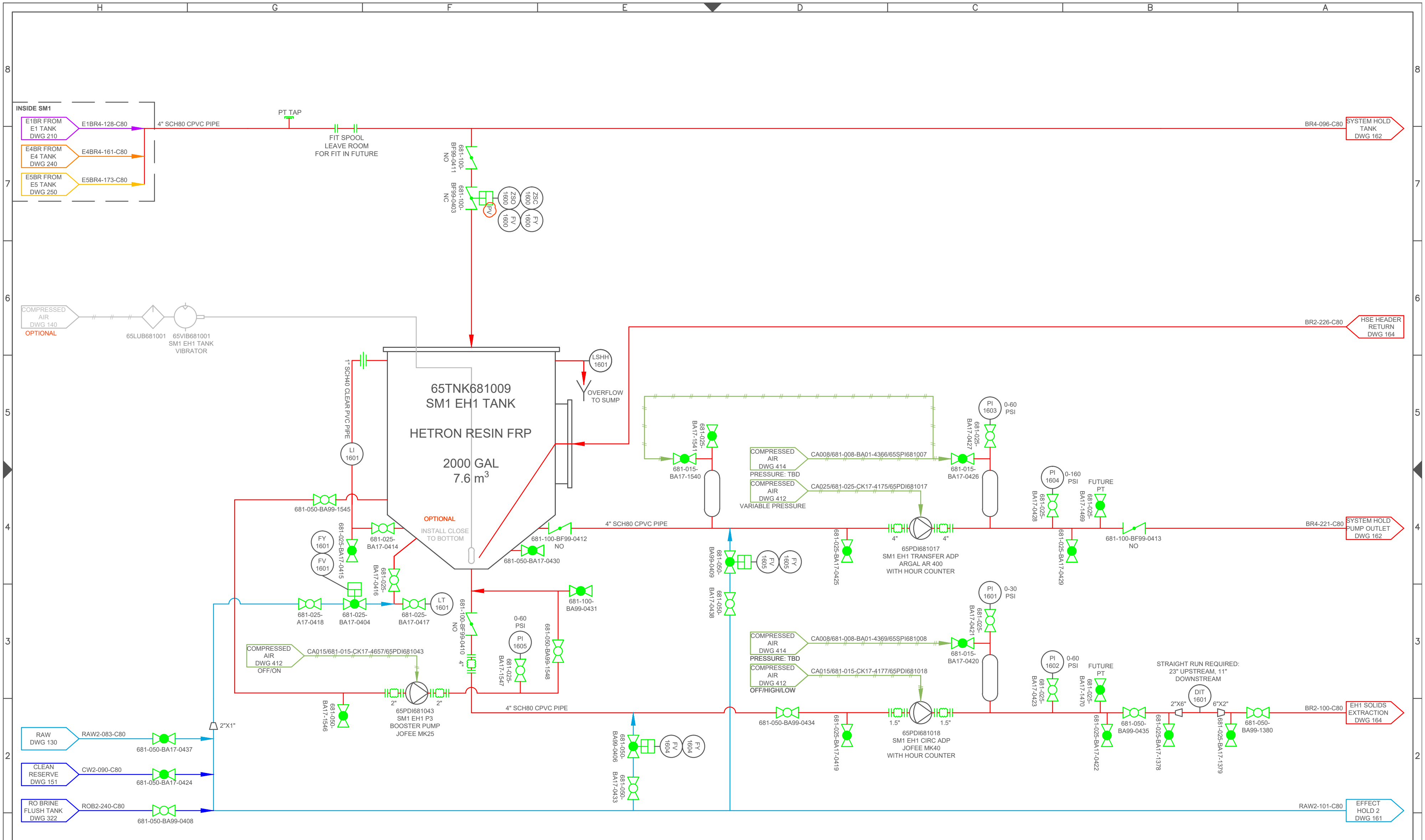
		K	23–FEB–2018	NO CHANGES	–
		L	16–MAR–2018	BLIND FLANGES ADDED AT PUMP INLETS	JLAU
	DO NOT SCALE DRAWING	M	20–APR–2018	AS BUILT UPDATES, ADDED INLET STANDPIPES	JLAU

TITLE: (SM1) 151: CIP PUMP SKID			
PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_SM1_DWG_151	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 18 OF117	



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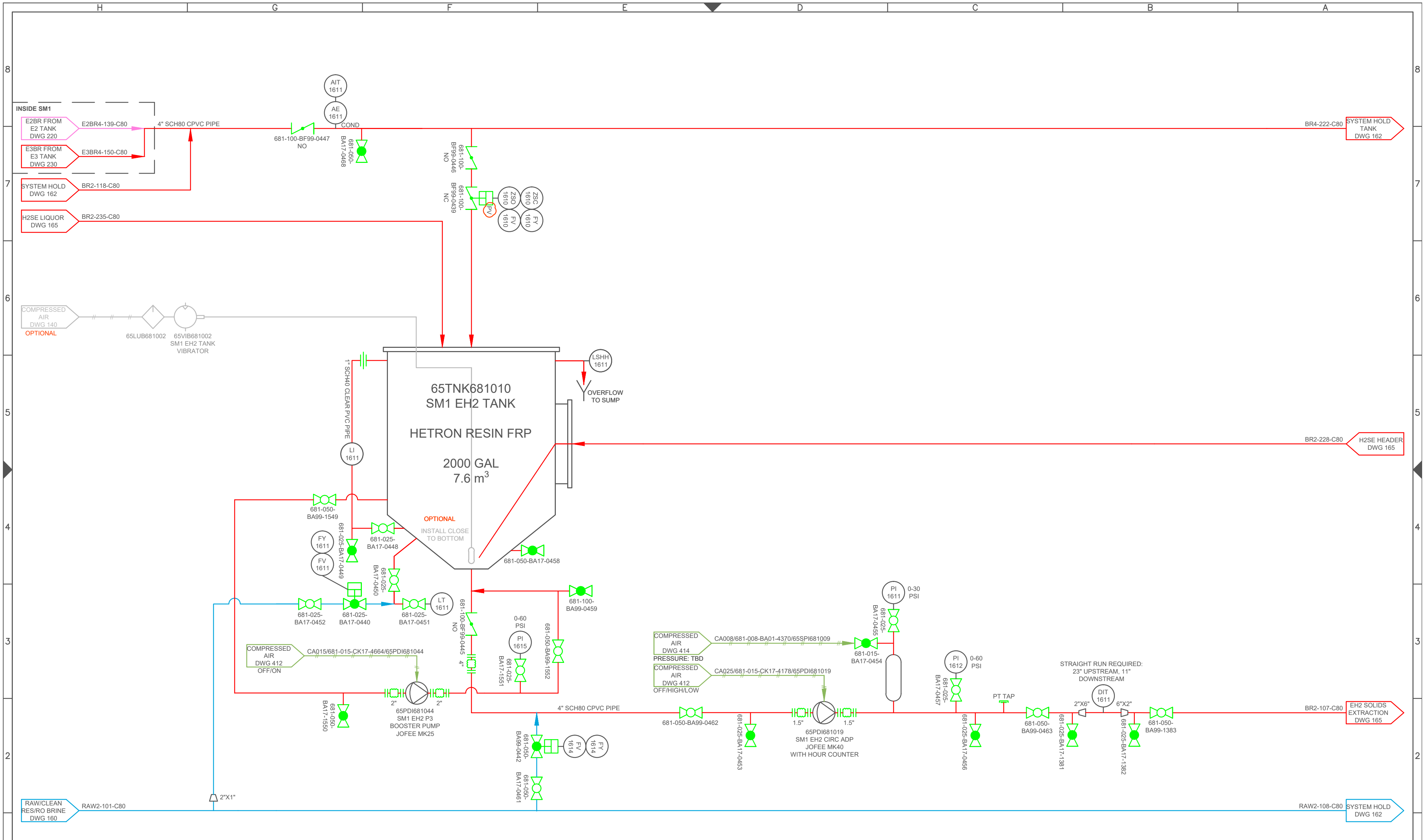
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	PINCH VALVES ADDED	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	ADDED INLET STANDPIPE AND P3 BOOSTER PUMP, AS BUILT UPDATE	JLAU

TITLE: (SM1) 160: EFFECT HOLD 1

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM-01_PID_SM1_DWG_160	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 19 OF117	



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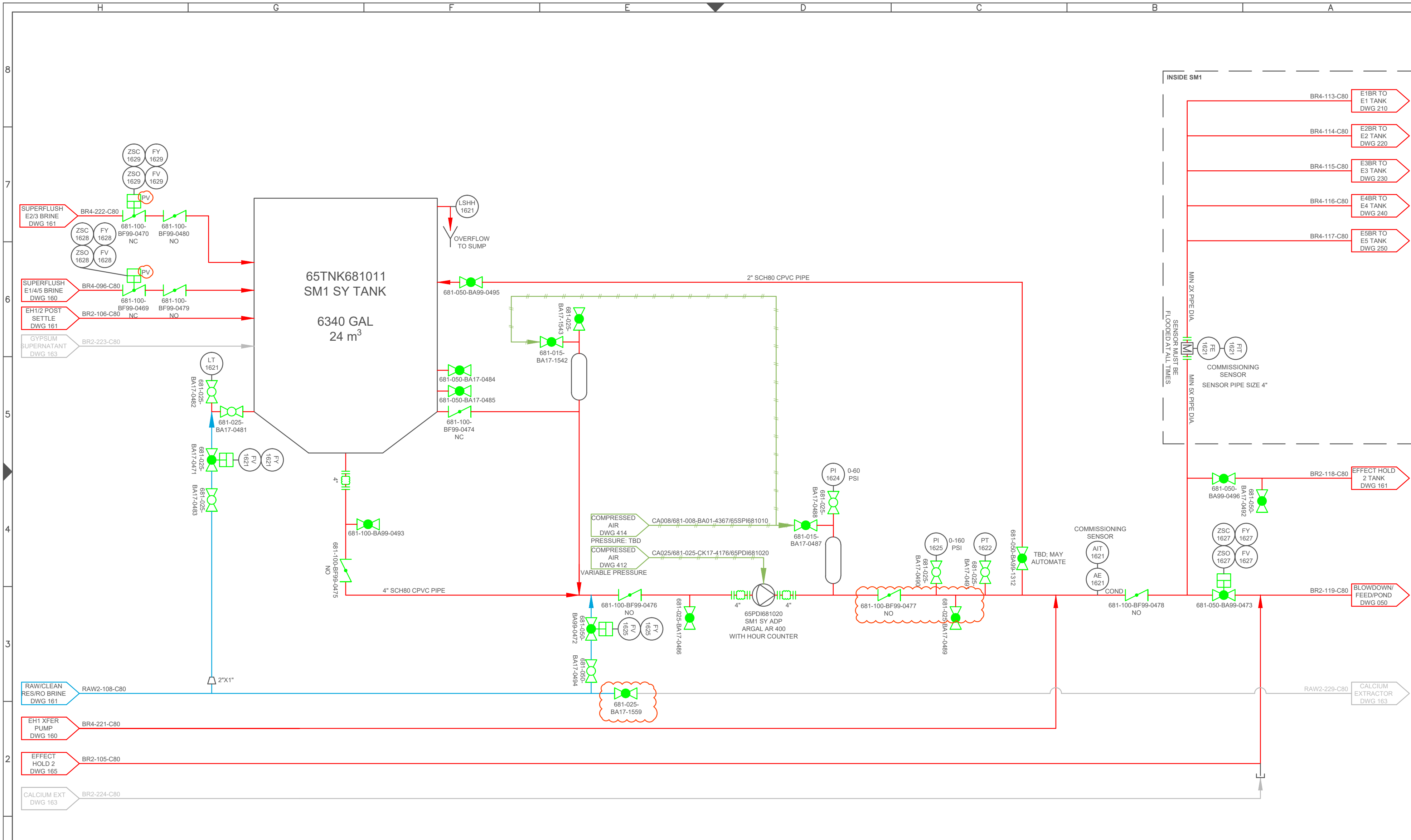
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	PINCH VALVES ADDED	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	ADDED P3 BOOSTER PUMP	JLAU

TITLE: (SM1) 161: EFFECT HOLD 2

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_SM1_DWG_161	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 20 OF117	



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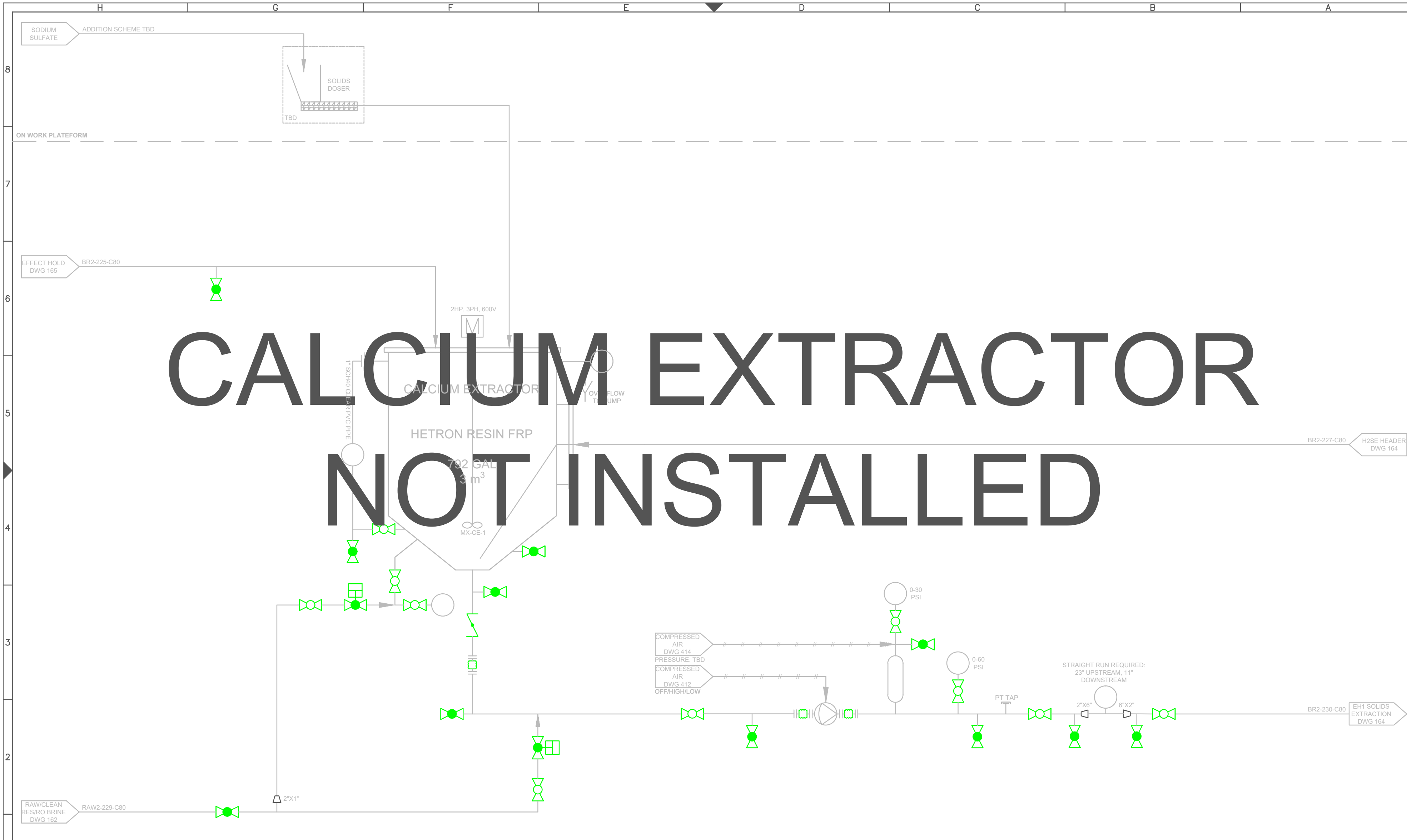
LTR	DATE	DESCRIPTION	REV. BY:
N	06-JUL-2018	PINCH VALVES ADDED, AS BUILT UPDATES	JLAU
K	23-FEB-2018	TAG UPDATED PER AEM MARK UP	JLAU
L	16-MAR-2018	NO CHANGES	–
M	20-APR-2018	ADDED INLET STANDPIPE	JLAU

TITLE: (SM1) 162: SYSTEM HOLD

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION N
PREPARED BY: JLAU	DATE: 01-SEP-2017	DWG. NO: SW_EN_SM_AEM-01_PID_SM1_DWG_162	
CHECKED BY: MLOW	DATE: 05-SEP-2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 21 OF117	



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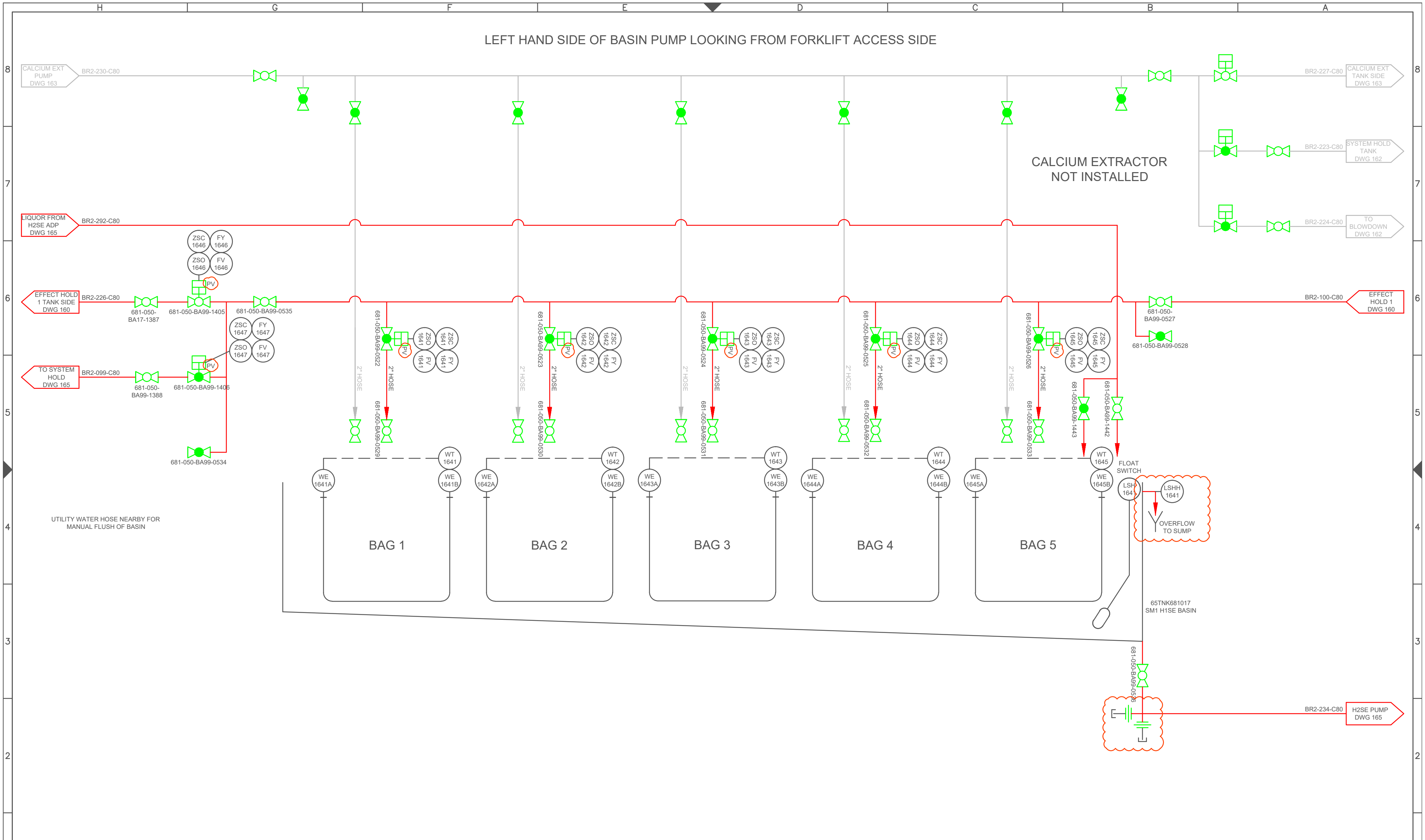
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 163: CALCIUM EXTRACTOR

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_SM1_DWG_163	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 22 OF117	



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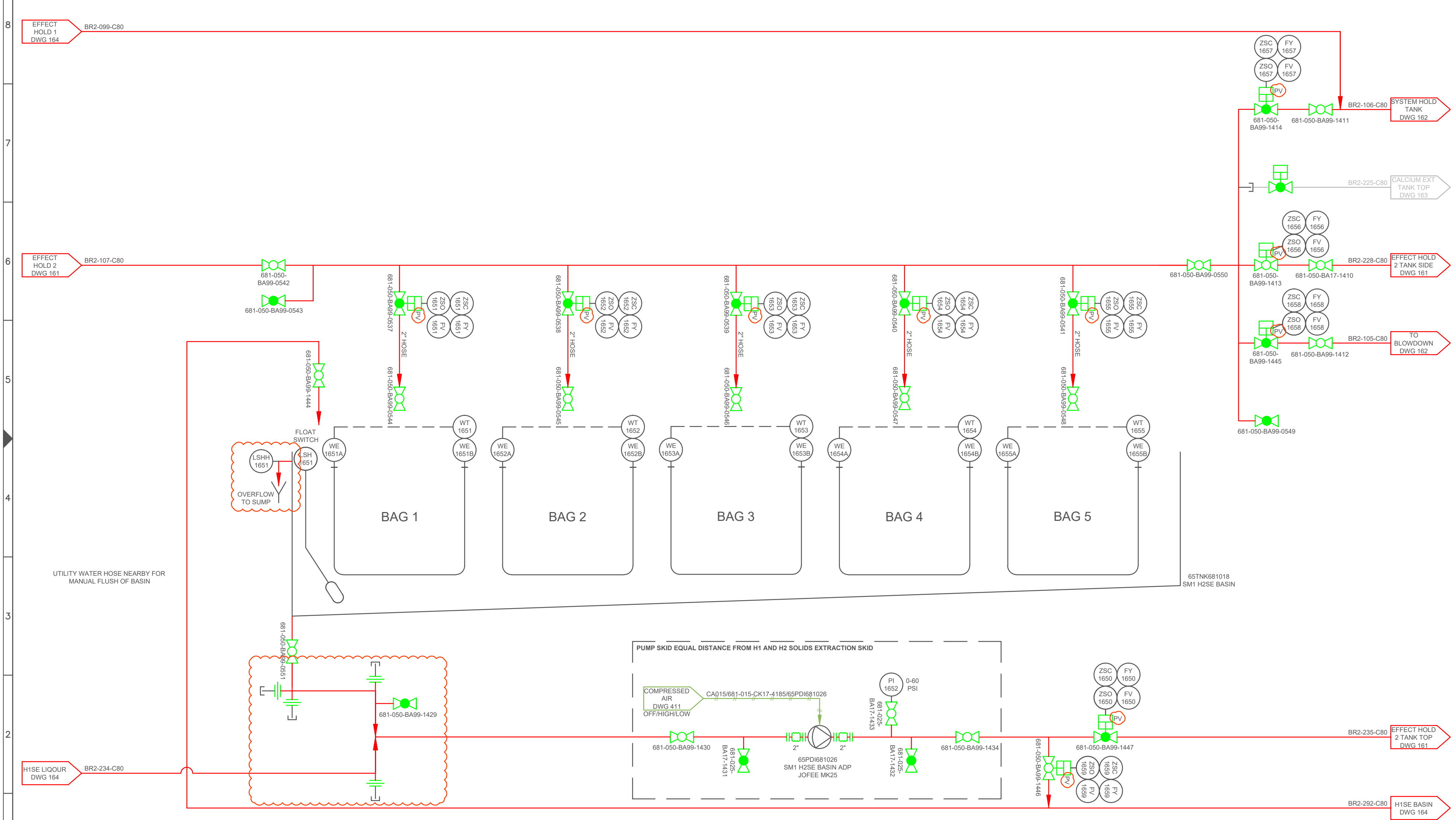
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	AS BUILT UPDATES	JLAU

TITLE:	(SM1) 164: EH1 SOLIDS EXTRACTION		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_SM1_DWG_164	JOB/CO NO:	(JOB NO.)
SHEET:	23 OF117		

RIGHT HAND SIDE OF BASIN PUMP LOOKING FROM FORKLIFT ACCESS SIDE



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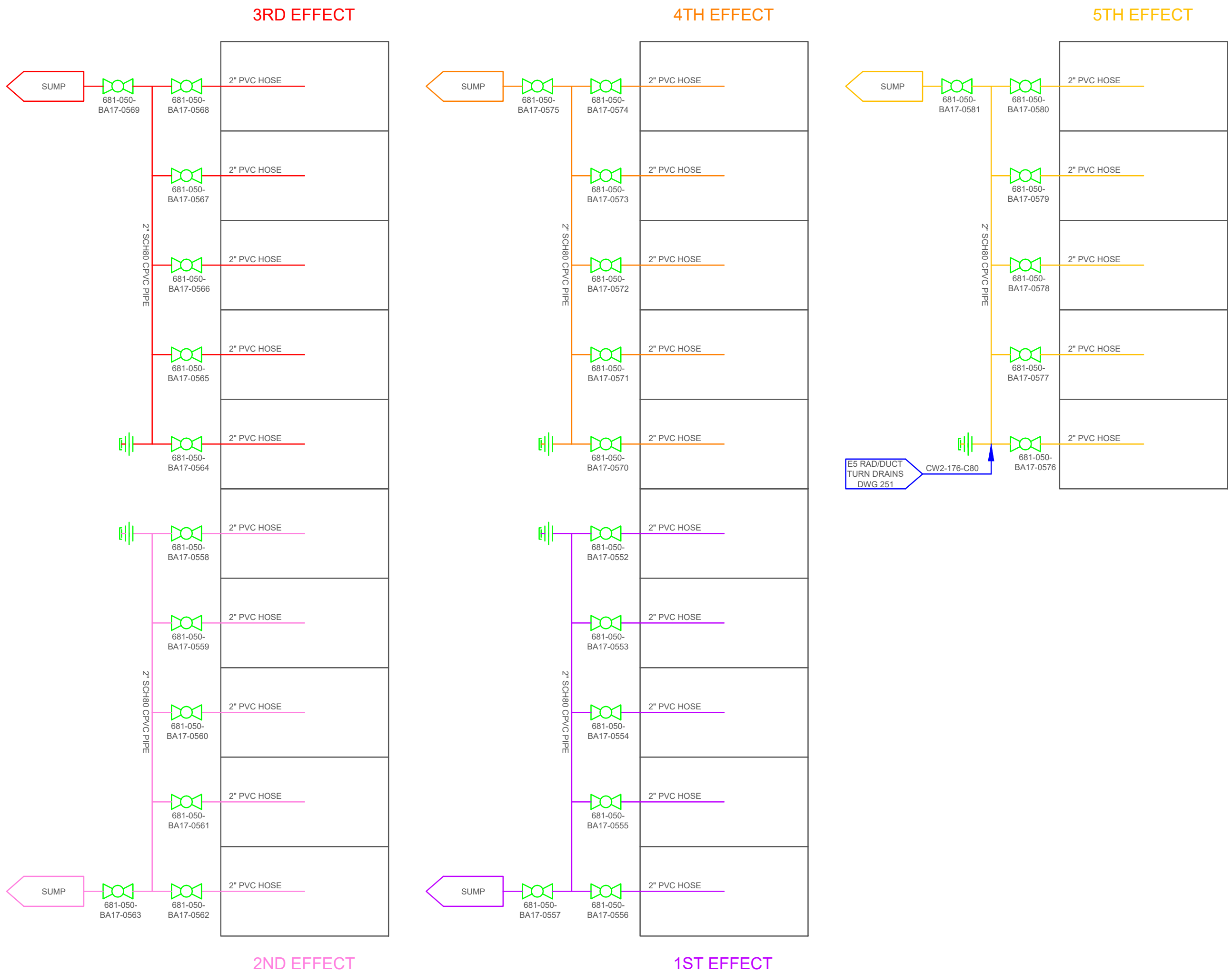
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	PINCH VALVES ADDED, AS BUILT UPDATES	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 165: EH2 SOLIDS EXTRACTION

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_SM1_DWG_165		
JOB/CO NO:	(JOB NO.)		
SHEET:	24 OF117		



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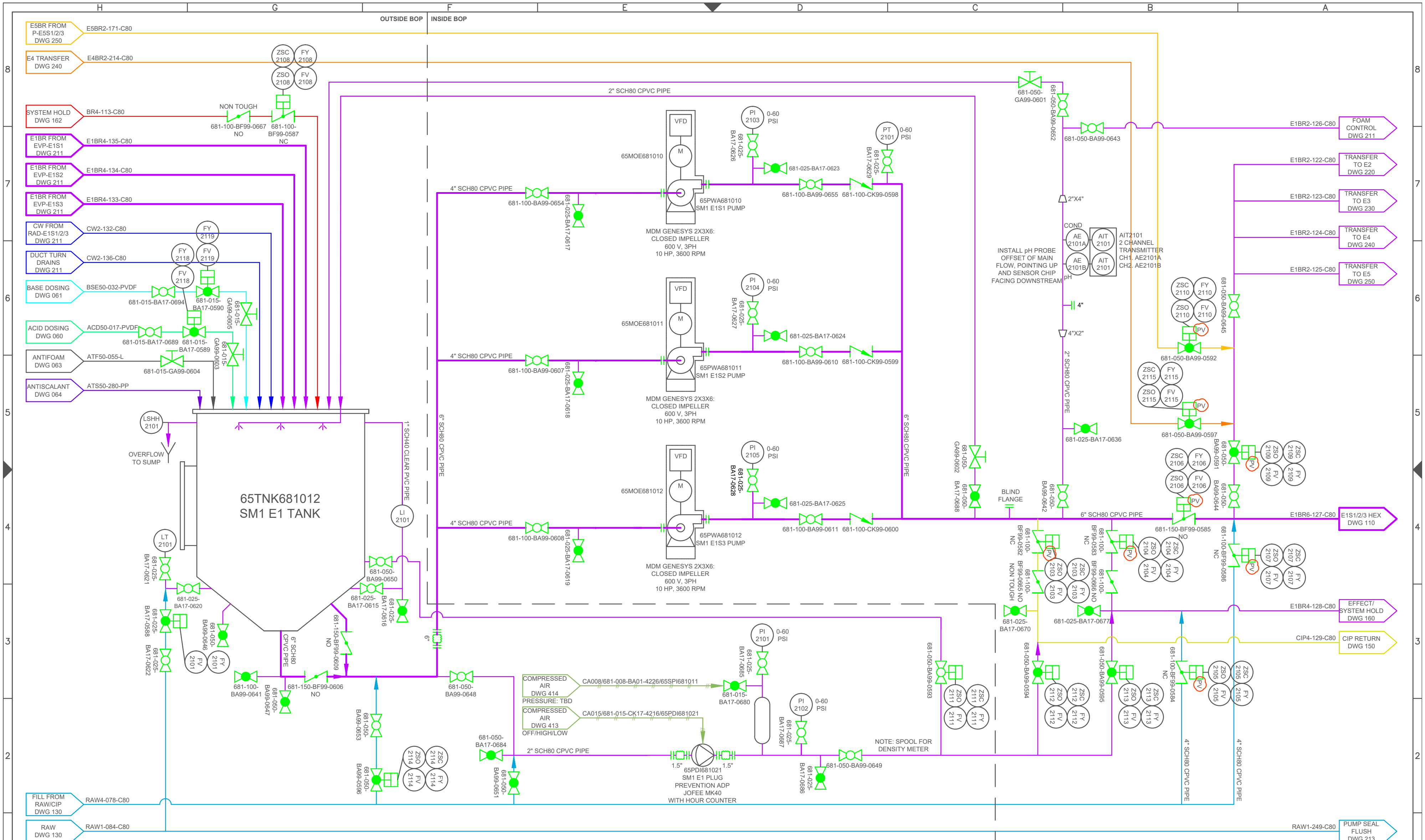
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 180: DRIP TRAY

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO:	SW_EN_SM_AEM–01_PID_SM1_DWG_180
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO:	(JOB NO.)
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET:	25 OF117

REVISION: N



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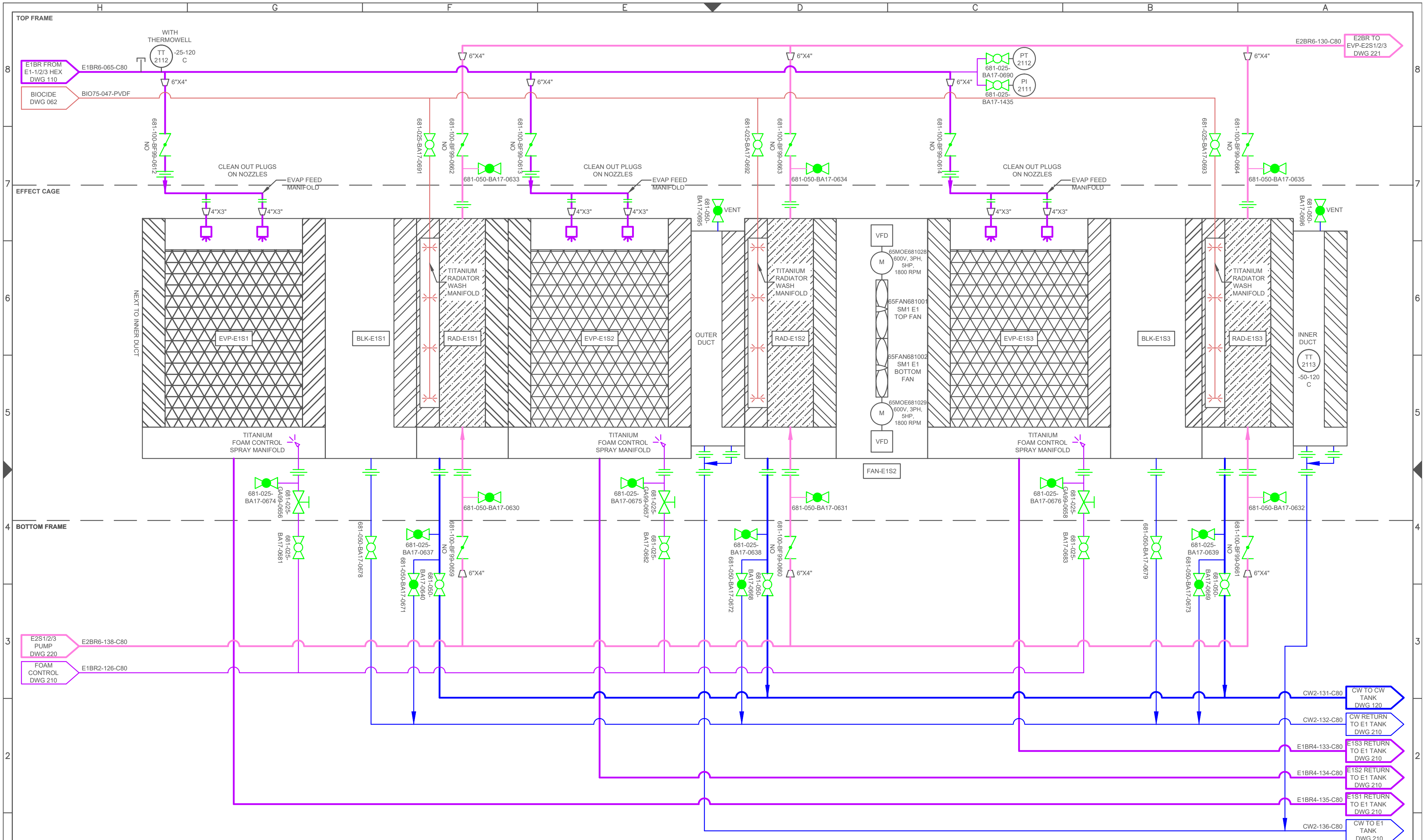
N	02–FEB–2018	PINCH VALVES ADDED	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	TANK BOTTOM PUMP INLET VALVE, P3 RECIRC VALVE CHANGED TO NO	JLAU
M	20–APR–2018	P3 INLET UPDATED	JLAU

TITLE: (SM1) 210: EFFECT 1 TANK AND PUMPS

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM-01_PID_SM1_DWG_210	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 26 OF117	



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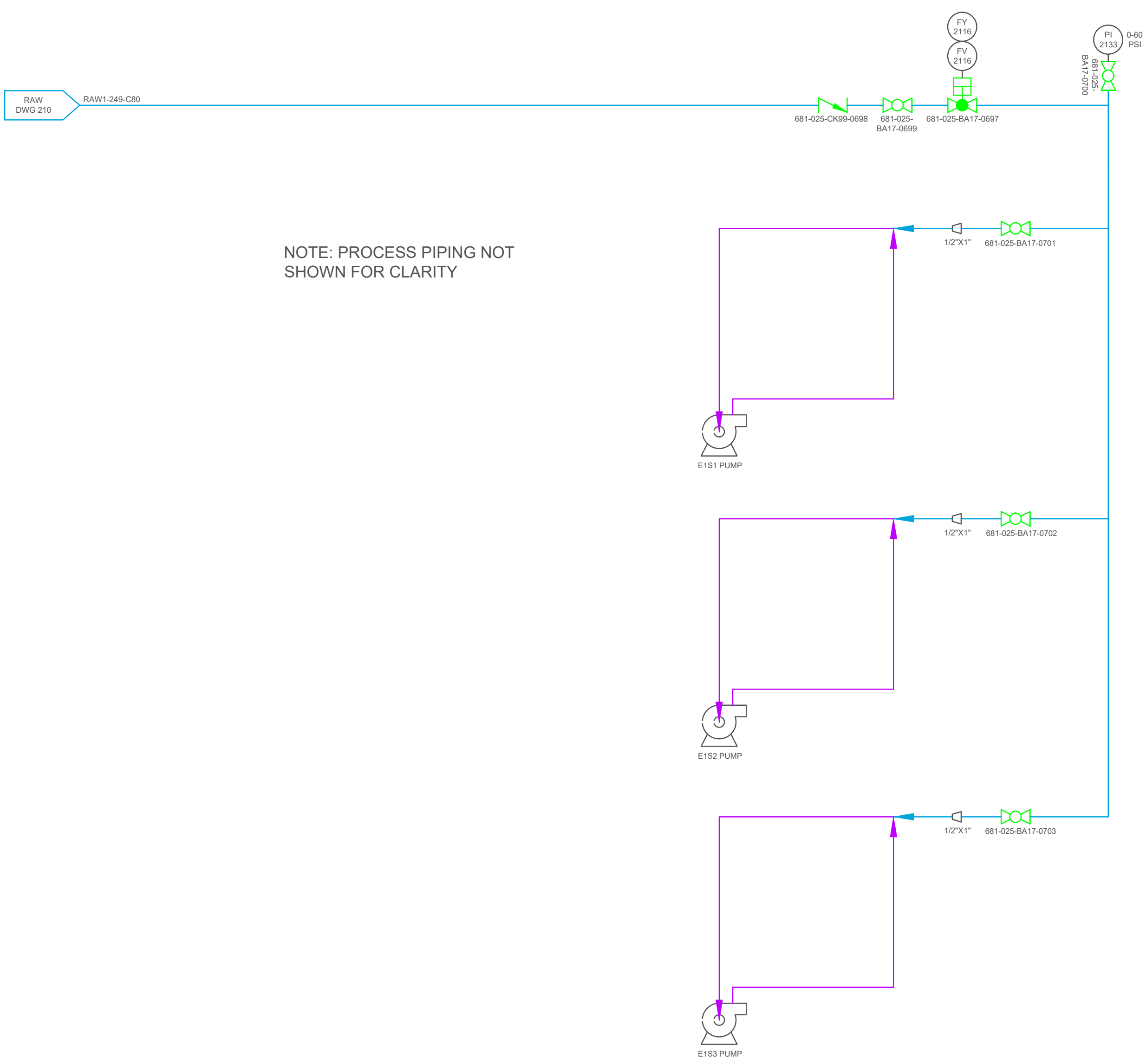
N	02–FEB–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 211: EFFECT 1 MODULES

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION:	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
DWG. NO:	SW_EN_SM_AEM–01_PID_SM1_DWG_211		
CHECKED BY:	MLOW	DATE:	05–SEP–2017
JOB/CO NO:	(JOB NO.)		
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
SHEET:	27 OF117		



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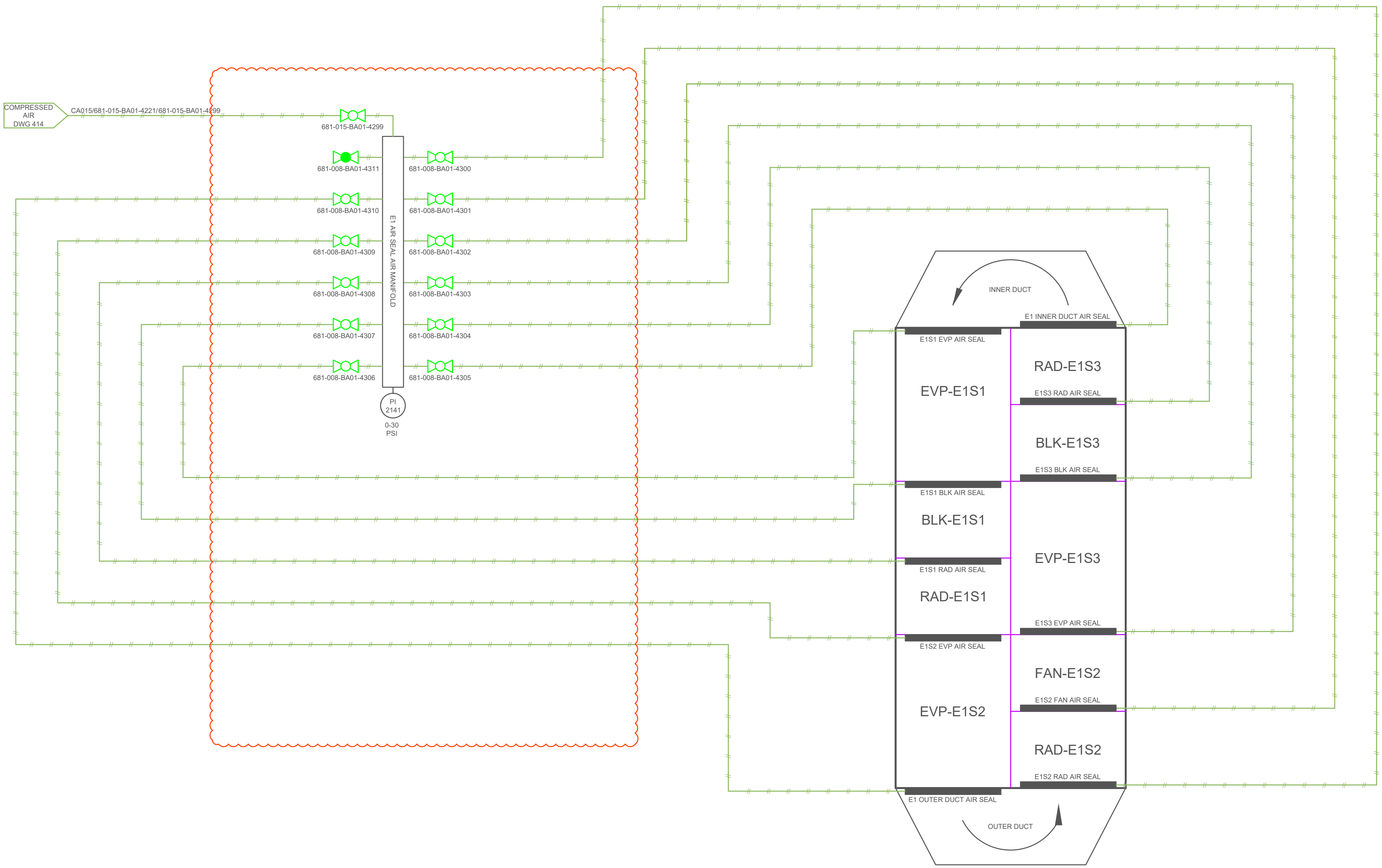
LTR	DATE	DESCRIPTION	REV. BY:
N	02–FEB–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 213: EFFECT 1 PUMP SEAL FLUSH

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_SM1_DWG_213	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 28 OF117	



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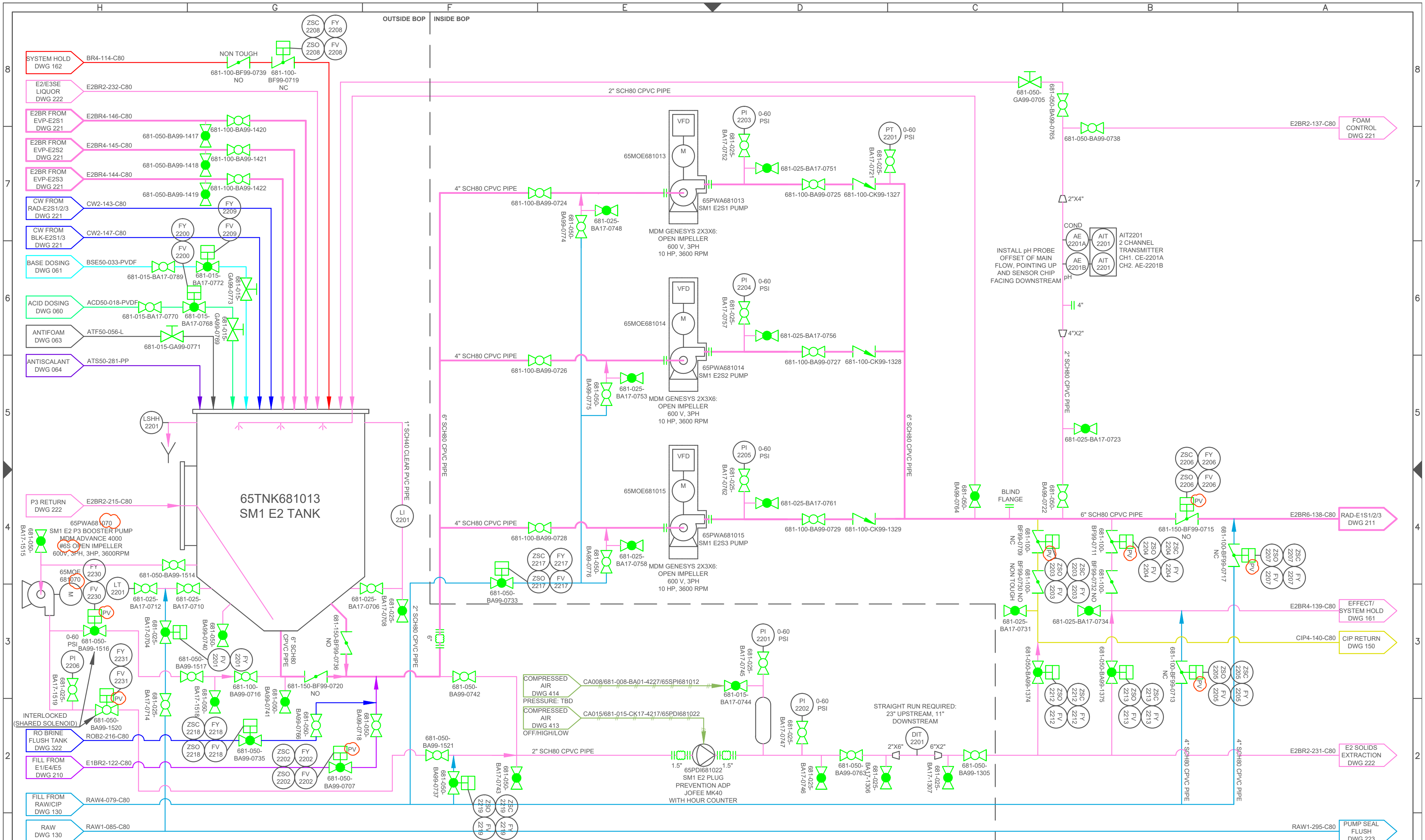
N	02–FEB–2018	UPDATED MANIFOLD	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 214: EFFECT 1 AIR SEALS

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_SM1_DWG_214	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 29 OF117	



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	K	23–FEB–2018	NO CHANGES	–
	L	16–MAR–2018	TANK SIDE PUMP INLET VALVE CHANGED TO NO	JLAU
DO NOT SCALE DRAWING	M	20–APR–2018	P3 INLET UPDATED, P3 BOOSTER PUMP ADDED	JLAU

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TITLE: (SM1) 220: EFFECT 2 TANK AND PUMPS

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM-01_PID_SM1_DWG_220	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
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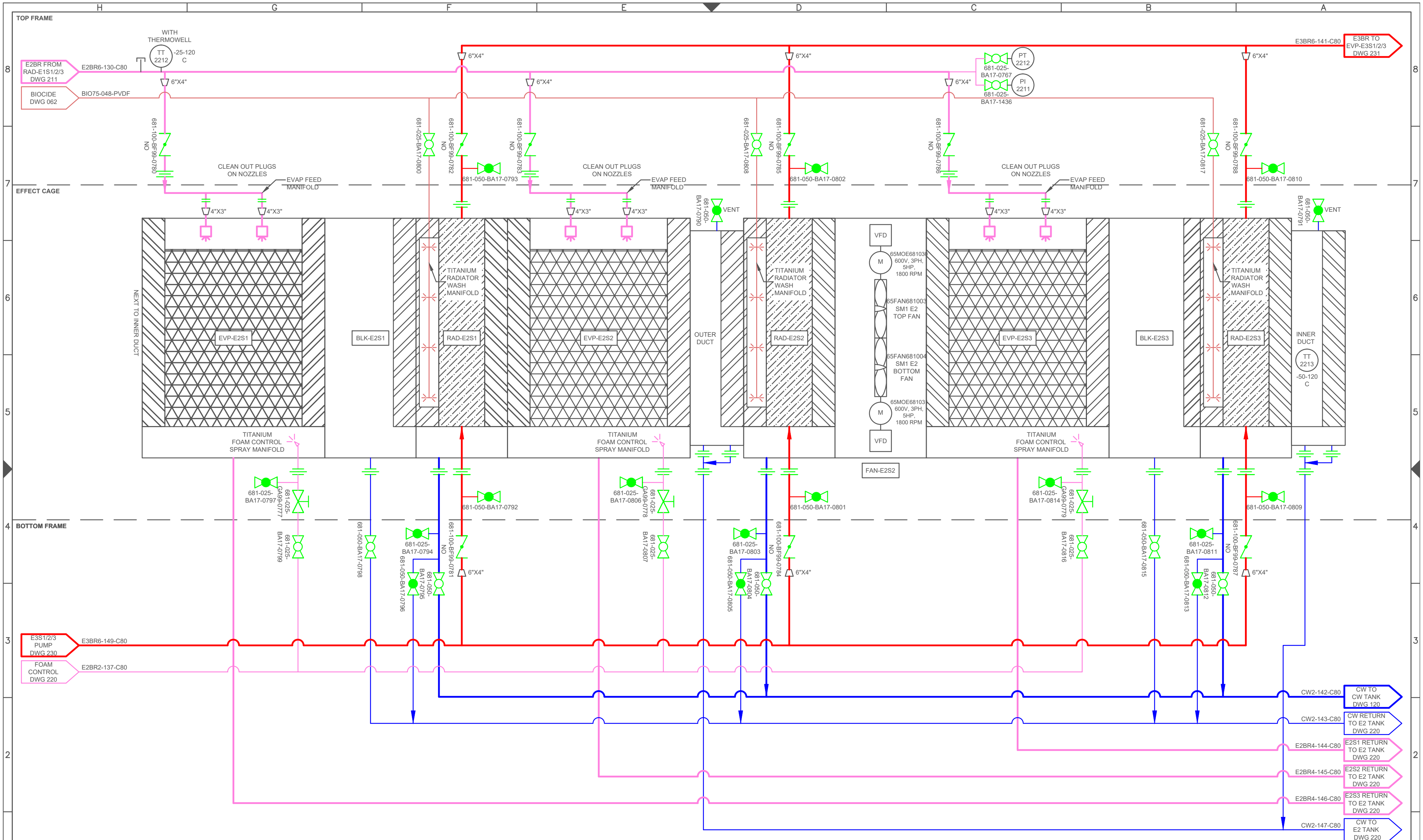

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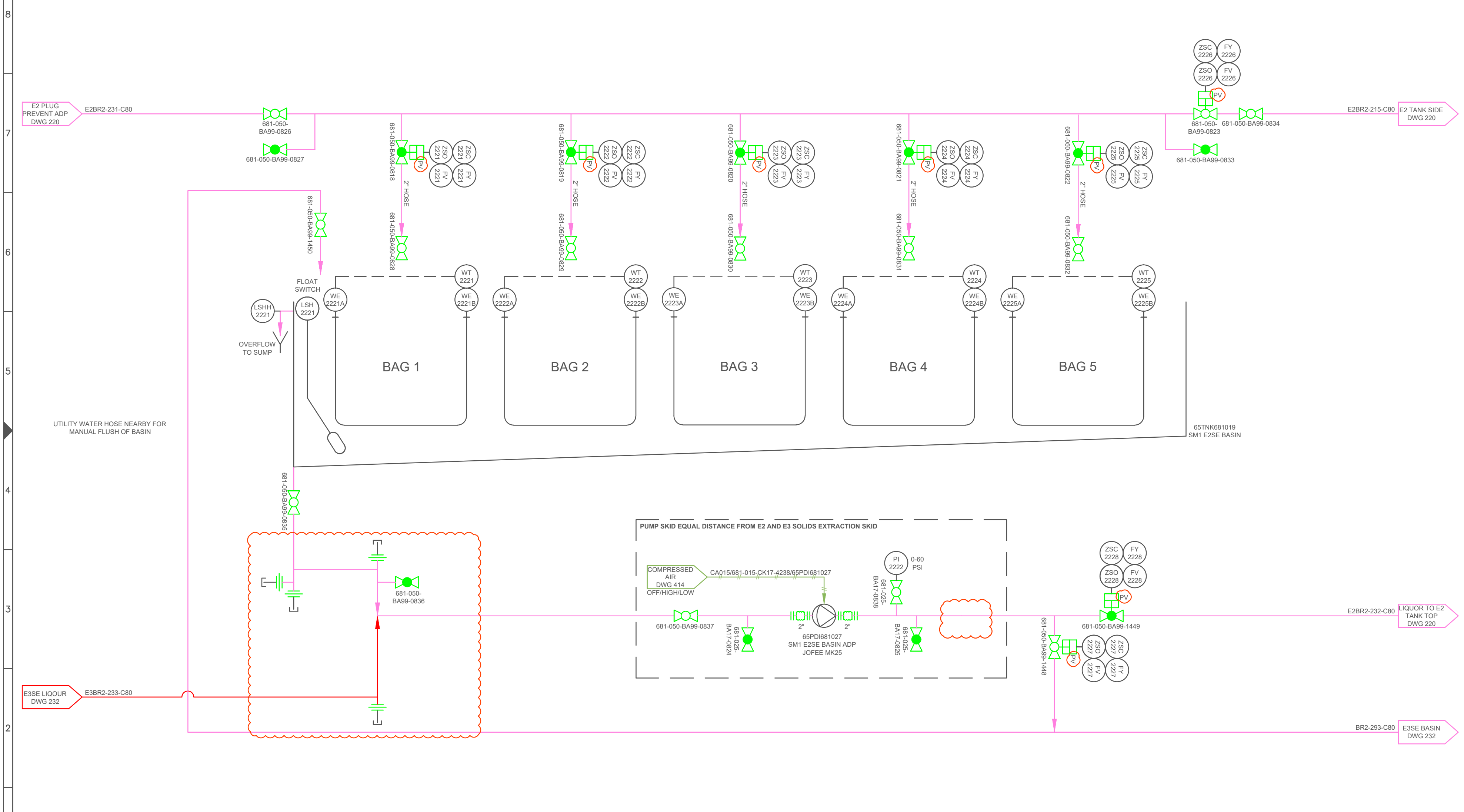
LTR	DATE	DESCRIPTION	REV. BY:
N	02–FEB–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 221: EFFECT 2 MODULES

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_SM1_DWG_221		
JOB/CO NO:	(JOB NO.)		
SHEET:	31 OF117		

RIGHT HAND SIDE OF BASIN PUMP LOOKING FROM FORKLIFT ACCESS SIDE



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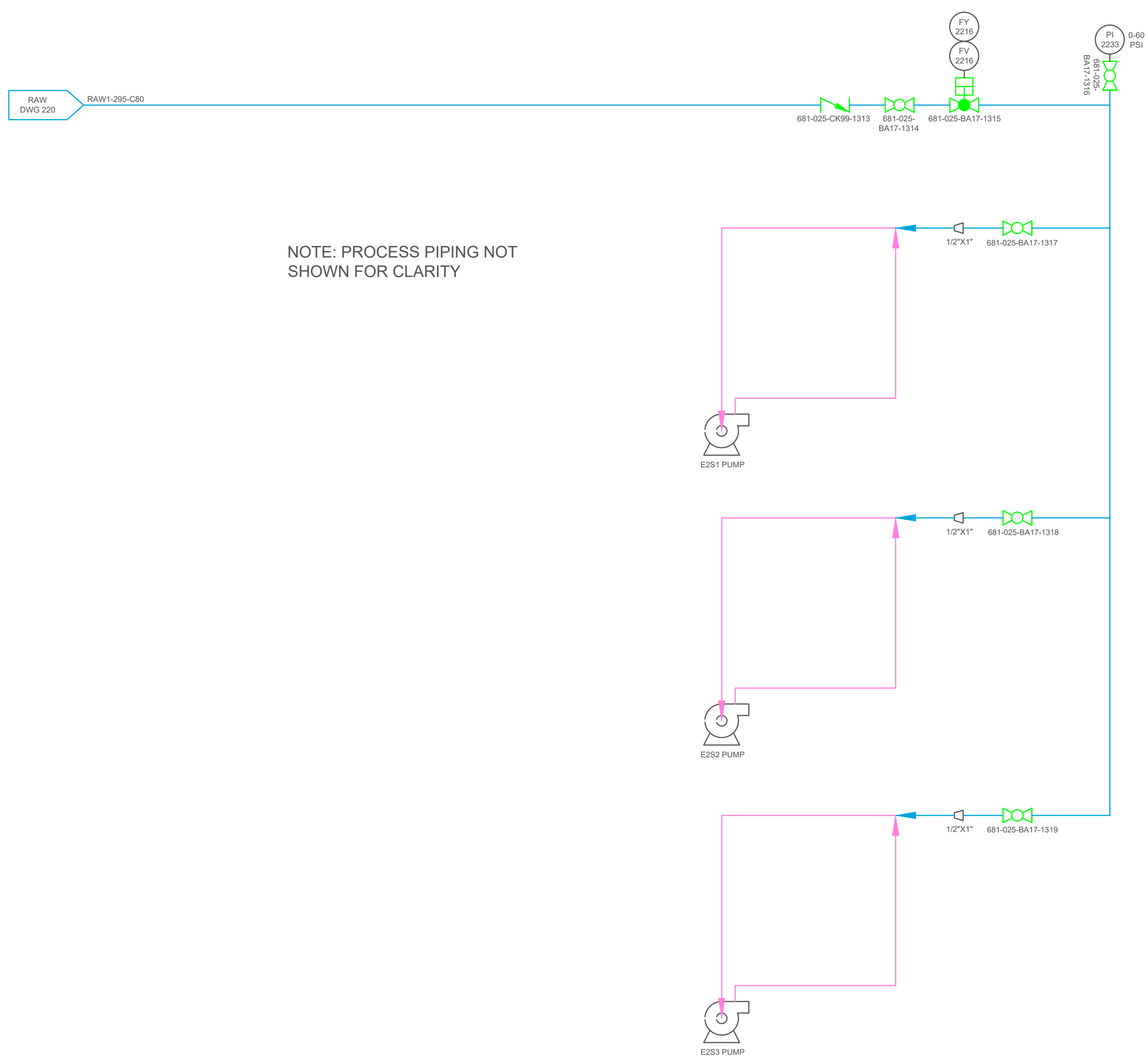
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	AS BUILT UPDATES	JLAU

TITLE: (SM1) 222: EFFECT 2 SOLIDS EXTRACTION

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_SM1_DWG_222		
JOB/CO NO:	(JOB NO.)	SHEET:	32 OF117



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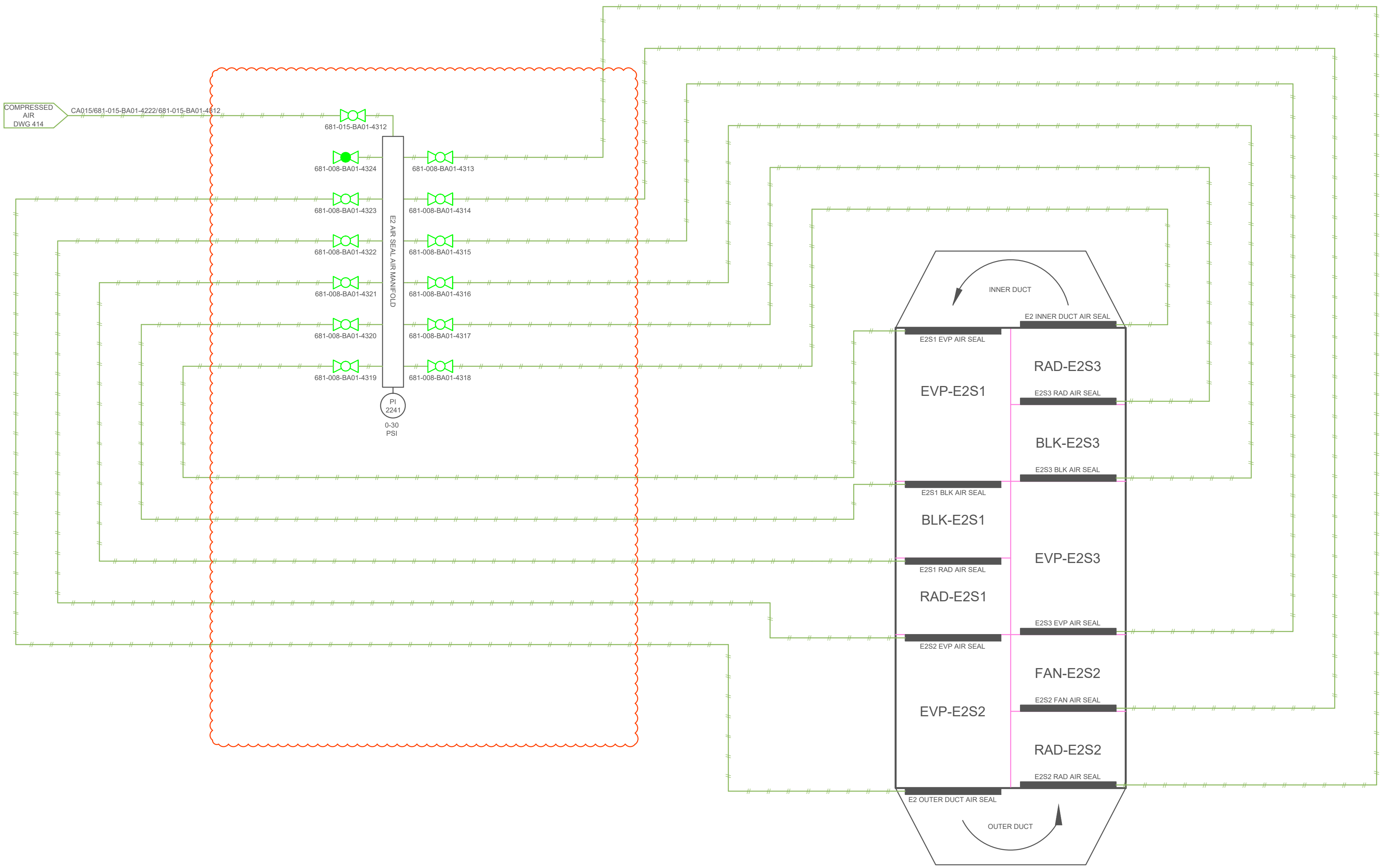
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 223: EFFECT 2 PUMP SEAL FLUSH

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_SM1_DWG_223		
JOB/CO NO:	(JOB NO.)		
SHEET:	33 OF117		



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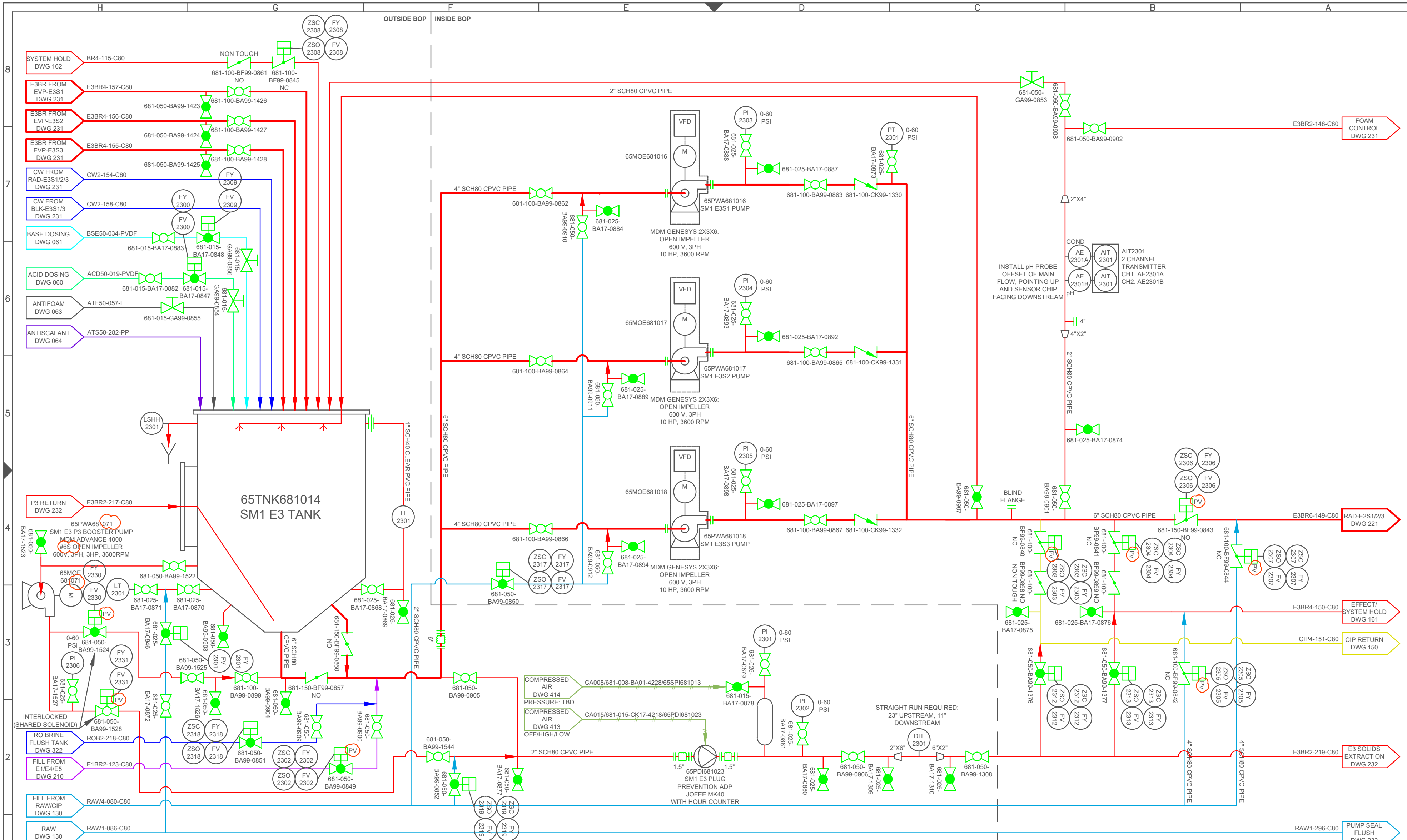
LTR	DATE	DESCRIPTION	REV. BY:
N	02–FEB–2018	UPDATED MANIFOLD	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 224: EFFECT 2 AIR SEALS

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_SM1_DWG_224	REVISION	N
JOB/CO NO:	(JOB NO.)	SHEET:	34 OF117



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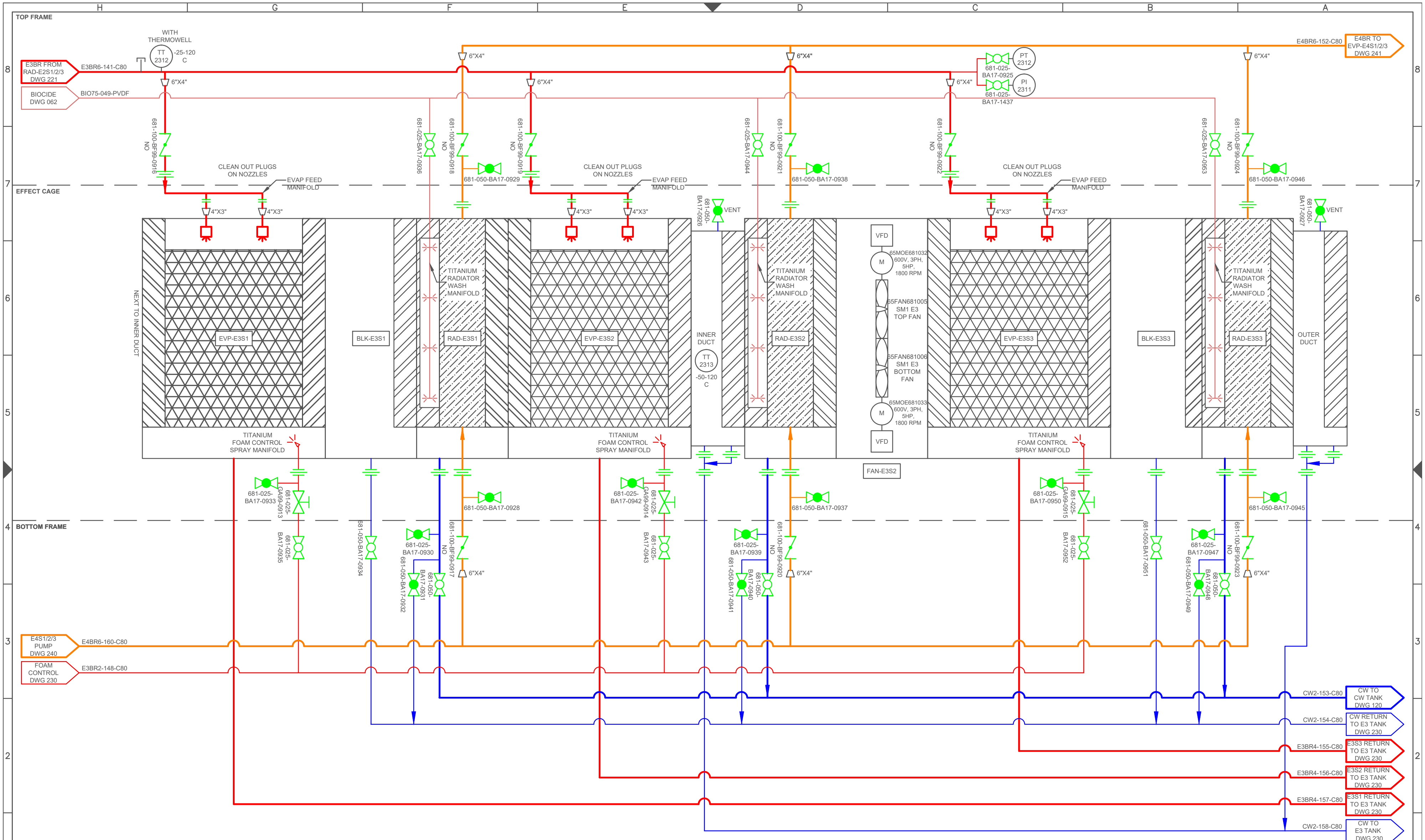
		K	23–FEB–2018	NO CHANGES	–
		L	16–MAR–2018	TANK SIDE PUMP INLET VALVE CHANGED TO NO	JLAU
	DO NOT SCALE DRAWING	M	20–APR–2018	P3 INLET UPDATED, P3 BOOSTER PUMP ADDED	JLAU

TITLE: (SM1) 230: EFFECT 3 TANK AND PUMPS			
PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM-01_PID_SM1_DWG_230	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 35 OF117	



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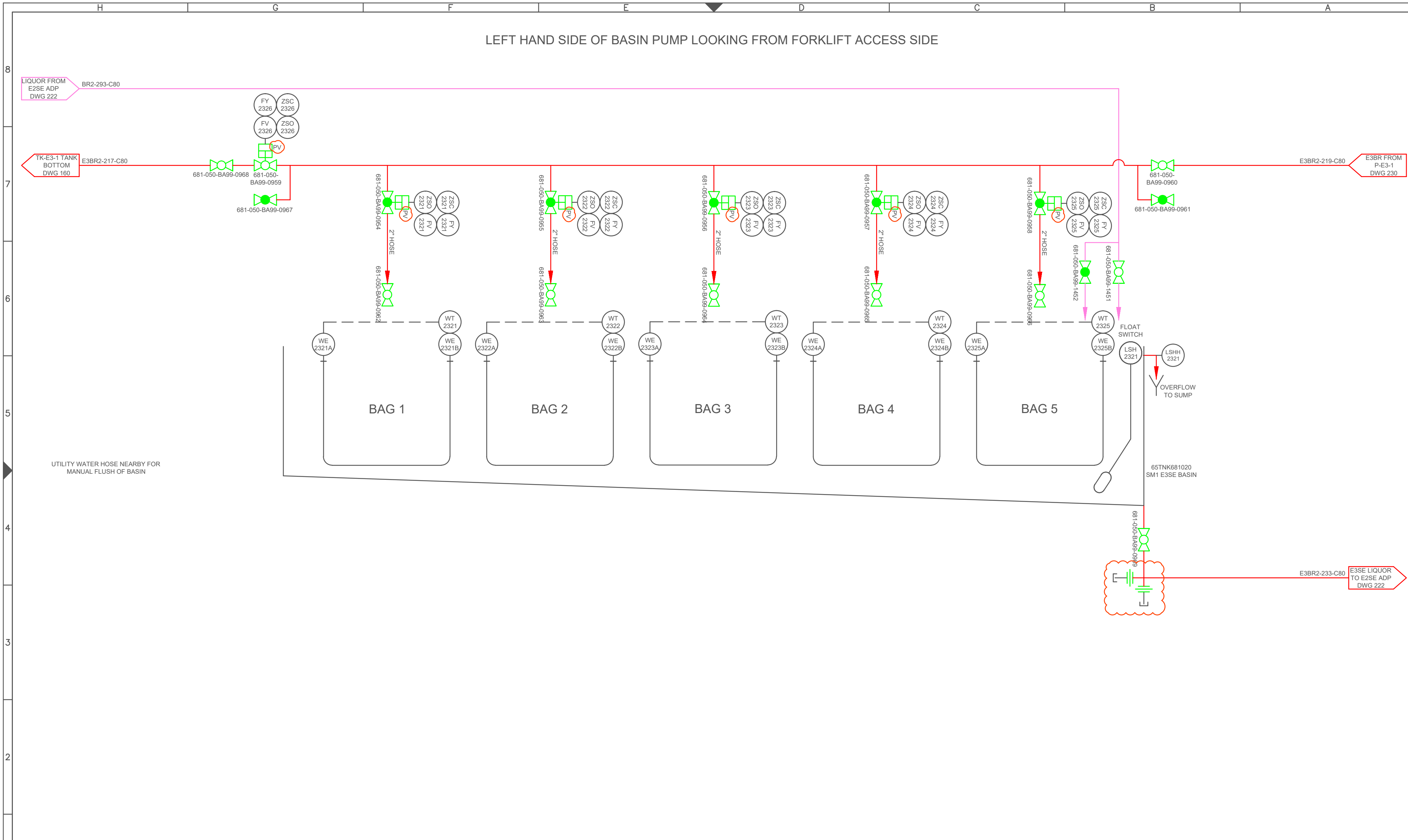
LTR	DATE	DESCRIPTION	REV. BY:
N	02–FEB–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 231: EFFECT 3 MODULES

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO:	SW_EN_SM_AEM–01_PID_SM1_DWG_231
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO:	(JOB NO.)
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET:	36 OF117



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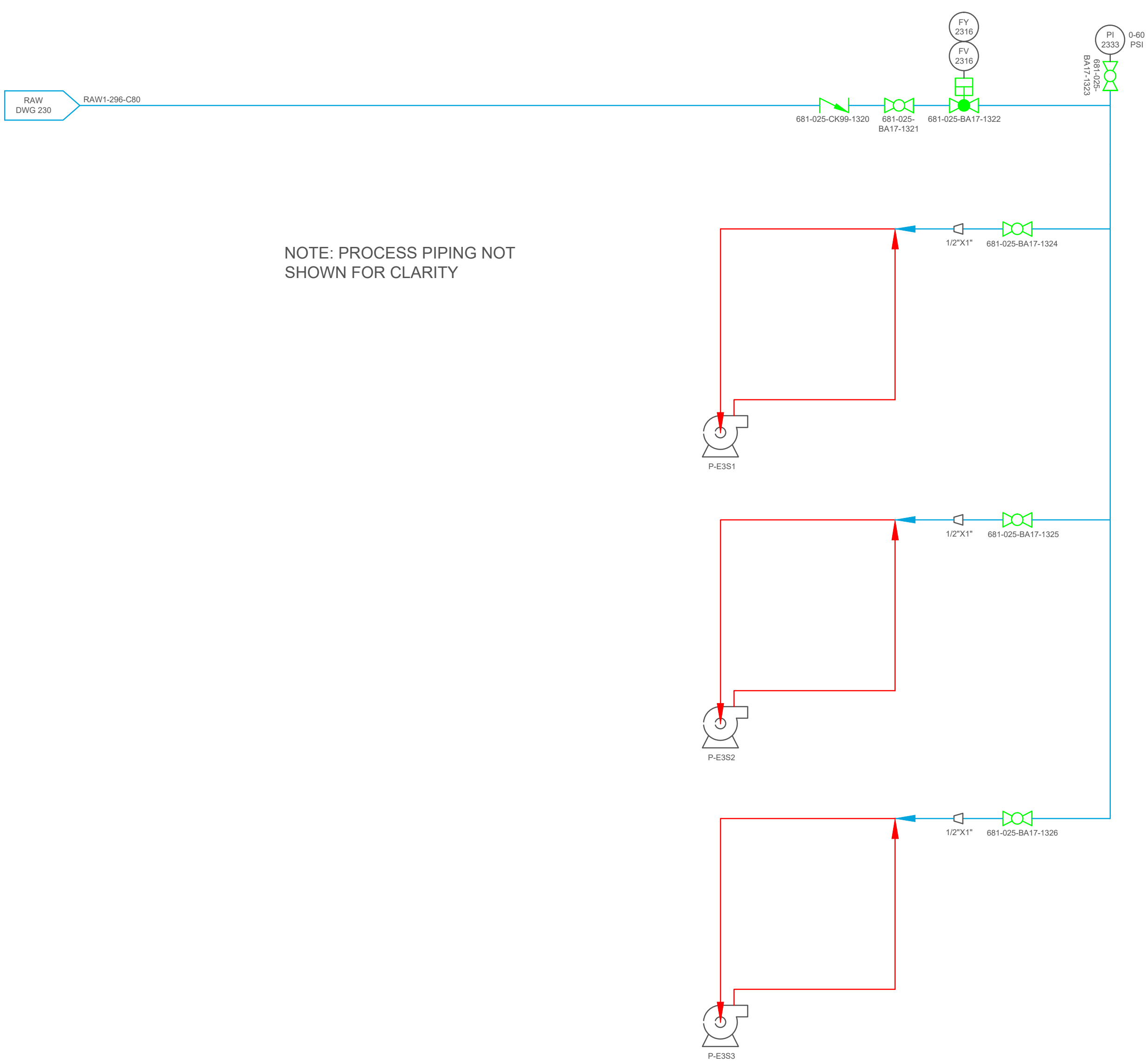
LTR	DATE	DESCRIPTION	REV. BY:
N	02–FEB–2018	PINCH VALVES ADDED, AS BUILT UPDATES	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	AS BUILT UPDATES	JLAU

TITLE:	(SM1) 232: EFFECT 3 SOLIDS EXTRACTION		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_SM1_DWG_232	JOB/CO NO:	(JOB NO.)
SHEET:	37 OF117		



NOTE: PROCESS PIPING NOT SHOWN FOR CLARITY

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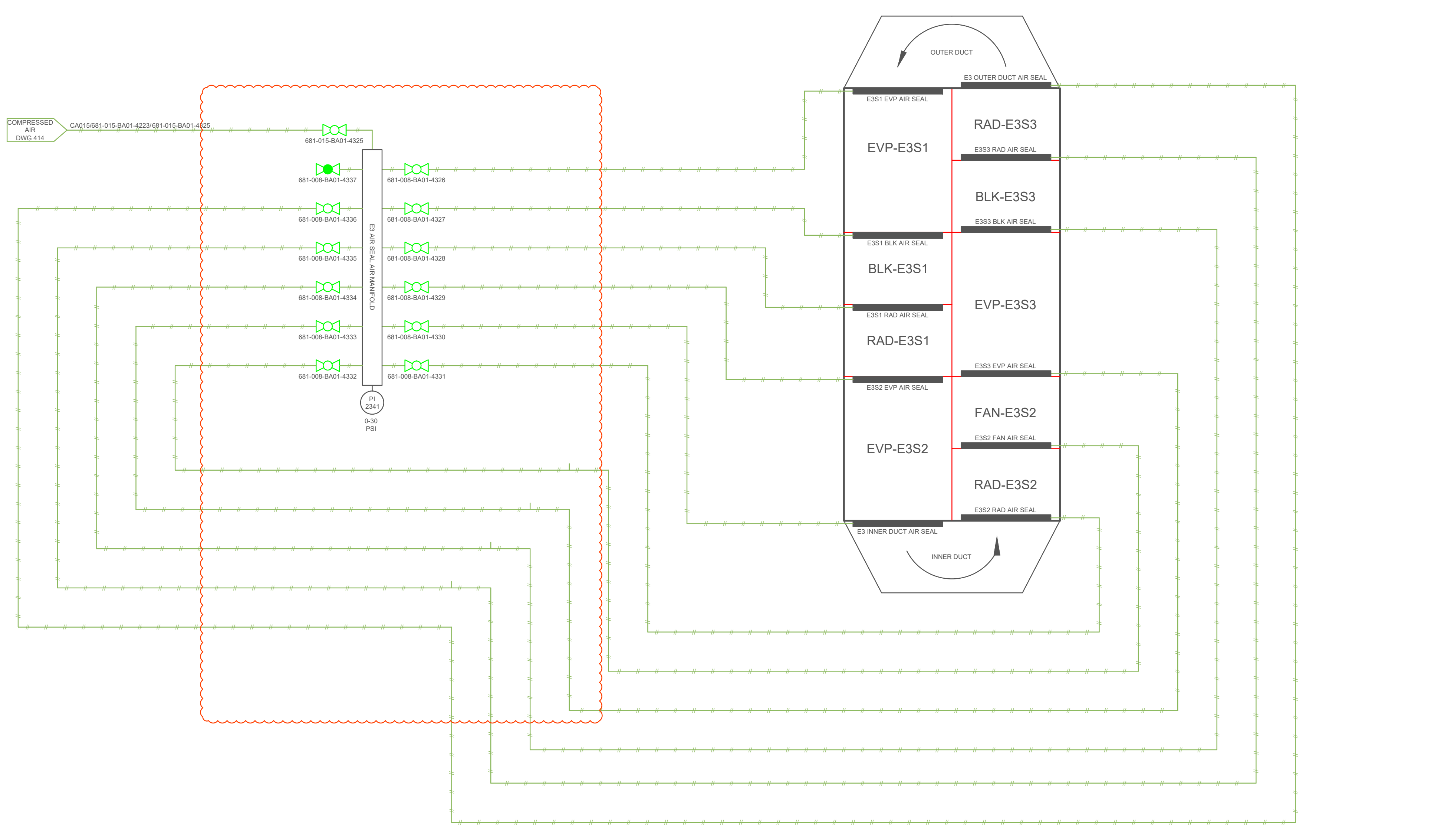
LTR	DATE	DESCRIPTION	REV. BY:
N	02–FEB–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 233: EFFECT 3 PUMP SEAL FLUSH

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_SM1_DWG_233		
JOB/CO NO:	(JOB NO.)		
SHEET:	38 OF117		



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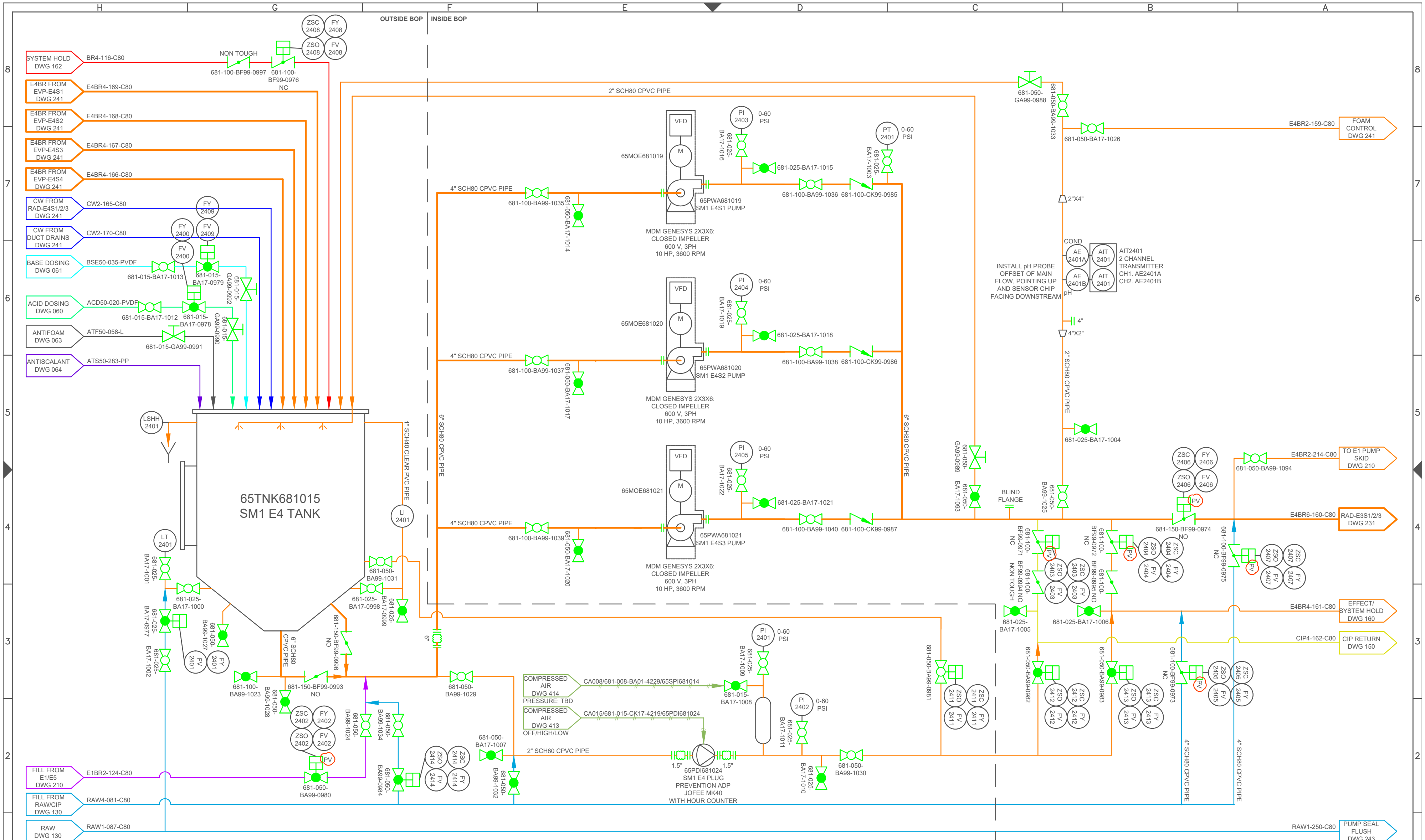
LTR	DATE	DESCRIPTION	REV. BY:
N	02–FEB–2018	UPDATED MANIFOLD	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 234: EFFECT 3 AIR SEALS

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_SM1_DWG_234	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 39 OF117	



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	K	23–FEB–2018	NO CHANGES	–
	L	16–MAR–2018	TANK BOTTOM PUMP INLET VALVE, P3 RECIRC VALVE CHANGED TO NO	JLAU
DO NOT SCALE DRAWING	M	20–APR–2018	P3 INLET UPDATED, SET PUMP INLET UPDATED	JLAU

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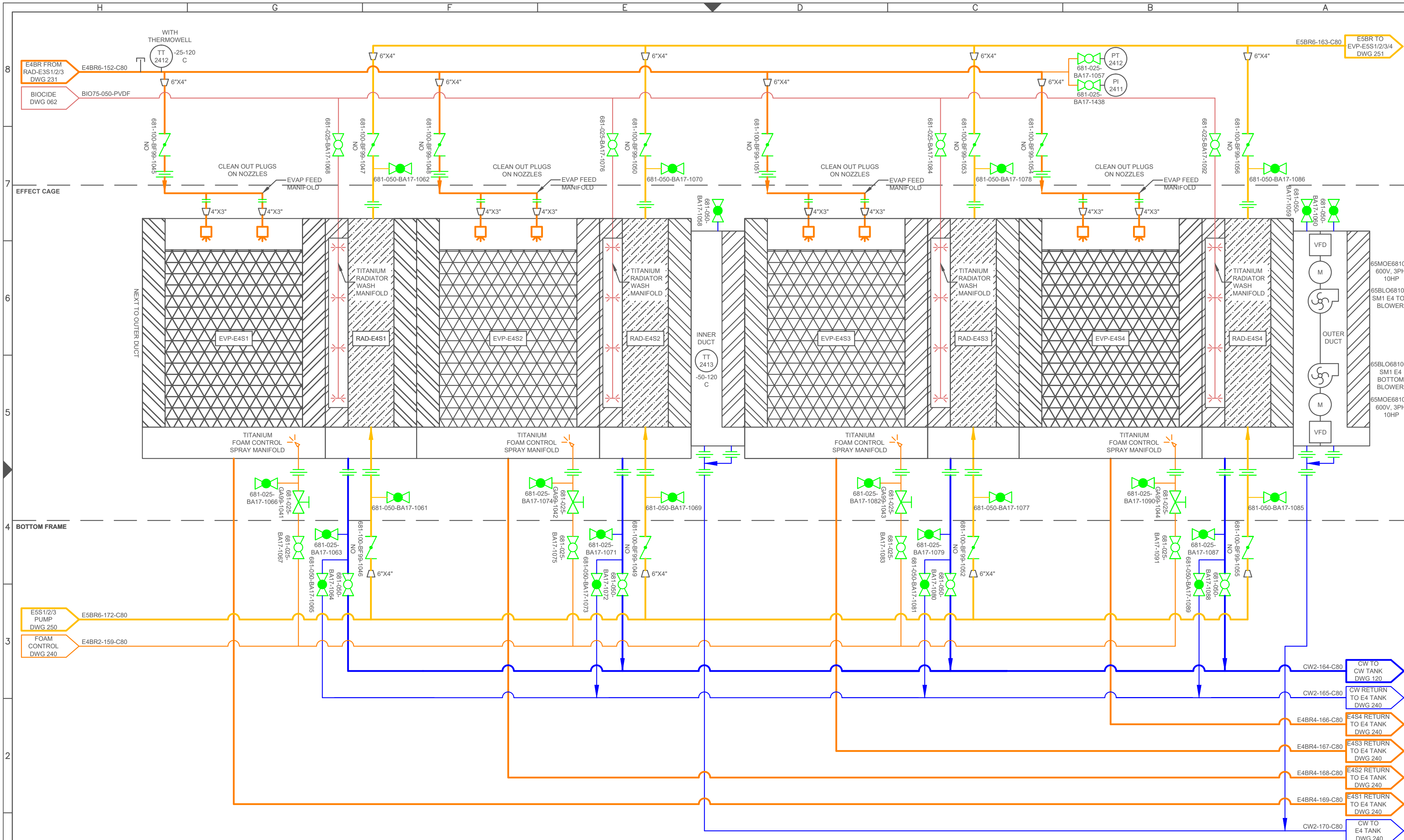
TITLE:	(SM1) 240: EFFECT 4 TANK AND PUMPS		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM-01_PID_SM1_DWG_240		
JOB/CO NO:	(JOB NO.)		
SHEET:	40 OF117		



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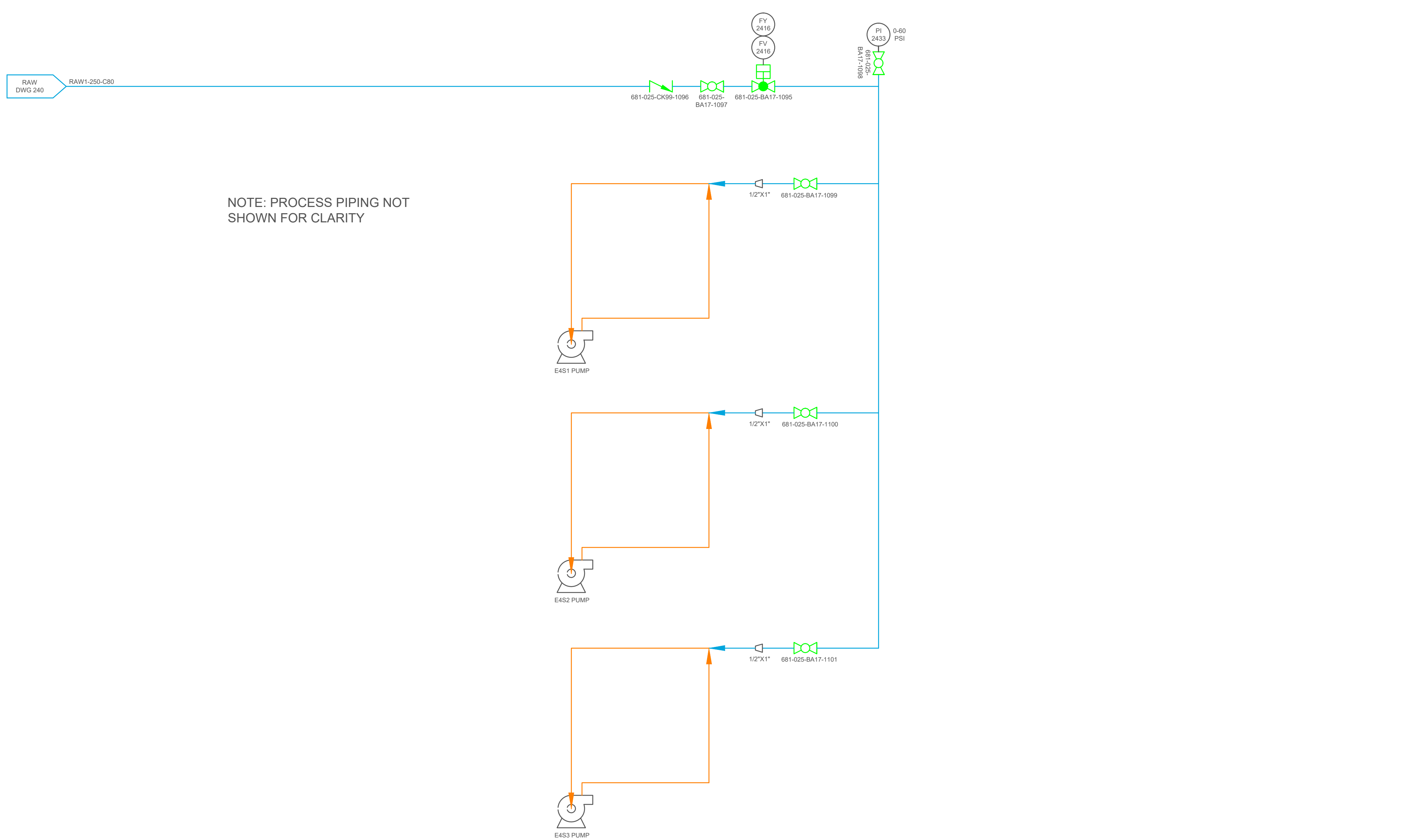
LTR	DATE	DESCRIPTION	REV. BY:
N	02–FEB–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 241: EFFECT 4 MODULES

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION:	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
DWG. NO:	SW_EN_SM_AEM–01_PID_SM1_DWG_241		
CHECKED BY:	MLOW	DATE:	05–SEP–2017
JOB/CO NO:	(JOB NO.)		
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
SHEET:	41 OF117		



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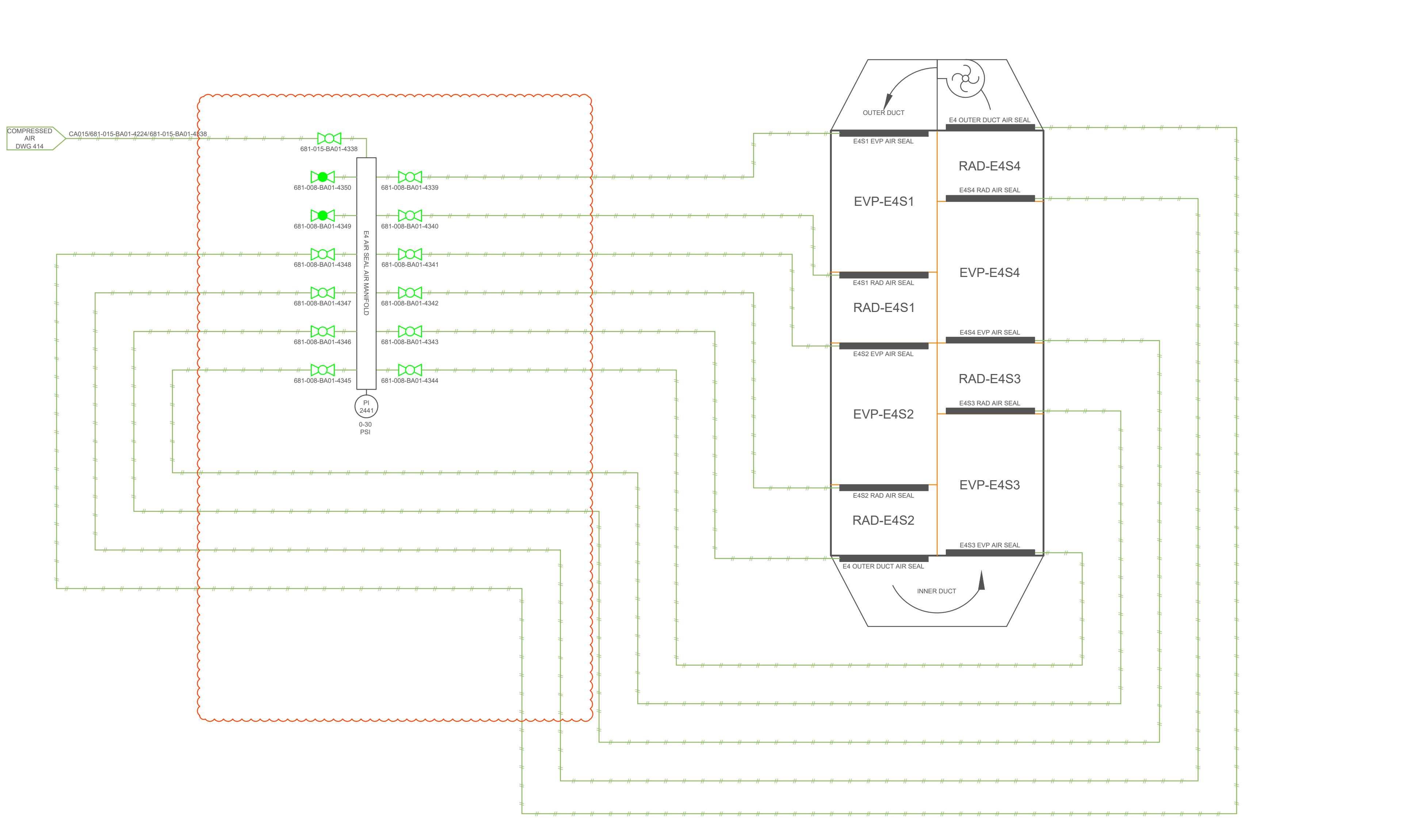
LTR	DATE	DESCRIPTION	REV. BY:
N	02–FEB–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 243: EFFECT 4 PUMP SEAL FLUSH

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_SM1_DWG_243		
JOB/CO NO:	(JOB NO.)		
SHEET:	42 OF117		



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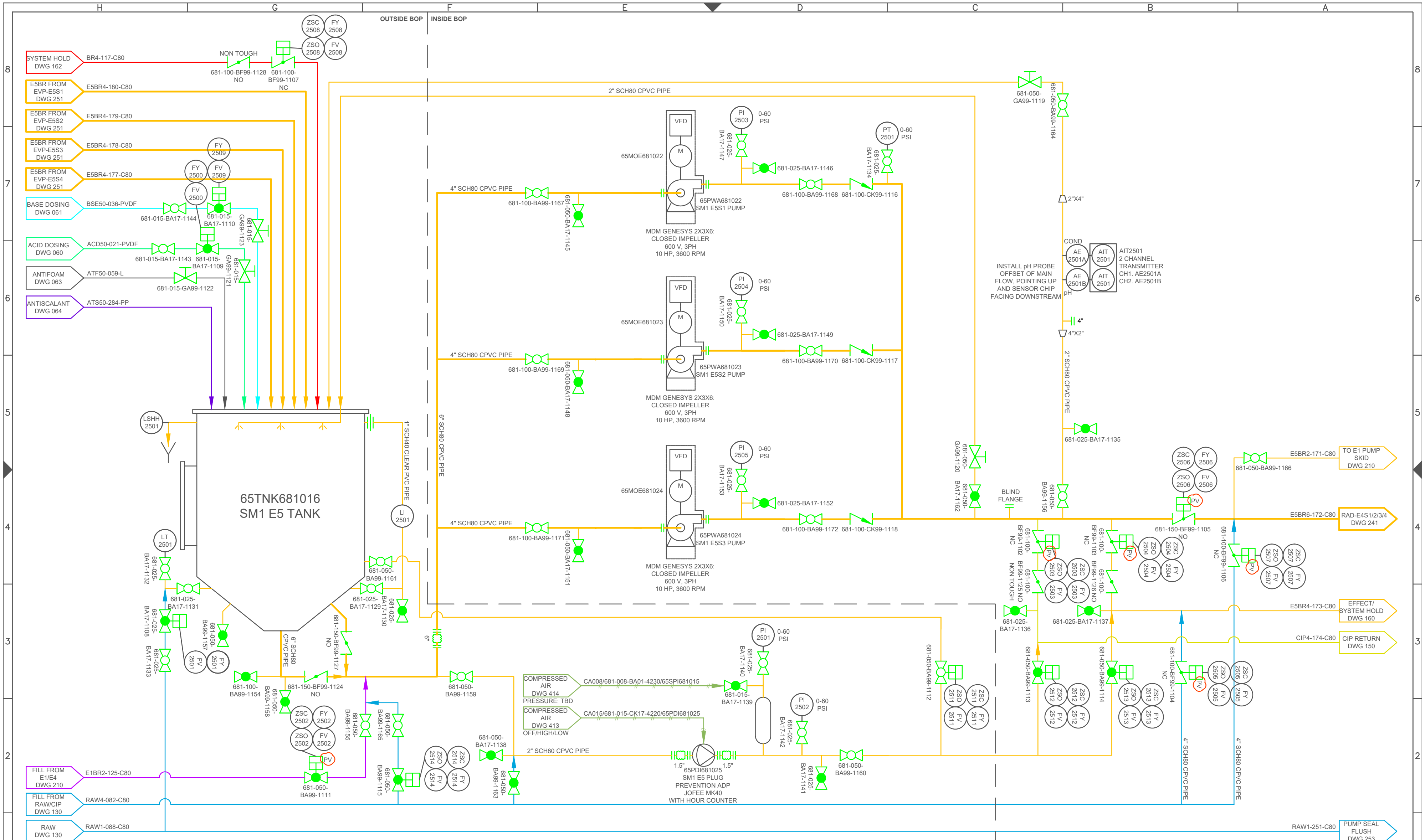
LTR	DATE	DESCRIPTION	REV. BY:
N	02–FEB–2018	UPDATED MANIFOLD	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 244: EFFECT 4 AIR SEALS

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_SM1_DWG_244		
JOB/CO NO:	(JOB NO.)		
SHEET:	43 OF117		



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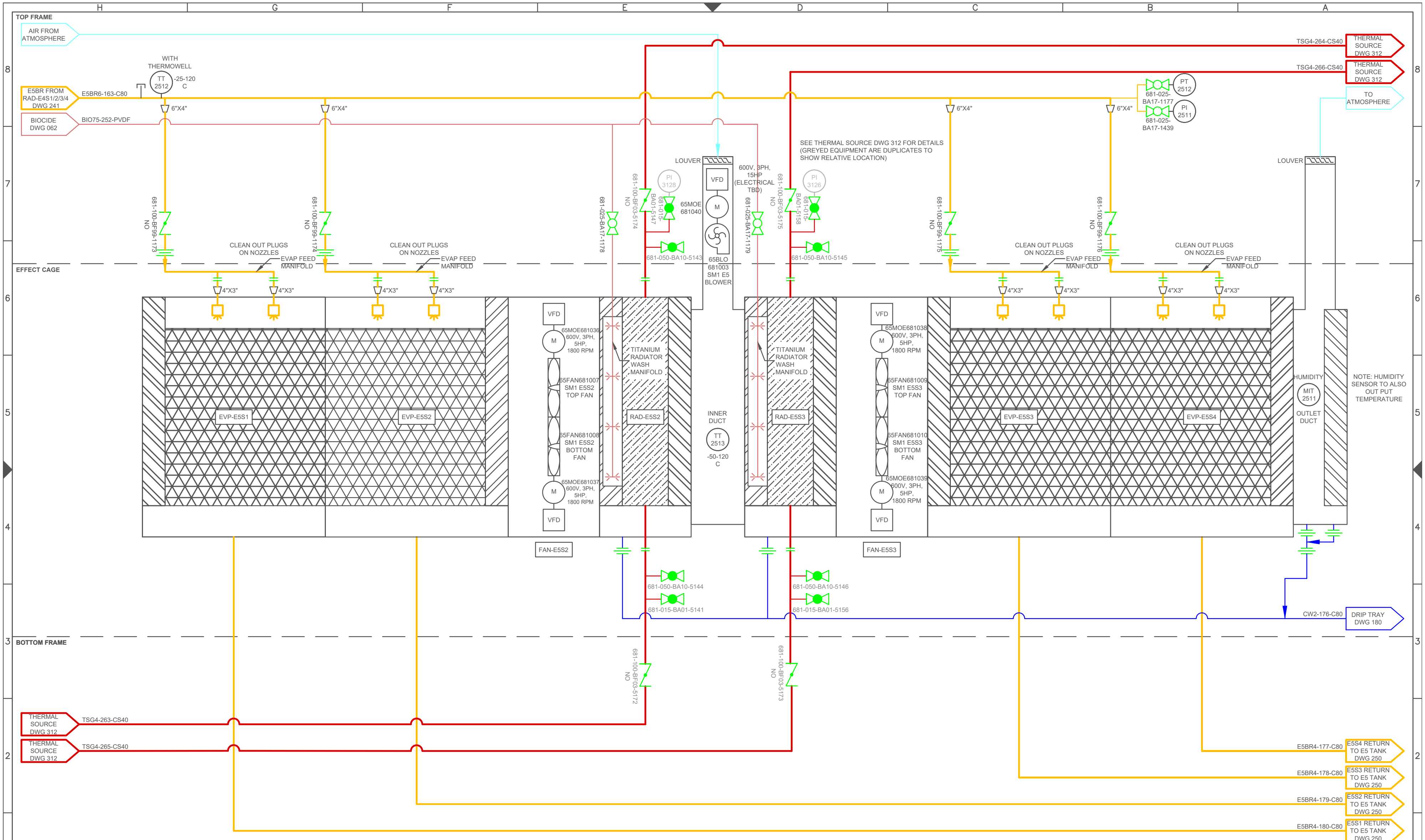
LTR	DATE	DESCRIPTION	REV. BY:
N	02–FEB–2018	PINCH VALVES ADDED	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	TANK BOTTOM PUMP INLET VALVE, P3 RECIRC VALVE CHANGED TO NO	JLAU
M	20–APR–2018	P3 INLET UPDATED, SET PUMP INLET UPDATED	JLAU

TITLE: (SM1) 250: EFFECT 5 TANK AND PUMPS

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES	REVISION:	N
PREPARED BY:	JLAU	DATE:	01–SEP–2017	DWG. NO:	SW_EN_SM_AEM–01_PID_SM1_DWG_250
CHECKED BY:	MLOW	DATE:	05–SEP–2017	JOB/CO NO:	(JOB NO.)
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE	SHEET:	44 OF 117



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LTR	DATE	DESCRIPTION	REV. BY:
N	02–FEB–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 251: EFFECT 5 MODULES

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_SM1_DWG_251	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
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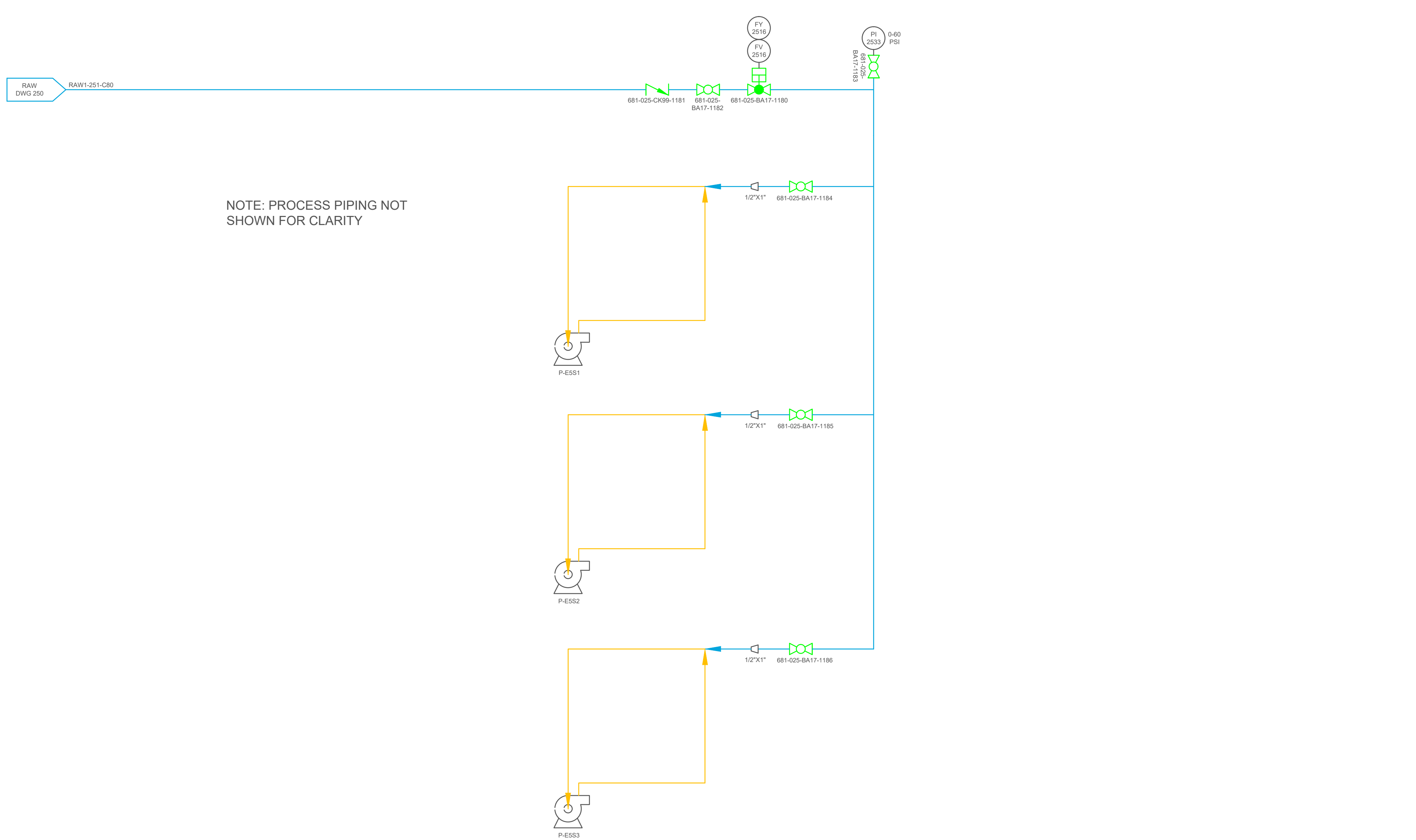

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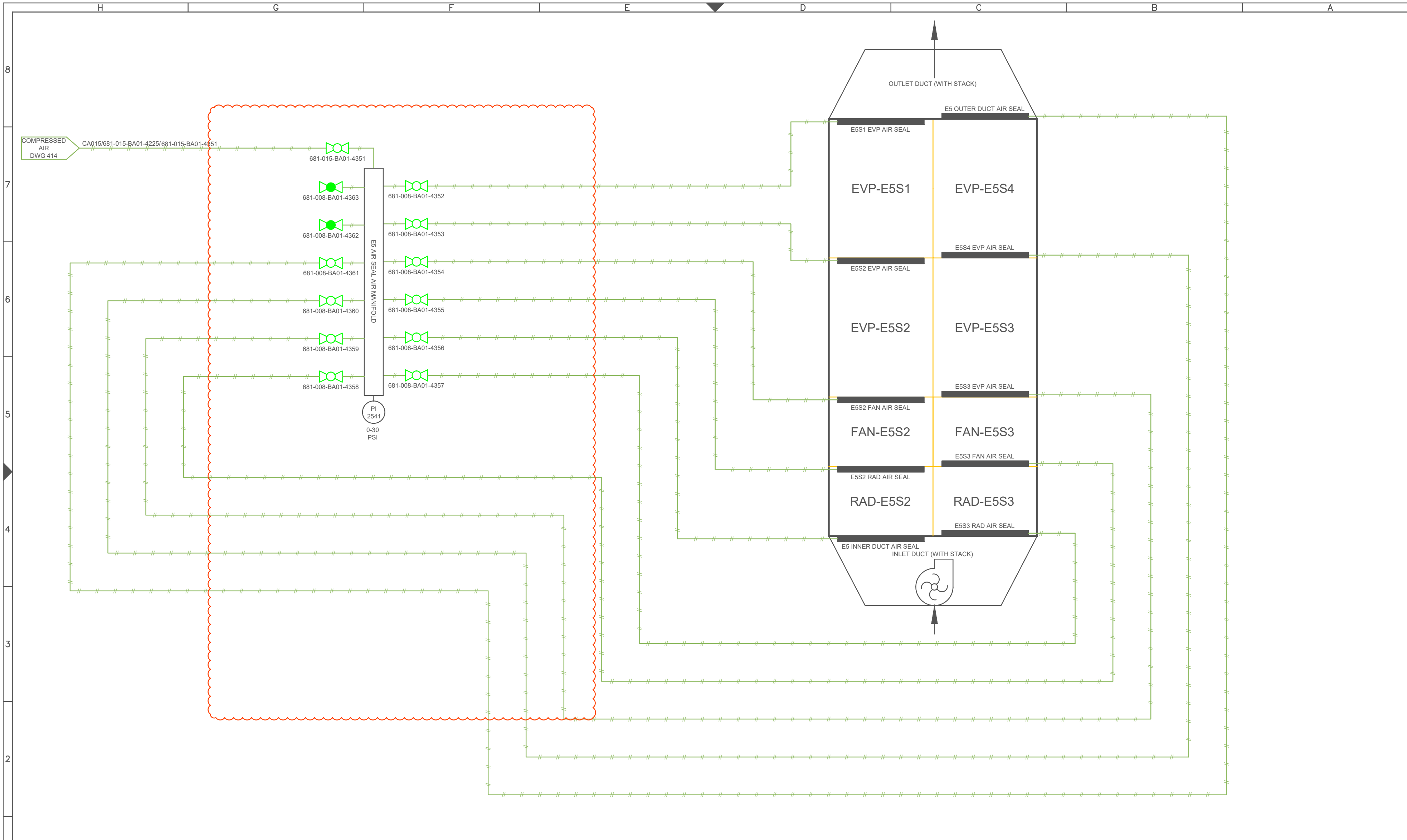
LTR	DATE	DESCRIPTION	REV. BY:
N	02–FEB–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 253: EFFECT 5 PUMP SEAL FLUSH

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_SM1_DWG_253		
JOB/CO NO:	(JOB NO.)		
SHEET:	46 OF117		



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LTR	DATE	DESCRIPTION	REV. BY:
N	02–FEB–2018	UPDATED MANIFOLD	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (SM1) 254: EFFECT 5 AIR SEALS

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_SM1_DWG_254		
JOB/CO NO:	(JOB NO.)		
SHEET:	47 OF117		

AGNICO EAGLE MINES
P&ID DRAWING PACKAGE

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LTR	DATE	DESCRIPTION	REV. BY:
N	06-JUL-2018	AS MARKED BY REVISION CLOUDS	JLAU
K	23-FEB-2018	NO CHANGES	–
L	16-MAR-2018	AS MARKED BY REVISION CLOUDS	JLAU
M	20-APR-2018	AS MARKED BY REVISION CLOUDS	JLAU

TITLE: COVER SHEET

PROJECT:	SALTMAKER GEN III		CUSTOMER:	AGNICO EAGLE MINES	REVISION: N
PREPARED BY:	JLAU	DATE: 1-SEP-2017	DWG. NO:	COVER SHEET	
CHECKED BY:	MLOW	DATE: 5-SEP-2017	JOB/CO NO:	(JOB NO.)	
APPROVED BY:	APPROVED BY	DATE: APPROVED DATE	SHEET:	# OF #	

DRAWING LIST 1

SHEET NO.	DRAWING NO.	DESCRIPTION
		COVER SHEET
		DRAWING LIST 1
		DRAWING LIST 2
		LEGEND
		COMMON
1	SW_EN_SM_AEM-01_PID_COMMON_DWG_000	MASTER PFD
2	SW_EN_SM_AEM-01_PID_COMMON_DWG_010	PROCESS FLOW DIAGRAM
3	SW_EN_SM_AEM-01_PID_COMMON_DWG_020	CONTAINER LAYOUT
4	SW_EN_SM_AEM-01_PID_COMMON_DWG_030	MODULES LAYOUT
5	SW_EN_SM_AEM-01_PID_COMMON_DWG_040	PLANT FEED TANKS
6	SW_EN_SM_AEM-01_PID_COMMON_DWG_041	PLANT FEED PUMP SKIDS
7	SW_EN_SM_AEM-01_PID_COMMON_DWG_050	CLEAN RESERVE AND BLOWDOWN SYSTEMS
8	SW_EN_SM_AEM-01_PID_COMMON_DWG_060	ACID DOSING SYSTEM
9	SW_EN_SM_AEM-01_PID_COMMON_DWG_061	BASE DOSING SYSTEM
10	SW_EN_SM_AEM-01_PID_COMMON_DWG_062	BIOCIDE DOSING SYSTEM
11	SW_EN_SM_AEM-01_PID_COMMON_DWG_063	ANTIFOAM DOSING SYSTEM
12	SW_EN_SM_AEM-01_PID_COMMON_DWG_064	ANTISCALANT DOSING SYSTEM
13	SW_EN_SM_AEM-01_PID_COMMON_DWG_070	UTILITY WATER DISTRIBUTION
		SALTMAKER 1 (SM1)
14	SW_EN_SM_AEM-01_PID_SM1_DWG_110	THERMAL SOURCE PRIMARY HEAT EXCHANGERS
15	SW_EN_SM_AEM-01_PID_SM1_DWG_120	CONDENSED WATER SYSTEM
16	SW_EN_SM_AEM-01_PID_SM1_DWG_130	FEED DISTRIBUTION
17	SW_EN_SM_AEM-01_PID_SM1_DWG_150	CIP TANKS
18	SW_EN_SM_AEM-01_PID_SM1_DWG_151	CIP PUMP SKID
19	SW_EN_SM_AEM-01_PID_SM1_DWG_160	EFFECT HOLD 1
20	SW_EN_SM_AEM-01_PID_SM1_DWG_161	EFFECT HOLD 2
21	SW_EN_SM_AEM-01_PID_SM1_DWG_162	SYSTEM HOLD
22	SW_EN_SM_AEM-01_PID_SM1_DWG_163	CALCIUM EXTRACTION
23	SW_EN_SM_AEM-01_PID_SM1_DWG_164	EH1 SOLIDS EXTRACTION
24	SW_EN_SM_AEM-01_PID_SM1_DWG_165	EH2 SOLIDS EXTRACTION
25	SW_EN_SM_AEM-01_PID_SM1_DWG_180	DRIP TRAYS
26	SW_EN_SM_AEM-01_PID_SM1_DWG_210	EFFECT 1 TANK AND PUMPS
27	SW_EN_SM_AEM-01_PID_SM1_DWG_211	EFFECT 1 MODULES
28	SW_EN_SM_AEM-01_PID_SM1_DWG_213	EFFECT 1 PUMP SEAL FLUSH
29	SW_EN_SM_AEM-01_PID_SM1_DWG_214	EFFECT 1 AIR SEALS
30	SW_EN_SM_AEM-01_PID_SM1_DWG_220	EFFECT 2 TANK AND PUMPS
31	SW_EN_SM_AEM-01_PID_SM1_DWG_221	EFFECT 2 MODULES
32	SW_EN_SM_AEM-01_PID_SM1_DWG_222	EFFECT 2 SOLIDS EXTRACTION
33	SW_EN_SM_AEM-01_PID_SM1_DWG_223	EFFECT 2 PUMP SEAL FLUSH
34	SW_EN_SM_AEM-01_PID_SM1_DWG_224	EFFECT 2 AIR SEALS

SHEET NO.	DRAWING NO.	DESCRIPTION
35	SW_EN_SM_AEM-01_PID_SM1_DWG_230	EFFECT 3 TANK AND PUMPS
36	SW_EN_SM_AEM-01_PID_SM1_DWG_231	EFFECT 3 MODULES
37	SW_EN_SM_AEM-01_PID_SM1_DWG_232	EFFECT 3 SOLIDS EXTRACTION
38	SW_EN_SM_AEM-01_PID_SM1_DWG_233	EFFECT 3 PUMP SEAL FLUSH
39	SW_EN_SM_AEM-01_PID_SM1_DWG_234	EFFECT 3 AIR SEALS
40	SW_EN_SM_AEM-01_PID_SM1_DWG_240	EFFECT 4 TANK AND PUMPS
41	SW_EN_SM_AEM-01_PID_SM1_DWG_241	EFFECT 4 MODULES
42	SW_EN_SM_AEM-01_PID_SM1_DWG_243	EFFECT 4 PUMP SEAL FLUSH
43	SW_EN_SM_AEM-01_PID_SM1_DWG_244	EFFECT 4 AIR SEALS
44	SW_EN_SM_AEM-01_PID_SM1_DWG_250	EFFECT 5 TANK AND PUMPS
45	SW_EN_SM_AEM-01_PID_SM1_DWG_251	EFFECT 5 MODULES
46	SW_EN_SM_AEM-01_PID_SM1_DWG_253	EFFECT 5 PUMP SEAL FLUSH
47	SW_EN_SM_AEM-01_PID_SM1_DWG_254	EFFECT 5 AIR SEALS
		THERMAL SYSTEM
48	SW_EN_SM_AEM-01_PID_DWG_310	THERMAL SKID: WATER LOOP
49	SW_EN_SM_AEM-01_PID_DWG_311	THERMAL SKID: WATER LOOP
50	SW_EN_SM_AEM-01_PID_DWG_312	THERMAL SKID: GYLCOL LOOP
		POST TREATMENT
51	SW_EN_SM_AEM-01_PID_COMMON_DWG_320	NITRITE DESTRUCTION AND RO PC SYSTEM
52	SW_EN_SM_AEM-01_PID_COMMON_DWG_321	AMMONIA DESTRUCTION SYSTEM
53	SW_EN_SM_AEM-01_PID_COMMON_DWG_322	RO BRINE FLUSH TANK
54	SW_EN_SM_AEM-01_PID_COMMON_DWG_323	TREATED WATER TANK
		COMPRESSED AIR-COMMON PACKAGE
55	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_400	COMPRESSED AIR SYSTEM
56	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_401	AMMONIA DES, BRINE BLOWDOWN AND PLANT FEED AIR
57	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_402	CHEMICAL DOSING AND ANCILLARY STAND PIPE AIR
58	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_403	COMMON AND POST TREATMENT AIR BANK 1
59	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_404	COMMON AND POST TREATMENT AIR BANK 2
		COMPRESSED AIR-SM1
60	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_410	SM INSTRUMENT AND PROCESS AIR
61	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_411	EH1/EH2 EXTRACT AND CIP AIR

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LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE:	DRAWING LIST 1		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	DRAWING LIST 1		
JOB/CO NO:	(JOB NO.)		
SHEET:	# OF #		

DRAWING LIST 2

SHEET NO.	DRAWING NO.	DESCRIPTION
62	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_412	EH1/EH2 EXTRACT AND CIP AIR
63	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_413	PLUG PREVENTION PUMP AIR
64	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_414	AIR SEAL, STAND PIPE AND E2/E3 SE AIR
65	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_415	UTILITY AIR
66	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_416	BOP1 AIR SOLENOID BANK
67	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_417	E2/E3 SE AIR SOLENOID BANK
68	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_418	BOP2 AIR SOLENOID BANK
69	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_419	BOP3 AIR SOLENOID BANK
70	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_420	CIP, EH/SY AIR SOLENOID BANK
71	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_421	H1/H2 SE AIR SOLENOID BANK
		COMPRESSED AIR-SM2
72	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_450	SM INSTRUMENT AND PROCESS AIR
73	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_451	EH1/EH2 EXTRACT AND CIP AIR
74	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_452	EFFECT/SYSTEM HOLD AND CAL EXTRACTION AIR
75	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_453	PLUG PREVENTION PUMP AIR
76	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_454	AIR SEAL, STAND PIPE AND E2/E3 SE AIR
77	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_455	UTILITY AIR
78	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_456	BOP1 AIR SOLENOID BANK
79	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_457	E2/E3 SE AIR SOLENOID BANK
80	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_458	BOP2 AIR SOLENOID BANK
81	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_459	BOP3 AIR SOLENOID BANK
82	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_460	CIP, EH/SY AIR SOLENOID BANK
83	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_461	H1/H2 SE AIR SOLENOID BANK

SHEET NO.	DRAWING NO.	DESCRIPTION
		SALTMAKER 2 (SM2)
84	SW_EN_SM_AEM-01_PID_SM2_DWG_510	THERMAL SOURCE PRIMARY HEAT EXCHANGERS
85	SW_EN_SM_AEM-01_PID_SM2_DWG_520	CONDENSED WATER SYSTEM
86	SW_EN_SM_AEM-01_PID_SM2_DWG_530	FEED DISTRIBUTION
87	SW_EN_SM_AEM-01_PID_SM2_DWG_550	CIP TANKS
88	SW_EN_SM_AEM-01_PID_SM2_DWG_551	CIP PUMP SKID
89	SW_EN_SM_AEM-01_PID_SM2_DWG_560	EFFECT HOLD 1
90	SW_EN_SM_AEM-01_PID_SM2_DWG_561	EFFECT HOLD 2
91	SW_EN_SM_AEM-01_PID_SM2_DWG_562	SYSTEM HOLD
92	SW_EN_SM_AEM-01_PID_SM2_DWG_563	CALCIUM EXTRACTION
93	SW_EN_SM_AEM-01_PID_SM2_DWG_564	EH1 SOLIDS EXTRACTION
94	SW_EN_SM_AEM-01_PID_SM2_DWG_565	EH2 SOLIDS EXTRACTION
95	SW_EN_SM_AEM-01_PID_SM2_DWG_580	DRIP TRAYS
96	SW_EN_SM_AEM-01_PID_SM2_DWG_610	EFFECT 1 TANK AND PUMPS
97	SW_EN_SM_AEM-01_PID_SM2_DWG_611	EFFECT 1 MODULES
98	SW_EN_SM_AEM-01_PID_SM2_DWG_613	EFFECT 1 PUMP SEAL FLUSH
99	SW_EN_SM_AEM-01_PID_SM2_DWG_614	EFFECT 1 AIR SEALS
100	SW_EN_SM_AEM-01_PID_SM2_DWG_620	EFFECT 2 TANK AND PUMPS
101	SW_EN_SM_AEM-01_PID_SM2_DWG_621	EFFECT 2 MODULES
102	SW_EN_SM_AEM-01_PID_SM2_DWG_622	EFFECT 2 SOLIDS EXTRACTION
103	SW_EN_SM_AEM-01_PID_SM2_DWG_623	EFFECT 2 PUMP SEAL FLUSH
104	SW_EN_SM_AEM-01_PID_SM2_DWG_624	EFFECT 2 AIR SEALS
105	SW_EN_SM_AEM-01_PID_SM2_DWG_630	EFFECT 3 TANK AND PUMPS
106	SW_EN_SM_AEM-01_PID_SM2_DWG_631	EFFECT 3 MODULES
107	SW_EN_SM_AEM-01_PID_SM2_DWG_632	EFFECT 3 SOLIDS EXTRACTION
108	SW_EN_SM_AEM-01_PID_SM2_DWG_633	EFFECT 3 PUMP SEAL FLUSH
109	SW_EN_SM_AEM-01_PID_SM2_DWG_634	EFFECT 3 AIR SEALS
110	SW_EN_SM_AEM-01_PID_SM2_DWG_640	EFFECT 4 TANK AND PUMPS
111	SW_EN_SM_AEM-01_PID_SM2_DWG_641	EFFECT 4 MODULES
112	SW_EN_SM_AEM-01_PID_SM2_DWG_643	EFFECT 4 PUMP SEAL FLUSH
113	SW_EN_SM_AEM-01_PID_SM2_DWG_644	EFFECT 4 AIR SEALS
114	SW_EN_SM_AEM-01_PID_SM2_DWG_650	EFFECT 5 TANK AND PUMPS
115	SW_EN_SM_AEM-01_PID_SM2_DWG_651	EFFECT 5 MODULES
116	SW_EN_SM_AEM-01_PID_SM2_DWG_653	EFFECT 5 PUMP SEAL FLUSH
117	SW_EN_SM_AEM-01_PID_SM2_DWG_654	EFFECT 5 AIR SEALS
		VENDOR DRAWINGS
	USW_10741_100D	POST TREATMENT RO

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LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE:	DRAWING LIST 2				
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES	REVISION	N
PREPARED BY:	JLAU	DATE:	01–SEP–2017	DWG. NO:	DRAWING LIST 2
CHECKED BY:	MLOW	DATE:	05–SEP–2017	JOB/CO NO:	(JOB NO.)
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE	SHEET:	# OF #

VALVES

- MANUAL BALL (MBV) – NORMALLY CLOSED
- MANUAL BALL (MBV) – NORMALLY OPEN
- CHECK (CV)
- GATE (GV)
- BUTTERFLY (BFV)
- PRESSURE RELIEF VALVE (PRV)
- FLOAT VALVE (FV)
- DIAPHRAGM (DV)
- NEEDLE (NV)
- 3–WAY
- 3–WAY SOLENOID
- 4–WAY SOLENOID
- 4–FUNCTION VALVE
- FOOT VALVE
- N.O. – NORMALLY OPEN
- N.C. – NORMALLY CLOSED

CONTROL VALVES/ACTUATORS

- PRESSURE CONTROL VALVE (PCV) WITH PRESSURE GAUGE
- DOUBLE ACTING ACTUATED BALL VALVE (ABV) – NORMALLY CLOSED
- DOUBLE ACTING ACTUATED BALL VALVE (ABV) – NORMALLY OPEN
- DOUBLE ACTING ACTUATED BALL VALVE (ABV) – NORMALLY OPEN WITH PINCH VALVES
- SOLENOID VALVE (SV)
- SOLENOID VALVE (SV)
- MOTORIZED ACTUATOR
- MOTORIZED ACTUATOR WITH MANUAL OVERRIDE
- DOUBLE ACTING DIAPHRAGM ACTUATOR WITH LIMIT STOP
- DOUBLE ACTING DIAPHRAGM ACTUATOR WITH SPRING TO CLOSE
- DOUBLE ACTING DIAPHRAGM ACTUATOR WITH SPRING TO OPEN
- A/S AIR OPERATOR W/POSITIONER

EQUIPMENT SYMBOL

- MIXER OR AGITATOR (MX)
- INLINE STATIC MIXER
- HEATER (HE)
- ELECTRIC HEATER (EH)
- INJECTION QUILL
- EDUCTOR/EJECTOR (ED)
- POSITIVE DISPLACEMENT PUMP W/MANUAL STROKE ADJUSTMENT (MP)
- POSITIVE DISPLACEMENT PUMP W/ELECTRIC STROKE ADJUSTMENT (MP)
- ROTARY COMPRESSOR OR BLOWER
- AIR FILTER
- BLOWER OR FAN (BW OR FN)
- VACUUM PUMP (VP)
- DIAPHRAGM PUMP (P)
- CENTRIFUGAL PUMP (P)
- HIGH PRESSURE PUMP (P)
- DESICCANT BREATHER
- VENT PIPE
- Y–STRAINER
- RUPTURE DISC
- DIAPHRAGM SEAL
- STANDPIPE (SP)
- CALIBRATION COLUMN (CC)
- AIR COMPRESSOR (AC)
- PNEUMATIC VIBRATOR (VIB)
- RO/UF MODULE
- FILTER – BASKET (BAF)
- FILTER (F) HOUSING
- CLOSED TOP TANK (TK)
- CONE BOTTOM TANK (TK)
- OPEN TOP TANK (TK) WITH COVER
- PLATE HEAT EXCHANGER (HX)
- SHELL AND TUBE HEAT EXCHANGER (HX)
- CONE CONSTRAINER (CSTR)
- PERISTALTIC HOSE PUMP (P)
- FLEXIBLE CONNECTION

MISCELLANEOUS SYMBOLS

- LINE, EQUIPMENT OR PRODUCT REFERENCES INTO OR LEAVING DWG.
- TIE — TIE IN TO PIPING BY OTHERS
- 304 | CPVC — PIPING MATERIAL SPEC. BREAK

SOLENOID VALVE OPERATION

- 3–WAY: FAIL OPEN TO PATH A–C
- 4–WAY: FAIL OPEN TO PATHS A–C AND D–B

(Piping components)

- A/S — AIR SUPPLY
- N/S — NITROGEN SUPPLY
- CONCENTRIC REDUCING
- ECCENTRIC REDUCING
- ENCLOSURE (CAP)
- FLANGE
- END CLOSURE (BLIND FLANGE)
- END CLOSURE (VIC PLUG)
- QUICK DISCONNECT
- UNION
- SANITARY CONNECTION
- FLOOR DRAIN OR SUMP
- BULKHEAD
- EXPANSION JOINT

FILL SYMBOLS

- SPLASH FILL
- FILM FILL
- NET FILL

INSTRUMENT LINE SYMBOLS

- PNEUMATIC SIGNAL (ANALOG)
- PNEUMATIC SIGNAL (DIGITAL)
- ELECTRICAL SIGNAL (ANALOG – 4–20mA OR 1–10 VDC)
- ELECTRICAL SIGNAL (FREQUENCY OR PULSE)
- CAPILLARY TUBING (FILLED TUBING)
- CONNECTION TO PROCESS, OR INSTRUMENT SUPPLY

FLUID LINE SYMBOLS

- EFFECT 1 BRINE (90°C)
- EFFECT 2 BRINE (75°C)
- EFFECT 3 BRINE (60°C)
- EFFECT 4 BRINE (45°C)
- EFFECT 5 BRINE (30°C)
- CIP
- RAW FEED
- CONDENSED WATER (70°C – 40°C)
- THERMAL LOOP (GYLCOL)
- EVAPORATE
- COMPRESSED AIR LINE
- ACID DOSING
- BASE DOSING
- ANTIFOAM
- BIOFILM TREATMENT SOLUTION

MISCELLANEOUS LINE SYMBOLS

- SYSTEM BOUNDARY

INSTRUMENT SYMBOLS

- LOCALLY MOUNTED
- PANEL MOUNTED (MAIN OR REMOTE)
- SHARED DISPLAY (CRT) AND/OR SHARED CONTROL

CONTROL SYMBOLS

- DI — DISCRETE INPUT TO PLC
- DO — DISCRETE OUTPUT FROM PLC
- AI — ANALOG INPUT TO PLC
- AO — ANALOG OUTPUT FROM PLC

EQUIPMENT IDENTIFICATION

- M – MOTOR
- AS – AIR SEAL
- VFD – VARIABLE FREQUENCY DRIVE
- DRY – DRYER

MODULE IDENTIFICATION

- EVP – EVAPORATOR MODULE
- RAD – RADIATOR MODULE
- FAN – FAN MODULE

MATERIAL ABBREVIATIONS

- PP – POLYPROPYLENE
- PVC – POLYVINYL CHLORIDE
- UPVC – POLYVINYL CHLORIDE
- P – POLYVINYL CHLORIDE (IN LINE NUMBER)
- CPVC – CHLORINATED POLYVINYL CHLORIDE
- C – CHLORINATED POLYVINYL CHLORIDE (IN LINE NUMBER)
- HDPE – HIGH DENSITY POLYETHYLENE
- PVDF – POLYVINYLIDENE FLUORIDE
- PVFB – PVDF BEADLESS & CREVICE FREE
- PVFL – PVDF LINED
- PTFE – TEFLON
- 304 – 304 STAINLESS STEEL
- 304L – 304L STAINLESS STEEL
- 316 – 316 STAINLESS STEEL
- 316L – 316L STAINLESS STEEL

INSTRUMENT IDENTIFICATION

PARAMETER (1ST LETTER)

- P – PRESSURE
- F – FLOW
- T – TEMPERATURE
- C – CONDUCTIVITY
- D – DENSITY
- Z – POSITION
- A – ANALYTICAL (SEE NOTES)

TYPE (2ND AND 3RD LETTER)

- I – INDICATING/INDICATOR
- T – TRANSMITTER
- E – ELEMENT/PROBE
- A – ALARM
- S – SWITCH

NOTES:

1. THE DESCRIPTION OF AN ANALYTICAL VARIABLE FUNCTION (pH, SiO_2, O , ETC.) SHALL BE SHOWN OUTSIDE THE INSTRUMENT SYMBOL.
   EXAMPLE: AIT pH
2. ADD THE SUFFIX L (LOW), LL (LOW–LOW), H (HIGH), HH (HIGH–HIGH), HL (HIGH–LOW), AS REQUIRED.
   EXAMPLE: PSL FAL

LINE NUMBERING

E1BR4–001–P80

- FLUID
- SIZE
- SEQUENTIAL NUMBER
- MATERIAL
- SCHEDULE

VALVE NUMBERING

681–015–BA17–0001

- AREA CODE
- VALVE SIZE
- VALVE TYPE
- SEQUENTIAL NUMBER

VALVE SIZE CONVERSION

MM		INCH
008	-	1/4
015	-	1/2
025	-	1
050	-	2
100	-	4
150	-	6

VALVE TYPE CONVERSION

BA17	-	BALL VALVE
BA99	-	TOUGH BALL VALVE
BF99	-	TOUGH BUTTERFLY VALVE (EXCEPT THOSE NOTED "NON TOUGH")
CK99	-	CHECK VALVE
GA99	-	GATE VALVE

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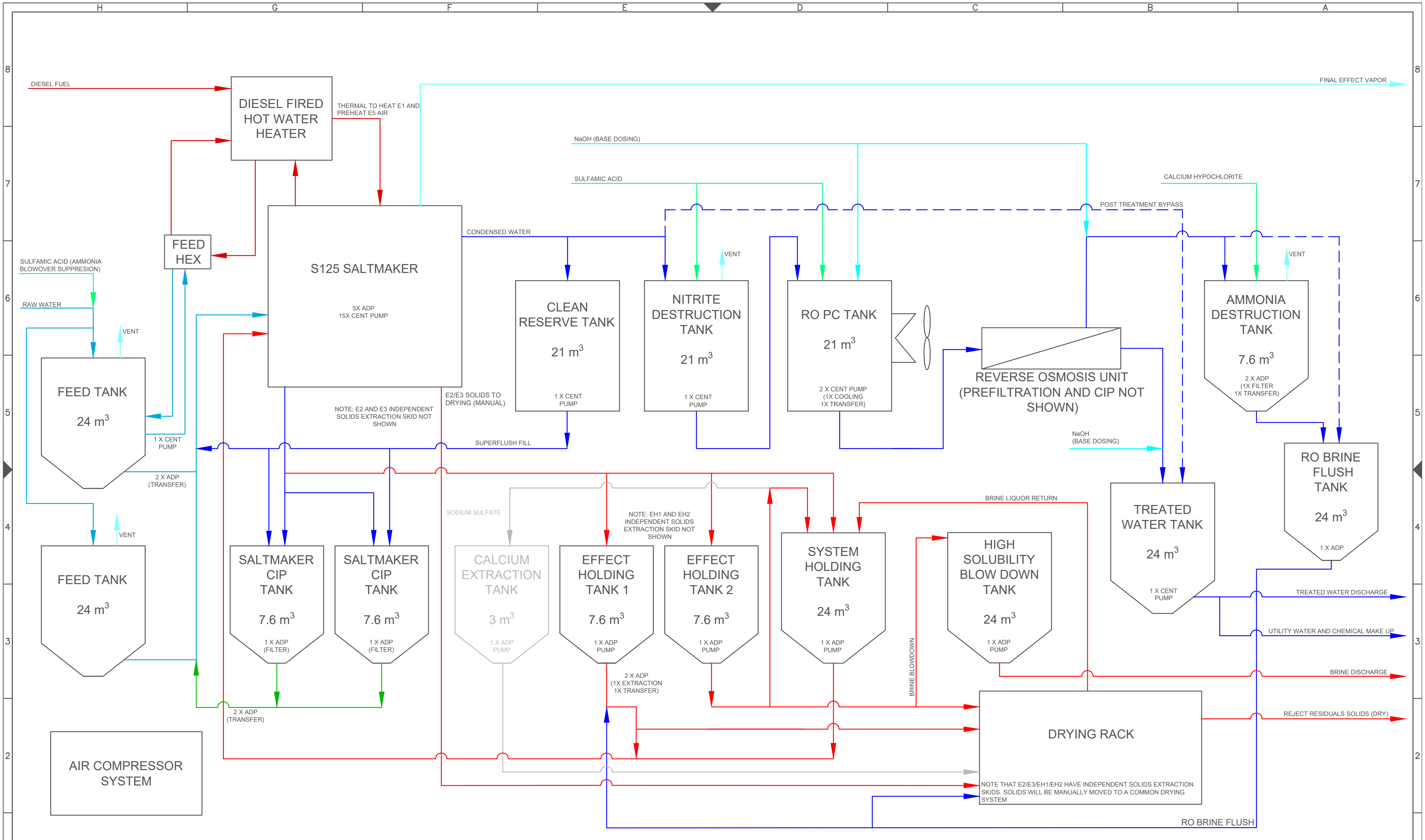
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	PINCH VALVE LEGEND ADDED	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE:	LEGEND		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	LEGEND		
JOB/CO NO:	(JOB NO.)		
SHEET:	# OF #		



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K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (COMMON) 000: MASTER PFD

PROJECT: SALTMAKER GEN III

CUSTOMER: AGNICO EAGLE MINES

REVISION: N

PREPARED BY: PREPPED BY | DATE: PREPPED DATE

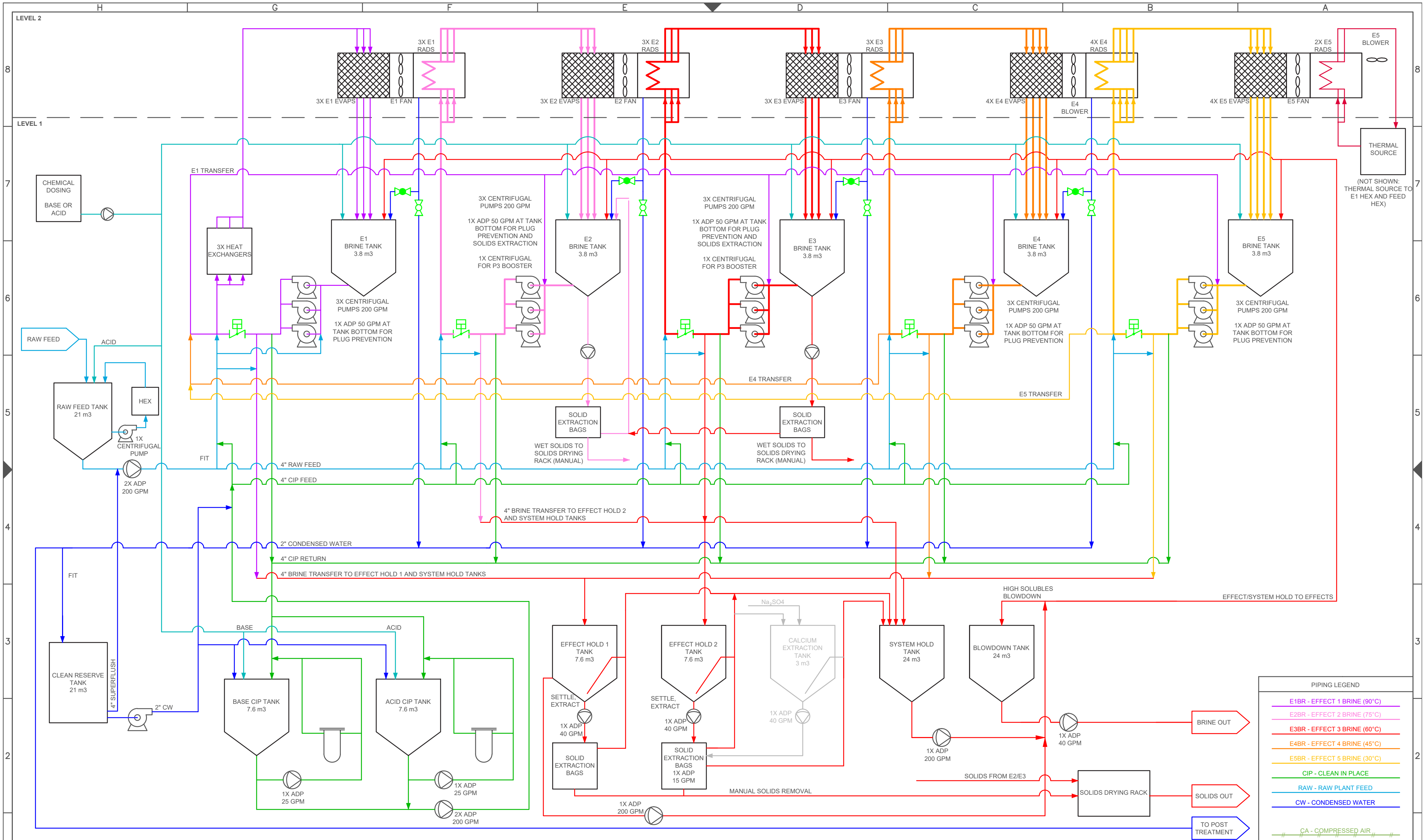
CHECKED BY: CHECKED BY | DATE: CHECKED DATE

APPROVED BY: APPROVED BY | DATE: APPROVED DATE

DWG. NO: SW_EN_SM_AEM–01_PID_COMMON_DWG_000

JOB/CO NO: (JOB NO.)

SHEET: 1 OF117



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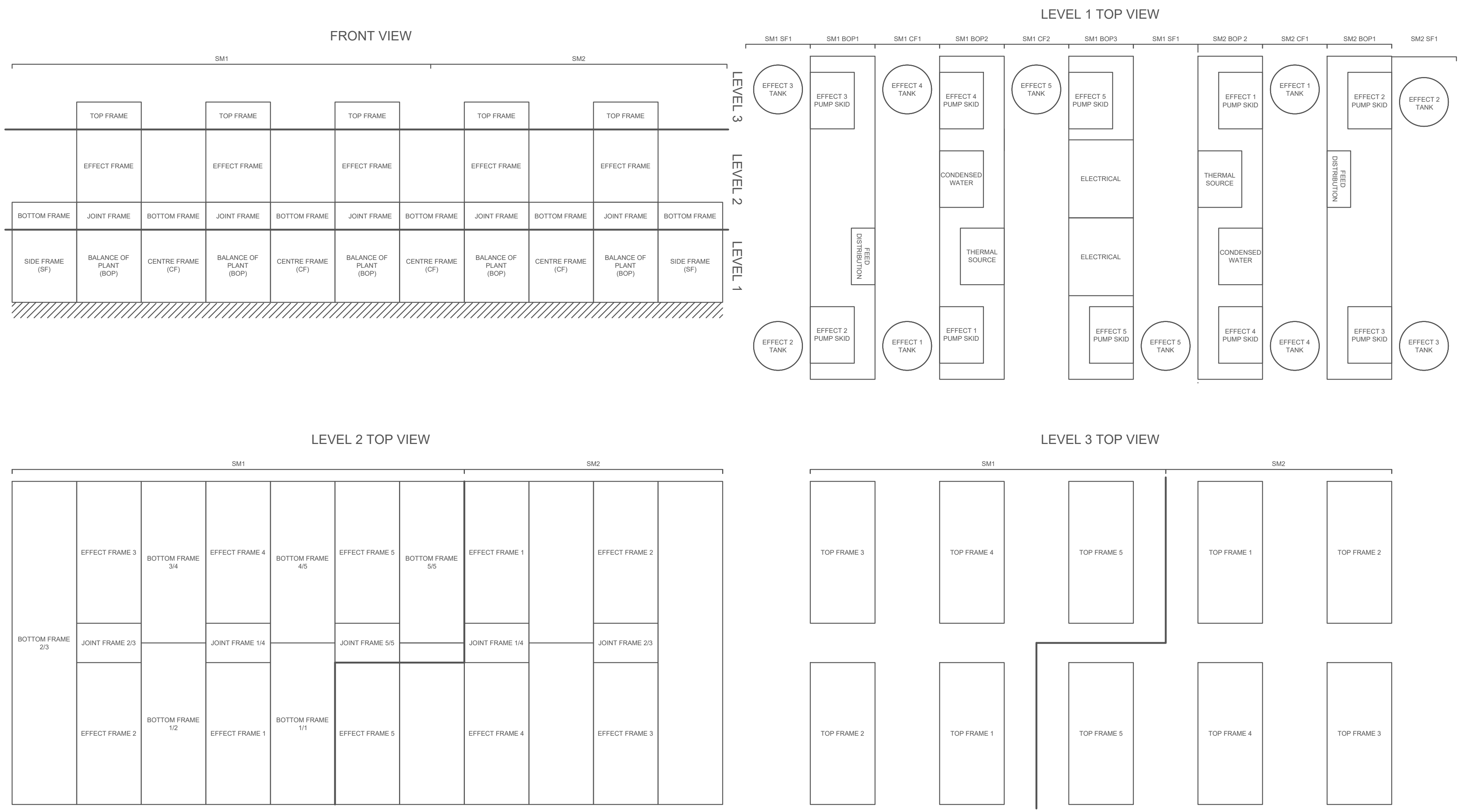
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	REMOVED BACK UP CIP BAG FILTER	JLAU
M	20–APR–2018	ADDED P3 BOOSTER PUMP NOTE	JLAU

TITLE: (COMMON) 010: PROCESS FLOW DIAGRAM

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_COMMON_DWG_010		
JOB/CO NO:	(JOB NO.)		
SHEET:	2 OF117		



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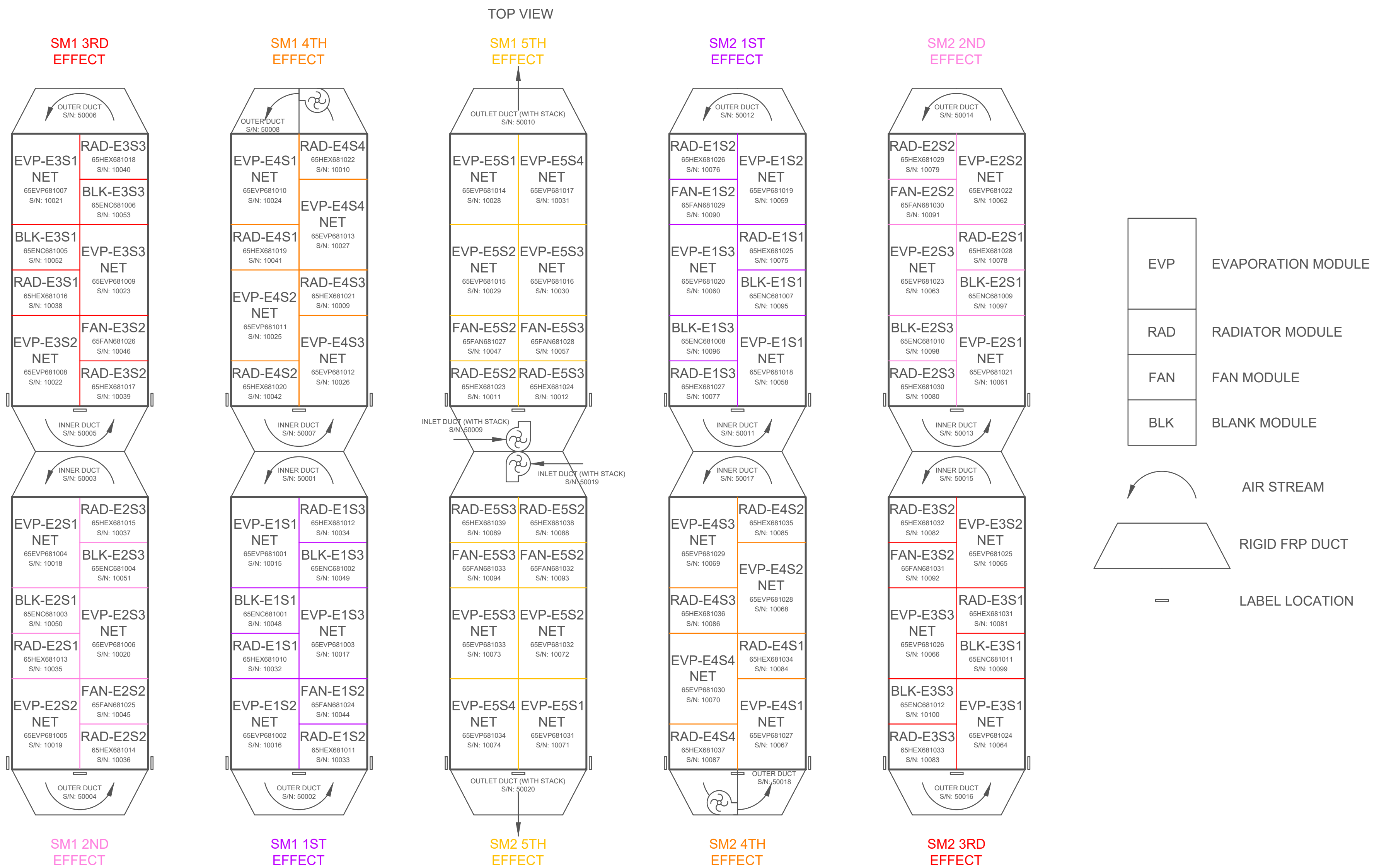
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (COMMON) 020: CONTAINER LAYOUT

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_COMMON_DWG_020		
JOB/CO NO:	(JOB NO.)		
SHEET:	3 OF117		



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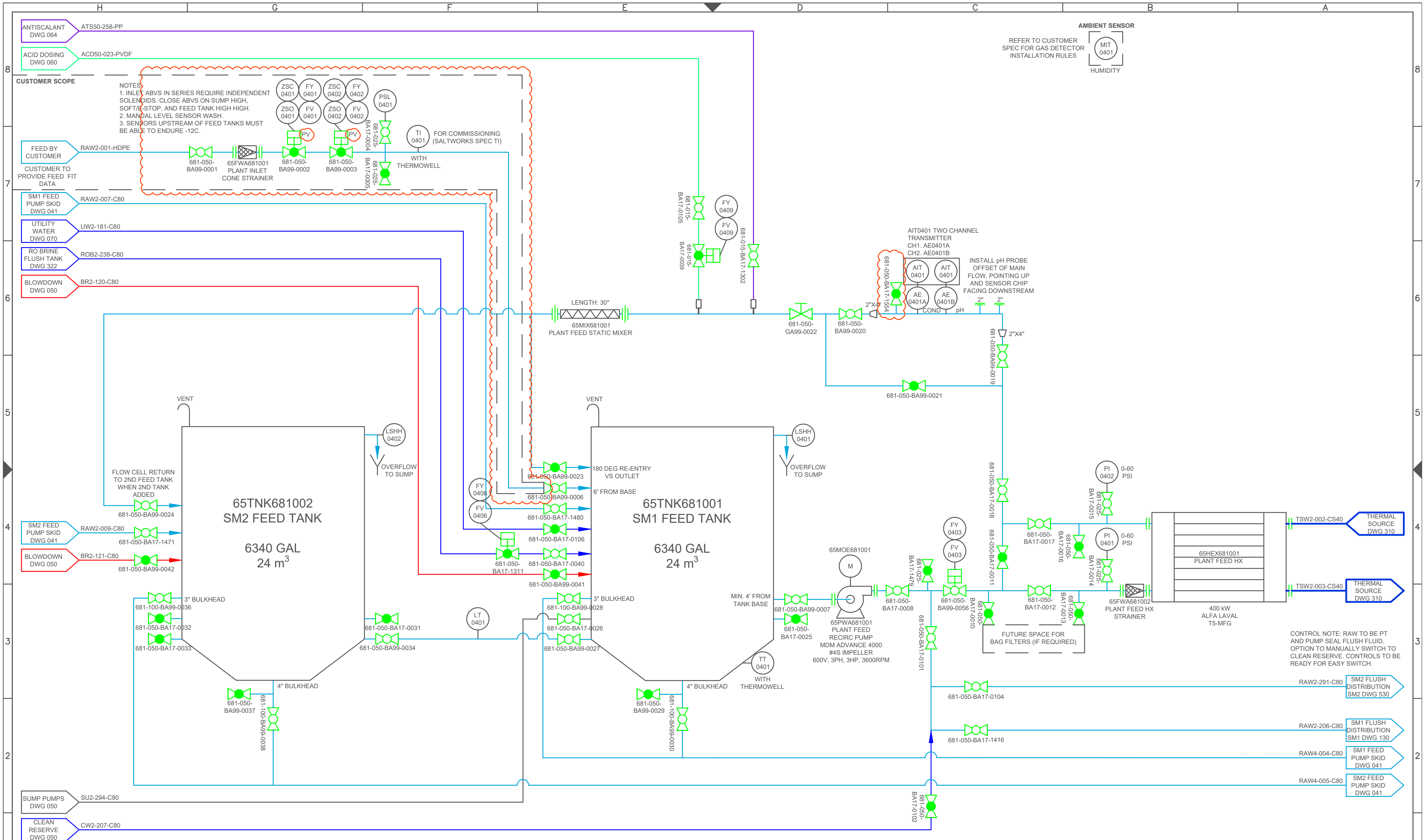
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	ADDED SM2 S/N AND LABEL LOCATION	JLAU

TITLE: 030: MODULE LAYOUT

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_COMMON_DWG_030	JOB/CO NO:	(JOB NO.)
SHEET:	4 OF117		



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LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	SCOPE BOUNDARY UPDATED, PINCH VALVES ADDED, AS BUILT UPDATES	JLAU
K	23–FEB–2018	2 TANK ISOLATION VALVES ADDED	JLAU
L	16–MAR–2018	ADDED AMBIENT SENRORS	JLAU
M	20–APR–2018	NO CHANGES	–

TITLE: (COMMON) 040: PLANT FEED TANKS

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_COMMON_DWG_040	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
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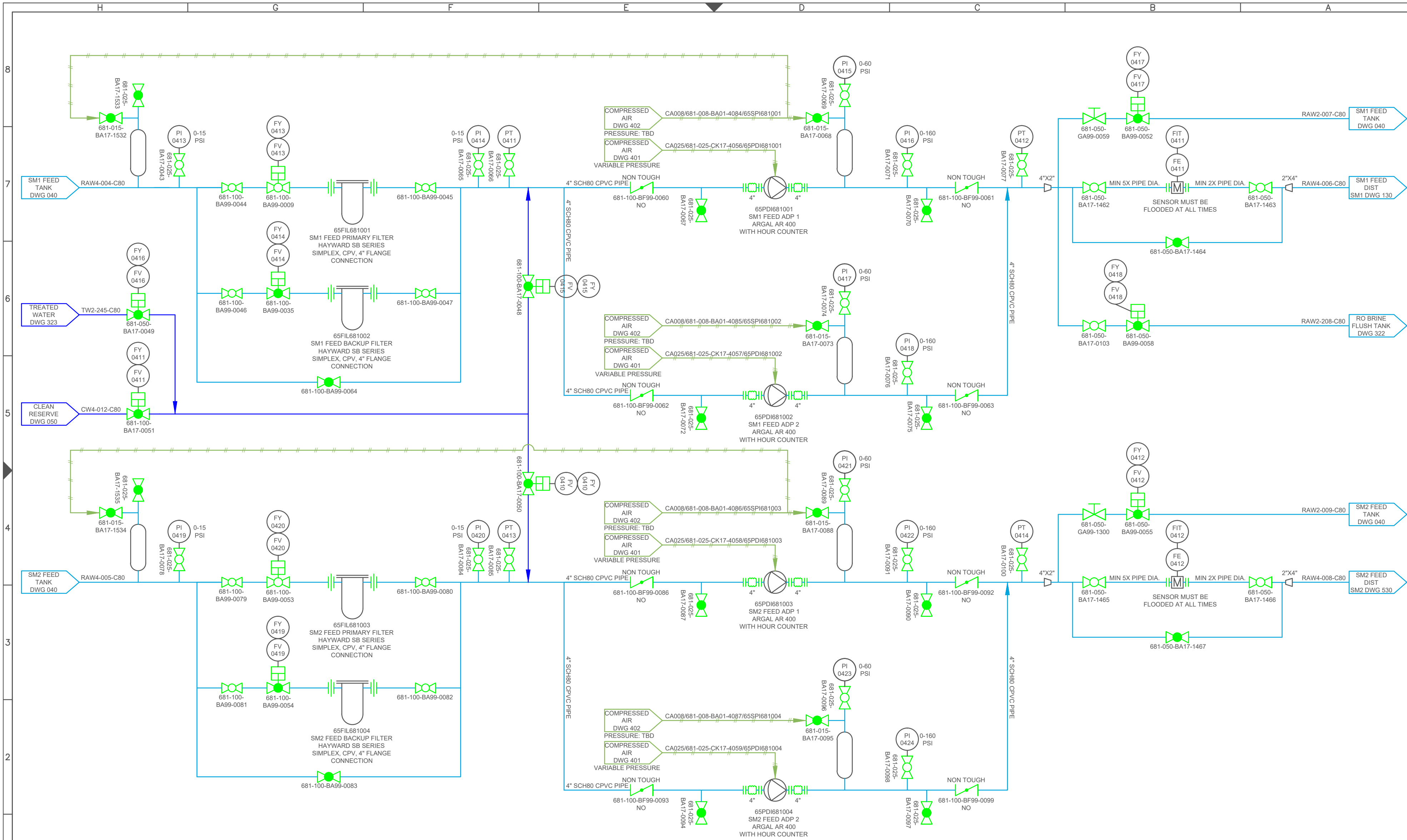

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LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	TAGS UPDATED PER AEM MARK UP	JLAU
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	ADDED INLET STANDPIPES	JLAU

TITLE: (COMMON) 041: PLANT FEED PUMP SKIDS

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_COMMON_DWG_041	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
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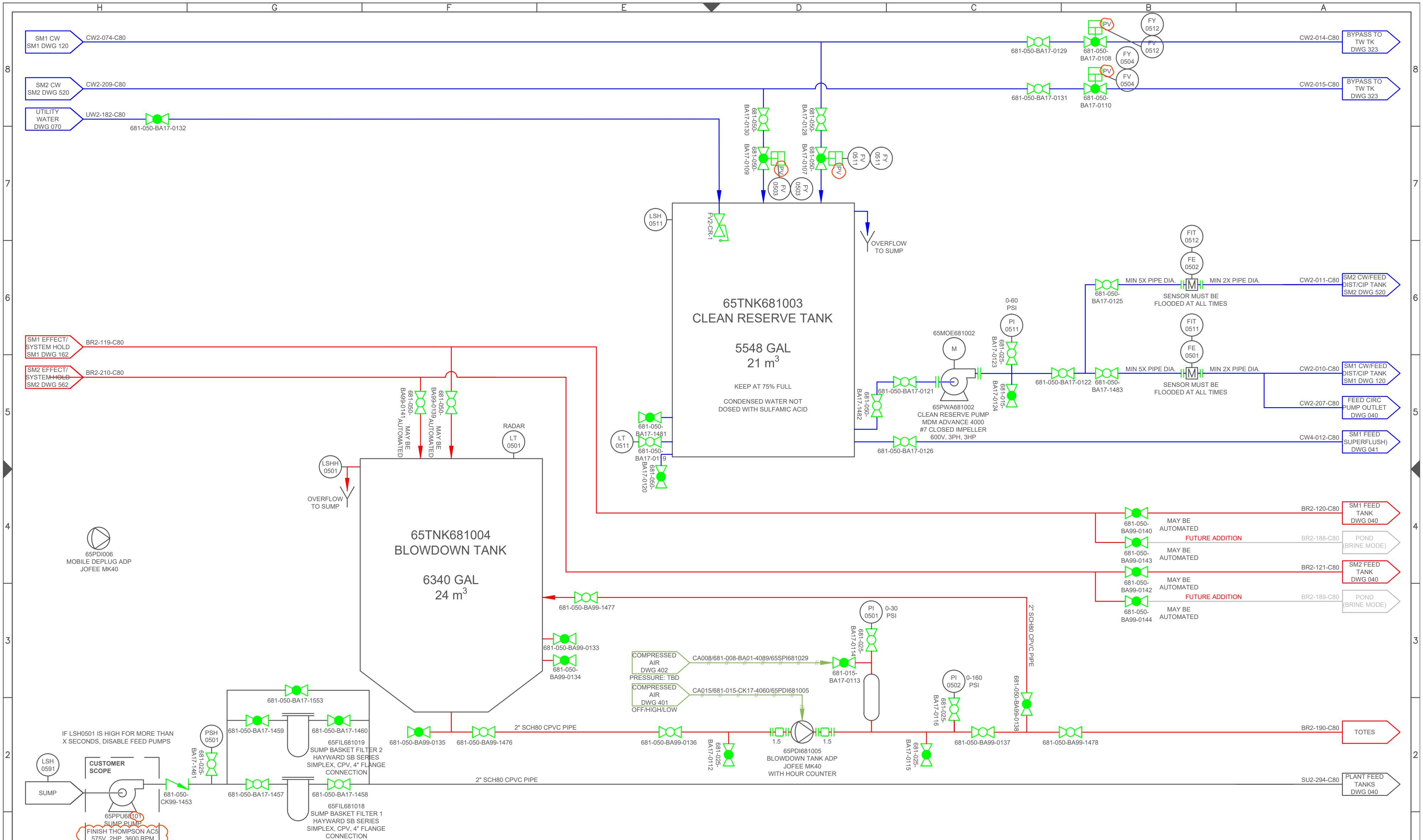

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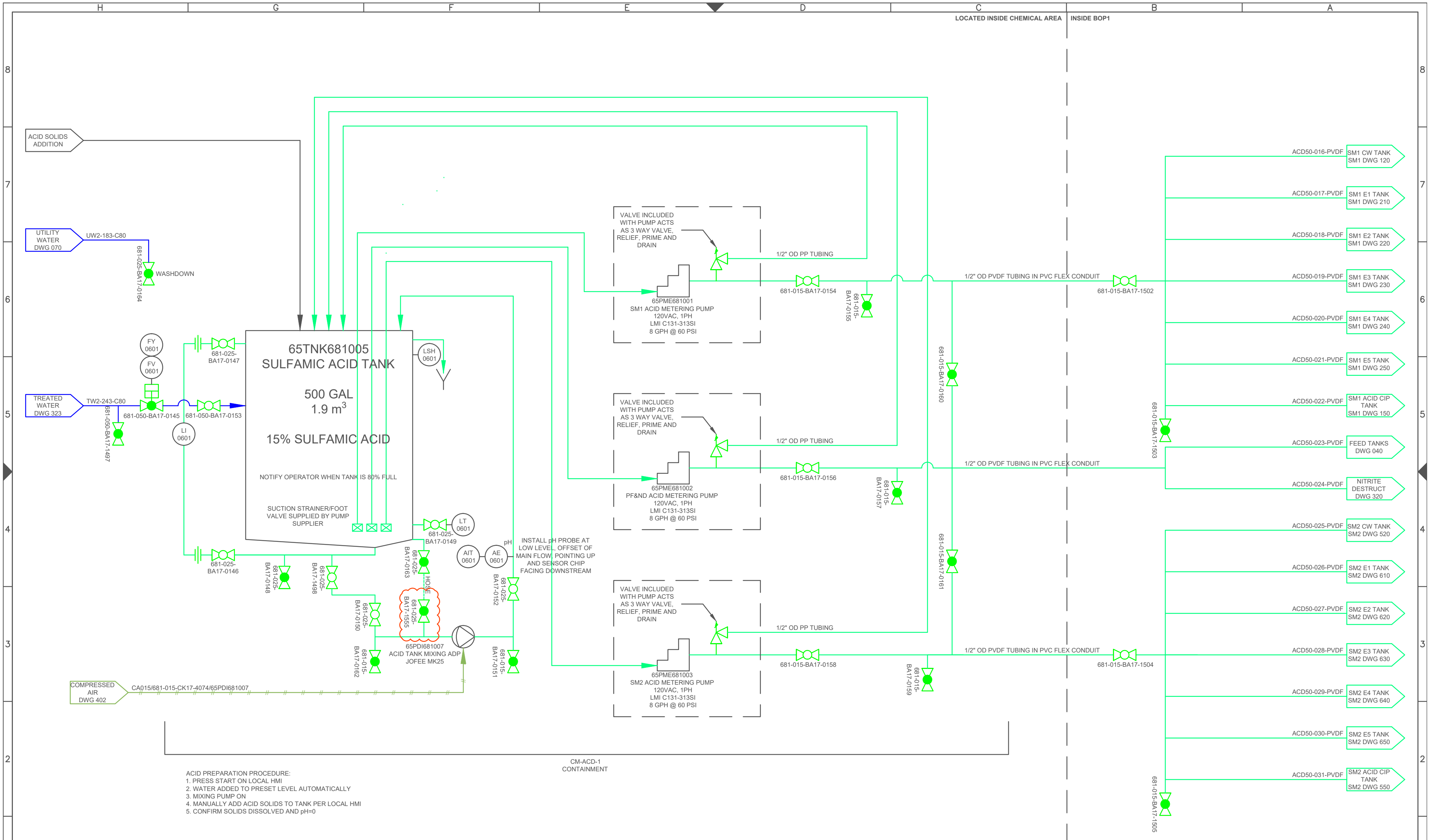
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	TAG UPDATED AND PINCH VALVES ADDED	JLAU
K	23–FEB–2018	TAGS UPDATED PER AEM MARK UP	JLAU
L	16–MAR–2018	AS–BUILT UPDATES	–
M	20–APR–2018	SUMP SYSTEM SCOPE AND DESIGNE UPDATED	JLAU

TITLE: (COMMON) 050: CLEAN RESERVE AND BLOWDOWN SYSTEMS

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_COMMON_DWG_050	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 7 OF117	



ACID PREPARATION PROCEDURE:
1. PRESS START ON LOCAL HMI
2. WATER ADDED TO PRESET LEVEL AUTOMATICALLY
3. MIXING PUMP ON
4. MANUALLY ADD ACID SOLIDS TO TANK PER LOCAL HMI
5. CONFIRM SOLIDS DISSOLVED AND pH=0

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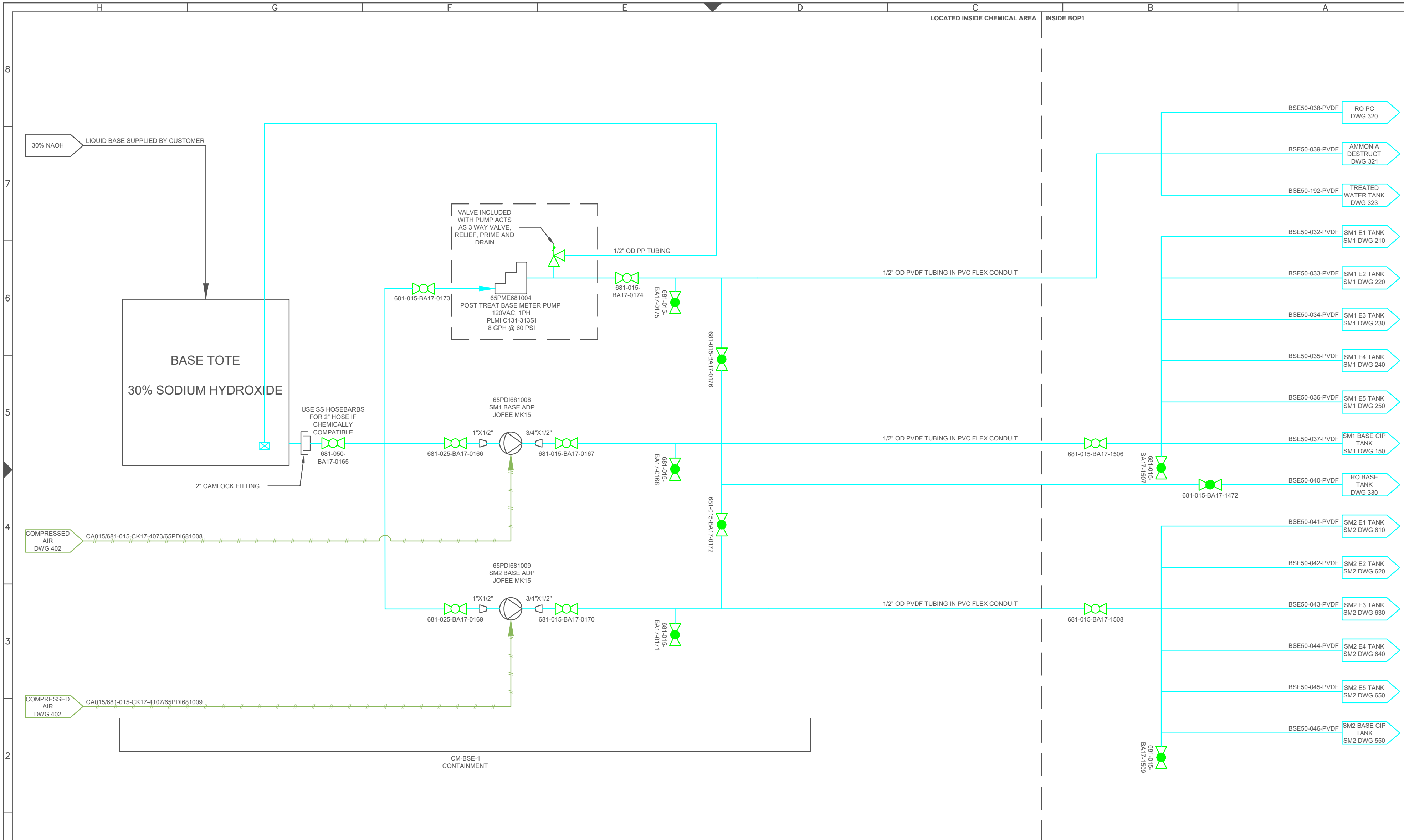
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	AS BUILT UDDATE	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	UPDATED PER MECH DESIGN	JLAU
M	20–APR–2018	NO CHANGES	–

TITLE: (COMMON) 060: ACID DOSING SYSTEM

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_COMMON_DWG_060	JOB/CO NO:	(JOB NO.)
SHEET:	8 OF117		



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LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	TI REMOVED PER MECH DESIGN	JLAU
M	20–APR–2018	NO CHANGES	–

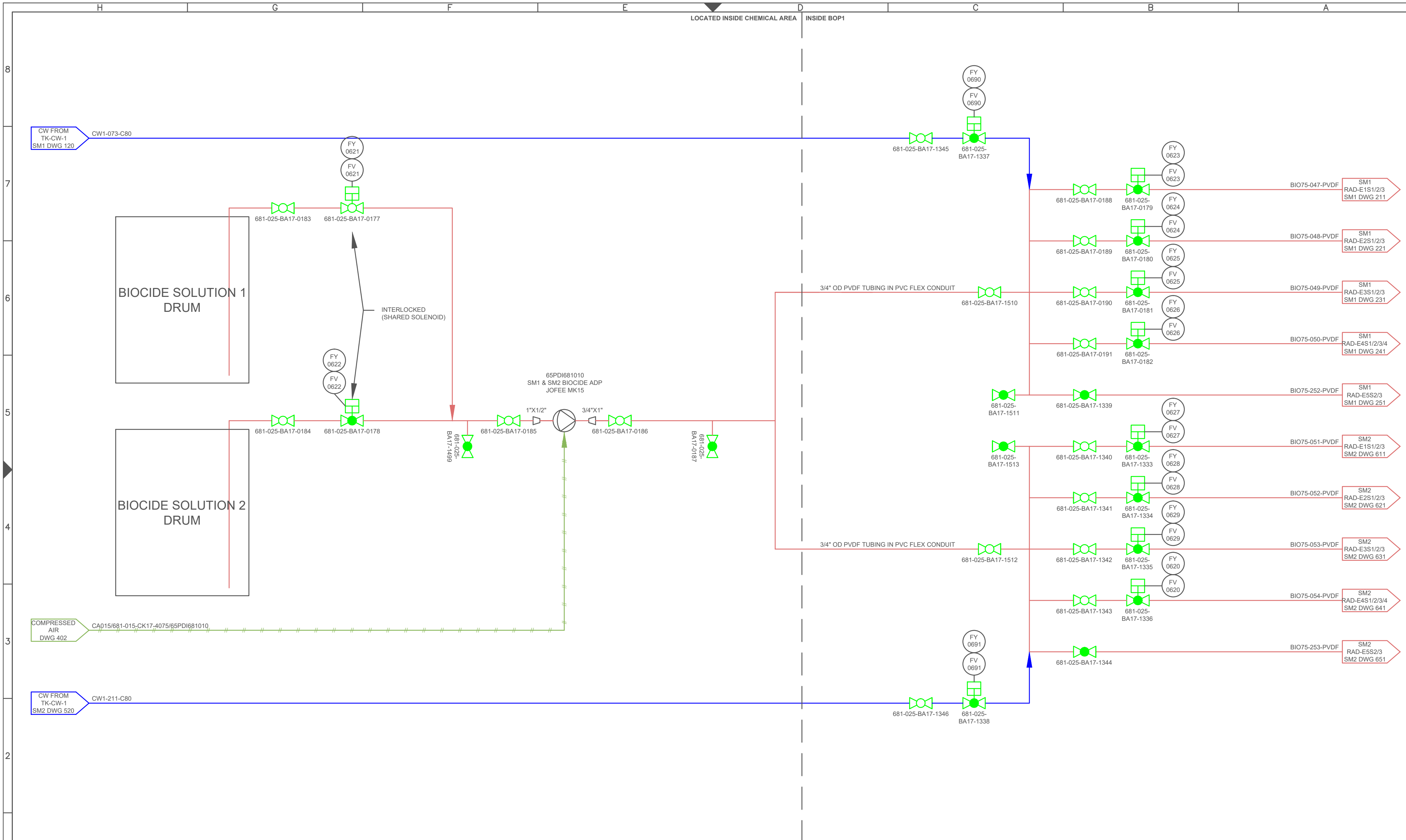
TITLE: (COMMON) 061: BASE DOSING SYSTEM

PROJECT: SALTMAKER GEN III

CUSTOMER: AGNICO EAGLE MINES

REVISION: N

PREPARED BY:	JLAU	DATE:	01–SEP–2017	DWG. NO:	SW_EN_SM_AEM–01_PID_COMMON_DWG_061
CHECKED BY:	MLOW	DATE:	05–SEP–2017	JOB/CO NO:	(JOB NO.)
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE	SHEET:	9 OF117



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LTR	DATE	DESCRIPTION	REV. BY:
N	06-JUL-2018	NO CHANGES	–
K	23-FEB-2018	TAGD UPDATED PER AEM MARK UP	JLAU
L	16-MAR-2018	DRAIN VALVE ADDED PER MECH DESIGN	JLAU
M	20-APR-2018	NO CHANGES	–

TITLE:	(COMMON) 062: BIOCIDE DOSING SYSTEM		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01-SEP-2017
CHECKED BY:	MLOW	DATE:	05-SEP-2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM-01_PID_COMMON_DWG_062		
JOB/CO NO:	(JOB NO.)		
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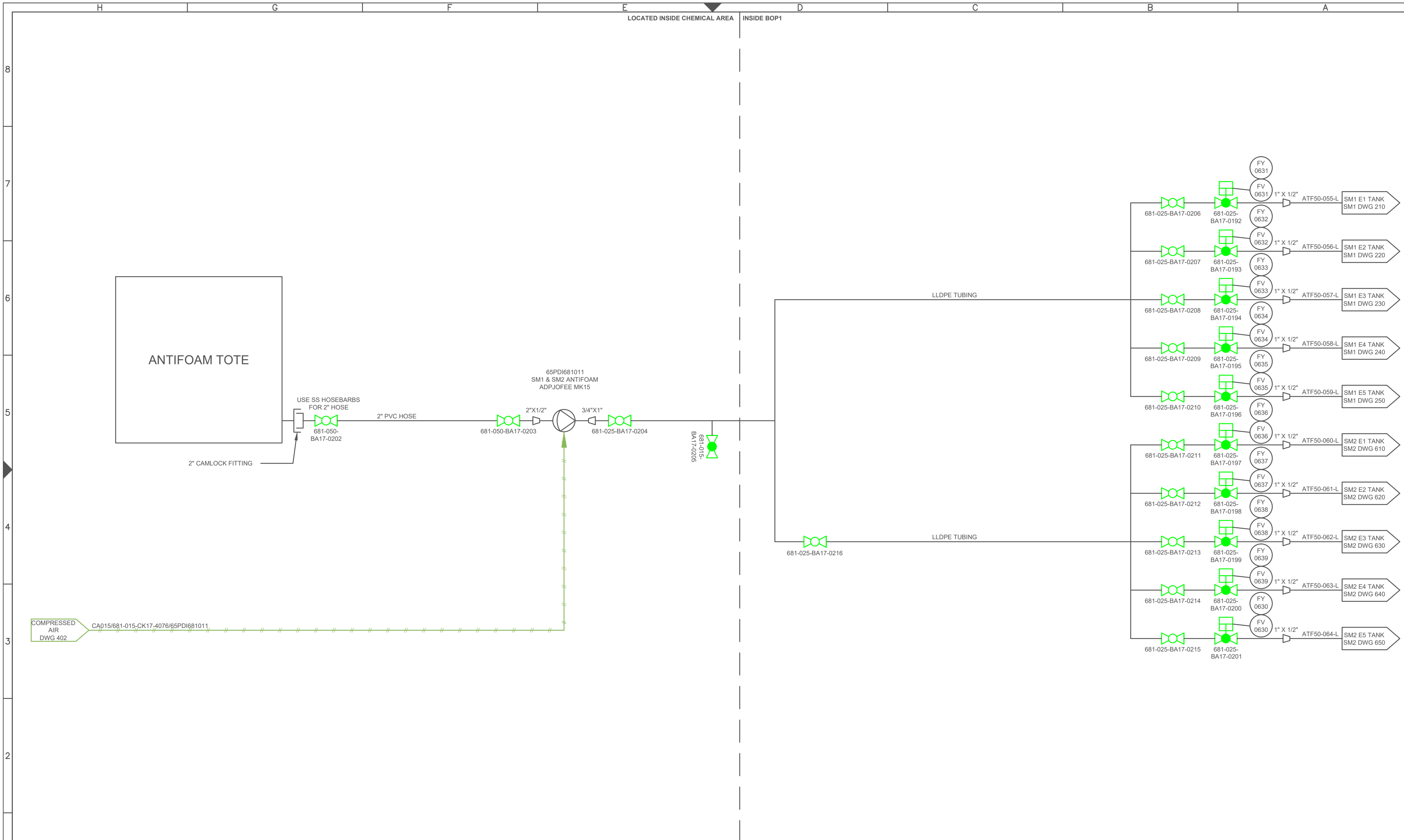

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LTR	DATE	DESCRIPTION	REV. BY:
N	06-JUL-2018	NO CHANGES	–
K	23-FEB-2018	NO CHANGES	–
L	16-MAR-2018	NO CHANGES	–
M	20-APR-2018	NO CHANGES	–

TITLE: (COMMON) 063: ANTIFOAM DOSING SYSTEM

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01-SEP-2017	DWG. NO: SW_EN_SM_AEM-01_PID_COMMON_DWG_063	
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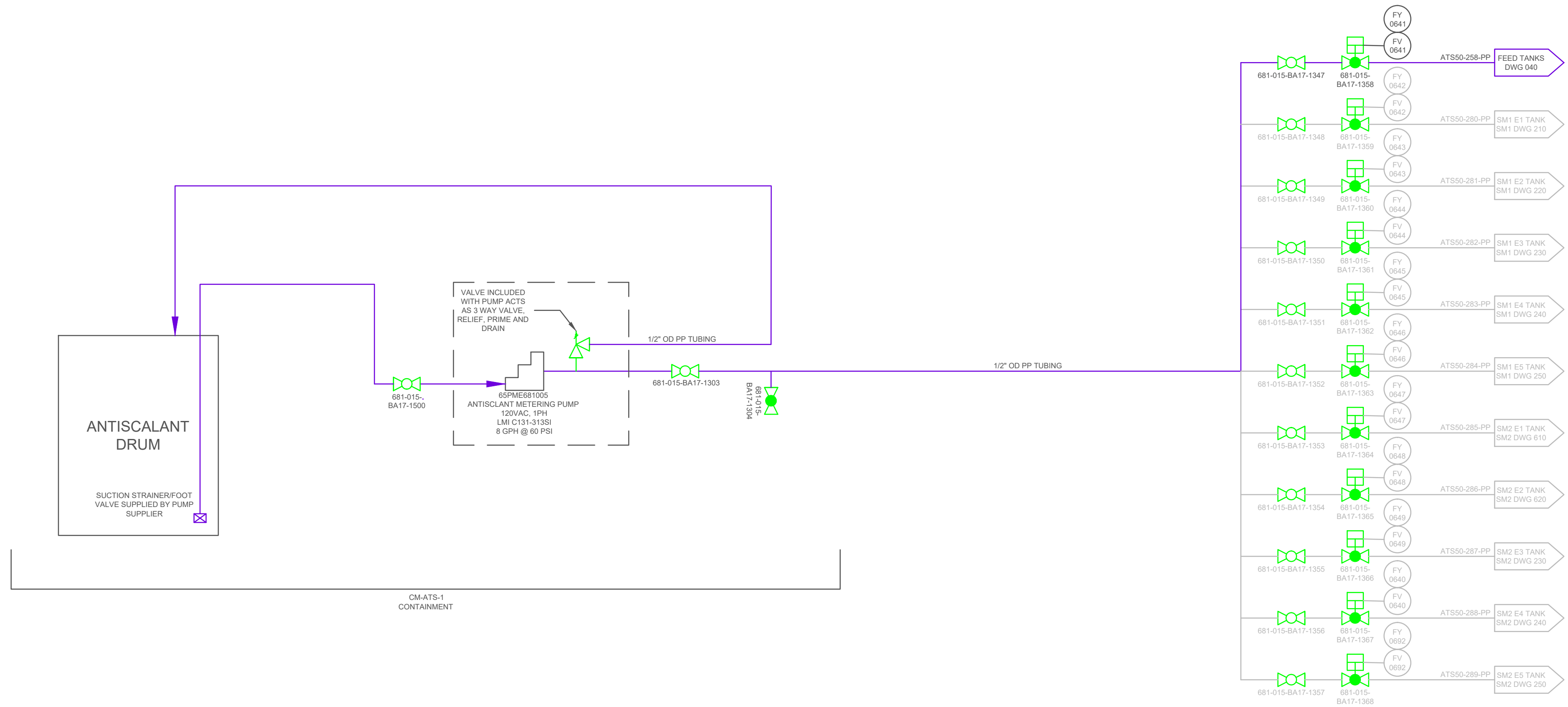

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N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	TAGS UPDATED PER AEM MARK UP	JLAU
L	16–MAR–2018	UPDATED PER MECH DESIGN	JLAU
M	20–APR–2018	NO CHANGES	–

TITLE: (COMMON) 064: ANTISCALANT DOSING SYSTEM

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_COMMON_DWG_064	
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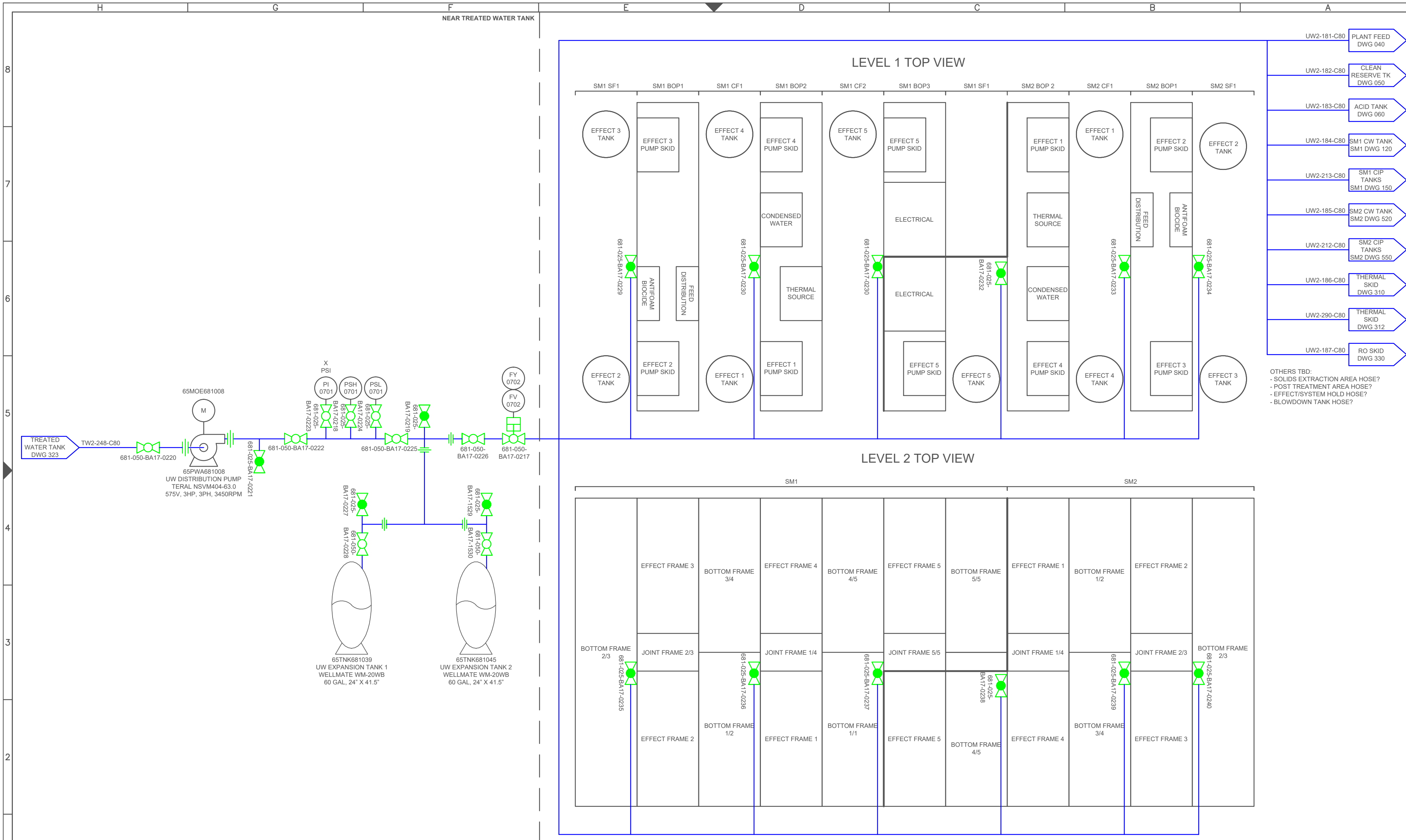

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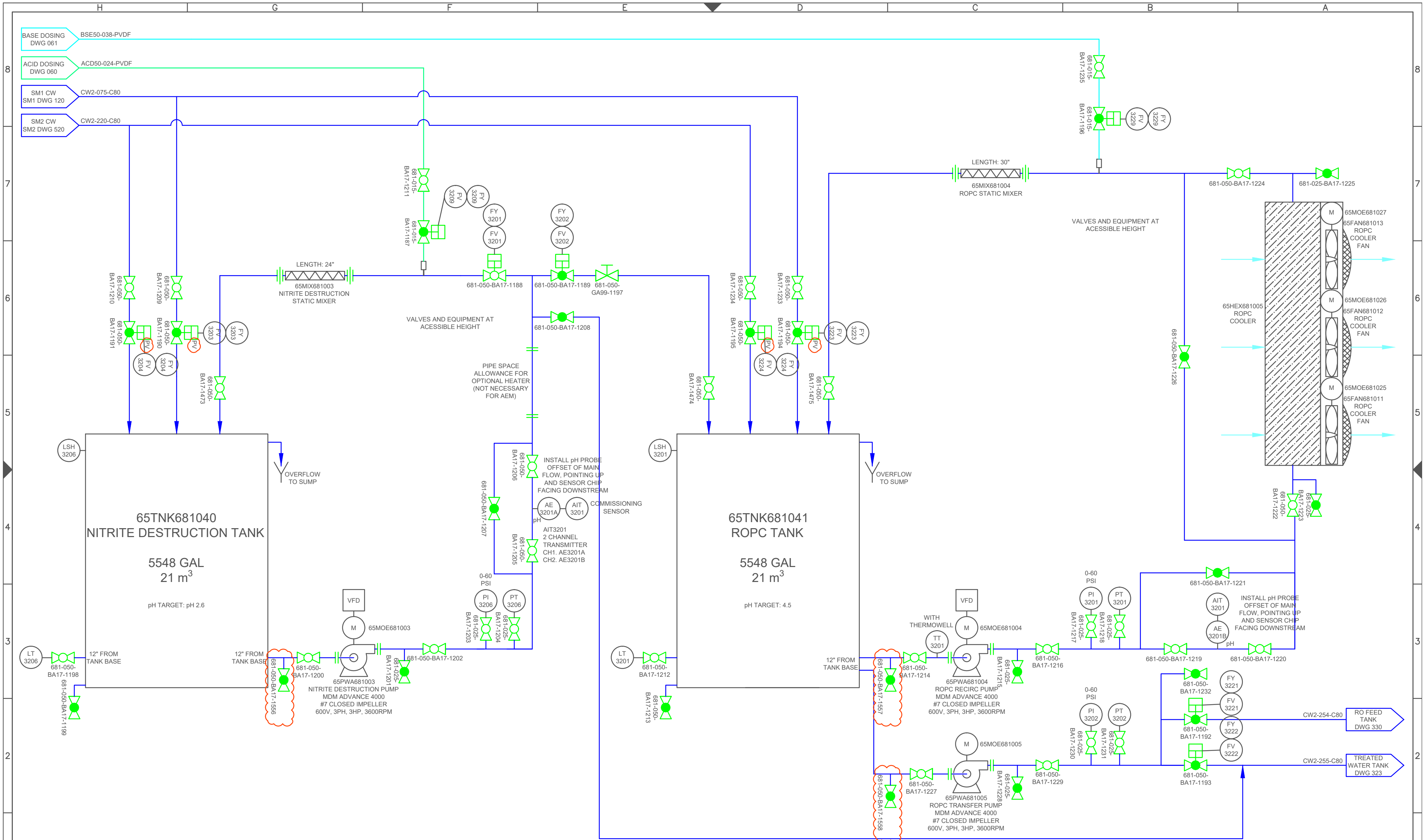
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (COMMON) 070: UTILITY WATER DISTRIBUTION

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_COMMON_DWG_070		
JOB/CO NO:	(JOB NO.)		
SHEET:	13 OF117		



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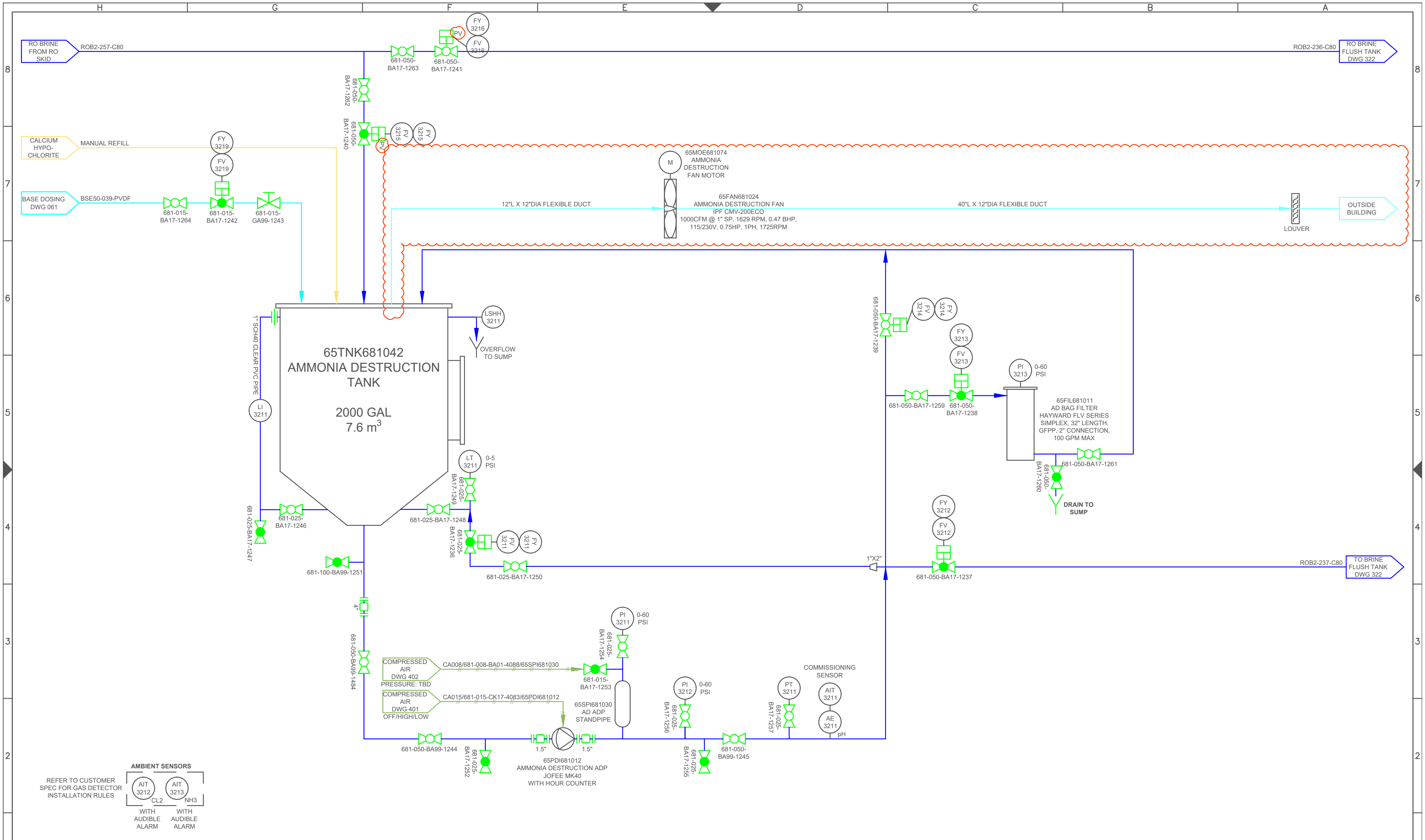
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	AS BUILT UPDATES, PINCH VALVES ADDED	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–

TITLE: (COMMON) 320: NITRITE DESTRUCTION AND RO PRE–CONDITIONING SYSTEM

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION N
PREPARED BY: JLAU	DATE: 15–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_COMMON_DWG_320	
CHECKED BY: CHECKED BY	DATE: CHECKED DATE	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 51 OF117	



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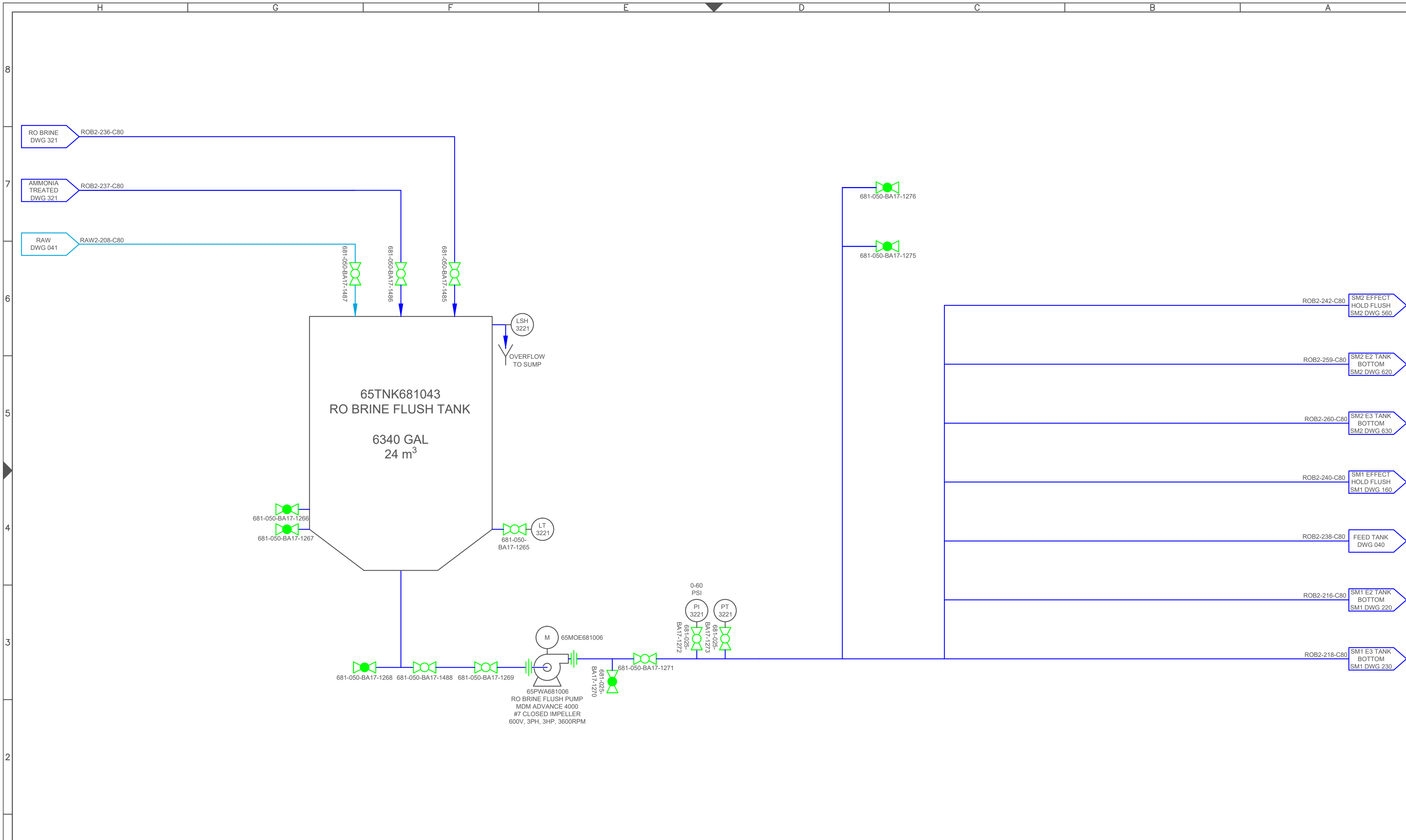
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	FAN ADDED, PINCH VALVES ADDED	JLAU
K	23–FEB–2018	NO CHANGES	–
L	16–MAR–2018	VALVES UPDATED, ADDED AMBIENT SENSORS	JLAU
M	20–APR–2018	NO CHANGES	–

TITLE: (COMMON) 321: AMMONIA DESTRUCTION SYSTEM

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 15–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_COMMON_DWG_321	
CHECKED BY: CHECKED BY	DATE: CHECKED DATE	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 52 OF 117	



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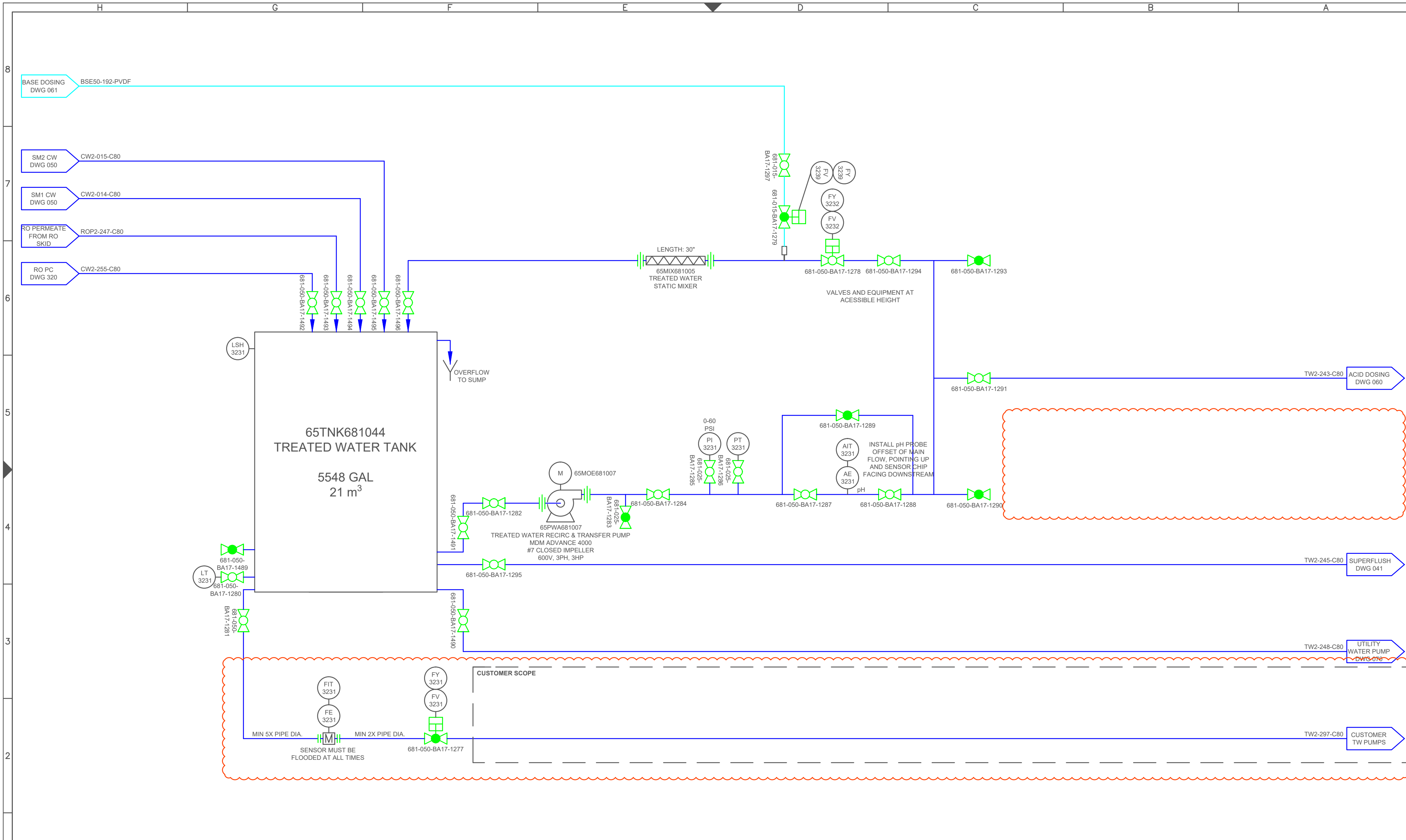
LTR	DATE	DESCRIPTION	REV. BY:
N	06-JUL-2018	NO CHANGES	–
K	23-FEB-2018	NO CHANGES	–
L	16-MAR-2018	NO CHANGES	–
M	20-APR-2018	NO CHANGES	–

TITLE: (COMMON) 322: RO BRINE FLUSH TANK

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 03-AUG-17	DWG. NO: SW_EN_SM_AEM-01_PID_COMMON_DWG_322	
CHECKED BY: CHECKED BY	DATE: CHECKED DATE	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 53 OF117	



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		K	23-FEB-2018	TAG UPDATED PER AEM MARK UP	JLAU
		L	16-MAR-2018	NO CHANGES	–
	DO NOT SCALE DRAWING	M	20-APR-2018	NO CHANGES	–

TITLE:	(COMMON) 323: TREATED WATER TANK		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	15-SEP-2017
CHECKED BY:	CHECKED BY	DATE:	CHECKED DATE
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM-01_PID_COMMON_DWG_323		
JOB/CO NO:	(JOB NO.)		
SHEET:	54 OF117		

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SALINE WATER TREATMENT PLANT
ENGINEERING DOCUMENT PACKAGE

DATE: 16-Aug-2018
CONFIDENTIAL

Client: Agnico Eagle Mines

Project: SaltMaker SM-AEM-01

The following engineering document package contains work completed under the guidance and supervision of professional engineers, P.Eng..

The package includes:

1) AEM Integration PFD Revision 3, dated 30-Oct-2017
2) Solids Extraction:

   Infographic Revision B, dated 13-Mar-2018

   Solids Extra Extraction System – Simplified Revision A, dated 23-Nov-2017
3) SW_EN_AEM-01_GAD SaltMaker GAD Revision F, dated 13-Jul-2018
4) Agnico Eagle Minds P&ID Drawing Package Revision N, dated 06-Jul-2018
5) System 100: Post Treatment RO P&ID Revision 3, Project Number 17041-100D, Nav Number: 49-0462, dated 23-Jan-2018

REGISTERED PROFESSIONAL ENGINEER
K.K.H. TSIN
LICENSEE
NT/NU

Aug 16, 2018

PERMIT TO PRACTICE
SALTWORKS TECHNOLOGIES INC.
Signature
Date Aug 16, 2018
PERMIT NUMBER: P 1239
NT/NU Association of Professional Engineers and Geoscientists

REGISTERED PROFESSIONAL ENGINEER
B.S. SPARROW
LICENSEE
NT/NU

Aug 16, 2018

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AGNICO EAGLE MINES
P&ID DRAWING PACKAGE

SALTMAKER 2 (SM2)
REVISION N

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L	22-DEC-2017	NO CHANGES	–
M	20-APR-2018	AS MARKED BY REVISION CLOUDS	JLAU
N	06-JUL-2018	AS MARKED BY REVISION CLOUDS	JLAU
K	23-FEB-2018	NO CHANGES	–

TITLE: COVER SHEET

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 1-SEP-2017	DWG. NO: COVER SHEET	
CHECKED BY: MLOW	DATE: 5-SEP-2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: # OF #	

DRAWING LIST 1

SHEET NO.	DRAWING NO.	DESCRIPTION
		COVER SHEET
		DRAWING LIST 1
		DRAWING LIST 2
		LEGEND
		COMMON
1	SW_EN_SM_AEM-01_PID_COMMON_DWG_000	MASTER PFD
2	SW_EN_SM_AEM-01_PID_COMMON_DWG_010	PROCESS FLOW DIAGRAM
3	SW_EN_SM_AEM-01_PID_COMMON_DWG_020	CONTAINER LAYOUT
4	SW_EN_SM_AEM-01_PID_COMMON_DWG_030	MODULES LAYOUT
5	SW_EN_SM_AEM-01_PID_COMMON_DWG_040	PLANT FEED TANKS
6	SW_EN_SM_AEM-01_PID_COMMON_DWG_041	PLANT FEED PUMP SKIDS
7	SW_EN_SM_AEM-01_PID_COMMON_DWG_050	CLEAN RESERVE AND BLOWDOWN SYSTEMS
8	SW_EN_SM_AEM-01_PID_COMMON_DWG_060	ACID DOSING SYSTEM
9	SW_EN_SM_AEM-01_PID_COMMON_DWG_061	BASE DOSING SYSTEM
10	SW_EN_SM_AEM-01_PID_COMMON_DWG_062	BIOCIDE DOSING SYSTEM
11	SW_EN_SM_AEM-01_PID_COMMON_DWG_063	ANTIFOAM DOSING SYSTEM
12	SW_EN_SM_AEM-01_PID_COMMON_DWG_064	ANTISCALANT DOSING SYSTEM
13	SW_EN_SM_AEM-01_PID_COMMON_DWG_070	UTILITY WATER DISTRIBUTION
		SALTMAKER 1 (SM1)
14	SW_EN_SM_AEM-01_PID_SM1_DWG_110	THERMAL SOURCE PRIMARY HEAT EXCHANGERS
15	SW_EN_SM_AEM-01_PID_SM1_DWG_120	CONDENSED WATER SYSTEM
16	SW_EN_SM_AEM-01_PID_SM1_DWG_130	FEED DISTRIBUTION
17	SW_EN_SM_AEM-01_PID_SM1_DWG_150	CIP TANKS
18	SW_EN_SM_AEM-01_PID_SM1_DWG_151	CIP PUMP SKID
19	SW_EN_SM_AEM-01_PID_SM1_DWG_160	EFFECT HOLD 1
20	SW_EN_SM_AEM-01_PID_SM1_DWG_161	EFFECT HOLD 2
21	SW_EN_SM_AEM-01_PID_SM1_DWG_162	SYSTEM HOLD
22	SW_EN_SM_AEM-01_PID_SM1_DWG_163	CALCIUM EXTRACTION
23	SW_EN_SM_AEM-01_PID_SM1_DWG_164	EH1 SOLIDS EXTRACTION
24	SW_EN_SM_AEM-01_PID_SM1_DWG_165	EH2 SOLIDS EXTRACTION
25	SW_EN_SM_AEM-01_PID_SM1_DWG_180	DRIP TRAYS
26	SW_EN_SM_AEM-01_PID_SM1_DWG_210	EFFECT 1 TANK AND PUMPS
27	SW_EN_SM_AEM-01_PID_SM1_DWG_211	EFFECT 1 MODULES
28	SW_EN_SM_AEM-01_PID_SM1_DWG_213	EFFECT 1 PUMP SEAL FLUSH
29	SW_EN_SM_AEM-01_PID_SM1_DWG_214	EFFECT 1 AIR SEALS
30	SW_EN_SM_AEM-01_PID_SM1_DWG_220	EFFECT 2 TANK AND PUMPS
31	SW_EN_SM_AEM-01_PID_SM1_DWG_221	EFFECT 2 MODULES
32	SW_EN_SM_AEM-01_PID_SM1_DWG_222	EFFECT 2 SOLIDS EXTRACTION
33	SW_EN_SM_AEM-01_PID_SM1_DWG_223	EFFECT 2 PUMP SEAL FLUSH
34	SW_EN_SM_AEM-01_PID_SM1_DWG_224	EFFECT 2 AIR SEALS

SHEET NO.	DRAWING NO.	DESCRIPTION
35	SW_EN_SM_AEM-01_PID_SM1_DWG_230	EFFECT 3 TANK AND PUMPS
36	SW_EN_SM_AEM-01_PID_SM1_DWG_231	EFFECT 3 MODULES
37	SW_EN_SM_AEM-01_PID_SM1_DWG_232	EFFECT 3 SOLIDS EXTRACTION
38	SW_EN_SM_AEM-01_PID_SM1_DWG_233	EFFECT 3 PUMP SEAL FLUSH
39	SW_EN_SM_AEM-01_PID_SM1_DWG_234	EFFECT 3 AIR SEALS
40	SW_EN_SM_AEM-01_PID_SM1_DWG_240	EFFECT 4 TANK AND PUMPS
41	SW_EN_SM_AEM-01_PID_SM1_DWG_241	EFFECT 4 MODULES
42	SW_EN_SM_AEM-01_PID_SM1_DWG_243	EFFECT 4 PUMP SEAL FLUSH
43	SW_EN_SM_AEM-01_PID_SM1_DWG_244	EFFECT 4 AIR SEALS
44	SW_EN_SM_AEM-01_PID_SM1_DWG_250	EFFECT 5 TANK AND PUMPS
45	SW_EN_SM_AEM-01_PID_SM1_DWG_251	EFFECT 5 MODULES
46	SW_EN_SM_AEM-01_PID_SM1_DWG_253	EFFECT 5 PUMP SEAL FLUSH
47	SW_EN_SM_AEM-01_PID_SM1_DWG_254	EFFECT 5 AIR SEALS
		THERMAL SYSTEM
48	SW_EN_SM_AEM-01_PID_DWG_310	THERMAL SKID: WATER LOOP
49	SW_EN_SM_AEM-01_PID_DWG_311	THERMAL SKID: WATER LOOP
50	SW_EN_SM_AEM-01_PID_DWG_312	THERMAL SKID: GYLCOL LOOP
		POST TREATMENT
51	SW_EN_SM_AEM-01_PID_COMMON_DWG_320	NITRITE DESTRUCTION AND RO PC SYSTEM
52	SW_EN_SM_AEM-01_PID_COMMON_DWG_321	AMMONIA DESTRUCTION SYSTEM
53	SW_EN_SM_AEM-01_PID_COMMON_DWG_322	RO BRINE FLUSH TANK
54	SW_EN_SM_AEM-01_PID_COMMON_DWG_323	TREATED WATER TANK
		COMPRESSED AIR-COMMON PACKAGE
55	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_400	COMPRESSED AIR SYSTEM
56	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_401	AMMONIA DES, BRINE BLOWDOWN AND PLANT FEED AIR
57	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_402	CHEMICAL DOSING AND ANCILLARY STAND PIPE AIR
58	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_403	COMMON AND POST TREATMENT AIR BANK 1
59	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_404	COMMON AND POST TREATMENT AIR BANK 2
		COMPRESSED AIR-SM1
60	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_410	SM INSTRUMENT AND PROCESS AIR
61	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_411	EH1/EH2 EXTRACT AND CIP AIR

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L	22–DEC–2017	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–

TITLE:	DRAWING LIST 1		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	DRAWING LIST 1		
JOB/CO NO:	(JOB NO.)		
SHEET:	# OF #		

DRAWING LIST 2

SHEET NO.	DRAWING NO.	DESCRIPTION
62	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_412	EH1/EH2 EXTRACT AND CIP AIR
63	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_413	PLUG PREVENTION PUMP AIR
64	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_414	AIR SEAL, STAND PIPE AND E2/E3 SE AIR
65	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_415	UTILITY AIR
66	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_416	BOP1 AIR SOLENOID BANK
67	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_417	E2/E3 SE AIR SOLENOID BANK
68	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_418	BOP2 AIR SOLENOID BANK
69	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_419	BOP3 AIR SOLENOID BANK
70	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_420	CIP, EH/SY AIR SOLENOID BANK
71	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_421	H1/H2 SE AIR SOLENOID BANK
		COMPRESSED AIR-SM2
72	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_450	SM INSTRUMENT AND PROCESS AIR
73	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_451	EH1/EH2 EXTRACT AND CIP AIR
74	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_452	EFFECT/SYSTEM HOLD AND CAL EXTRACTION AIR
75	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_453	PLUG PREVENTION PUMP AIR
76	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_454	AIR SEAL, STAND PIPE AND E2/E3 SE AIR
77	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_455	UTILITY AIR
78	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_456	BOP1 AIR SOLENOID BANK
79	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_457	E2/E3 SE AIR SOLENOID BANK
80	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_458	BOP2 AIR SOLENOID BANK
81	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_459	BOP3 AIR SOLENOID BANK
82	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_460	CIP, EH/SY AIR SOLENOID BANK
83	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_461	H1/H2 SE AIR SOLENOID BANK

SHEET NO.	DRAWING NO.	DESCRIPTION
		SALTMAKER 2 (SM2)
84	SW_EN_SM_AEM-01_PID_SM2_DWG_510	THERMAL SOURCE PRIMARY HEAT EXCHANGERS
85	SW_EN_SM_AEM-01_PID_SM2_DWG_520	CONDENSED WATER SYSTEM
86	SW_EN_SM_AEM-01_PID_SM2_DWG_530	FEED DISTRIBUTION
87	SW_EN_SM_AEM-01_PID_SM2_DWG_550	CIP TANKS
88	SW_EN_SM_AEM-01_PID_SM2_DWG_551	CIP PUMP SKID
89	SW_EN_SM_AEM-01_PID_SM2_DWG_560	EFFECT HOLD 1
90	SW_EN_SM_AEM-01_PID_SM2_DWG_561	EFFECT HOLD 2
91	SW_EN_SM_AEM-01_PID_SM2_DWG_562	SYSTEM HOLD
92	SW_EN_SM_AEM-01_PID_SM2_DWG_563	CALCIUM EXTRACTION
93	SW_EN_SM_AEM-01_PID_SM2_DWG_564	EH1 SOLIDS EXTRACTION
94	SW_EN_SM_AEM-01_PID_SM2_DWG_565	EH2 SOLIDS EXTRACTION
95	SW_EN_SM_AEM-01_PID_SM2_DWG_580	DRIP TRAYS
96	SW_EN_SM_AEM-01_PID_SM2_DWG_610	EFFECT 1 TANK AND PUMPS
97	SW_EN_SM_AEM-01_PID_SM2_DWG_611	EFFECT 1 MODULES
98	SW_EN_SM_AEM-01_PID_SM2_DWG_613	EFFECT 1 PUMP SEAL FLUSH
99	SW_EN_SM_AEM-01_PID_SM2_DWG_614	EFFECT 1 AIR SEALS
100	SW_EN_SM_AEM-01_PID_SM2_DWG_620	EFFECT 2 TANK AND PUMPS
101	SW_EN_SM_AEM-01_PID_SM2_DWG_621	EFFECT 2 MODULES
102	SW_EN_SM_AEM-01_PID_SM2_DWG_622	EFFECT 2 SOLIDS EXTRACTION
103	SW_EN_SM_AEM-01_PID_SM2_DWG_623	EFFECT 2 PUMP SEAL FLUSH
104	SW_EN_SM_AEM-01_PID_SM2_DWG_624	EFFECT 2 AIR SEALS
105	SW_EN_SM_AEM-01_PID_SM2_DWG_630	EFFECT 3 TANK AND PUMPS
106	SW_EN_SM_AEM-01_PID_SM2_DWG_631	EFFECT 3 MODULES
107	SW_EN_SM_AEM-01_PID_SM2_DWG_632	EFFECT 3 SOLIDS EXTRACTION
108	SW_EN_SM_AEM-01_PID_SM2_DWG_633	EFFECT 3 PUMP SEAL FLUSH
109	SW_EN_SM_AEM-01_PID_SM2_DWG_634	EFFECT 3 AIR SEALS
110	SW_EN_SM_AEM-01_PID_SM2_DWG_640	EFFECT 4 TANK AND PUMPS
111	SW_EN_SM_AEM-01_PID_SM2_DWG_641	EFFECT 4 MODULES
112	SW_EN_SM_AEM-01_PID_SM2_DWG_643	EFFECT 4 PUMP SEAL FLUSH
113	SW_EN_SM_AEM-01_PID_SM2_DWG_644	EFFECT 4 AIR SEALS
114	SW_EN_SM_AEM-01_PID_SM2_DWG_650	EFFECT 5 TANK AND PUMPS
115	SW_EN_SM_AEM-01_PID_SM2_DWG_651	EFFECT 5 MODULES
116	SW_EN_SM_AEM-01_PID_SM2_DWG_653	EFFECT 5 PUMP SEAL FLUSH
117	SW_EN_SM_AEM-01_PID_SM2_DWG_654	EFFECT 5 AIR SEALS
		VENDOR DRAWINGS
	USW_17041_100D	POST TREATMENT RO

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M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–

TITLE:	DRAWING LIST 2		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	DRAWING LIST 2		
JOB/CO NO:	(JOB NO.)		
SHEET:	# OF #		

VALVES

- MANUAL BALL (MBV) – NORMALLY CLOSED
- MANUAL BALL (MBV) – NORMALLY OPEN
- CHECK (CV)
- GATE (GV)
- BUTTERFLY (BFV)
- PRESSURE RELIEF VALVE (PRV)
- FLOAT VALVE (FV)
- DIAPHRAGM (DV)
- NEEDLE (NV)
- 3–WAY
- 3–WAY SOLENOID
- 4–WAY SOLENOID
- 4–FUNCTION VALVE
- FOOT VALVE

N.O. – NORMALLY OPEN
N.C. – NORMALLY CLOSED

CONTROL VALVES/ACTUATORS

- PRESSURE CONTROL VALVE (PCV) WITH PRESSURE GAUGE
- DOUBLE ACTING ACTUATED BALL VALVE (ABV) – NORMALLY CLOSED
- DOUBLE ACTING ACTUATED BALL VALVE (ABV) – NORMALLY OPEN
- DOUBLE ACTING ACTUATED BALL VALVE (ABV) – NORMALLY OPEN WITH PINCH VALVES
- SOLENOID VALVE (SV)
- SOLENOID VALVE (SV)
- MOTORIZED ACTUATOR
- MOTORIZED ACTUATOR WITH MANUAL OVERRIDE
- DOUBLE ACTING DIAPHRAGM ACTUATOR WITH LIMIT STOP
- DOUBLE ACTING DIAPHRAGM ACTUATOR WITH SPRING TO CLOSE
- DOUBLE ACTING DIAPHRAGM ACTUATOR WITH SPRING TO OPEN
- A/S AIR OPERATOR W/POSITIONER

EQUIPMENT SYMBOL

- MIXER OR AGITATOR (MX)
- INLINE STATIC MIXER
- HEATER (HE)
- ELECTRIC HEATER (EH)
- INJECTION QUILL
- EDUCTOR/EJECTOR (ED)
- POSITIVE DISPLACEMENT PUMP W/MANUAL STROKE ADJUSTMENT (MP)
- POSITIVE DISPLACEMENT PUMP W/ELECTRIC STROKE ADJUSTMENT (MP)
- ROTARY COMPRESSOR OR BLOWER
- AIR FILTER
- BLOWER OR FAN (BW OR FN)
- VACUUM PUMP (VP)
- DIAPHRAGM PUMP (P)
- CENTRIFUGAL PUMP (P)
- HIGH PRESSURE PUMP (P)
- DESICCANT BREATHER
- VENT PIPE
- Y–STRAINER
- RUPTURE DISC
- DIAPHRAGM SEAL
- STANDPIPE (SP)
- CALIBRATION COLUMN (CC)
- AIR COMPRESSOR (AC)
- PNEUMATIC VIBRATOR (VIB)
- RO/UF MODULE
- FILTER – BASKET (BAF)
- FILTER (F) HOUSING
- CLOSED TOP TANK (TK)
- CONE BOTTOM TANK (TK)
- OPEN TOP TANK (TK) WITH COVER
- PLATE HEAT EXCHANGER (HX)
- SHELL AND TUBE HEAT EXCHANGER (HX)
- CONE CONSTRAINER (CSTR)
- PERISTALTIC HOSE PUMP (P)
- FLEXIBLE CONNECTION

MISCELLANEOUS SYMBOLS

- LINE, EQUIPMENT OR PRODUCT REFERENCES INTO OR LEAVING DWG.
- TIE – TIE IN TO PIPING BY OTHERS
- 304 | CPVC – PIPING MATERIAL SPEC. BREAK

SOLENOID VALVE OPERATION

- 3–WAY: FAIL OPEN TO PATH A–C
- 4–WAY: FAIL OPEN TO PATHS A–C AND D–B

(Piping)

- A/S – AIR SUPPLY
- N/S – NITROGEN SUPPLY
- CONCENTRIC REDUCING
- ECCENTRIC REDUCING
- ENCLOSURE (CAP)
- FLANGE
- END CLOSURE (BLIND FLANGE)
- END CLOSURE (VIC PLUG)
- QUICK DISCONNECT
- UNION
- SANITARY CONNECTION
- FLOOR DRAIN OR SUMP
- BULKHEAD
- EXPANSION JOINT

FILL SYMBOLS

- SPLASH FILL
- FILM FILL
- NET FILL

INSTRUMENT LINE SYMBOLS

- PNEUMATIC SIGNAL (ANALOG)
- PNEUMATIC SIGNAL (DIGITAL)
- ELECTRICAL SIGNAL (ANALOG – 4–20mA OR 1–10 VDC)
- ELECTRICAL SIGNAL (FREQUENCY OR PULSE)
- CAPILLARY TUBING (FILLED TUBING)
- CONNECTION TO PROCESS, OR INSTRUMENT SUPPLY

FLUID LINE SYMBOLS

- EFFECT 1 BRINE (90°C)
- EFFECT 2 BRINE (75°C)
- EFFECT 3 BRINE (60°C)
- EFFECT 4 BRINE (45°C)
- EFFECT 5 BRINE (30°C)
- CIP
- RAW FEED
- CONDENSED WATER (70°C – 40°C)
- THERMAL LOOP (GYLCOL)
- EVAPORATE
- COMPRESSED AIR LINE
- ACID DOSING
- BASE DOSING
- ANTIFOAM
- BIOFILM TREATMENT SOLUTION

MISCELLANEOUS LINE SYMBOLS

- SYSTEM BOUNDARY

INSTRUMENT SYMBOLS

- LOCALLY MOUNTED
- PANEL MOUNTED (MAIN OR REMOTE)
- SHARED DISPLAY (CRT) AND/OR SHARED CONTROL

CONTROL SYMBOLS

- DI – DISCRETE INPUT TO PLC
- DO – DISCRETE OUTPUT FROM PLC
- AI – ANALOG INPUT TO PLC
- AO – ANALOG OUTPUT FROM PLC

EQUIPMENT IDENTIFICATION

M – MOTOR
AS – AIR SEAL
VFD – VARIABLE FREQUENCY DRIVE
DRY – DRYER

MODULE IDENTIFICATION

EVP – EVAPORATOR MODULE
RAD – RADIATOR MODULE
FAN – FAN MODULE

MATERIAL ABBREVIATIONS

PP – POLYPROPYLENE
PVC – POLYVINYL CHLORIDE
UPVC – POLYVINYL CHLORIDE
P – POLYVINYL CHLORIDE (IN LINE NUMBER)
CPVC – CHLORINATED POLYVINYL CHLORIDE
C – CHLORINATED POLYVINYL CHLORIDE (IN LINE NUMBER)
HDPE – HIGH DENSITY POLYETHYLENE
PVDF – POLYVINYLIDENE FLUORIDE
PVFB – PVDF BEADLESS & CREVICE FREE
PVFL – PVDF LINED
PTFE – TEFLON
304 – 304 STAINLESS STEEL
304L – 304L STAINLESS STEEL
316 – 316 STAINLESS STEEL
316L – 316L STAINLESS STEEL

INSTRUMENT IDENTIFICATION

PARAMETER (1ST LETTER)
P – PRESSURE
F – FLOW
T – TEMPERATURE
C – CONDUCTIVITY
D – DENSITY
Z – POSITION
A – ANALYTICAL (SEE NOTES)

TYPE (2ND AND 3RD LETTER)
I – INDICATING/INDICATOR
T – TRANSMITTER
E – ELEMENT/PROBE
A – ALARM
S – SWITCH

NOTES:
1. THE DESCRIPTION OF AN ANALYTICAL VARIABLE FUNCTION (pH, SiO_2, O, ETC.) SHALL BE SHOWN OUTSIDE THE INSTRUMENT SYMBOL. EXAMPLE: AIT pH
2. ADD THE SUFFIX L (LOW), LL (LOW–LOW), H (HIGH), HH (HIGH–HIGH), HL (HIGH–LOW), AS REQUIRED. EXAMPLE: PSL FAL

LINE NUMBERING

E1BR4–001–P80 — FLUID, SIZE, SEQUENTIAL NUMBER, MATERIAL, SCHEDULE

VALVE NUMBERING

681–015–BA17–0001 — AREA CODE, VALVE SIZE, VALVE TYPE, SEQUENTIAL NUMBER

VALVE SIZE CONVERSION

MM		INCH
008	-	1/4
015	-	1/2
025	-	1
050	-	2
100	-	4
150	-	6

VALVE TYPE CONVERSION

BA17	-	BALL VALVE
BA99	-	TOUGH BALL VALVE
BF99	-	TOUGH BUTTERFLY VALVE (EXCEPT THOSE NOTED "NON TOUGH")
CK99	-	CHECK VALVE
GA99	-	GATE VALVE

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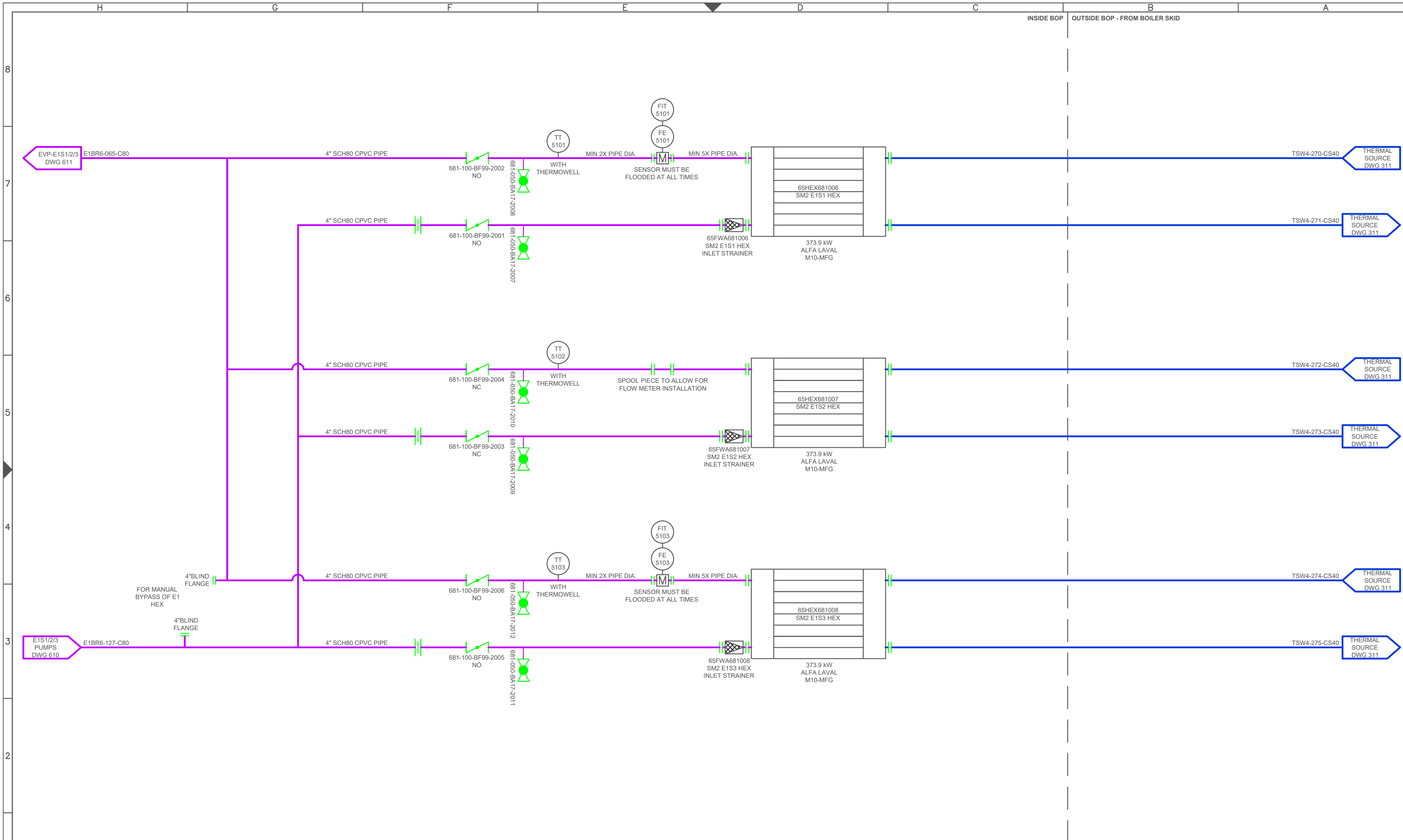
DO NOT SCALE DRAWING

LTR	DATE	DESCRIPTION	REV. BY:
L	22–DEC–2017	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	PINCH VALVE LEGEND ADDED	JLAU
K	23–FEB–2018	NO CHANGES	–

TITLE:	LEGEND		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION:	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	LEGEND	JOB/CO NO:	(JOB NO.)
SHEET:	# OF #		



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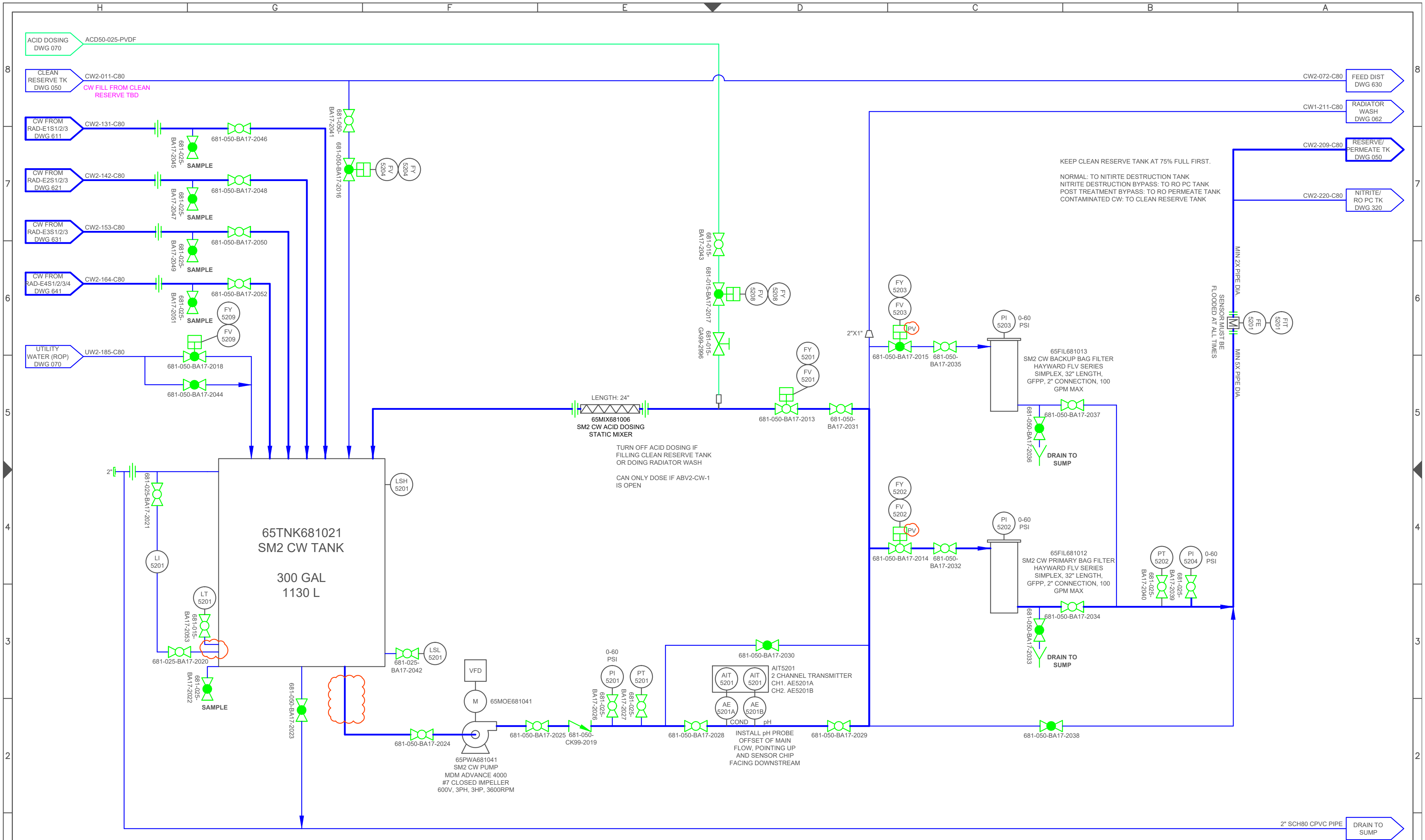
LTR	DATE	DESCRIPTION	REV. BY:
L	22-DEC-2017	NO CHANGES	–
M	20-APR-2018	NO CHANGES	–
N	06-JUL-2018	NO CHANGES	–
K	23-FEB-2018	TAGS UPDATED PER AEM MARK UP	JLAU

TITLE: (SM2) 510: THERMAL SOURCE PRIMARY HEAT EXCHANGER

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	PH	DATE:	01-SEP-2017
CHECKED BY:	MLOW	DATE:	05-SEP-2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM-01_PID_SM2_DWG_510	JOB/CO NO:	(JOB NO.)
SHEET:	84 OF117		



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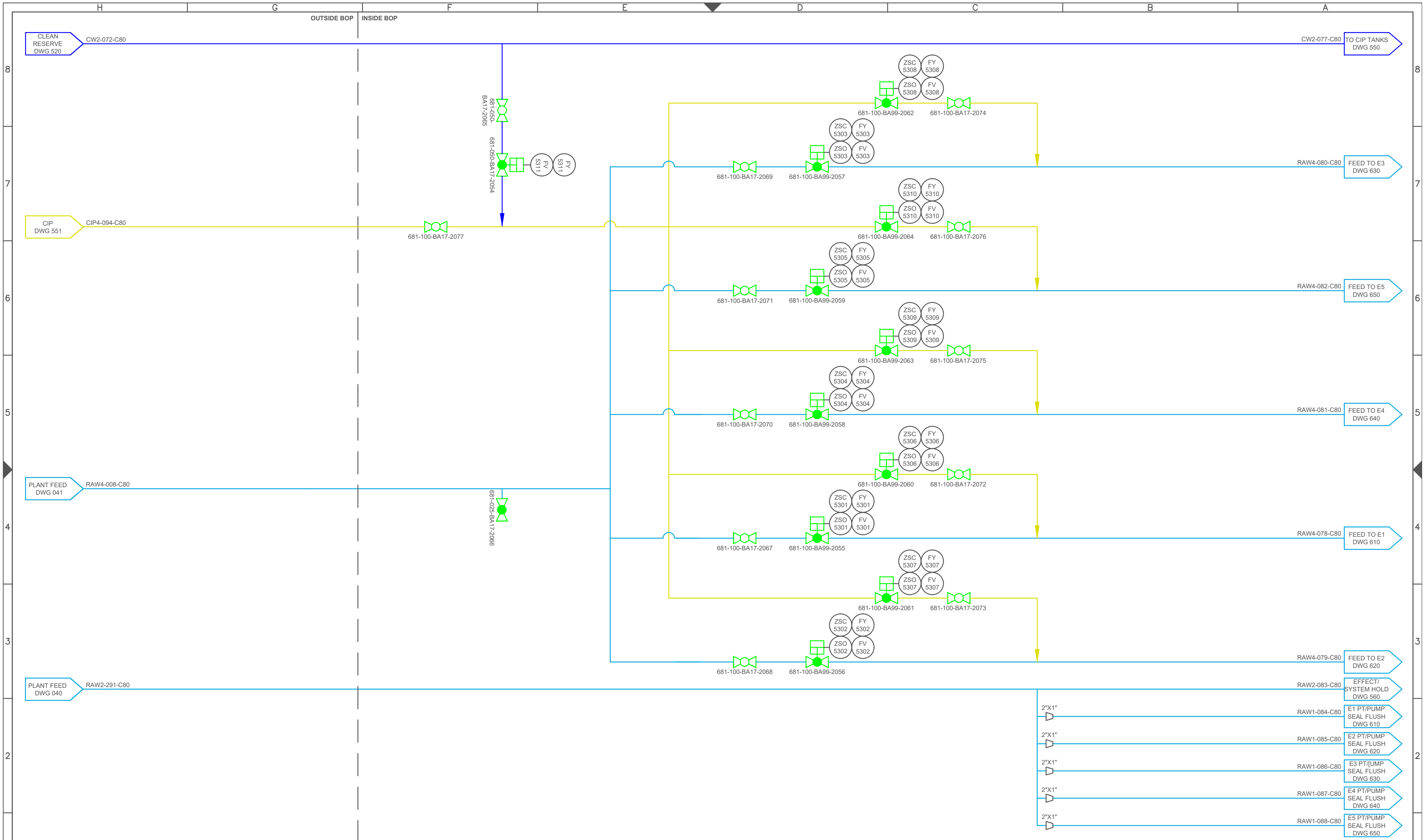
LTR	DATE	DESCRIPTION	REV. BY:
L	22-DEC-2017	NO CHANGES	–
M	20-APR-2018	GATE VALVE ADDED	JLAU
N	06-JUL-2018	PINCH VALVES ADDED, AS BUILT UPDATES	JLAU
K	23-FEB-2018	TAG UPDATED PER AEM MARK UP	JLAU

TITLE: (SM2) 520: CONDENSED WATER SYSTEM

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY: JLAU	DATE: 01-SEP-2017	DWG. NO:	SW_EN_SM_AEM-01_PID_SM2_DWG_520
CHECKED BY: MLOW	DATE: 05-SEP-2017	JOB/CO NO:	(JOB NO.)
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET:	85 OF117



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LTR	DATE	DESCRIPTION	REV. BY:
L	22–DEC–2017	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 530: FEED DISTRIBUTION

PROJECT: SALTMAKER GEN III

CUSTOMER: AGNICO EAGLE MINES

REVISION: N

PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE

DWG. NO: SW_EN_SM_AEM–01_PID_SM2_DWG_530

JOB/CO NO: (JOB NO.)

SHEET: 86 OF117

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SALINE WATER TREATMENT PLANT
ENGINEERING DOCUMENT PACKAGE

DATE: 16-Aug-2018
CONFIDENTIAL

Client: Agnico Eagle Mines

Project: SaltMaker SM-AEM-01

The following engineering document package contains work completed under the guidance and supervision of professional engineers, P.Eng..

The package includes:

1) AEM Integration PFD Revision 3, dated 30-Oct-2017
2) Solids Extraction:

   Infographic Revision B, dated 13-Mar-2018

   Solids Extra Extraction System – Simplified Revision A, dated 23-Nov-2017
3) SW_EN_AEM-01_GAD SaltMaker GAD Revision F, dated 13-Jul-2018
4) Agnico Eagle Minds P&ID Drawing Package Revision N, dated 06-Jul-2018
5) System 100: Post Treatment RO P&ID Revision 3, Project Number 17041-100D, Nav Number: 49-0462, dated 23-Jan-2018

REGISTERED PROFESSIONAL ENGINEER
K.K.H. TSIN
LICENSEE
NT/NU

Aug 16, 2018

PERMIT TO PRACTICE
SALTWORKS TECHNOLOGIES INC.
Signature
Date Aug 16, 2018
PERMIT NUMBER: P 1239
NT/NU Association of Professional Engineers and Geoscientists

REGISTERED PROFESSIONAL ENGINEER
B.S. SPARROW
LICENSEE
NT/NU

Aug 16, 2018

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AGNICO EAGLE MINES
P&ID DRAWING PACKAGE

THERMAL SOURCE
REVISION N

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	N	06-JUL-2018	NO CHANGES	–
	K	23-FEB-2018	NO CHANGES	–
	L	23-MAR-2018	DRAIN VALVE SIZE AND UTILITY WATER FILL LAYOUT UPDATE	PH
DO NOT SCALE DRAWING	M	09-MAY-2018	BUILDING HEATERS TIE-IN UPDATE	DKAO

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TITLE: COVER SHEET			
PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: DKAO	DATE: 09-MAY-2018	DWG. NO: COVER SHEET	
CHECKED BY:	DATE:	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: # OF #	

DRAWING LIST 2

SHEET NO.	DRAWING NO.	DESCRIPTION
61	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_412	EH1/EH2 EXTRACT AND CIP AIR
62	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_413	PLUG PREVENTION PUMP AIR
63	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_414	AIR SEAL, STAND PIPE AND E2/E3 SE AIR
64	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_415	UTILITY AIR
65	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_416	BOP1 AIR SOLENOID BANK
66	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_417	E2/E3 SE AIR SOLENOID BANK
67	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_418	BOP2 AIR SOLENOID BANK
68	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_419	BOP3 AIR SOLENOID BANK
69	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_420	CIP, EH/SY AIR SOLENOID BANK
70	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_421	H1/H2 SE AIR SOLENOID BANK
		COMPRESSED AIR-SM2
71	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_450	SM INSTRUMENT AND PROCESS AIR
72	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_451	EH1/EH2 EXTRACT AND CIP AIR
73	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_452	EFFECT/SYSTEM HOLD AND CAL EXTRACTION AIR
74	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_453	PLUG PREVENTION PUMP AIR
75	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_454	AIR SEAL, STAND PIPE AND E2/E3 SE AIR
76	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_455	UTILITY AIR
77	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_456	BOP1 AIR SOLENOID BANK
78	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_457	E2/E3 SE AIR SOLENOID BANK
79	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_458	BOP2 AIR SOLENOID BANK
80	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_459	BOP3 AIR SOLENOID BANK
81	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_460	CIP, EH/SY AIR SOLENOID BANK
82	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_461	H1/H2 SE AIR SOLENOID BANK

SHEET NO.	DRAWING NO.	DESCRIPTION
		SALTMAKER 2 (SM2)
83	SW_EN_SM_AEM-01_PID_SM2_DWG_510	THERMAL SOURCE PRIMARY HEAT EXCHANGERS
84	SW_EN_SM_AEM-01_PID_SM2_DWG_520	CONDENSED WATER SYSTEM
85	SW_EN_SM_AEM-01_PID_SM2_DWG_530	FEED DISTRIBUTION
86	SW_EN_SM_AEM-01_PID_SM2_DWG_550	CIP TANKS
87	SW_EN_SM_AEM-01_PID_SM2_DWG_551	CIP PUMP SKID
88	SW_EN_SM_AEM-01_PID_SM2_DWG_560	EFFECT HOLD 1
89	SW_EN_SM_AEM-01_PID_SM2_DWG_561	EFFECT HOLD 2
90	SW_EN_SM_AEM-01_PID_SM2_DWG_562	SYSTEM HOLD
91	SW_EN_SM_AEM-01_PID_SM2_DWG_563	CALCIUM EXTRACTION
92	SW_EN_SM_AEM-01_PID_SM2_DWG_564	EH1 SOLIDS EXTRACTION
93	SW_EN_SM_AEM-01_PID_SM2_DWG_565	EH2 SOLIDS EXTRACTION
94	SW_EN_SM_AEM-01_PID_SM2_DWG_580	DRIP TRAYS
95	SW_EN_SM_AEM-01_PID_SM2_DWG_610	EFFECT 1 TANK AND PUMPS
96	SW_EN_SM_AEM-01_PID_SM2_DWG_611	EFFECT 1 MODULES
97	SW_EN_SM_AEM-01_PID_SM2_DWG_613	EFFECT 1 PUMP SEAL FLUSH
98	SW_EN_SM_AEM-01_PID_SM2_DWG_614	EFFECT 1 AIR SEALS
99	SW_EN_SM_AEM-01_PID_SM2_DWG_620	EFFECT 2 TANK AND PUMPS
100	SW_EN_SM_AEM-01_PID_SM2_DWG_621	EFFECT 2 MODULES
101	SW_EN_SM_AEM-01_PID_SM2_DWG_622	EFFECT 2 SOLIDS EXTRACTION
102	SW_EN_SM_AEM-01_PID_SM2_DWG_623	EFFECT 2 PUMP SEAL FLUSH
103	SW_EN_SM_AEM-01_PID_SM2_DWG_624	EFFECT 2 AIR SEALS
104	SW_EN_SM_AEM-01_PID_SM2_DWG_630	EFFECT 3 TANK AND PUMPS
105	SW_EN_SM_AEM-01_PID_SM2_DWG_631	EFFECT 3 MODULES
106	SW_EN_SM_AEM-01_PID_SM2_DWG_632	EFFECT 3 SOLIDS EXTRACTION
107	SW_EN_SM_AEM-01_PID_SM2_DWG_633	EFFECT 3 PUMP SEAL FLUSH
108	SW_EN_SM_AEM-01_PID_SM2_DWG_634	EFFECT 3 AIR SEALS
109	SW_EN_SM_AEM-01_PID_SM2_DWG_640	EFFECT 4 TANK AND PUMPS
110	SW_EN_SM_AEM-01_PID_SM2_DWG_641	EFFECT 4 MODULES
111	SW_EN_SM_AEM-01_PID_SM2_DWG_643	EFFECT 4 PUMP SEAL FLUSH
112	SW_EN_SM_AEM-01_PID_SM2_DWG_644	EFFECT 4 AIR SEALS
113	SW_EN_SM_AEM-01_PID_SM2_DWG_650	EFFECT 5 TANK AND PUMPS
114	SW_EN_SM_AEM-01_PID_SM2_DWG_651	EFFECT 5 MODULES
115	SW_EN_SM_AEM-01_PID_SM2_DWG_653	EFFECT 5 PUMP SEAL FLUSH
116	SW_EN_SM_AEM-01_PID_SM2_DWG_654	EFFECT 5 AIR SEALS
		VENDOR DRAWINGS
	USW_17041_100D	POST TREATMENT RO

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LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	23–MAR–2018	DRAIN VALVE SIZE AND UTILITY WATER FILL LAYOUT UPDATE	PH
M	09–MAY–2018	BUILDING HEATERS TIE–IN UPDATE	DKAO

TITLE: DRAWING LIST 2			
PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: DKAO	DATE: 09–MAY–2018	DWG. NO: DRAWING LIST 2	
CHECKED BY:	DATE:	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: # OF #	

DRAWING LIST 1

SHEET NO.	DRAWING NO.	DESCRIPTION
		COVER SHEET
		DRAWING LIST 1
		DRAWING LIST 2
		LEGEND
		COMMON
1	SW_EN_SM_AEM-01_PID_COMMON_DWG_000	MASTER PFD
2	SW_EN_SM_AEM-01_PID_COMMON_DWG_010	PROCESS FLOW DIAGRAM
3	SW_EN_SM_AEM-01_PID_COMMON_DWG_020	CONTAINER LAYOUT
4	SW_EN_SM_AEM-01_PID_COMMON_DWG_030	MODULES LAYOUT
5	SW_EN_SM_AEM-01_PID_COMMON_DWG_040	PLANT FEED TANKS
6	SW_EN_SM_AEM-01_PID_COMMON_DWG_041	PLANT FEED PUMP SKIDS
7	SW_EN_SM_AEM-01_PID_COMMON_DWG_050	CLEAN RESERVE AND BLOWDOWN SYSTEMS
8	SW_EN_SM_AEM-01_PID_COMMON_DWG_060	ACID DOSING SYSTEM
9	SW_EN_SM_AEM-01_PID_COMMON_DWG_061	BASE DOSING SYSTEM
10	SW_EN_SM_AEM-01_PID_COMMON_DWG_062	BIOCIDE DOSING SYSTEM
11	SW_EN_SM_AEM-01_PID_COMMON_DWG_063	ANTIFOAM DOSING SYSTEM
12	SW_EN_SM_AEM-01_PID_COMMON_DWG_064	ANTISCALANT DOSING SYSTEM
13	SW_EN_SM_AEM-01_PID_COMMON_DWG_070	UTILITY WATER DISTRIBUTION
		SALTMAKER 1 (SM1)
14	SW_EN_SM_AEM-01_PID_SM1_DWG_110	THERMAL SOURCE PRIMARY HEAT EXCHANGERS
15	SW_EN_SM_AEM-01_PID_SM1_DWG_120	CONDENSED WATER SYSTEM
16	SW_EN_SM_AEM-01_PID_SM1_DWG_130	FEED DISTRIBUTION
17	SW_EN_SM_AEM-01_PID_SM1_DWG_150	CIP TANKS
18	SW_EN_SM_AEM-01_PID_SM1_DWG_151	CIP PUMP SKID
19	SW_EN_SM_AEM-01_PID_SM1_DWG_160	EFFECT HOLD 1
20	SW_EN_SM_AEM-01_PID_SM1_DWG_161	EFFECT HOLD 2
21	SW_EN_SM_AEM-01_PID_SM1_DWG_162	SYSTEM HOLD
22	SW_EN_SM_AEM-01_PID_SM1_DWG_163	CALCIUM EXTRACTION
23	SW_EN_SM_AEM-01_PID_SM1_DWG_164	EH1 SOLIDS EXTRACTION
24	SW_EN_SM_AEM-01_PID_SM1_DWG_165	EH2 SOLIDS EXTRACTION
25	SW_EN_SM_AEM-01_PID_SM1_DWG_180	DRIP TRAYS
26	SW_EN_SM_AEM-01_PID_SM1_DWG_210	EFFECT 1 TANK AND PUMPS
27	SW_EN_SM_AEM-01_PID_SM1_DWG_211	EFFECT 1 MODULES
28	SW_EN_SM_AEM-01_PID_SM1_DWG_213	EFFECT 1 PUMP SEAL FLUSH
29	SW_EN_SM_AEM-01_PID_SM1_DWG_214	EFFECT 1 AIR SEALS
30	SW_EN_SM_AEM-01_PID_SM1_DWG_220	EFFECT 2 TANK AND PUMPS
31	SW_EN_SM_AEM-01_PID_SM1_DWG_221	EFFECT 2 MODULES
32	SW_EN_SM_AEM-01_PID_SM1_DWG_222	EFFECT 2 SOLIDS EXTRACTION
33	SW_EN_SM_AEM-01_PID_SM1_DWG_223	EFFECT 2 PUMP SEAL FLUSH
34	SW_EN_SM_AEM-01_PID_SM1_DWG_224	EFFECT 2 AIR SEALS

SHEET NO.	DRAWING NO.	DESCRIPTION
35	SW_EN_SM_AEM-01_PID_SM1_DWG_230	EFFECT 3 TANK AND PUMPS
36	SW_EN_SM_AEM-01_PID_SM1_DWG_231	EFFECT 3 MODULES
37	SW_EN_SM_AEM-01_PID_SM1_DWG_232	EFFECT 3 SOLIDS EXTRACTION
38	SW_EN_SM_AEM-01_PID_SM1_DWG_233	EFFECT 3 PUMP SEAL FLUSH
39	SW_EN_SM_AEM-01_PID_SM1_DWG_234	EFFECT 3 AIR SEALS
40	SW_EN_SM_AEM-01_PID_SM1_DWG_240	EFFECT 4 TANK AND PUMPS
41	SW_EN_SM_AEM-01_PID_SM1_DWG_241	EFFECT 4 MODULES
42	SW_EN_SM_AEM-01_PID_SM1_DWG_243	EFFECT 4 PUMP SEAL FLUSH
43	SW_EN_SM_AEM-01_PID_SM1_DWG_244	EFFECT 4 AIR SEALS
44	SW_EN_SM_AEM-01_PID_SM1_DWG_250	EFFECT 5 TANK AND PUMPS
45	SW_EN_SM_AEM-01_PID_SM1_DWG_251	EFFECT 5 MODULES
46	SW_EN_SM_AEM-01_PID_SM1_DWG_253	EFFECT 5 PUMP SEAL FLUSH
47	SW_EN_SM_AEM-01_PID_SM1_DWG_254	EFFECT 5 AIR SEALS
		THERMAL SYSTEM
48	SW_EN_SM_AEM-01_PID_DWG_310	THERMAL SKID: WATER LOOP
49	SW_EN_SM_AEM-01_PID_DWG_311	THERMAL SKID: WATER LOOP
50	SW_EN_SM_AEM-01_PID_DWG_312	THERMAL SKID: GYLCOL LOOP
		POST TREATMENT
51	SW_EN_SM_AEM-01_PID_COMMON_DWG_320	NITRITE DESTRUCTION AND RO PC SYSTEM
52	SW_EN_SM_AEM-01_PID_COMMON_DWG_321	AMMONIA DESTRUCTION SYSTEM
53	SW_EN_SM_AEM-01_PID_COMMON_DWG_322	RO BRINE FLUSH TANK
54	SW_EN_SM_AEM-01_PID_COMMON_DWG_323	TREATED WATER TANK
		COMPRESSED AIR-COMMON PACKAGE
55	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_400	COMPRESSED AIR SYSTEM
56	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_401	AMMONIA DES, BRINE BLOWDOWN AND PLANT FEED AIR
57	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_402	CHEMICAL DOSING AND ANCILLARY STAND PIPE AIR
58	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_403	COMMON AND POST TREATMENT AIR BANK
		COMPRESSED AIR-SM1
59	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_410	SM INSTRUMENT AND PROCESS AIR
60	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_411	EH1/EH2 EXTRACT AND CIP AIR

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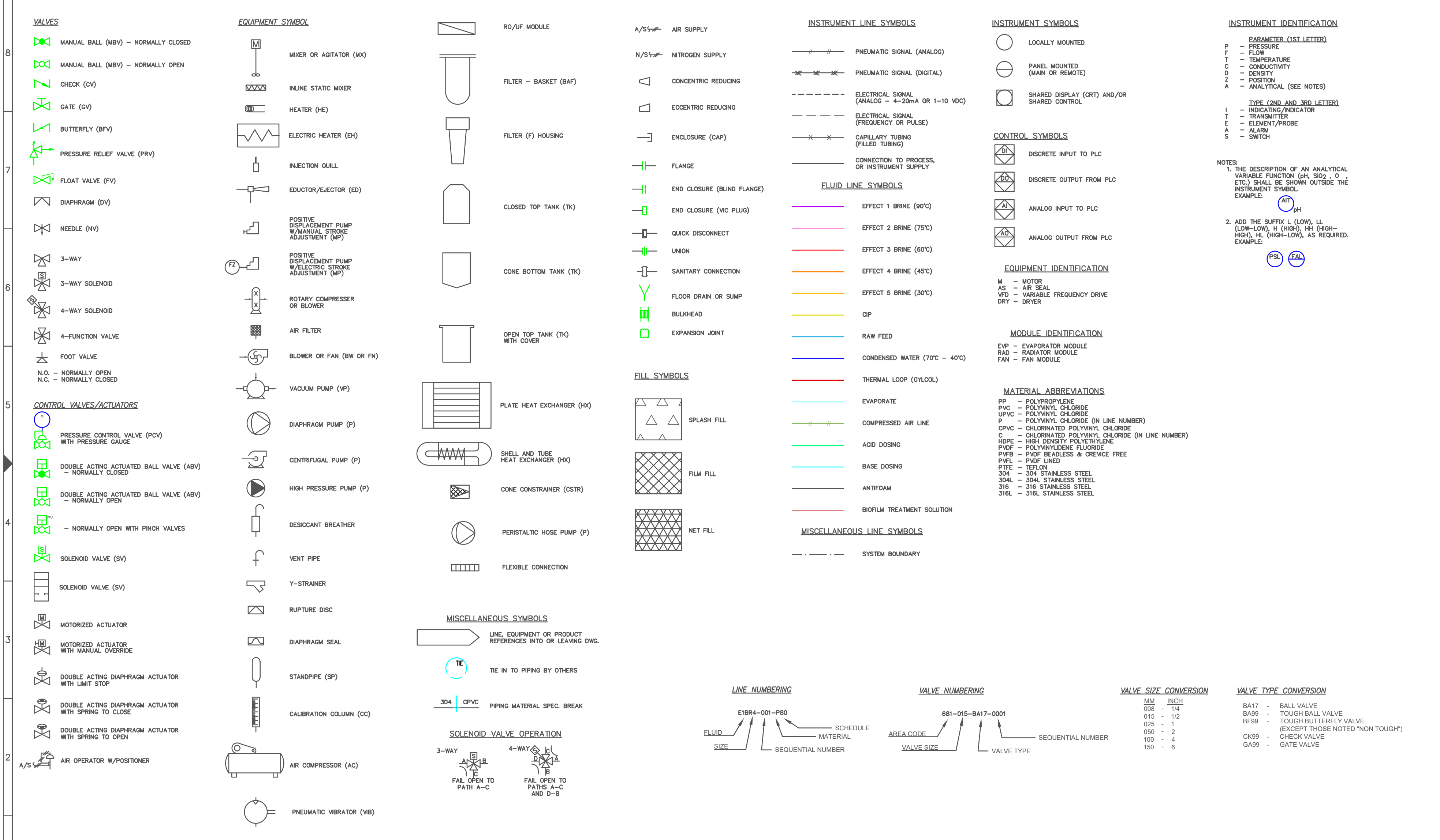
DO NOT SCALE DRAWING

LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	23–MAR–2018	DRAIN VALVE SIZE AND UTILITY WATER FILL LAYOUT UPDATE	PH
M	09–MAY–2018	BUILDING HEATERS TIE–IN UPDATE	DKAO

TITLE:	DRAWING LIST 1
PROJECT:	SALTMAKER GEN III
CUSTOMER:	AGNICO EAGLE MINES
REVISION	N
PREPARED BY:	DKAO
DATE:	09–MAY–2018
CHECKED BY:	
DATE:	
APPROVED BY:	APPROVED BY
DATE:	APPROVED DATE
DWG. NO:	DRAWING LIST 1
JOB/CO NO:	(JOB NO.)
SHEET:	# OF #



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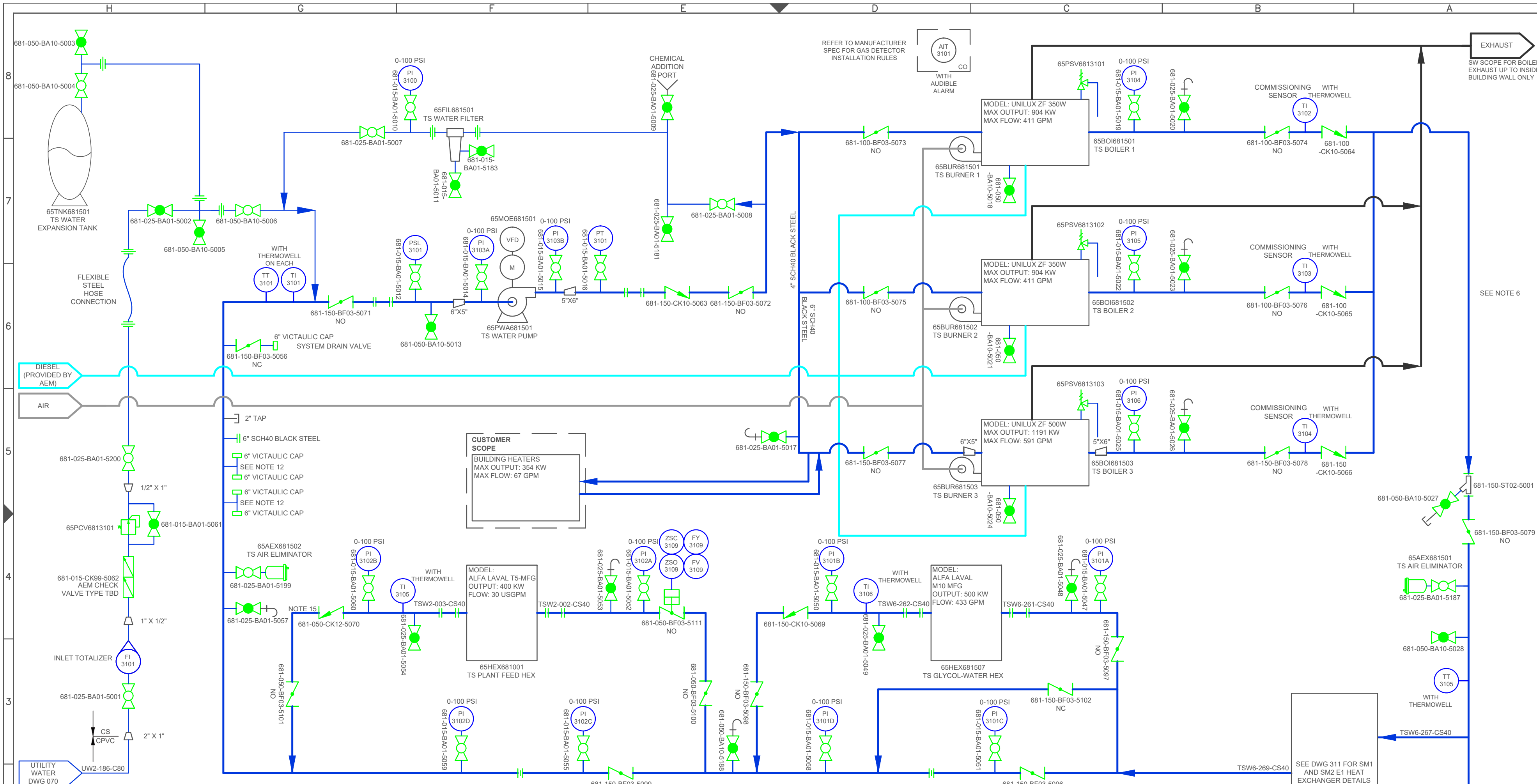
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	23–MAR–2018	DRAIN VALVE SIZE AND UTILITY WATER FILL LAYOUT UPDATE	PH
M	09–MAY–2018	BUILDING HEATERS TIE–IN UPDATE	DKAO

TITLE: LEGEND

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: DKAO	DATE: 09–MAY–2018	DWG. NO: LEGEND	
CHECKED BY:	DATE:	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: # OF #	



NOTES:
1. ALL FITTINGS TO BE VICTAULIC
2. DOES AEM WANT PROTECTION AGAINST BRINE LEAKS? I.E. INCLUDE CONDUCTIVITY MEASUREMENT.
3. INCLUDE LOW POINT DRAINS AND HIGH POINT VENTS.
4. TAPS FOR BUILDING HEATER DISTRIUBTION - UPSTREAM PUMP & HYDRAULICS ARE NOT DESIGNED TO SUPPLY SUFFICIENT FLOW AND PRESSURE; AEM TO PROVIDE BUILDING HEATER DISTRIBUTION PUMP, PIPEWORK, AND HEATERS.
5. WHEN BYPASS AROUND E1 HEAT EXCHANGERS OPEN, TURN DOWN PUMP SPEED.
6. NO PRESSURE BALANCING VALVES TO BE INSTALLED ON BOILER - THE LOOPS WILL BE DESIGNED TO BE HYDRAULICALLY SIMILAR.
7. VENTS AND AIR ELIMINATORS NEED TO BE DETERMINED BY MECHANICAL LAYOUT.
8. NOTE: SW TO HAVE ABILITY TO CONNECT WITH AEM WASTE HEAT STREAM (NOT SHOWN ON DRAWING). WE HAVE NOT DESIGNED OUR SYSTEM, PUMP AND HYDRAULIC-WISE, TO ACCOUNT FOR THE CONNECTION.
9. THERE WILL BE AN UPSTREAM AND DOWNSTREAM PIPING REQUIREMENT AROUND THE PRESSURE BALANCING VALVES.
10. BOILER WATER QUALITY REQUIREMENTS:
11. NOTE: FLOW TO E5 RADS WILL BE CONTROLLED BY TT IN E5 MODULE MEASURING AIR TEMPERATURE.
12. 1 STUB WITH BLIND FLANGE, 2 TEES WITH VICTUALIC PLUGS - THESE ARE FOR POTENTIAL CONNECTION TO AEM'S THERMAL SOURCE AND BUILDING HEATERS.
13. NOTE: FLOW TO FEED HEAT EXCHANGER WILL BE ON/OFF BASED ON INLET ABFV OPENING/CLOSING.
14. NOTE: SM2 GRAYED-OUT UNTIL SECOND PO FROM AEM CONFIRMED.
15. NOTE: VENT VALVE TO BE IN CLOSEST PIPE RACK HIGH POINT TO THERMAL SYSTEM PUMP.
16. NOTE: BYPASS AROUND GLYCOL-WATER HEX TO BE USED DURING MAINTENANCE OR PROLONGED OPERATION WITHOUT E5 RADIATORS (E.G. SUMMER).

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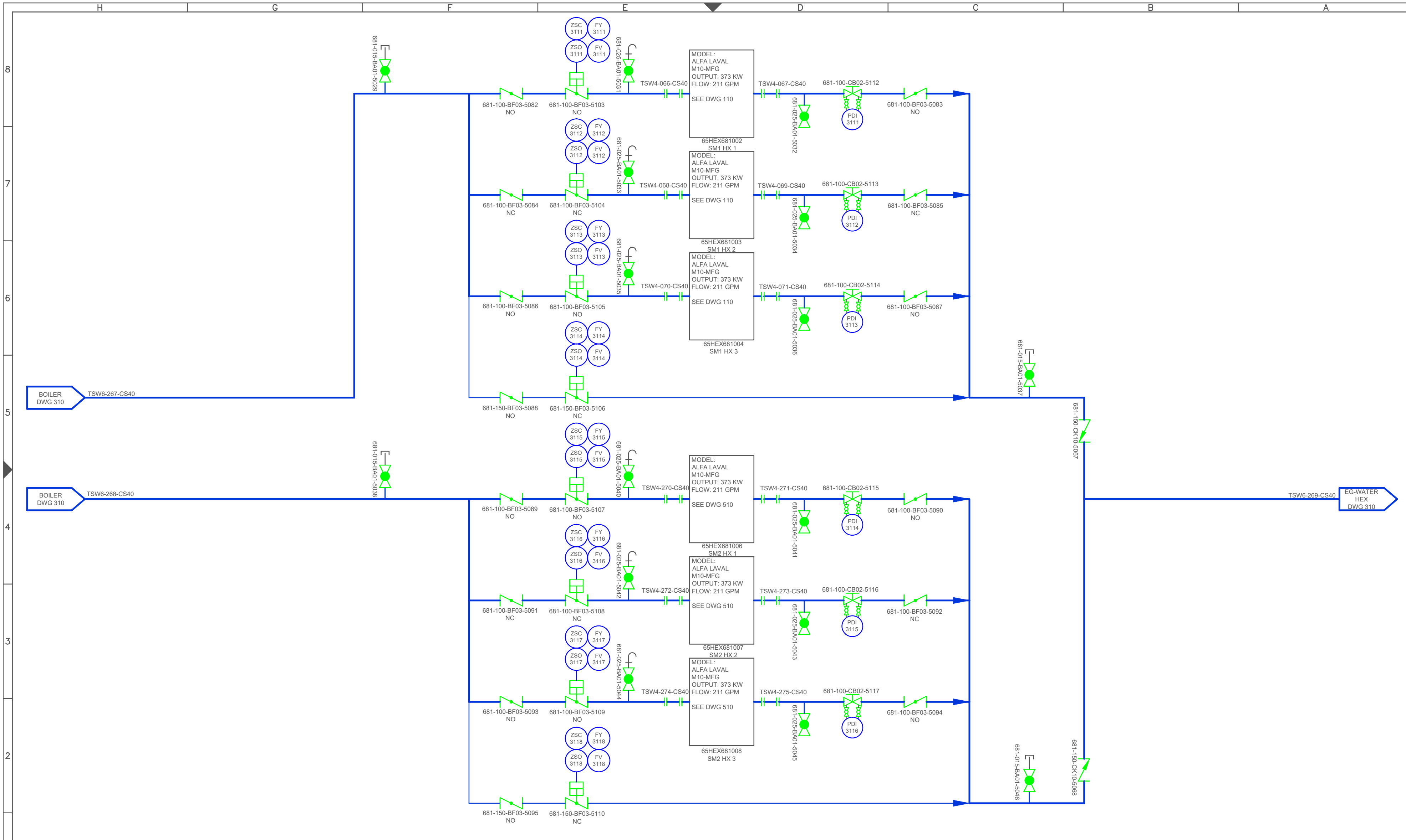
K	23-FEB-2018	NO CHANGES	–
L	23-MAR-2018	DRAIN VALVE SIZE AND UTILITY WATER FILL LAYOUT UPDATE	PH
M	09-MAY-2018	BUILDING HEATERS TIE-IN UPDATE	DKAO

TITLE: 310: THERMAL SKID – WATER LOOP

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: DKAO	DATE: 09-MAY-2018	DWG. NO: SW_EN_SM_GEN III_PID_DWG_310	
CHECKED BY:	DATE:	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 48 OF117	



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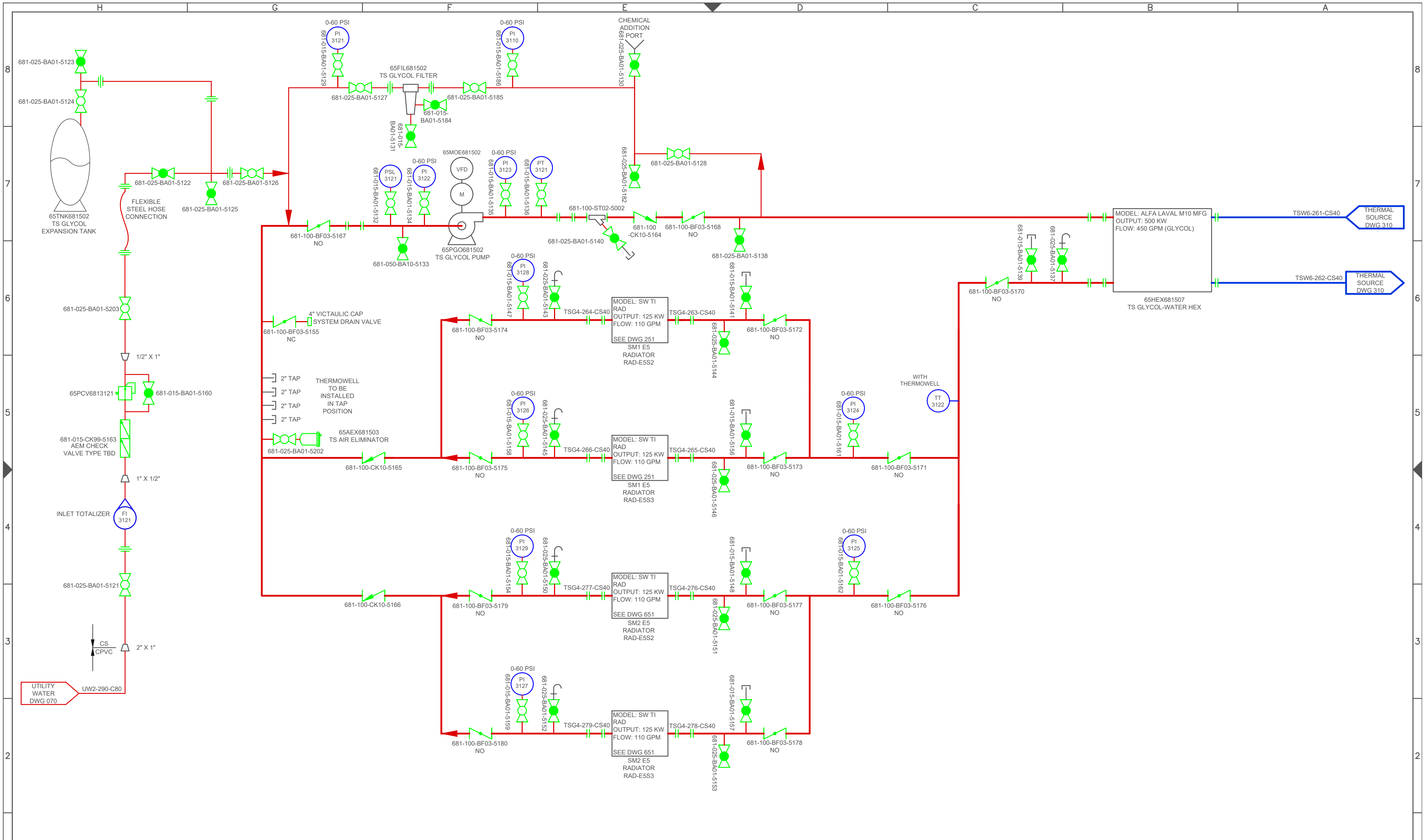
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–
L	23–MAR–2018	DRAIN VALVE SIZE AND UTILITY WATER FILL LAYOUT UPDATE	PH
M	09–MAY–2018	BUILDING HEATERS TIE–IN UPDATE	DKAO

TITLE: 311: THERMAL SKID – WATER LOOP

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: DKAO	DATE: 09–MAY–2018	DWG. NO: SW_EN_SM_GEN III_PID_DWG_311	
CHECKED BY:	DATE:	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 49 OF117	



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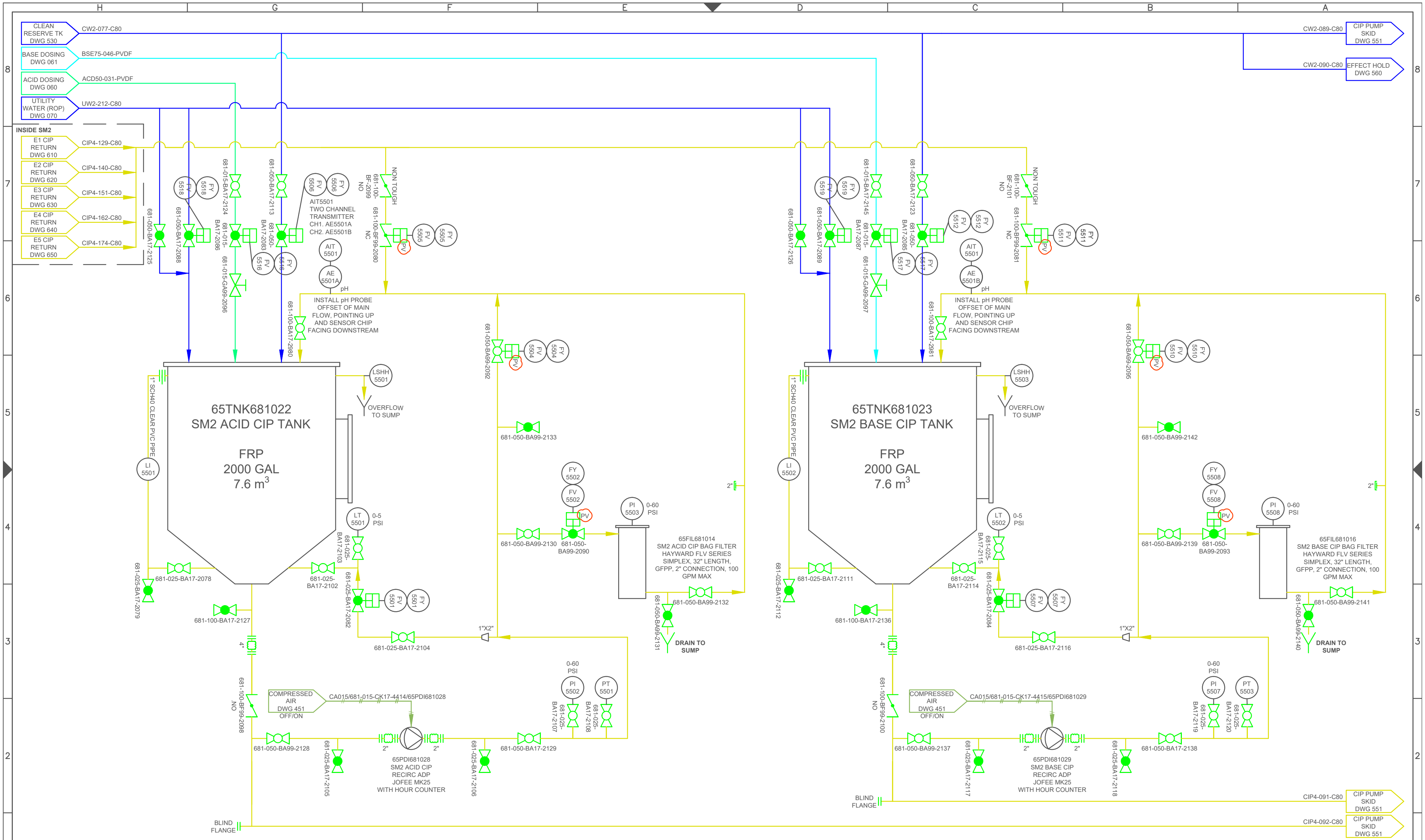
LTR	DATE	DESCRIPTION	REV. BY:
N	06-JUL-2018	NO CHANGES	–
K	23-FEB-2018	NO CHANGES	–
L	23-MAR-2018	DRAIN VALVE SIZE AND UTILITY WATER FILL LAYOUT UPDATE	PH
M	09-MAY-2018	BUILDING HEATERS TIE-IN UPDATE	DKAO

TITLE: 312: THERMAL SKID – GLYCOL LOOP

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	DKAO	DATE:	09–MAY–2018
DWG. NO:	SW_EN_SM_GEN III_PID_DWG_312		
CHECKED BY:		DATE:	
JOB/CO NO:	(JOB NO.)		
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
SHEET:	50 OF117		



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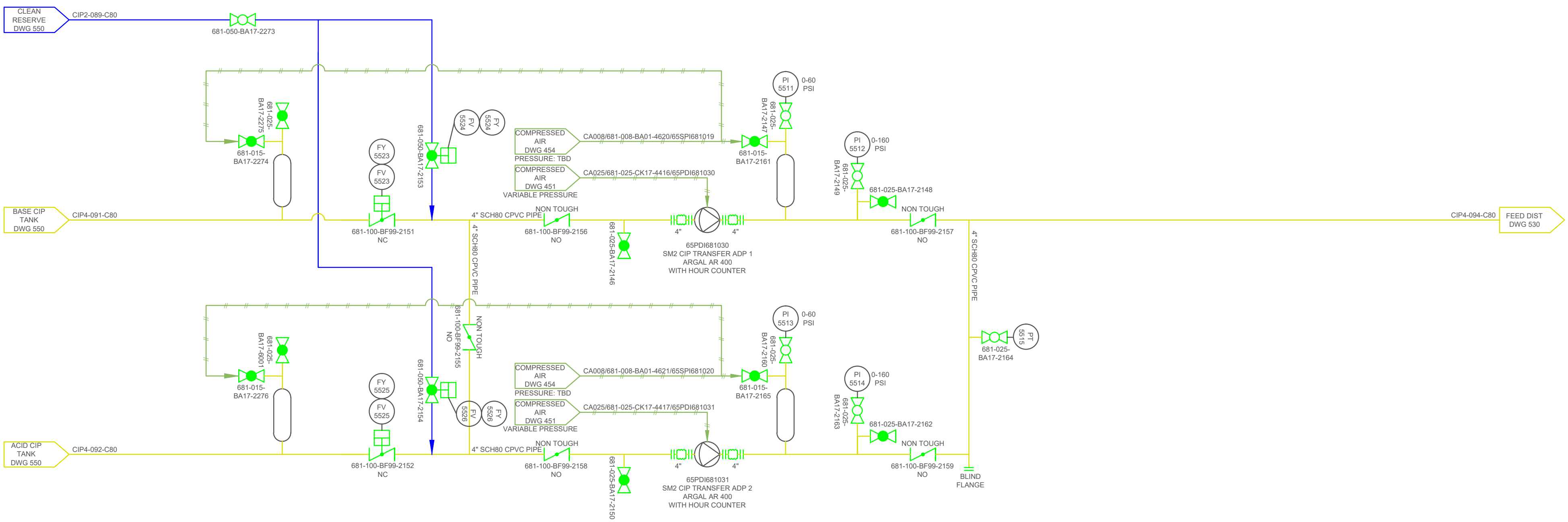
LTR	DATE	DESCRIPTION	REV. BY:
L	22-DEC-2017	RECIRC VALVES CHANGED TO NO	JLAU
M	20-APR-2018	MECHANICAL UPDATES	JLAU
N	06-JUL-2018	PINCH VALVES ADDED	JLAU
K	23-FEB-2018	NO CHANGES	–

TITLE:	(SM2) 550: CIP TANKS		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01-SEP-2017
DWG. NO:	SW_EN_SM_AEM-01_PID_SM2_DWG_550		
CHECKED BY:	MLOW	DATE:	05-SEP-2017
JOB/CO NO:	(JOB NO.)		
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
SHEET:	87 OF117		



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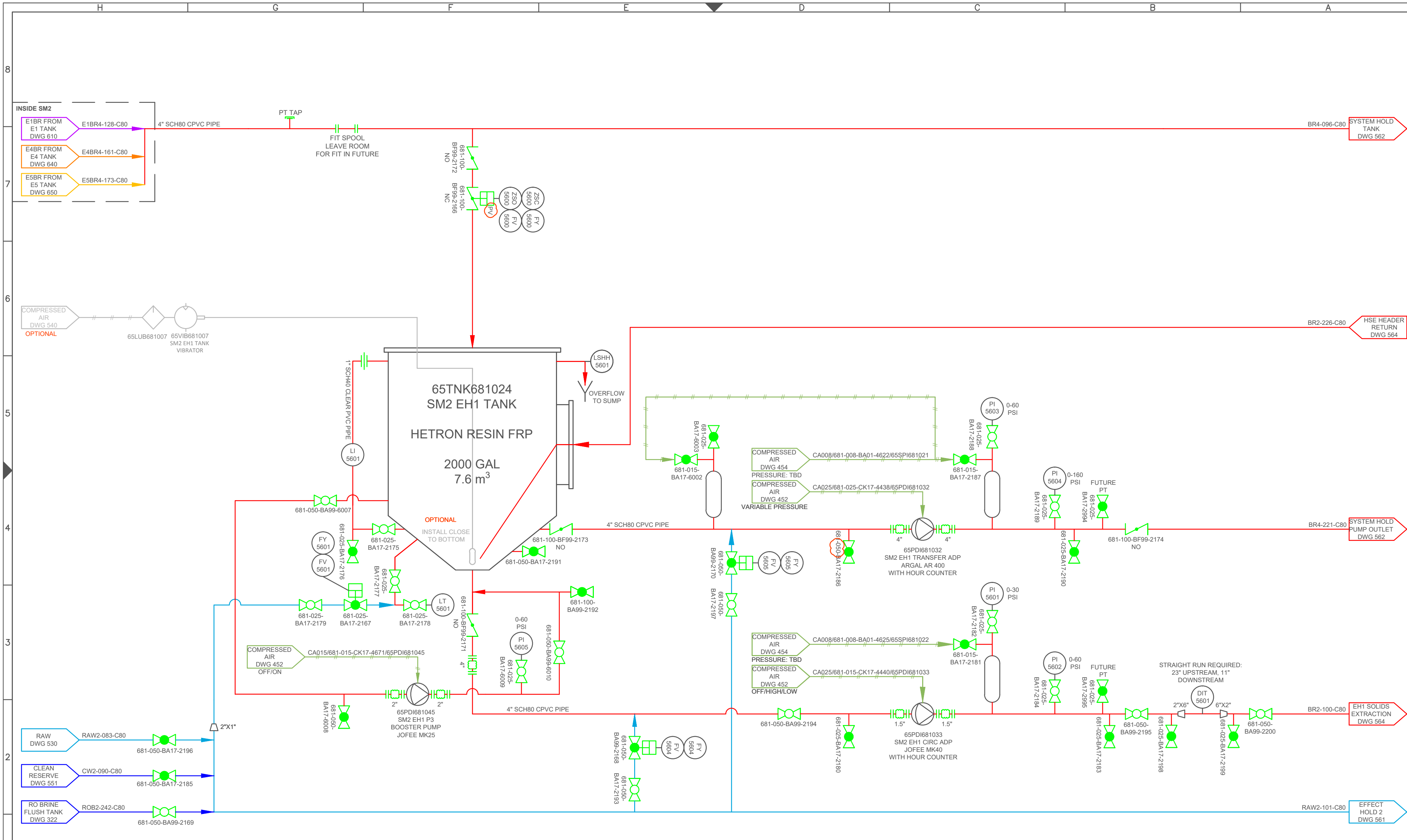
LTR	DATE	DESCRIPTION	REV. BY:
L	22-DEC-2017	ADDED BLIND FLANGE TO PUMP INLETS	JLAU
M	20-APR-2018	MECHANICAL UPDATES, ADDED INLET STANDPIPES	JLAU
N	06-JUL-2018	NO CHANGES	–
K	23-FEB-2018	NO CHANGES	–

TITLE: (SM2) 551: CIP PUMP SKID

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01-SEP-2017
CHECKED BY:	MLOW	DATE:	05-SEP-2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM-01_PID_SM2_DWG_551	JOB/CO NO:	(JOB NO.)
SHEET:	88 OF117		



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LTR	DATE	DESCRIPTION	REV. BY:
L	22–DEC–2017	NO CHANGES	–
M	20–APR–2018	ADDED INLET STANDPIPE, ADDED P3 BOOSTER PUMP, UPDATED TO MATCH SM1	JLAU
N	06–JUL–2018	PINCH VALVES ADDED, AS BUILT UPDATES	JLAU
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 560: EFFECT HOLD 1

PROJECT: SALTMAKER GEN III

CUSTOMER: AGNICO EAGLE MINES

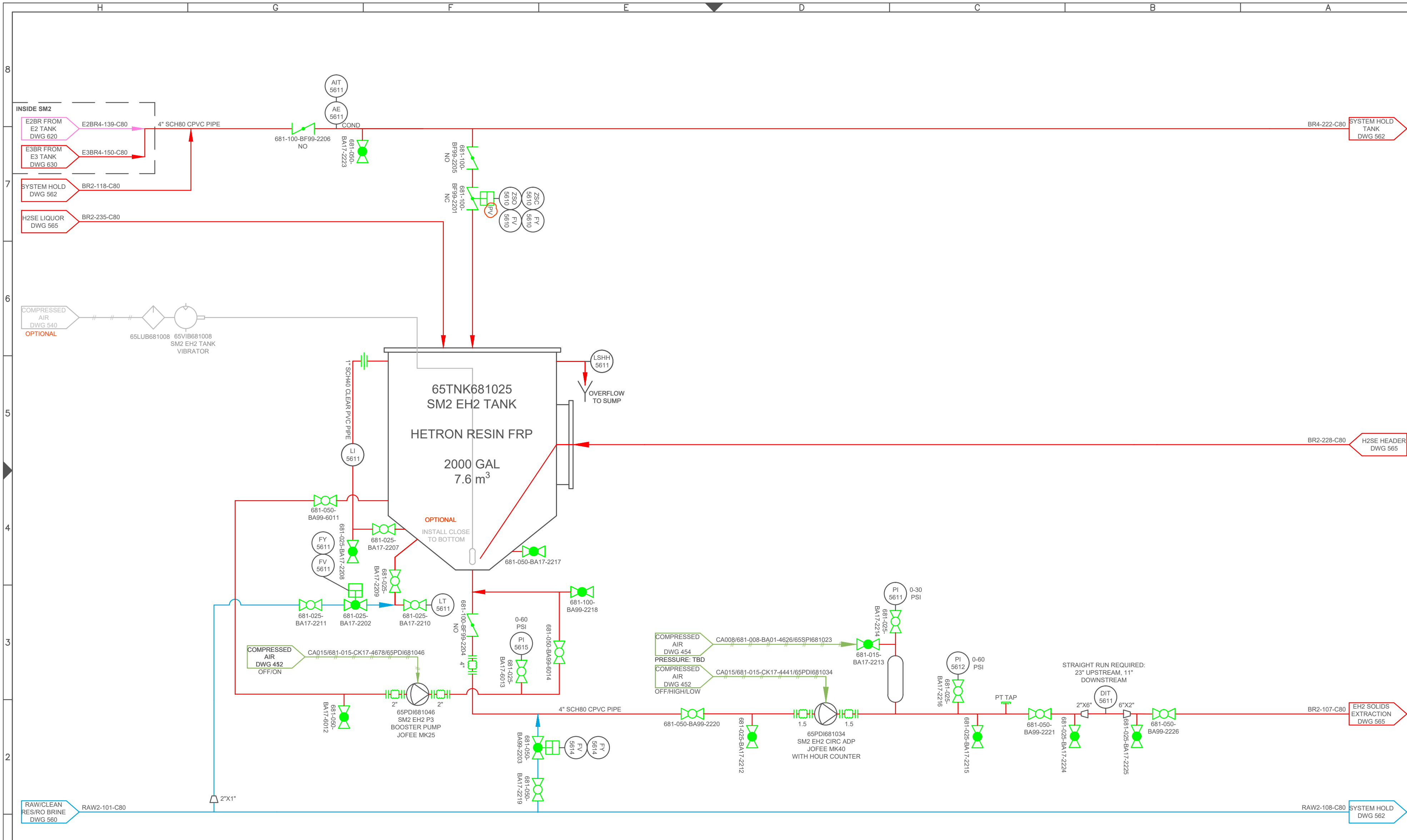
REVISION: N

PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE

DWG. NO: SW_EN_SM_AEM-01_PID_SM2_DWG_560

JOB/CO NO: (JOB NO.)

SHEET: 89 OF117



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		M	20–APR–2018	ADDED P3 BOOSTER PUMP	JLAU
		N	06–JUL–2018	PINCH VALVES ADDED	JLAU
	DO NOT SCALE DRAWING	K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 561: EFFECT HOLD 2				
PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES		REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM-01_PID_SM2_DWG_562		
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)		
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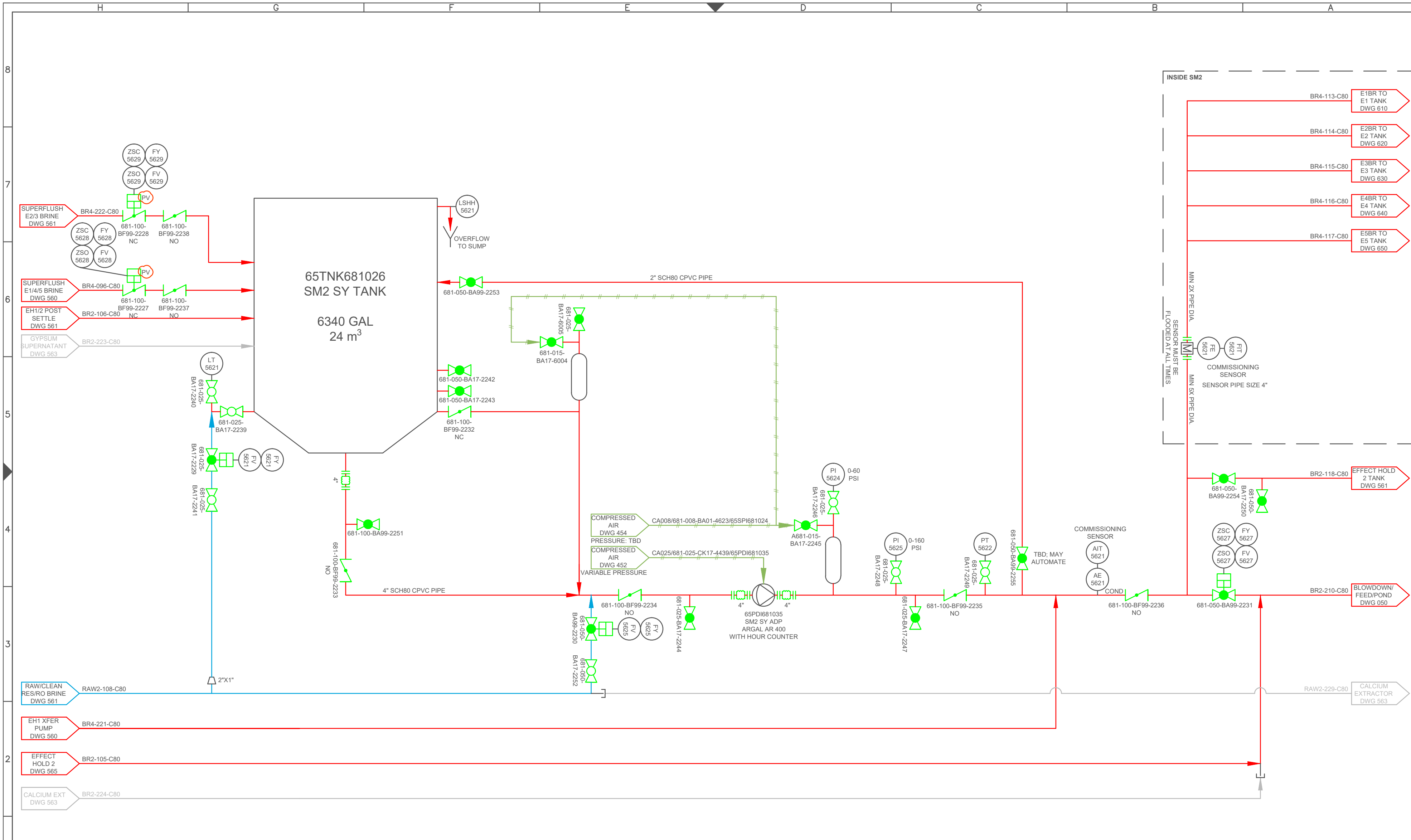

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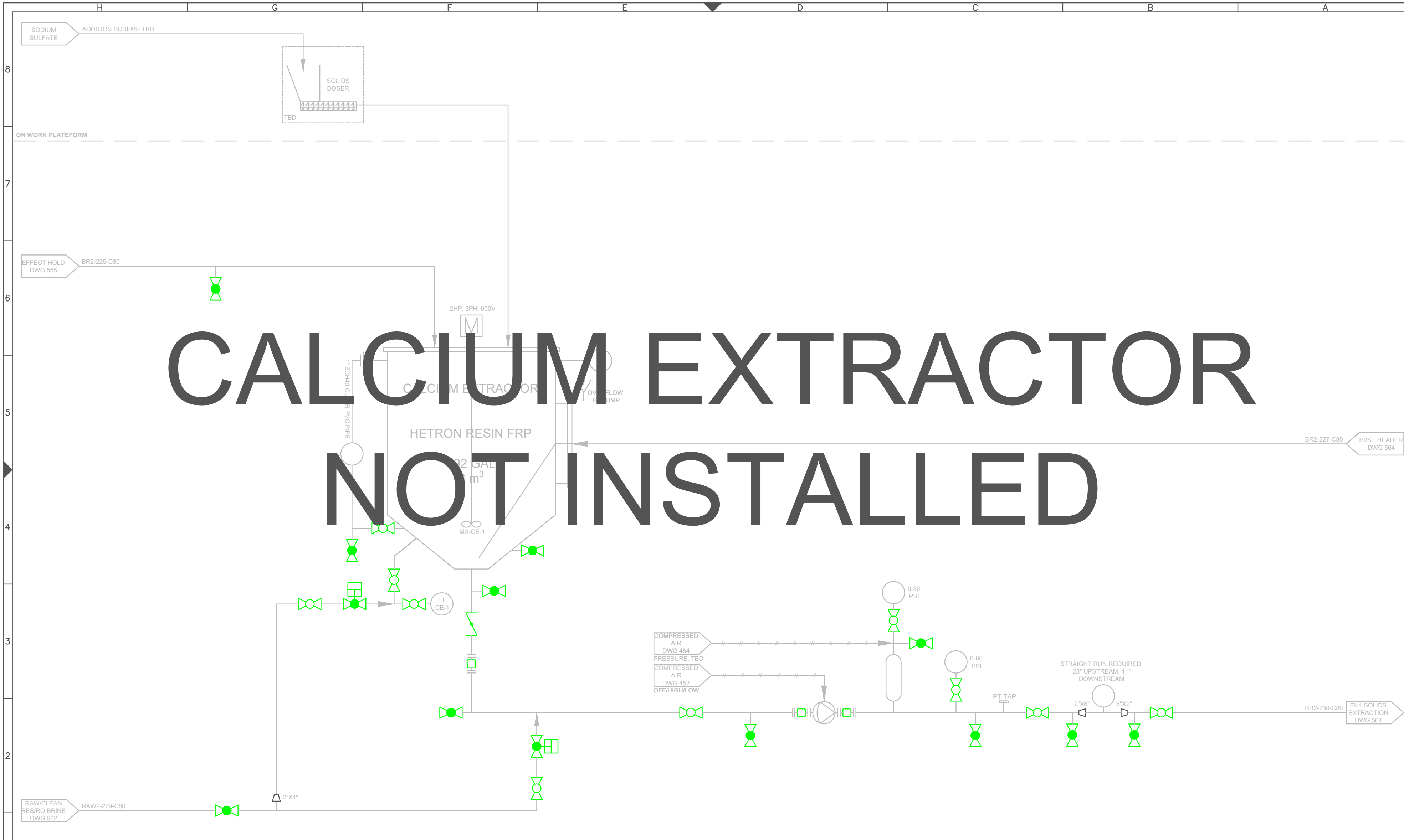
LTR	DATE	DESCRIPTION	REV. BY:
L	22-DEC-2017	NO CHANGES	–
M	20-APR-2018	ADDED INLET STANDPIPE	JLAU
N	06-JUL-2018	PINCH VALVES ADDED	JLAU
K	23-FEB-2018	TAG UPDATED PER MARK UP	JLAU

TITLE: (SM2) 562: SYSTEM HOLD

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01-SEP-2017
CHECKED BY:	MLOW	DATE:	05-SEP-2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM-01_PID_SM2_DWG_562	JOB/CO NO:	(JOB NO.)
SHEET:	91 OF117		



CALCIUM EXTRACTOR NOT INSTALLED

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L	22-DEC-2017	NO CHANGES	–
M	20-APR-2018	NO CHANGES	–
N	06-JUL-2018	NO CHANGES	–
K	23-FEB-2018	NO CHANGES	–

TITLE: (SM2) 563: CALCIUM EXTRACTOR

PROJECT: SALTMAKER GEN III

CUSTOMER: AGNICO EAGLE MINES

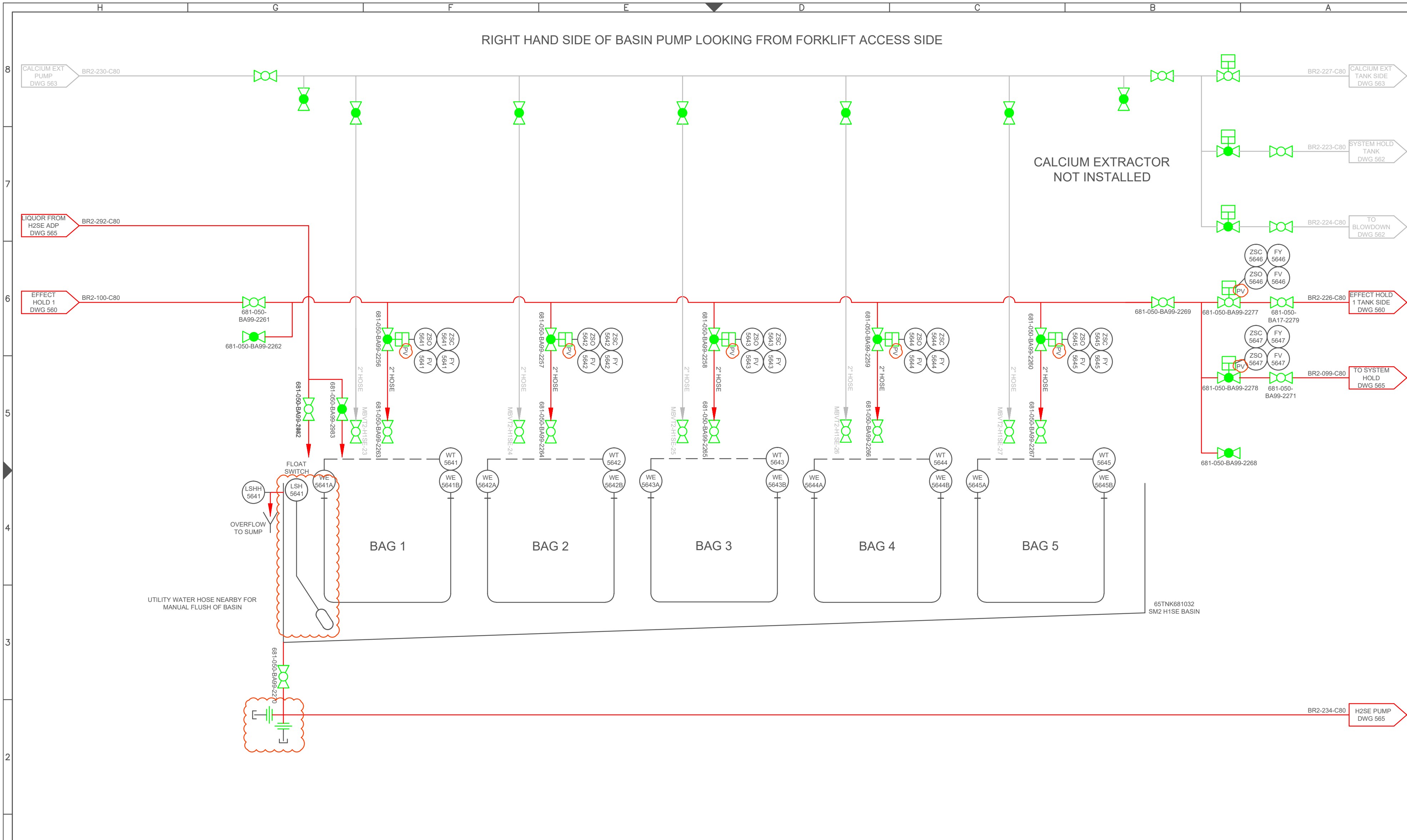
REVISION: N

PREPARED BY:	JLAU	DATE:	01-SEP-2017
CHECKED BY:	MLOW	DATE:	05-SEP-2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE

DWG. NO: SW_EN_SM_AEM-01_PID_SM2_DWG163

JOB/CO NO: (JOB NO.)

SHEET: 92 OF117



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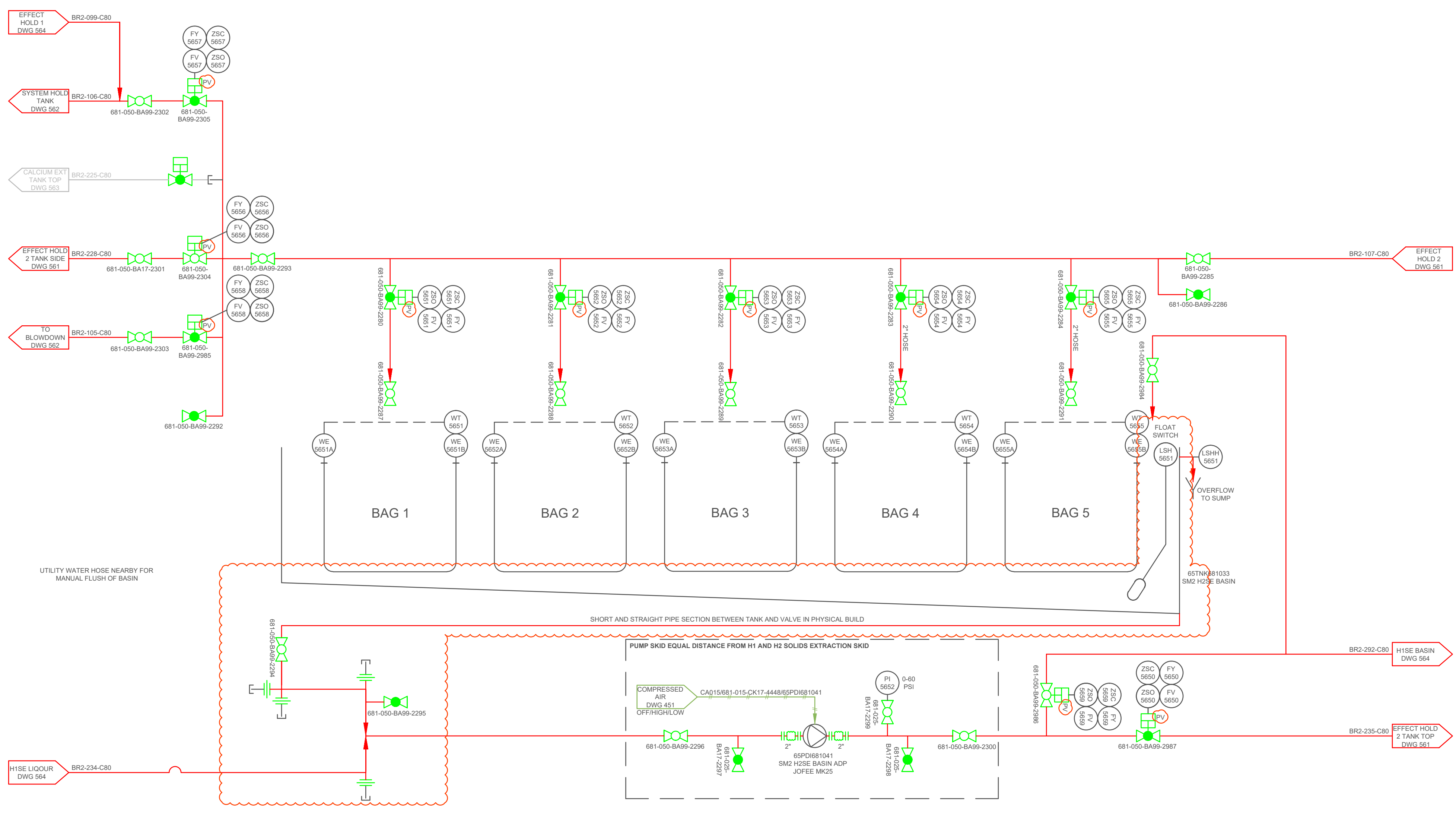
LTR	DATE	DESCRIPTION	REV. BY:
L	22–DEC–2017	NO CHANGES	–
M	20–APR–2018	UPDATED TO MATCH SM1	–
N	06–JUL–2018	PINCH VALVES ADDED, AS BUILT UPDATES	JLAU
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 564: EH1 SOLIDS EXTRACTION

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_SM2_DWG_564	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 93 OF117	

LEFT HAND SIDE OF BASIN PUMP LOOKING FROM FORKLIFT ACCESS SIDE



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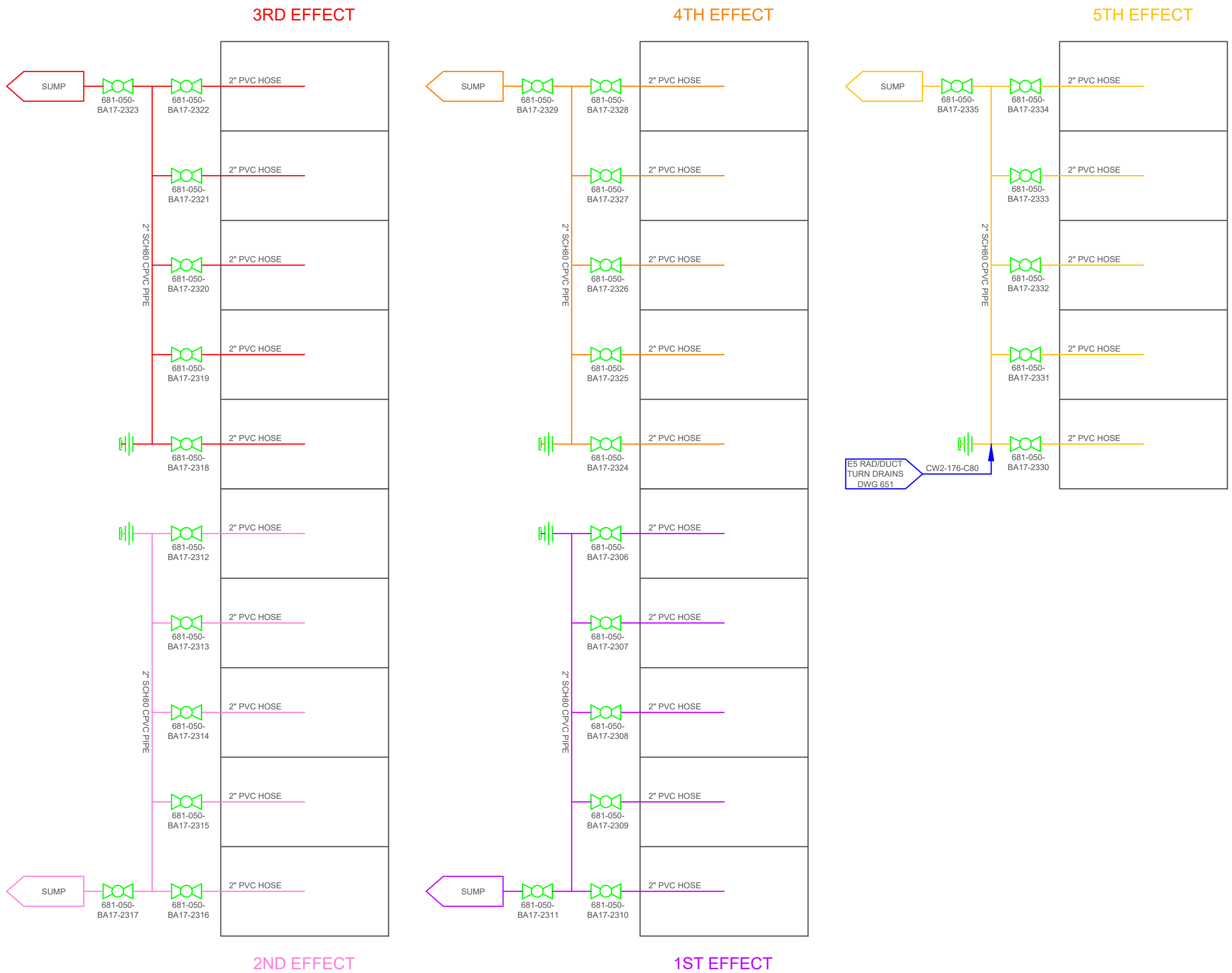
		M	20-APR-2018	UPDATED TO MATCH SM1	–
		N	06-JUL-2018	PINCH VALVES ADDED, AS BUILT UPDATES	JLAU
	DO NOT SCALE DRAWING	K	23-FEB-2018	NO CHANGES	–

TITLE:	(SM2) 565: EH2 SOLIDS EXTRACTION				
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES	REVISION	N
PREPARED BY:	JLAU	DATE:	01-SEP-2017	DWG. NO:	SW_EN_SM_AEM-01_PID_SM2_DWG_565
CHECKED BY:	MLOW	DATE:	05-SEP-2017	JOB/CO NO:	(JOB NO.)
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE	SHEET:	94 OF117



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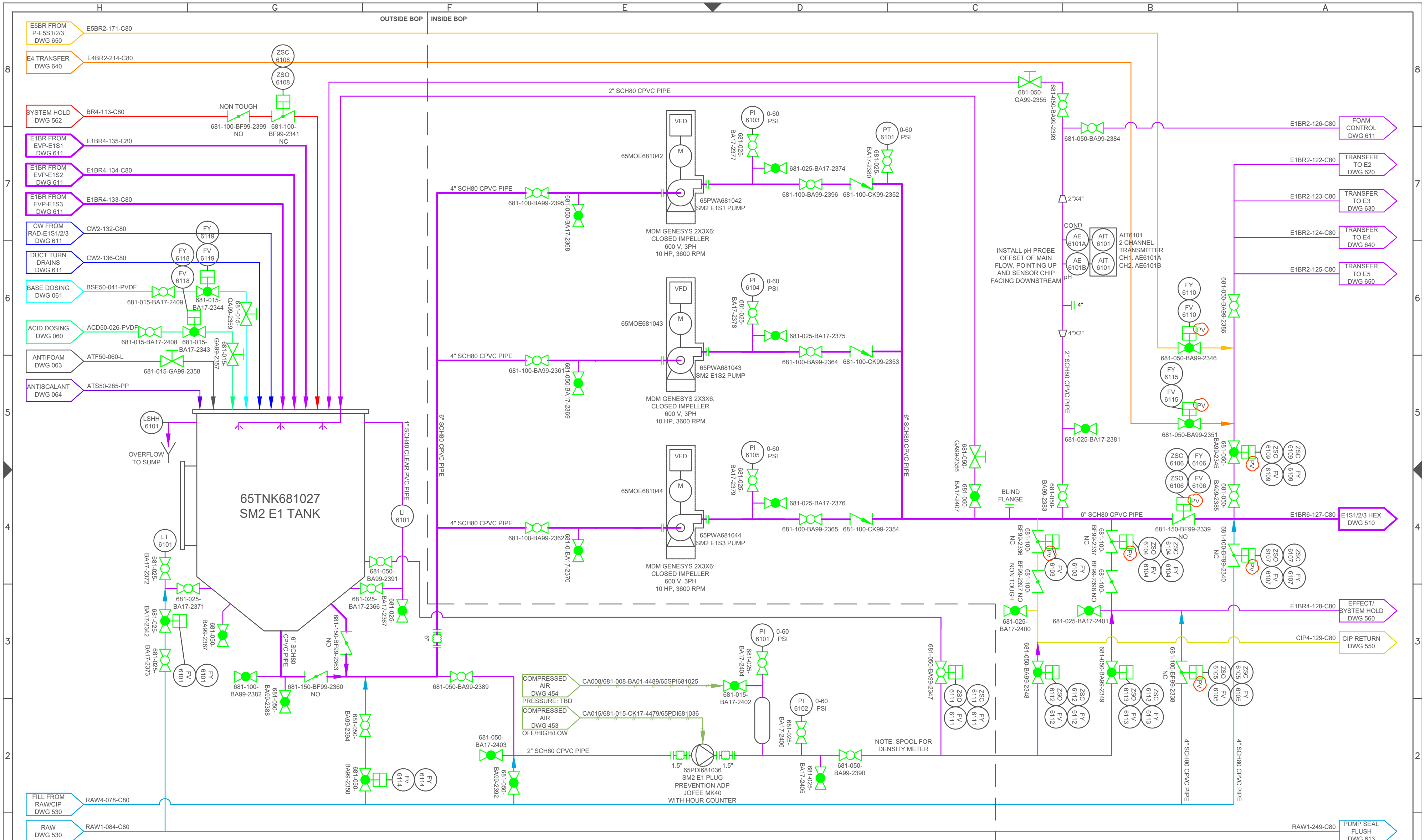
L	22–DEC–2017	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–

TITLE:	(SM2) 580: DRIP TRAY		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_SM2_DWG_580		
JOB/CO NO:	(JOB NO.)		
SHEET:	95 OF117		



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	M	20–APR–2018	P3 INLET UPDATED	JLAU	PREPARED BY: JLAU — DATE: 01–SEP–2017 — DWG. NO: SW_EN_SM_AEM-01_PID_SM2_DWG_610
	N	06–JUL–2018	PINCH VALVES ADDED	JLAU	CHECKED BY: MLOW — DATE: 05–SEP–2017 — JOB/CO NO: (JOB NO.)
DO NOT SCALE DRAWING	K	23–FEB–2018	NO CHANGES	–	APPROVED BY: APPROVED BY — DATE: APPROVED DATE — SHEET: 96 OF117

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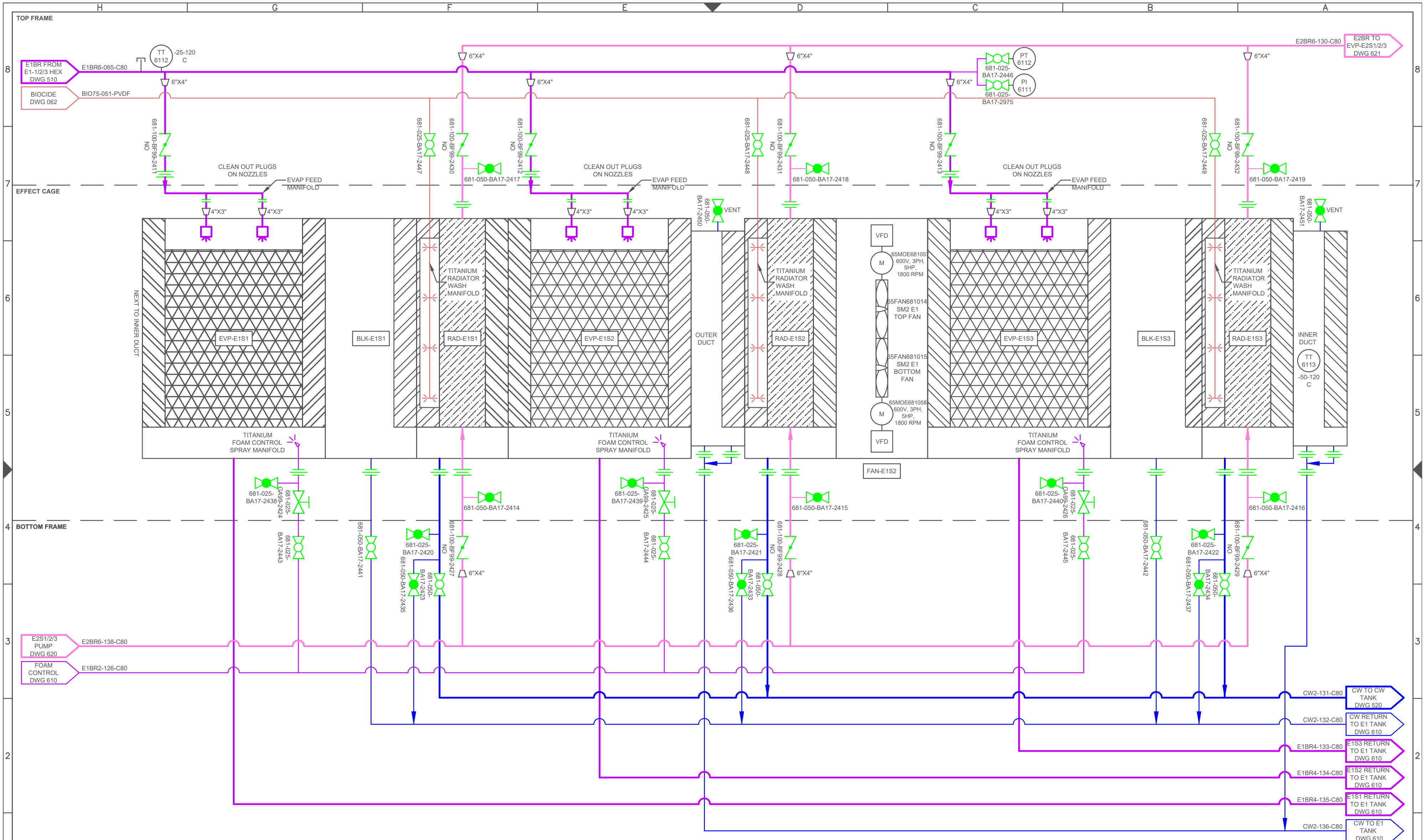

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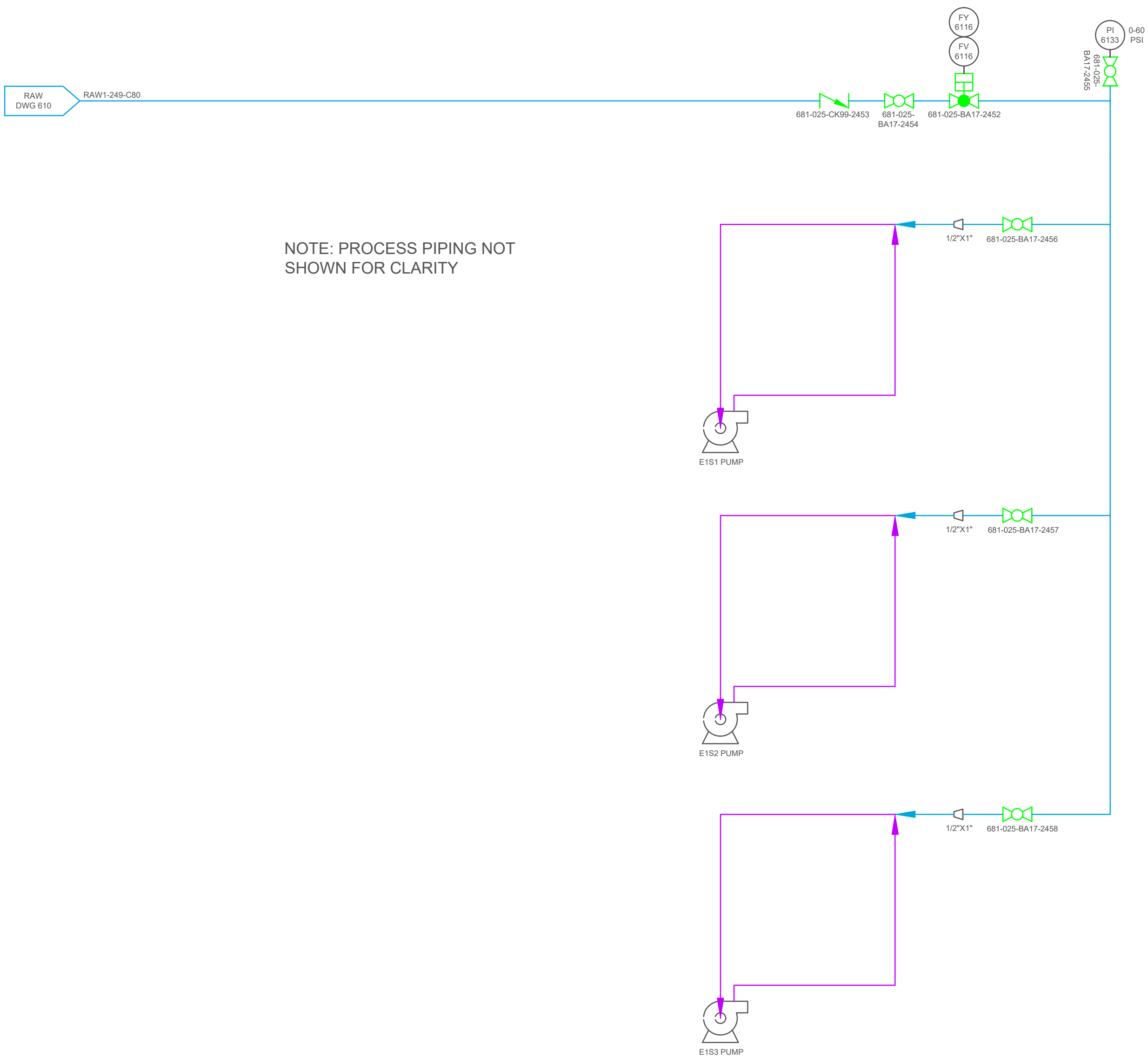
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 611: EFFECT 1 MODULES

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO:	SW_EN_SM_AEM–01_PID_SM2_DWG_611
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO:	(JOB NO.)
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET:	97 OF117

REVISION: N



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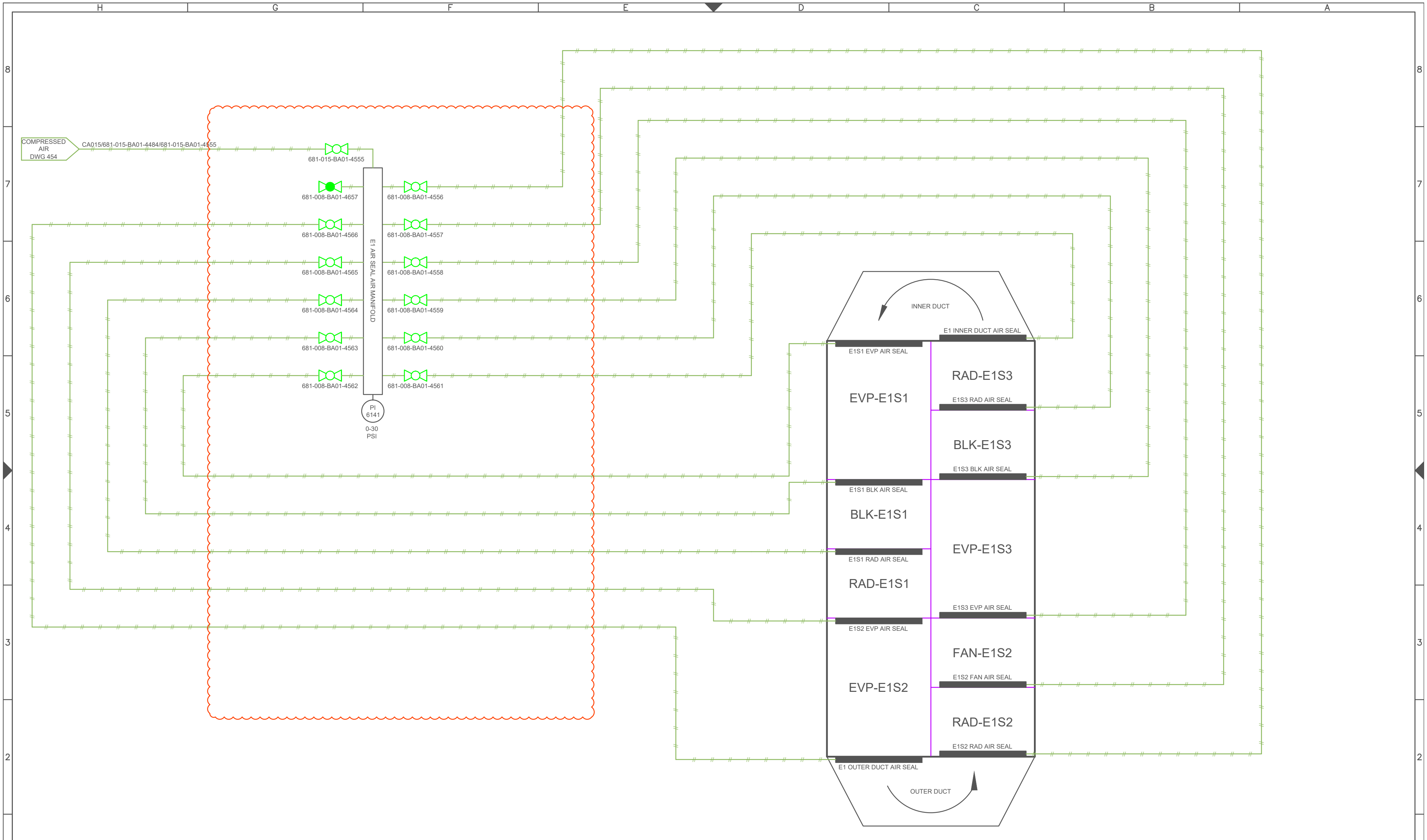
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 613: EFFECT 1 PUMP SEAL FLUSH

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_SM2_DWG_613		
JOB/CO NO:	(JOB NO.)		
SHEET:	98 OF117		



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LTR	DATE	DESCRIPTION	REV. BY:
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	UPDATED MANIFOLD	JLAU
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 614: EFFECT 1 AIR SEALS

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_SM2_DWG_614		
JOB/CO NO:	(JOB NO.)		
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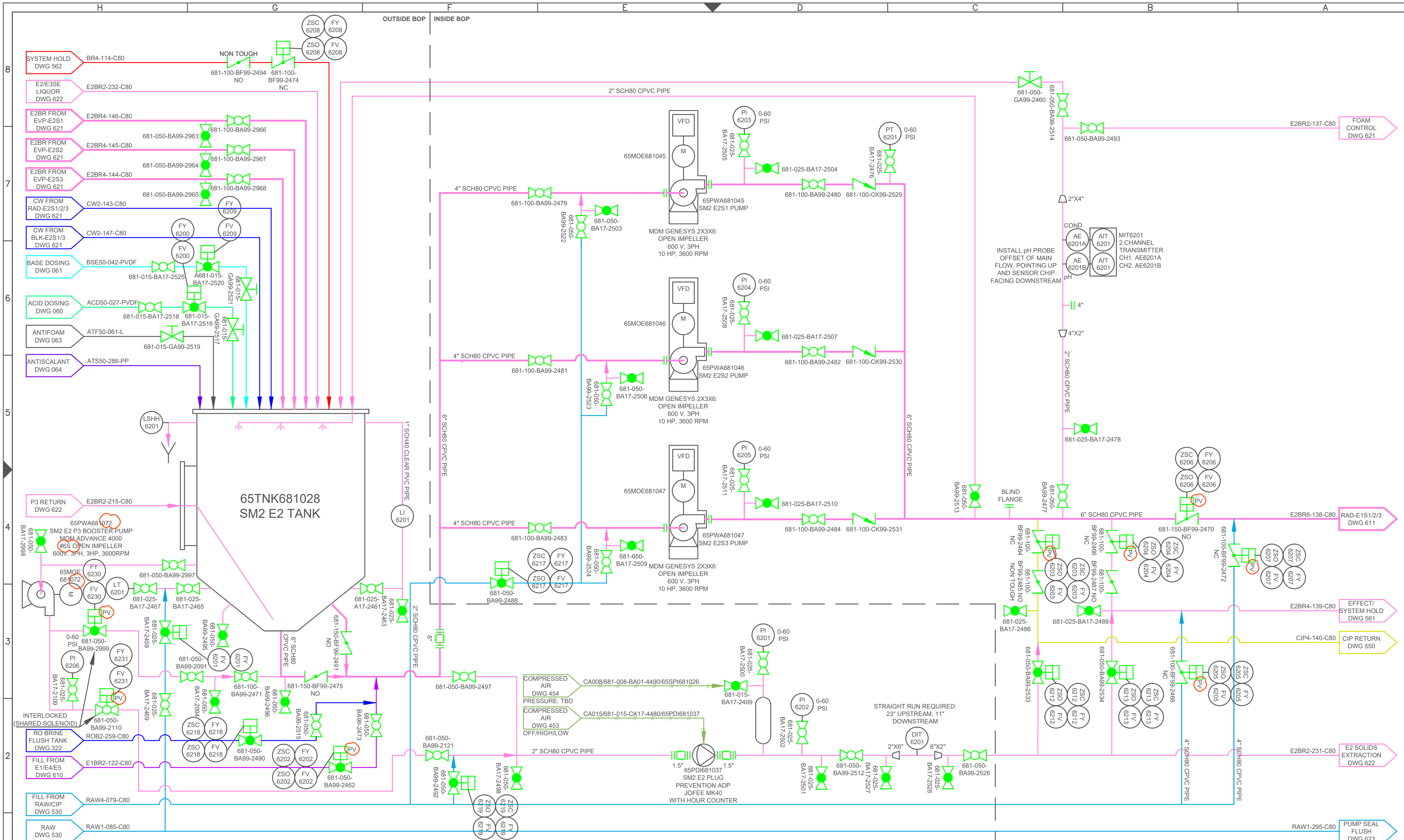

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	M	20–APR–2018	P3 INLET UPDATED AND P3 BOOSTER PUMP ADDED	JLAU
	N	06–JUL–2018	PINCH VALVES ADDED, P3 BOOSTER TAGS UPDATED	JLAU
DO NOT SCALE DRAWING	K	23–FEB–2018	NO CHANGES	–

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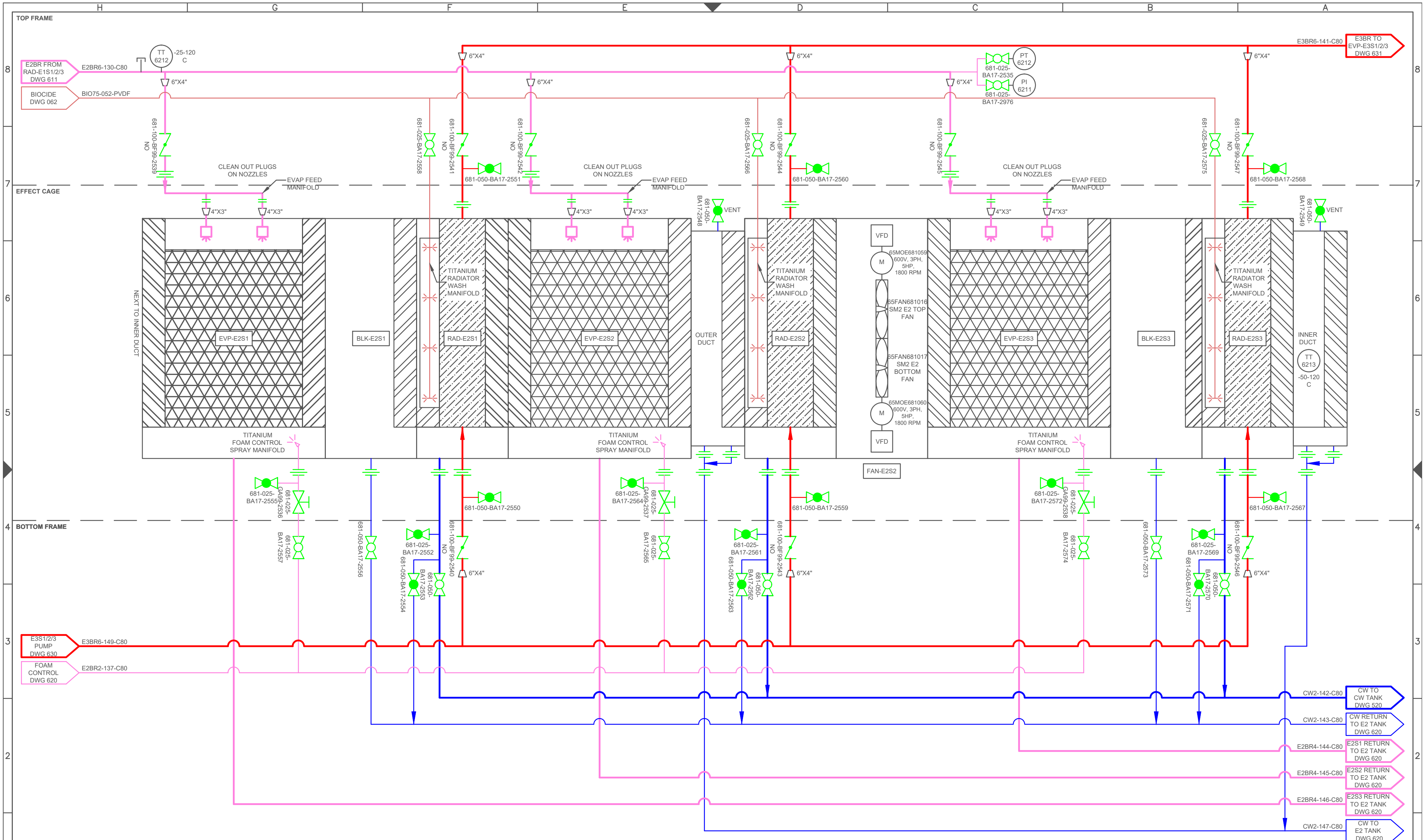
TITLE: (SM2) 620: EFFECT 2 TANK AND PUMPS

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_SM2_DWG_620	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 100OF117	



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L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 621: EFFECT 2 MODULES

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
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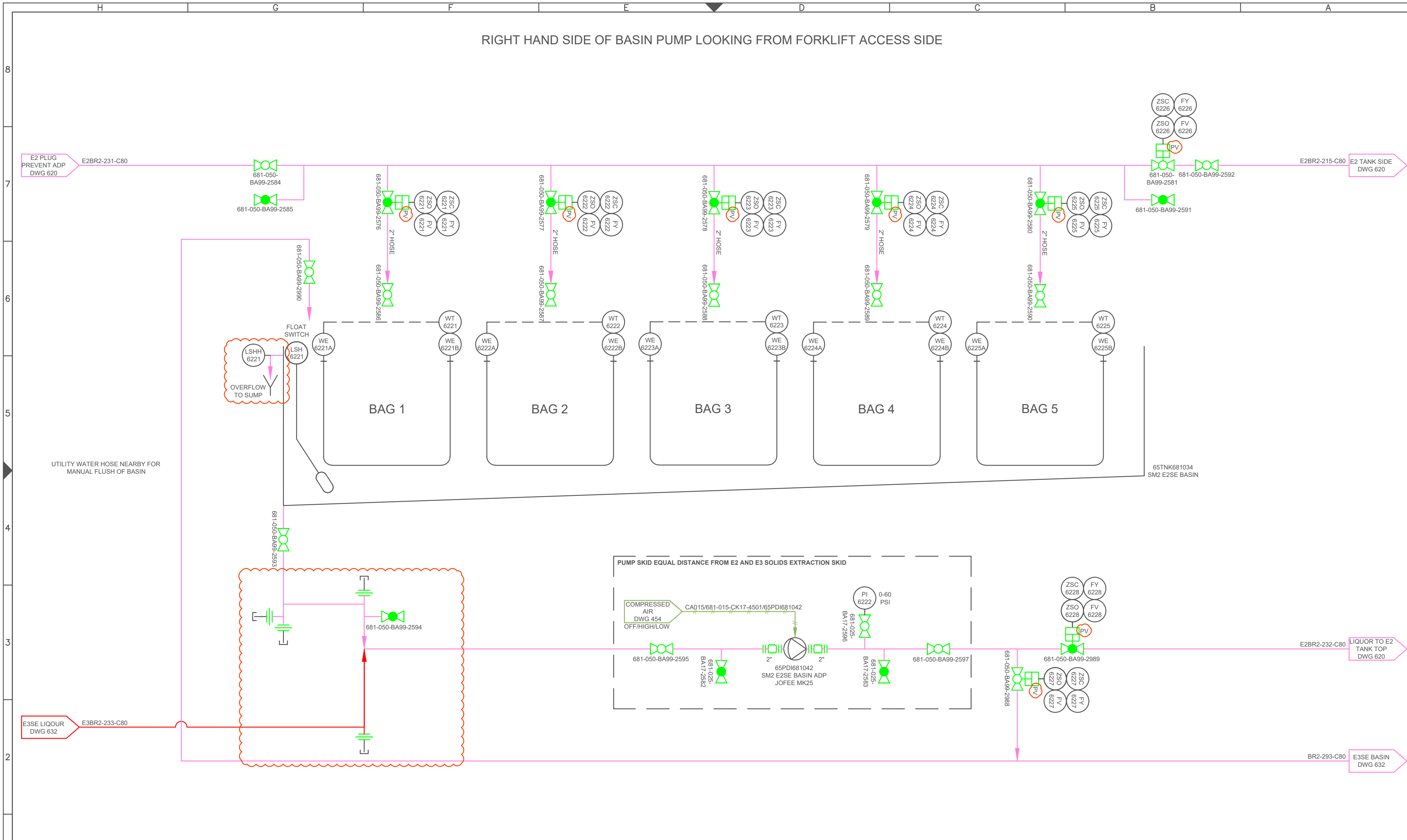
JOB/CO NO:	(JOB NO.)		
SHEET:	1OF117		



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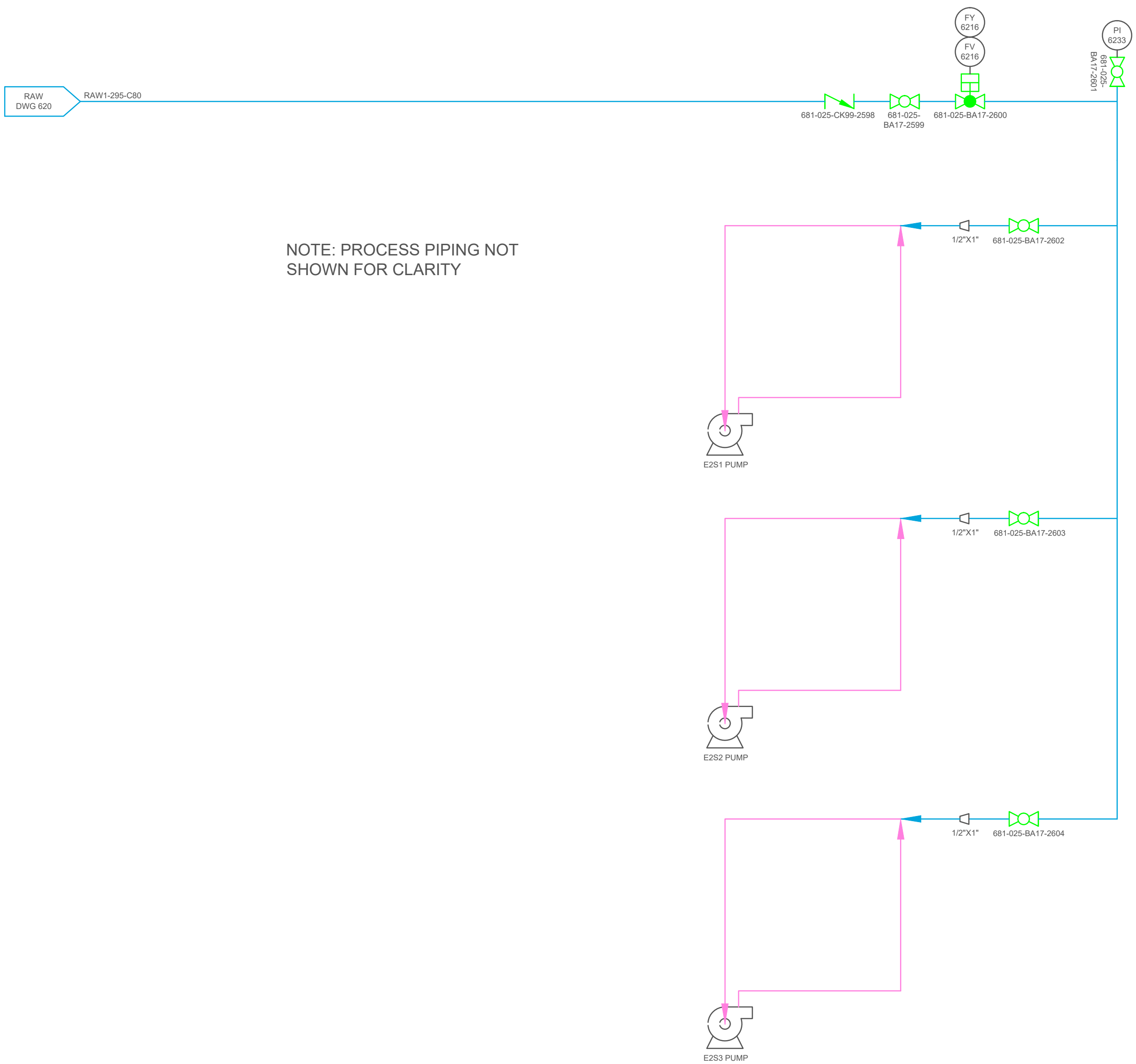
		M	20-APR-2018	NO CHANGES	–	PREPARED BY: JLAU — DATE: 01-SEP-2017 — DWG. NO: SW_EN_SM_AEM-01_PID_SM2_DWG_622
		N	06-JUL-2018	PINCH VALVES ADDED, AS BUILT UPDATES	JLAU	CHECKED BY: MLOW — DATE: 05-SEP-2017 — JOB/CO NO: (JOB NO.)
	DO NOT SCALE DRAWING	K	23-FEB-2018	NO CHANGES	–	APPROVED BY: APPROVED BY — DATE: APPROVED DATE — SHEET: 102OF117



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L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 623: EFFECT 2 PUMP SEAL FLUSH

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION:	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
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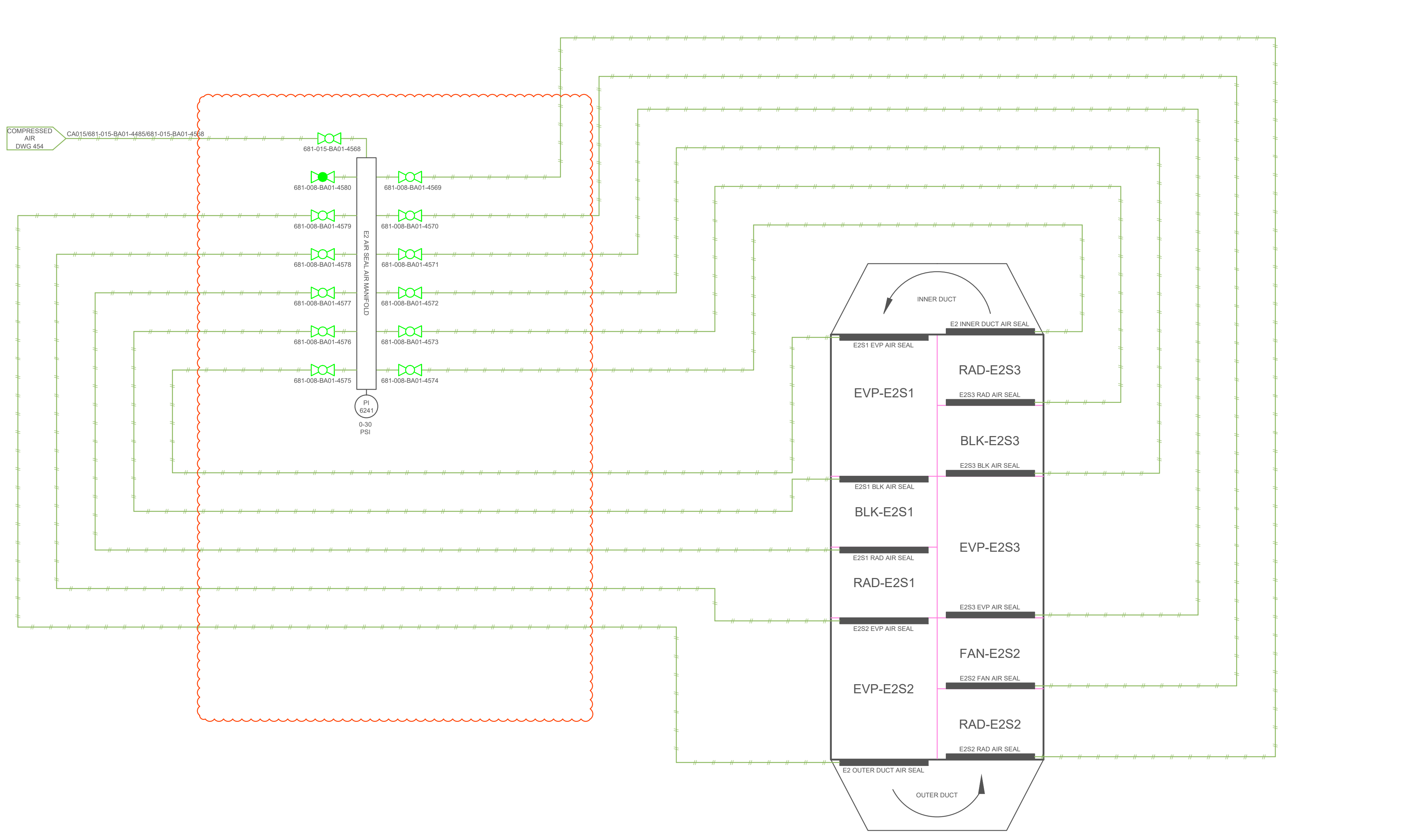
JOB/CO NO:	(JOB NO.)		
SHEET:	103OF117		



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L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	UPDATED MANIFOLD	JLAU
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 624: EFFECT 2 AIR SEALS

PROJECT: SALTMAKER GEN III

CUSTOMER: AGNICO EAGLE MINES

REVISION: N

PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE

DWG. NO: SW_EN_SM_AEM–01_PID_SM2_DWG_624

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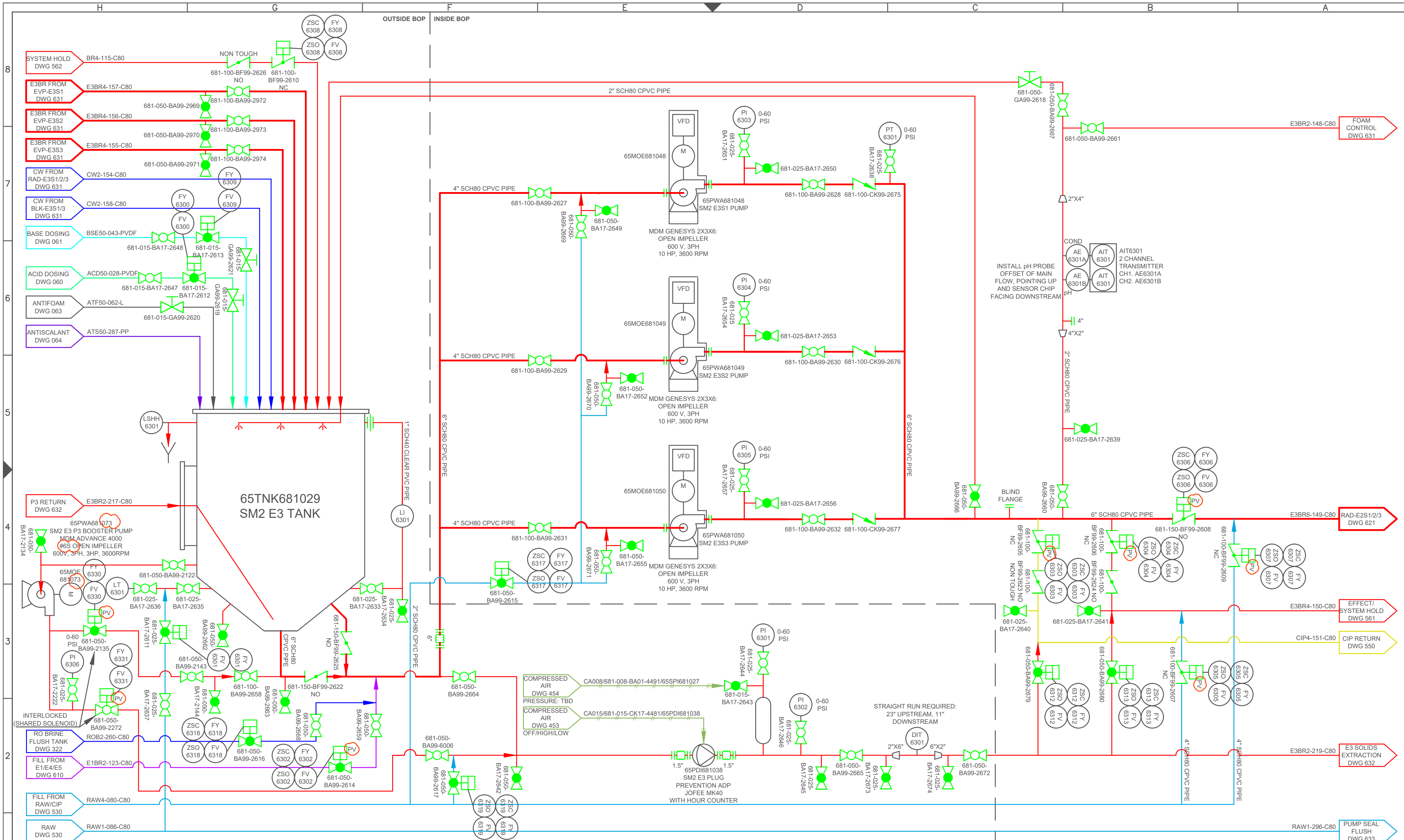

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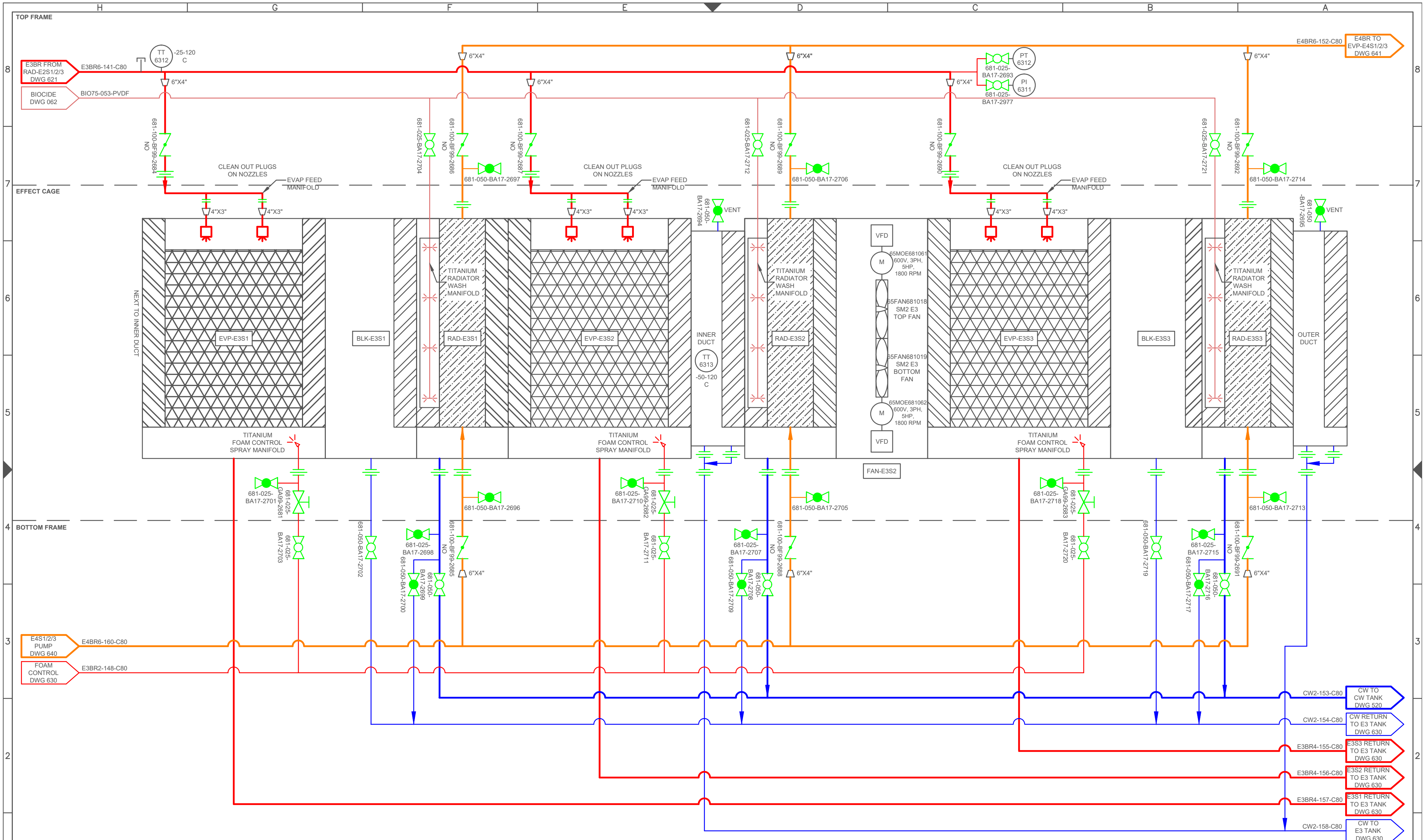
L	16-MAR-2018	TANK SIDE PUMP INLET CHANGED TO NO	JLAU
M	20-APR-2018	P3 INLET UPDATED AND P3 BOOSTER PUMP ADDED	JLAU
N	06-JUL-2018	PINCH VALVES ADDED, P3 BOOSTER TAGS UPDATED	JLAU
K	23-FEB-2018	NO CHANGES	–

TITLE: (SM2) 630: EFFECT 3 TANK AND PUMPS

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01-SEP-2017	DWG. NO: SW_EN_SM_AEM-01_PID_SM2_DWG_630	
CHECKED BY: MLOW	DATE: 05-SEP-2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 105OF117	



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L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 631: EFFECT 3 MODULES

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_SM2_DWG_631	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
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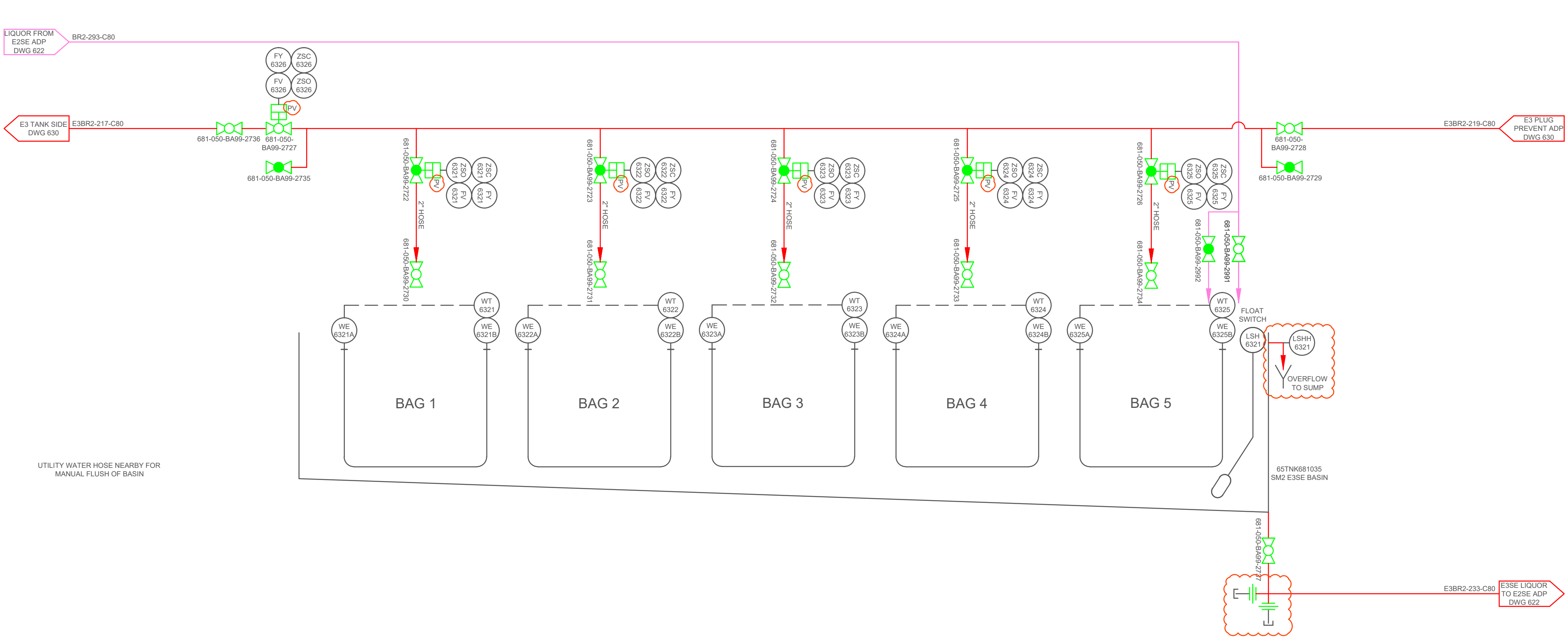
LEFT HAND SIDE OF BASIN PUMP LOOKING FROM FORKLIFT ACCESS SIDE



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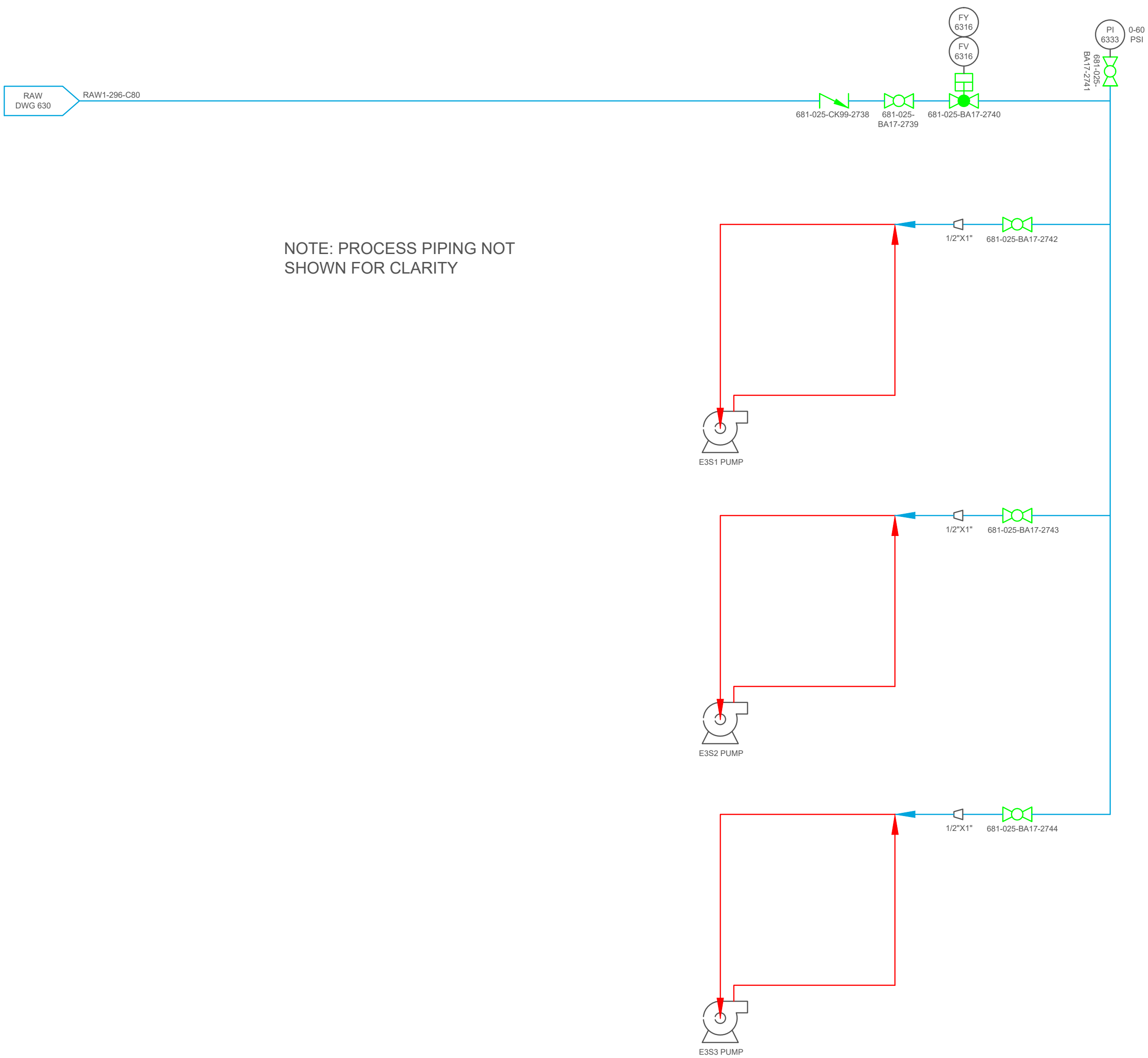
LTR	DATE	DESCRIPTION	REV. BY:
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	UPDATED TO MATCH SM1	–
N	06–JUL–2018	PINCH VALVES ADDED, AS BUILT UPDATES	JLAU
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 632: EFFECT 3 SOLIDS EXTRACTION

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
DWG. NO:	SW_EN_SM_AEM–01_PID_SM2_DWG_632		
CHECKED BY:	MLOW	DATE:	05–SEP–2017
JOB/CO NO:	(JOB NO.)		
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
SHEET:	107OF117		



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M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 633: EFFECT 3 PUMP SEAL FLUSH

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
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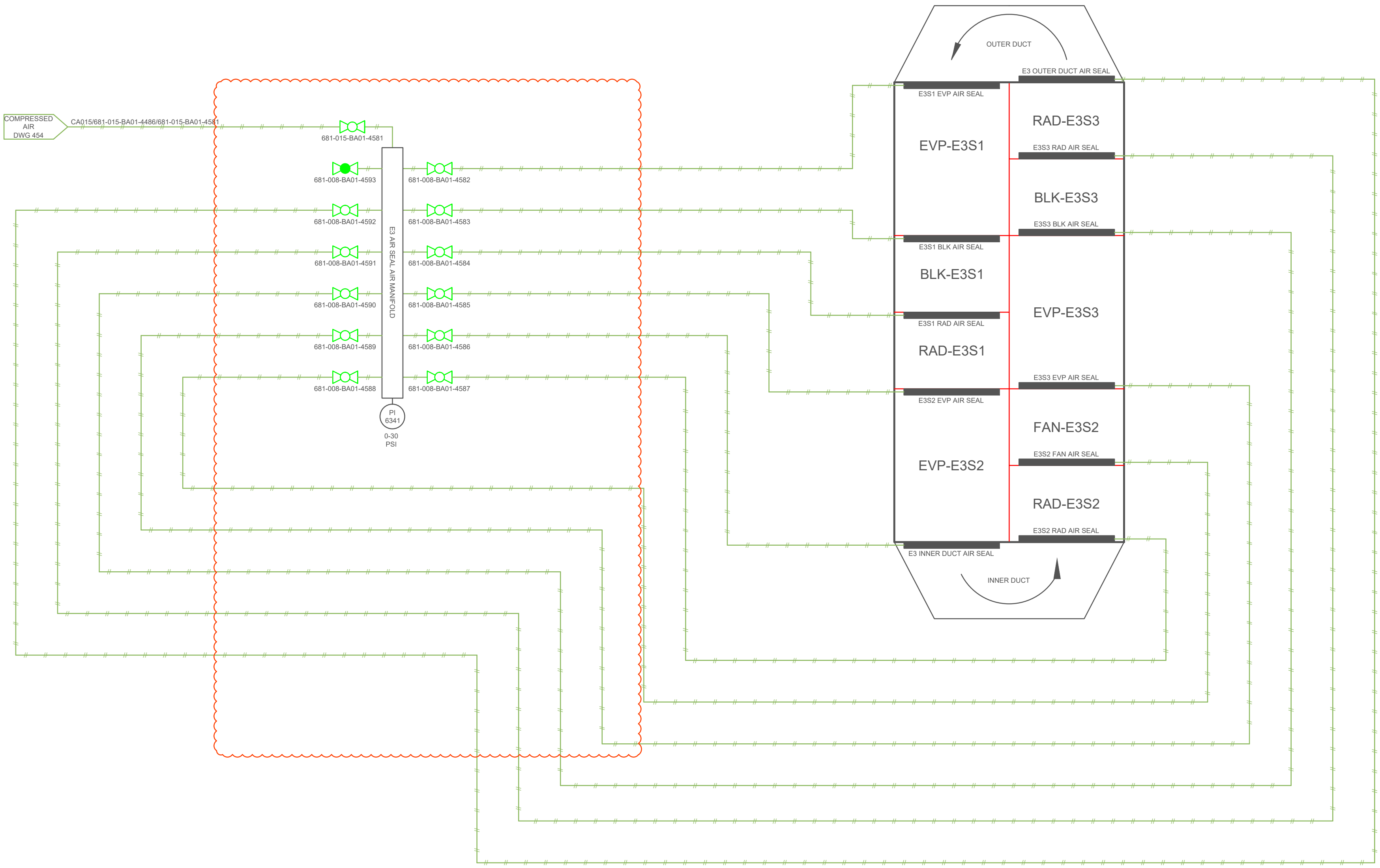
SHEET:	108OF117		



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L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	UPDATED MANIFOLD	JLAU
K	23–FEB–2018	NO CHANGES	–

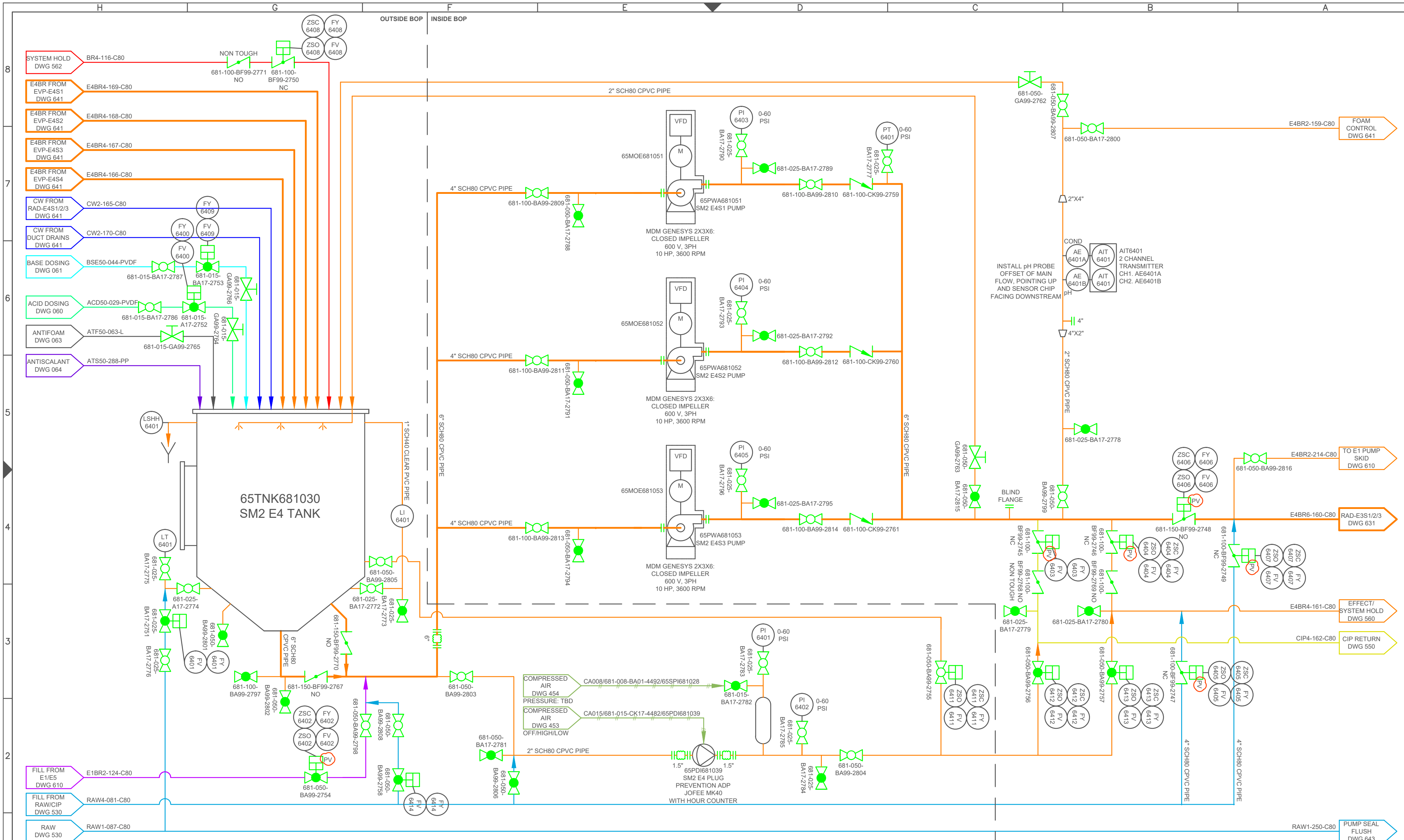
TITLE: (SM2) 634: EFFECT 3 AIR SEALS

PROJECT: SALTMAKER GEN III

CUSTOMER: AGNICO EAGLE MINES

REVISION: N

PREPARED BY:	JLAU	DATE:	01–SEP–2017	DWG. NO:	SW_EN_SM_AEM–01_PID_SM2_DWG_634
CHECKED BY:	MLOW	DATE:	05–SEP–2017	JOB/CO NO:	(JOB NO.)
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE	SHEET:	109OF117



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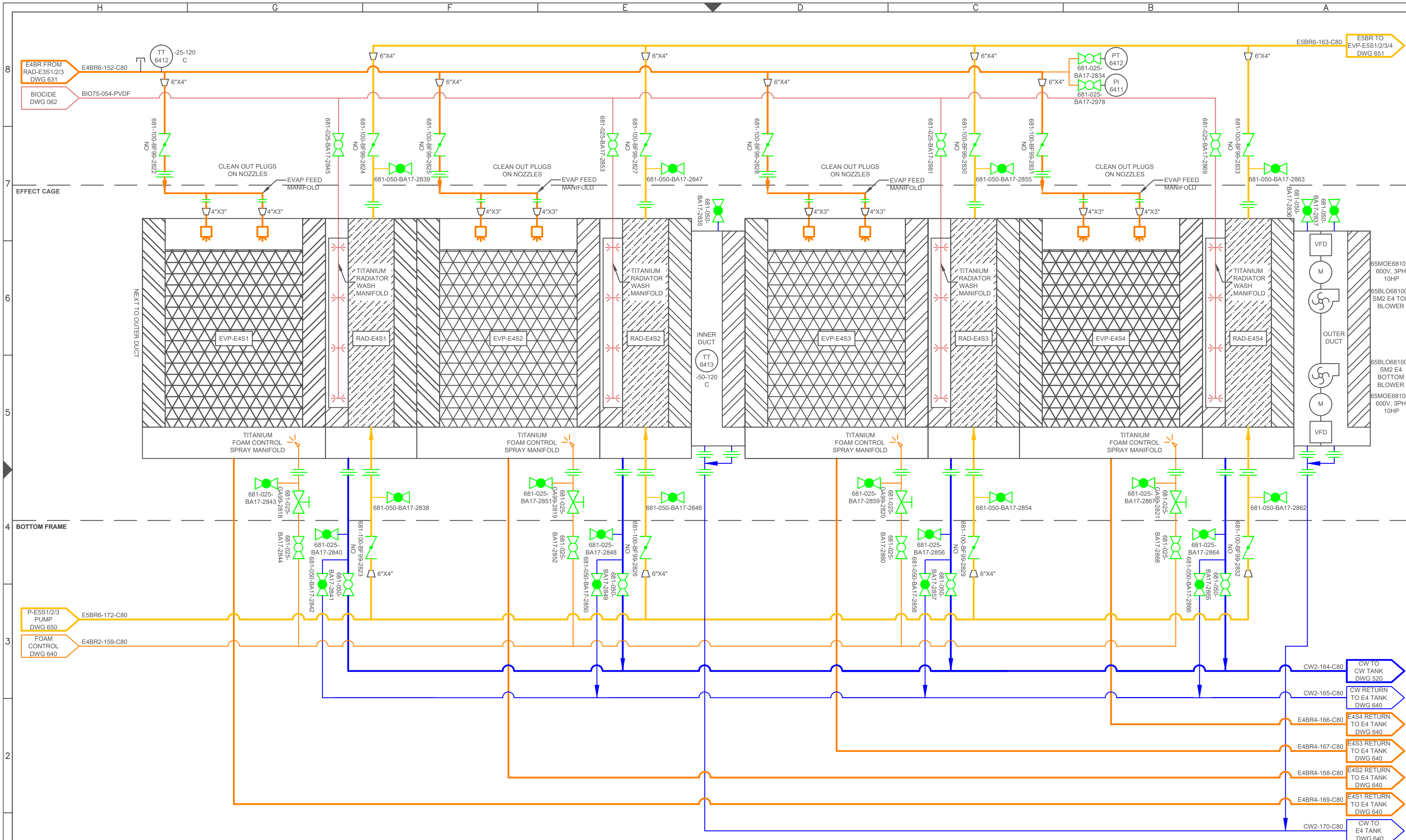
L	16–MAR–2018	TANK BOTTOM PUMP INLET VALVE, P3 RECIRC VALVE CHANGED TO NO	JLAU
M	20–APR–2018	P3 INLET UPDATED	JLAU
N	06–JUL–2018	PINCH VALVES ADDED	JLAU
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 640: EFFECT 4 TANK AND PUMPS

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM-01_PID_SM2_DWG_640	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 1100F117	



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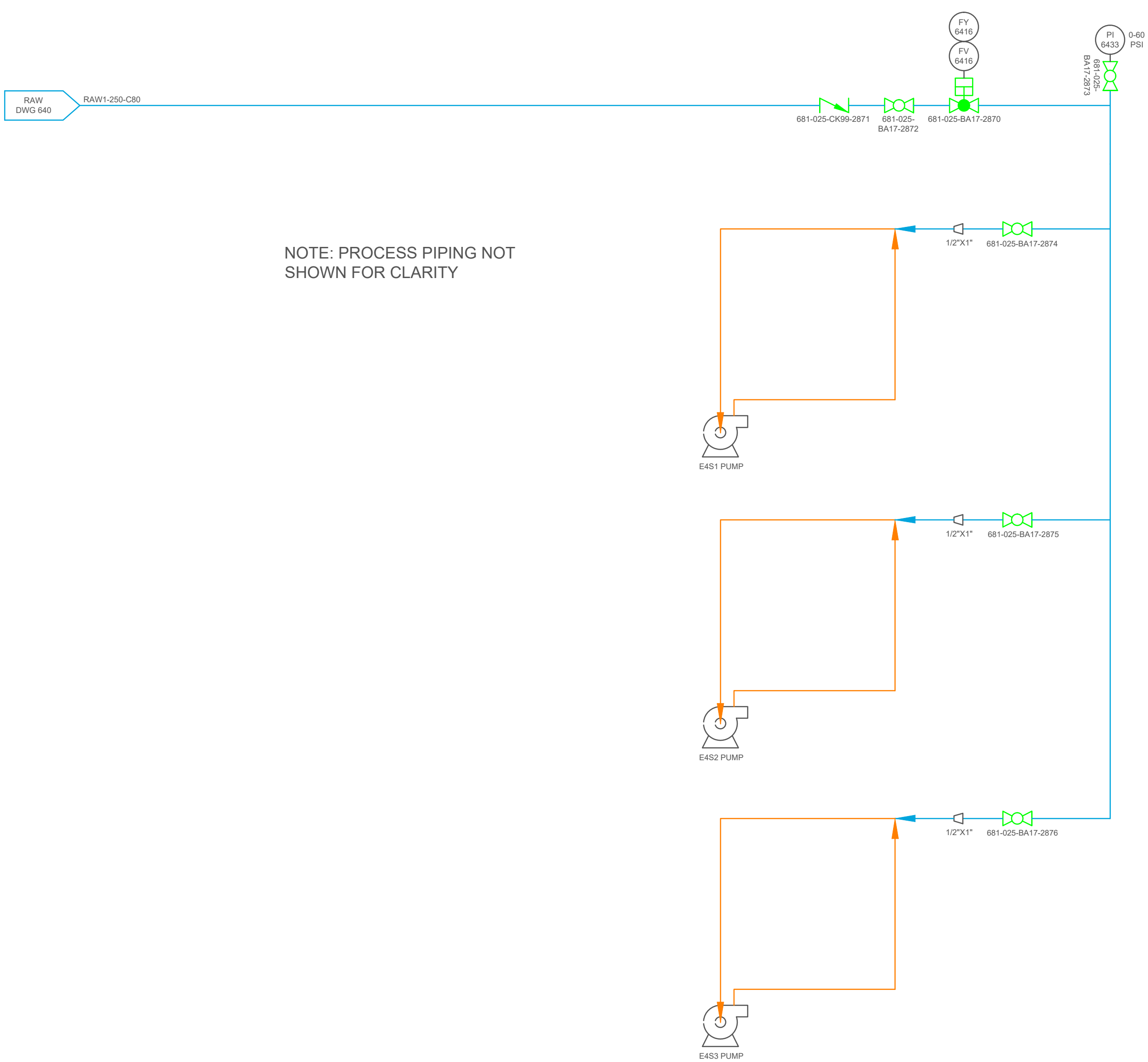
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 641: EFFECT 4 MODULES

PROJECT: SALTMAKER GEN III
CUSTOMER: AGNICO EAGLE MINES
REVISION: N

PREPARED BY:	JLAU	DATE:	01–SEP–2017	DWG. NO:	SW_EN_SM_AEM–01_PID_SM2_DWG_641
CHECKED BY:	MLOW	DATE:	05–SEP–2017	JOB/CO NO:	(JOB NO.)
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE	SHEET:	11 OF 117



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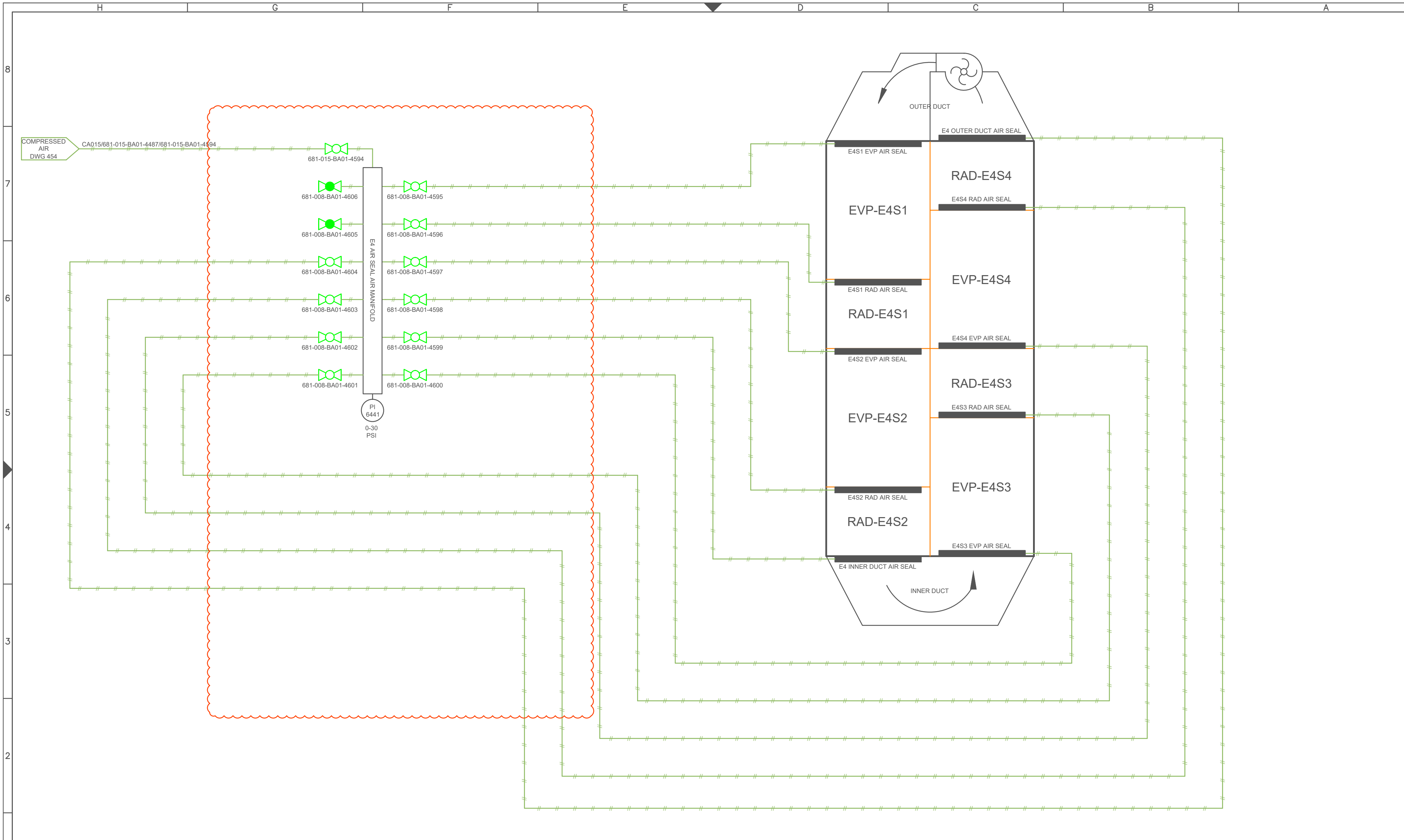
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 643: EFFECT 4 PUMP SEAL FLUSH

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01–SEP–2017
CHECKED BY:	MLOW	DATE:	05–SEP–2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM–01_PID_SM2_DWG_643		
JOB/CO NO:	(JOB NO.)		
SHEET:	112OF117		



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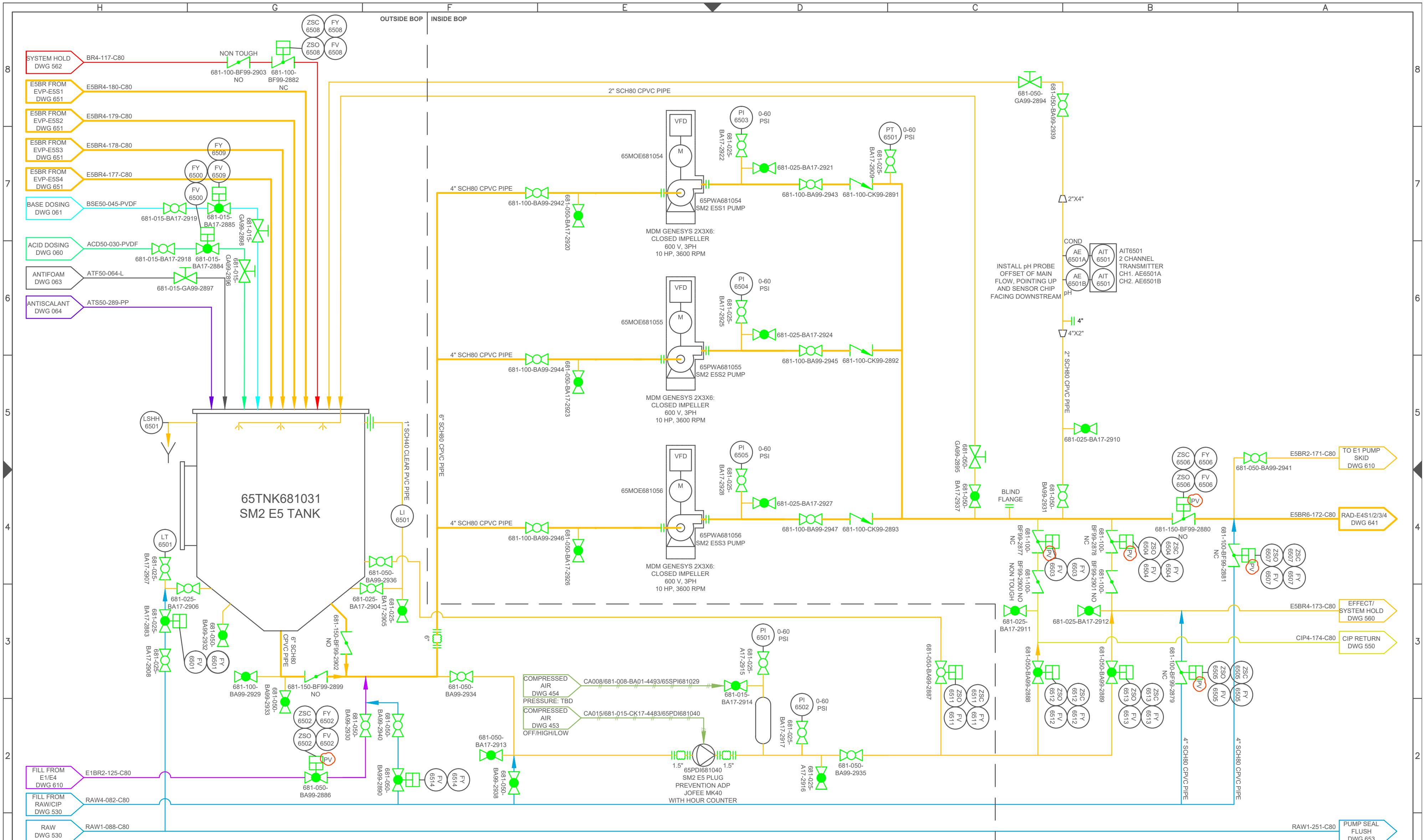
L	16-MAR-2018	NO CHANGES	–
M	20-APR-2018	NO CHANGES	–
N	06-JUL-2018	UPDATED MANIFOLD	JLAU
K	23-FEB-2018	NO CHANGES	–

TITLE: (SM2) 644: EFFECT 4 AIR SEALS

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	JLAU	DATE:	01-SEP-2017
CHECKED BY:	MLOW	DATE:	05-SEP-2017
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_AEM-01_PID_SM2_DWG_644		
JOB/CO NO:	(JOB NO.)		
SHEET:	113OF117		



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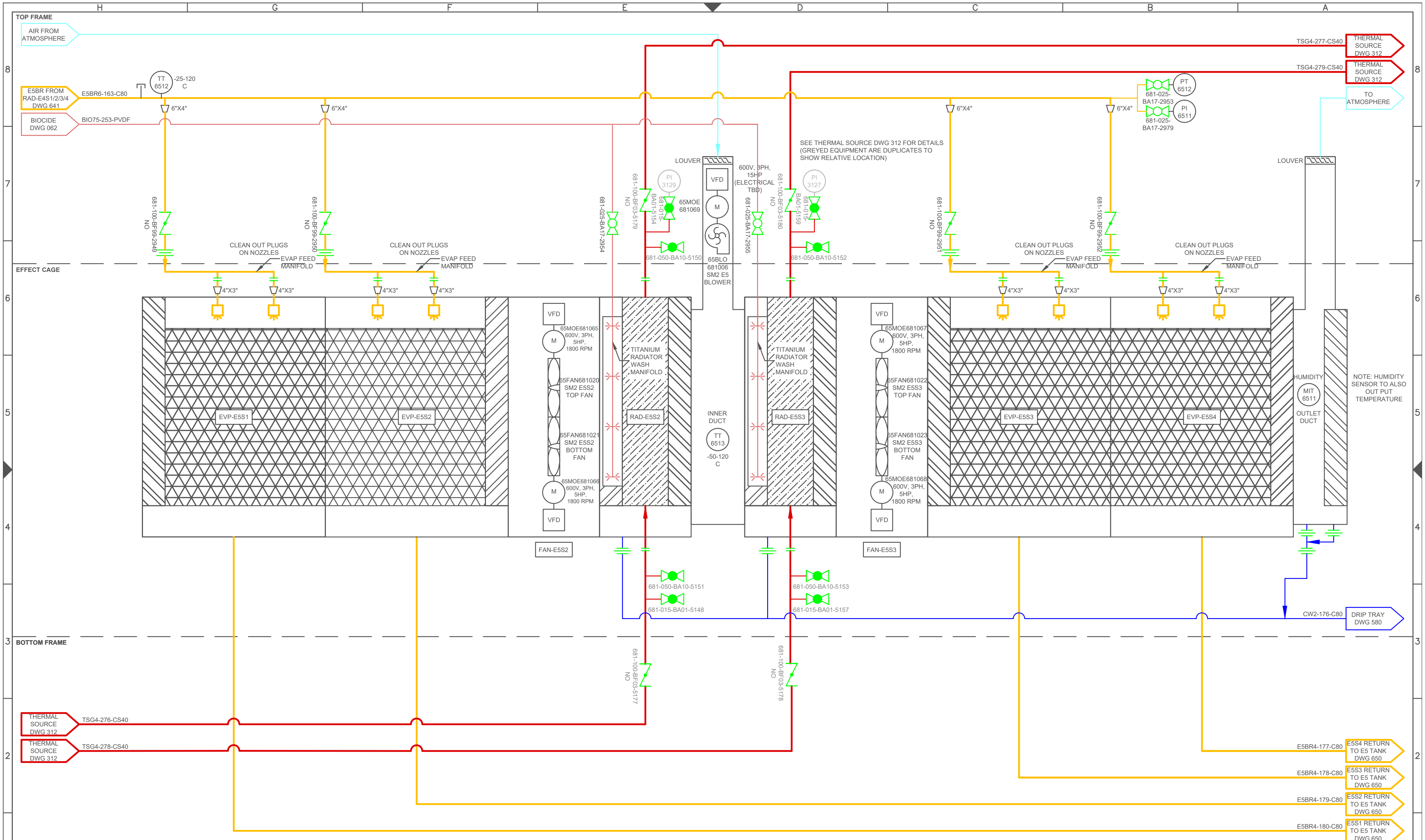
M	20–APR–2018	P3 INLET UPDATED	JLAU
N	06–JUL–2018	PINCH VALVES ADDED	JLAU
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 650: EFFECT 5 TANK AND PUMPS

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM-01_PID_SM2_DWG_650	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 114OF117	



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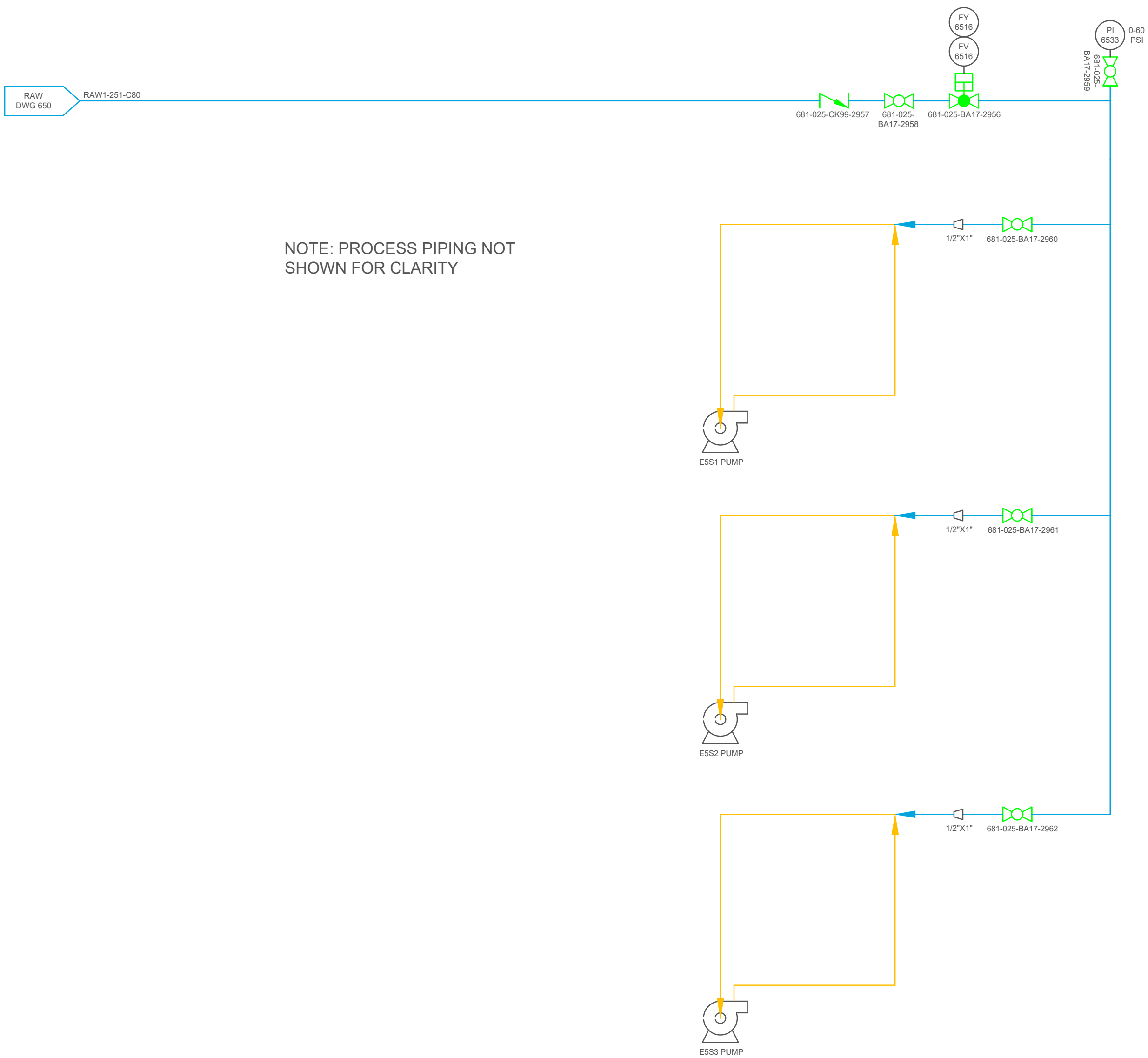
M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 651: EFFECT 5 MODULES

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM-01_PID_SM2_DWG_651	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 115OF117	



NOTE: PROCESS PIPING NOT SHOWN FOR CLARITY

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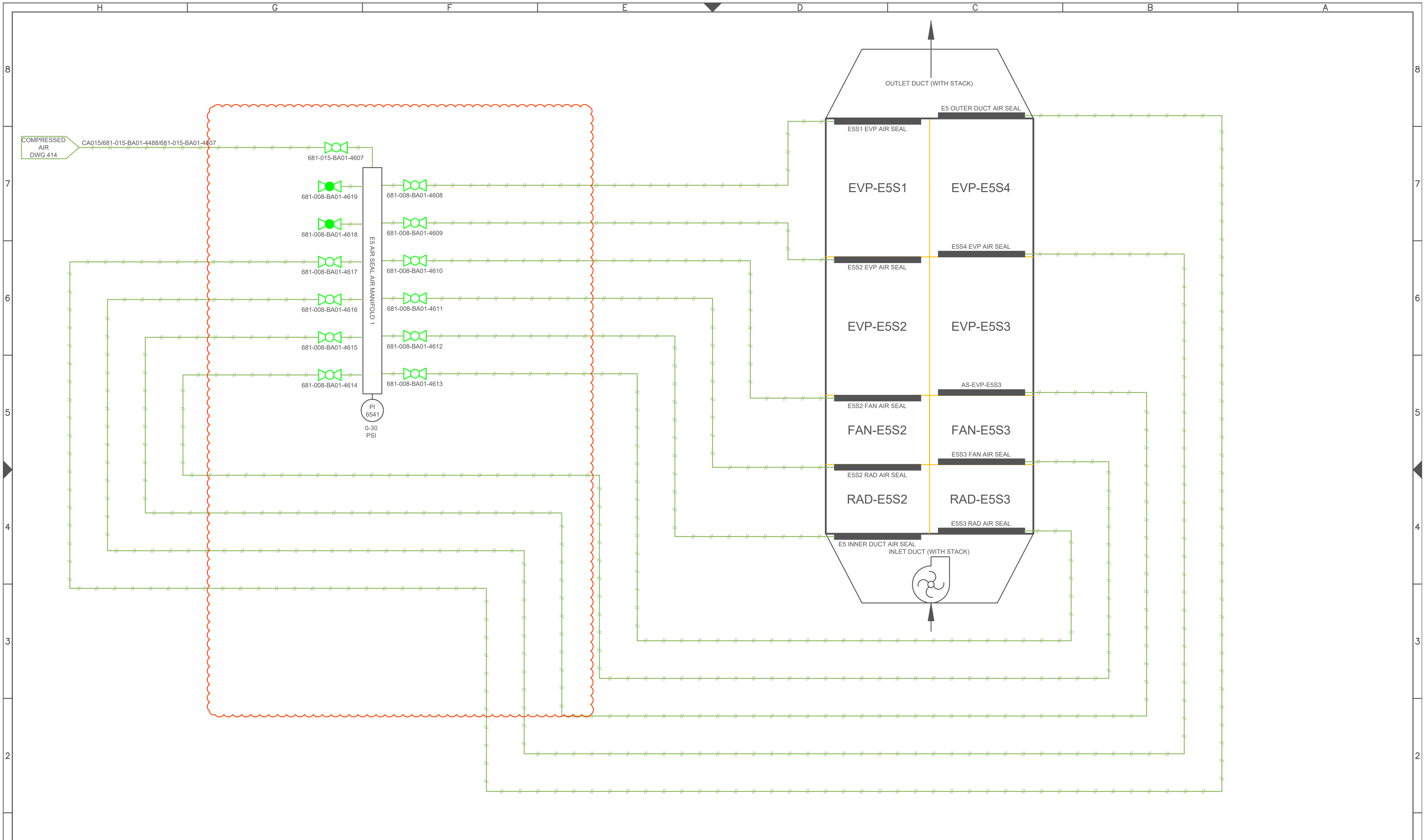
L	16–MAR–2018	NO CHANGES	–
M	20–APR–2018	NO CHANGES	–
N	06–JUL–2018	NO CHANGES	–
K	23–FEB–2018	NO CHANGES	–

TITLE: (SM2) 653: EFFECT 5 PUMP SEAL FLUSH

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: JLAU	DATE: 01–SEP–2017	DWG. NO: SW_EN_SM_AEM–01_PID_SM2_DWG_653	
CHECKED BY: MLOW	DATE: 05–SEP–2017	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 116OF117	



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		M	20–APR–2018	NO CHANGES	–
		N	06–JUL–2018	UPDATED MANIFOLD	JLAU
	DO NOT SCALE DRAWING	K	23–FEB–2018	NO CHANGES	–

TITLE:	(SM2) 654: EFFECT 5 AIR SEALS				
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES	REVISION	N
PREPARED BY:	JLAU	DATE:	01–SEP–2017	DWG. NO:	SW_EN_SM_AEM–01_PID_SM2_DWG_654
CHECKED BY:	MLOW	DATE:	05–SEP–2017	JOB/CO NO:	(JOB NO.)
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE	SHEET:	117OF117

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SALINE WATER TREATMENT PLANT
ENGINEERING DOCUMENT PACKAGE

DATE: 16-Aug-2018
CONFIDENTIAL

Client: Agnico Eagle Mines

Project: SaltMaker SM-AEM-01

The following engineering document package contains work completed under the guidance and supervision of professional engineers, P.Eng..

The package includes:

1) AEM Integration PFD Revision 3, dated 30-Oct-2017
2) Solids Extraction:

    Infographic Revision B, dated 13-Mar-2018

    Solids Extra Extraction System – Simplified Revision A, dated 23-Nov-2017
3) SW_EN_AEM-01_GAD SaltMaker GAD Revision F, dated 13-Jul-2018
4) Agnico Eagle Minds P&ID Drawing Package Revision N, dated 06-Jul-2018
5) System 100: Post Treatment RO P&ID Revision 3, Project Number 17041-100D, Nav Number: 49-0462, dated 23-Jan-2018

REGISTERED PROFESSIONAL ENGINEER
K.K.H. TSIN
LICENSEE
NT/NU

Aug 16, 2018

PERMIT TO PRACTICE
SALTWORKS TECHNOLOGIES INC.
Signature
Date Aug 16, 2018
PERMIT NUMBER: P 1239
NT/NU Association of Professional Engineers and Geoscientists

REGISTERED PROFESSIONAL ENGINEER
B.S. SPARROW
LICENSEE
NT/NU

Aug 16, 2018

AGNICO EAGLE MINES
P&ID DRAWING PACKAGE

COMPRESSED AIR - COMMON
REVISION N

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N	06-JUL-2018	AS MARKED BY REVISION CLOUDS	JLAU
K	26-FEB-2018	PROCESS UPDATE	SNOW
L	16-MAR-2018	AS MARKED BY REVISION CLOUDS	JLAU
M	08-MAY-2018	AS MARKED BY REVISION CLOUDS	JLAU

TITLE:	COVER SHEET		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	SNOW	DATE:	22-FEB-2018
CHECKED BY:	XXIAO	DATE:	23-FEB-2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	COVER SHEET	JOB/CO NO:	(JOB NO.)
SHEET:	# OF #		

DRAWING LIST 1

SHEET NO.	DRAWING NO.	DESCRIPTION
		COVER SHEET
		DRAWING LIST 1
		DRAWING LIST 2
		LEGEND
		COMMON
1	SW_EN_SM_AEM-01_PID_COMMON_DWG_000	MASTER PFD
2	SW_EN_SM_AEM-01_PID_COMMON_DWG_010	PROCESS FLOW DIAGRAM
3	SW_EN_SM_AEM-01_PID_COMMON_DWG_020	CONTAINER LAYOUT
4	SW_EN_SM_AEM-01_PID_COMMON_DWG_030	MODULES LAYOUT
5	SW_EN_SM_AEM-01_PID_COMMON_DWG_040	PLANT FEED TANKS
6	SW_EN_SM_AEM-01_PID_COMMON_DWG_041	PLANT FEED PUMP SKIDS
7	SW_EN_SM_AEM-01_PID_COMMON_DWG_050	CLEAN RESERVE AND BLOWDOWN SYSTEMS
8	SW_EN_SM_AEM-01_PID_COMMON_DWG_060	ACID DOSING SYSTEM
9	SW_EN_SM_AEM-01_PID_COMMON_DWG_061	BASE DOSING SYSTEM
10	SW_EN_SM_AEM-01_PID_COMMON_DWG_062	BIOCIDE DOSING SYSTEM
11	SW_EN_SM_AEM-01_PID_COMMON_DWG_063	ANTIFOAM DOSING SYSTEM
12	SW_EN_SM_AEM-01_PID_COMMON_DWG_064	ANTISCALANT DOSING SYSTEM
13	SW_EN_SM_AEM-01_PID_COMMON_DWG_070	UTILITY WATER DISTRIBUTION
		SALTMAKER 1 (SM1)
14	SW_EN_SM_AEM-01_PID_SM1_DWG_110	THERMAL SOURCE PRIMARY HEAT EXCHANGERS
15	SW_EN_SM_AEM-01_PID_SM1_DWG_120	CONDENSED WATER SYSTEM
16	SW_EN_SM_AEM-01_PID_SM1_DWG_130	FEED DISTRIBUTION
17	SW_EN_SM_AEM-01_PID_SM1_DWG_150	CIP TANKS
18	SW_EN_SM_AEM-01_PID_SM1_DWG_151	CIP PUMP SKID
19	SW_EN_SM_AEM-01_PID_SM1_DWG_160	EFFECT HOLD 1
20	SW_EN_SM_AEM-01_PID_SM1_DWG_161	EFFECT HOLD 2
21	SW_EN_SM_AEM-01_PID_SM1_DWG_162	SYSTEM HOLD
22	SW_EN_SM_AEM-01_PID_SM1_DWG_163	CALCIUM EXTRACTION
23	SW_EN_SM_AEM-01_PID_SM1_DWG_164	EH1 SOLIDS EXTRACTION
24	SW_EN_SM_AEM-01_PID_SM1_DWG_165	EH2 SOLIDS EXTRACTION
25	SW_EN_SM_AEM-01_PID_SM1_DWG_180	DRIP TRAYS
26	SW_EN_SM_AEM-01_PID_SM1_DWG_210	EFFECT 1 TANK AND PUMPS
27	SW_EN_SM_AEM-01_PID_SM1_DWG_211	EFFECT 1 MODULES
28	SW_EN_SM_AEM-01_PID_SM1_DWG_213	EFFECT 1 PUMP SEAL FLUSH
29	SW_EN_SM_AEM-01_PID_SM1_DWG_214	EFFECT 1 AIR SEALS
30	SW_EN_SM_AEM-01_PID_SM1_DWG_220	EFFECT 2 TANK AND PUMPS
31	SW_EN_SM_AEM-01_PID_SM1_DWG_221	EFFECT 2 MODULES
32	SW_EN_SM_AEM-01_PID_SM1_DWG_222	EFFECT 2 SOLIDS EXTRACTION
33	SW_EN_SM_AEM-01_PID_SM1_DWG_223	EFFECT 2 PUMP SEAL FLUSH
34	SW_EN_SM_AEM-01_PID_SM1_DWG_224	EFFECT 2 AIR SEALS

SHEET NO.	DRAWING NO.	DESCRIPTION
35	SW_EN_SM_AEM-01_PID_SM1_DWG_230	EFFECT 3 TANK AND PUMPS
36	SW_EN_SM_AEM-01_PID_SM1_DWG_231	EFFECT 3 MODULES
37	SW_EN_SM_AEM-01_PID_SM1_DWG_232	EFFECT 3 SOLIDS EXTRACTION
38	SW_EN_SM_AEM-01_PID_SM1_DWG_233	EFFECT 3 PUMP SEAL FLUSH
39	SW_EN_SM_AEM-01_PID_SM1_DWG_234	EFFECT 3 AIR SEALS
40	SW_EN_SM_AEM-01_PID_SM1_DWG_240	EFFECT 4 TANK AND PUMPS
41	SW_EN_SM_AEM-01_PID_SM1_DWG_241	EFFECT 4 MODULES
42	SW_EN_SM_AEM-01_PID_SM1_DWG_243	EFFECT 4 PUMP SEAL FLUSH
43	SW_EN_SM_AEM-01_PID_SM1_DWG_244	EFFECT 4 AIR SEALS
44	SW_EN_SM_AEM-01_PID_SM1_DWG_250	EFFECT 5 TANK AND PUMPS
45	SW_EN_SM_AEM-01_PID_SM1_DWG_251	EFFECT 5 MODULES
46	SW_EN_SM_AEM-01_PID_SM1_DWG_253	EFFECT 5 PUMP SEAL FLUSH
47	SW_EN_SM_AEM-01_PID_SM1_DWG_254	EFFECT 5 AIR SEALS
		THERMAL SYSTEM
48	SW_EN_SM_AEM-01_PID_DWG_310	THERMAL SKID: WATER LOOP
49	SW_EN_SM_AEM-01_PID_DWG_311	THERMAL SKID: WATER LOOP
50	SW_EN_SM_AEM-01_PID_DWG_312	THERMAL SKID: GYLCOL LOOP
		POST TREATMENT
51	SW_EN_SM_AEM-01_PID_COMMON_DWG_320	NITRITE DESTRUCTION AND RO PC SYSTEM
52	SW_EN_SM_AEM-01_PID_COMMON_DWG_321	AMMONIA DESTRUCTION SYSTEM
53	SW_EN_SM_AEM-01_PID_COMMON_DWG_322	RO BRINE FLUSH TANK
54	SW_EN_SM_AEM-01_PID_COMMON_DWG_323	RO PERMEATE TANK
		COMPRESSED AIR-COMMON PACKAGE
55	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_400	COMPRESSED AIR SYSTEM
56	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_401	AMMONIA DES, BRINE BLOWDOWN AND PLANT FEED AIR
57	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_402	CHEMICAL DOSING AND ANCILLARY STAND PIPE AIR
58	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_403	COMMON AND POST TREATMENT AIR BANK 1
59	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_404	COMMON AND POST TREATMENT AIR BANK 2
		COMPRESSED AIR-SM1
60	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_410	SM INSTRUMENT AND PROCESS AIR
61	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_411	EH1/EH2 EXTRACT AND CIP AIR

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K	26–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	08–MAY–2018	NO CHANGES	–

TITLE: DRAWING LIST 1			
PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: SNOW	DATE: 22–FEB–2018	DWG. NO: DRAWING LIST 1	
CHECKED BY: XXIAO	DATE: 23–FEB–2018	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: # OF #	

DRAWING LIST 2

SHEET NO.	DRAWING NO.	DESCRIPTION
62	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_412	EH1/EH2 EXTRACT AND CIP AIR
63	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_413	PLUG PREVENTION PUMP AIR
64	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_414	AIR SEAL, STAND PIPE AND E2/E3 SE AIR
65	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_415	UTILITY AIR
66	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_416	BOP1 AIR SOLENOID BANK
67	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_417	E2/E3 SE AIR SOLENOID BANK
68	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_418	BOP2 AIR SOLENOID BANK
69	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_419	BOP3 AIR SOLENOID BANK
70	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_420	CIP, EH/SY AIR SOLENOID BANK
	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_421	H1/H2 SE AIR SOLENOID BANK
71		
		COMPRESSED AIR-SM2
72	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_450	SM INSTRUMENT AND PROCESS AIR
73	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_451	EH1/EH2 EXTRACT AND CIP AIR
74	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_452	EFFECT/SYSTEM HOLD AND CAL EXTRACTION AIR
75	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_453	PLUG PREVENTION PUMP AIR
76	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_454	AIR SEAL, STAND PIPE AND E2/E3 SE AIR
77	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_455	UTILITY AIR
78	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_456	BOP1 AIR SOLENOID BANK
79	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_457	E2/E3 SE AIR SOLENOID BANK
80	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_458	BOP2 AIR SOLENOID BANK
81	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_459	BOP3 AIR SOLENOID BANK
82	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_460	CIP, EH/SY AIR SOLENOID BANK
83	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_461	H1/H2 SE AIR SOLENOID BANK

SHEET NO.	DRAWING NO.	DESCRIPTION
		SALTMAKER 2 (SM2)
84	SW_EN_SM_AEM-01_PID_SM2_DWG_510	THERMAL SOURCE PRIMARY HEAT EXCHANGERS
85	SW_EN_SM_AEM-01_PID_SM2_DWG_520	CONDENSED WATER SYSTEM
86	SW_EN_SM_AEM-01_PID_SM2_DWG_530	FEED DISTRIBUTION
87	SW_EN_SM_AEM-01_PID_SM2_DWG_550	CIP TANKS
88	SW_EN_SM_AEM-01_PID_SM2_DWG_551	CIP PUMP SKID
89	SW_EN_SM_AEM-01_PID_SM2_DWG_560	EFFECT HOLD 1
90	SW_EN_SM_AEM-01_PID_SM2_DWG_561	EFFECT HOLD 2
91	SW_EN_SM_AEM-01_PID_SM2_DWG_562	SYSTEM HOLD
92	SW_EN_SM_AEM-01_PID_SM2_DWG_563	CALCIUM EXTRACTION
93	SW_EN_SM_AEM-01_PID_SM2_DWG_564	EH1 SOLIDS EXTRACTION
94	SW_EN_SM_AEM-01_PID_SM2_DWG_565	EH2 SOLIDS EXTRACTION
	SW_EN_SM_AEM-01_PID_SM2_DWG_580	DRIP TRAYS
95		
96	SW_EN_SM_AEM-01_PID_SM2_DWG_610	EFFECT 1 TANK AND PUMPS
97	SW_EN_SM_AEM-01_PID_SM2_DWG_611	EFFECT 1 MODULES
98	SW_EN_SM_AEM-01_PID_SM2_DWG_613	EFFECT 1 PUMP SEAL FLUSH
	SW_EN_SM_AEM-01_PID_SM2_DWG_614	EFFECT 1 AIR SEALS
99		
100	SW_EN_SM_AEM-01_PID_SM2_DWG_620	EFFECT 2 TANK AND PUMPS
101	SW_EN_SM_AEM-01_PID_SM2_DWG_621	EFFECT 2 MODULES
102	SW_EN_SM_AEM-01_PID_SM2_DWG_622	EFFECT 2 SOLIDS EXTRACTION
103	SW_EN_SM_AEM-01_PID_SM2_DWG_623	EFFECT 2 PUMP SEAL FLUSH
	SW_EN_SM_AEM-01_PID_SM2_DWG_624	EFFECT 2 AIR SEALS
104		
105	SW_EN_SM_AEM-01_PID_SM2_DWG_630	EFFECT 3 TANK AND PUMPS
106	SW_EN_SM_AEM-01_PID_SM2_DWG_631	EFFECT 3 MODULES
107	SW_EN_SM_AEM-01_PID_SM2_DWG_632	EFFECT 3 SOLIDS EXTRACTION
108	SW_EN_SM_AEM-01_PID_SM2_DWG_633	EFFECT 3 PUMP SEAL FLUSH
	SW_EN_SM_AEM-01_PID_SM2_DWG_634	EFFECT 3 AIR SEALS
109		
110	SW_EN_SM_AEM-01_PID_SM2_DWG_640	EFFECT 4 TANK AND PUMPS
111	SW_EN_SM_AEM-01_PID_SM2_DWG_641	EFFECT 4 MODULES
112	SW_EN_SM_AEM-01_PID_SM2_DWG_643	EFFECT 4 PUMP SEAL FLUSH
	SW_EN_SM_AEM-01_PID_SM2_DWG_644	EFFECT 4 AIR SEALS
113		
114	SW_EN_SM_AEM-01_PID_SM2_DWG_650	EFFECT 5 TANK AND PUMPS
115	SW_EN_SM_AEM-01_PID_SM2_DWG_651	EFFECT 5 MODULES
116	SW_EN_SM_AEM-01_PID_SM2_DWG_653	EFFECT 5 PUMP SEAL FLUSH
117	SW_EN_SM_AEM-01_PID_SM2_DWG_654	EFFECT 5 AIR SEALS
		VENDOR DRAWINGS
	USW_17041_100D	POST TREATMENT RO

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LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	08–MAY–2018	NO CHANGES	–

TITLE: DRAWING LIST 2
PROJECT: SALTMAKER GEN III
CUSTOMER: AGNICO EAGLE MINES
REVISION: N
PREPARED BY: SNOW DATE: 22–FEB–2018
CHECKED BY: XXIAO DATE: 23–FEB–2018
APPROVED BY: APPROVED BY DATE: APPROVED DATE
DWG. NO: DRAWING LIST 2
JOB/CO NO: (JOB NO.)
SHEET: # OF #

VALVES

- MANUAL BALL (MBV) – NORMALLY CLOSED
- MANUAL BALL (MBV) – NORMALLY OPEN
- CHECK (CV)
- GATE (GV)
- BUTTERFLY (BFV)
- PRESSURE RELIEF VALVE (PRV)
- FLOAT VALVE (FV)
- DIAPHRAGM (DV)
- NEEDLE (NV)
- 3–WAY
- 3–WAY SOLENOID
- 4–WAY SOLENOID
- 4–FUNCTION VALVE
- FOOT VALVE

N.O. – NORMALLY OPEN
N.C. – NORMALLY CLOSED

CONTROL VALVES/ACTUATORS

- PRESSURE CONTROL VALVE (PCV) WITH PRESSURE GAUGE
- DOUBLE ACTING ACTUATED BALL VALVE (ABV) – NORMALLY CLOSED
- DOUBLE ACTING ACTUATED BALL VALVE (ABV) – NORMALLY OPEN
- DOUBLE ACTING ACTUATED BALL VALVE (ABV) – NORMALLY OPEN WITH PINCH VALVES
- SOLENOID VALVE (SV)
- SOLENOID VALVE (SV)
- MOTORIZED ACTUATOR
- MOTORIZED ACTUATOR WITH MANUAL OVERRIDE
- DOUBLE ACTING DIAPHRAGM ACTUATOR WITH LIMIT STOP
- DOUBLE ACTING DIAPHRAGM ACTUATOR WITH SPRING TO CLOSE
- DOUBLE ACTING DIAPHRAGM ACTUATOR WITH SPRING TO OPEN
- A/S AIR OPERATOR W/POSITIONER

EQUIPMENT SYMBOL

- MIXER OR AGITATOR (MX)
- INLINE STATIC MIXER
- HEATER (HE)
- ELECTRIC HEATER (EH)
- INJECTION QUILL
- EDUCTOR/EJECTOR (ED)
- POSITIVE DISPLACEMENT PUMP W/MANUAL STROKE ADJUSTMENT (MP)
- POSITIVE DISPLACEMENT PUMP W/ELECTRIC STROKE ADJUSTMENT (MP)
- ROTARY COMPRESSER OR BLOWER
- AIR FILTER
- BLOWER OR FAN (BW OR FN)
- VACUUM PUMP (VP)
- DIAPHRAGM PUMP (P)
- CENTRIFUGAL PUMP (P)
- HIGH PRESSURE PUMP (P)
- DESICCANT BREATHER
- VENT PIPE
- Y–STRAINER
- RUPTURE DISC
- DIAPHRAGM SEAL
- STANDPIPE (SP)
- CALIBRATION COLUMN (CC)
- AIR COMPRESSOR (AC)
- PNEUMATIC VIBRATOR (VIB)
- RO/UF MODULE
- FILTER – BASKET (BAF)
- FILTER (F) HOUSING
- CLOSED TOP TANK (TK)
- CONE BOTTOM TANK (TK)
- OPEN TOP TANK (TK) WITH COVER
- PLATE HEAT EXCHANGER (HX)
- SHELL AND TUBE HEAT EXCHANGER (HX)
- CONE CONSTRAINER (CSTR)
- PERISTALTIC HOSE PUMP (P)
- FLEXIBLE CONNECTION

MISCELLANEOUS SYMBOLS

- LINE, EQUIPMENT OR PRODUCT REFERENCES INTO OR LEAVING DWG.
- TIE — TIE IN TO PIPING BY OTHERS
- 304 | CPVC — PIPING MATERIAL SPEC. BREAK

SOLENOID VALVE OPERATION

- 3–WAY: FAIL OPEN TO PATH A–C
- 4–WAY: FAIL OPEN TO PATHS A–C AND D–B

(Piping)

- A/S — AIR SUPPLY
- N/S — NITROGEN SUPPLY
- CONCENTRIC REDUCING
- ECCENTRIC REDUCING
- ENCLOSURE (CAP)
- FLANGE
- END CLOSURE (BLIND FLANGE)
- END CLOSURE (VIC PLUG)
- QUICK DISCONNECT
- UNION
- SANITARY CONNECTION
- FLOOR DRAIN OR SUMP
- BULKHEAD
- EXPANSION JOINT

FILL SYMBOLS

- SPLASH FILL
- FILM FILL
- NET FILL

INSTRUMENT LINE SYMBOLS

- PNEUMATIC SIGNAL (ANALOG)
- PNEUMATIC SIGNAL (DIGITAL)
- ELECTRICAL SIGNAL (ANALOG – 4–20mA OR 1–10 VDC)
- ELECTRICAL SIGNAL (FREQUENCY OR PULSE)
- CAPILLARY TUBING (FILLED TUBING)
- CONNECTION TO PROCESS, OR INSTRUMENT SUPPLY

FLUID LINE SYMBOLS

- EFFECT 1 BRINE (90°C)
- EFFECT 2 BRINE (75°C)
- EFFECT 3 BRINE (60°C)
- EFFECT 4 BRINE (45°C)
- EFFECT 5 BRINE (30°C)
- CIP
- RAW FEED
- CONDENSED WATER (70°C – 40°C)
- THERMAL LOOP (GYLCOL)
- EVAPORATE
- COMPRESSED AIR LINE
- ACID DOSING
- BASE DOSING
- ANTIFOAM
- BIOFILM TREATMENT SOLUTION

MISCELLANEOUS LINE SYMBOLS

- SYSTEM BOUNDARY

INSTRUMENT SYMBOLS

- LOCALLY MOUNTED
- PANEL MOUNTED (MAIN OR REMOTE)
- SHARED DISPLAY (CRT) AND/OR SHARED CONTROL

CONTROL SYMBOLS

- DI — DISCRETE INPUT TO PLC
- DO — DISCRETE OUTPUT FROM PLC
- AI — ANALOG INPUT TO PLC
- AO — ANALOG OUTPUT FROM PLC

EQUIPMENT IDENTIFICATION

M – MOTOR
AS – AIR SEAL
VFD – VARIABLE FREQUENCY DRIVE
DRY – DRYER

MODULE IDENTIFICATION

EVP – EVAPORATOR MODULE
RAD – RADIATOR MODULE
FAN – FAN MODULE

MATERIAL ABBREVIATIONS

PP – POLYPROPYLENE
PVC – POLYVINYL CHLORIDE
UPVC – POLYVINYL CHLORIDE
P – POLYVINYL CHLORIDE (IN LINE NUMBER)
CPVC – CHLORINATED POLYVINYL CHLORIDE
C – CHLORINATED POLYVINYL CHLORIDE (IN LINE NUMBER)
HDPE – HIGH DENSITY POLYETHYLENE
PVDF – POLYVINYLIDENE FLUORIDE
PVFB – PVDF BEADLESS & CREVICE FREE
PVFL – PVDF LINED
PTFE – TEFLON
304 – 304 STAINLESS STEEL
304L – 304L STAINLESS STEEL
316 – 316 STAINLESS STEEL
316L – 316L STAINLESS STEEL

INSTRUMENT IDENTIFICATION

PARAMETER (1ST LETTER)

P – PRESSURE
F – FLOW
T – TEMPERATURE
C – CONDUCTIVITY
D – DENSITY
Z – POSITION
A – ANALYTICAL (SEE NOTES)

TYPE (2ND AND 3RD LETTER)

I – INDICATING/INDICATOR
T – TRANSMITTER
E – ELEMENT/PROBE
A – ALARM
S – SWITCH

NOTES:

1. THE DESCRIPTION OF AN ANALYTICAL VARIABLE FUNCTION (pH, SiO_2, O, ETC.) SHALL BE SHOWN OUTSIDE THE INSTRUMENT SYMBOL. EXAMPLE: AIT pH
2. ADD THE SUFFIX L (LOW), LL (LOW–LOW), H (HIGH), HH (HIGH–HIGH), HL (HIGH–LOW), AS REQUIRED. EXAMPLE: PSL FAL

LINE NUMBERING

E1BR4–001–P80

FLUID — SIZE — SEQUENTIAL NUMBER — MATERIAL — SCHEDULE

VALVE NUMBERING

681–015–BA17–0001

AREA CODE — VALVE SIZE — VALVE TYPE — SEQUENTIAL NUMBER

VALVE SIZE CONVERSION

MM		INCH
008	-	1/4
015	-	1/2
025	-	1
050	-	2
100	-	4
150	-	6

VALVE TYPE CONVERSION

BA17	-	BALL VALVE
BA99	-	TOUGH BALL VALVE
BF99	-	TOUGH BUTTERFLY VALVE (EXCEPT THOSE NOTED "NON TOUGH")
CK99	-	CHECK VALVE
GA99	-	GATE VALVE

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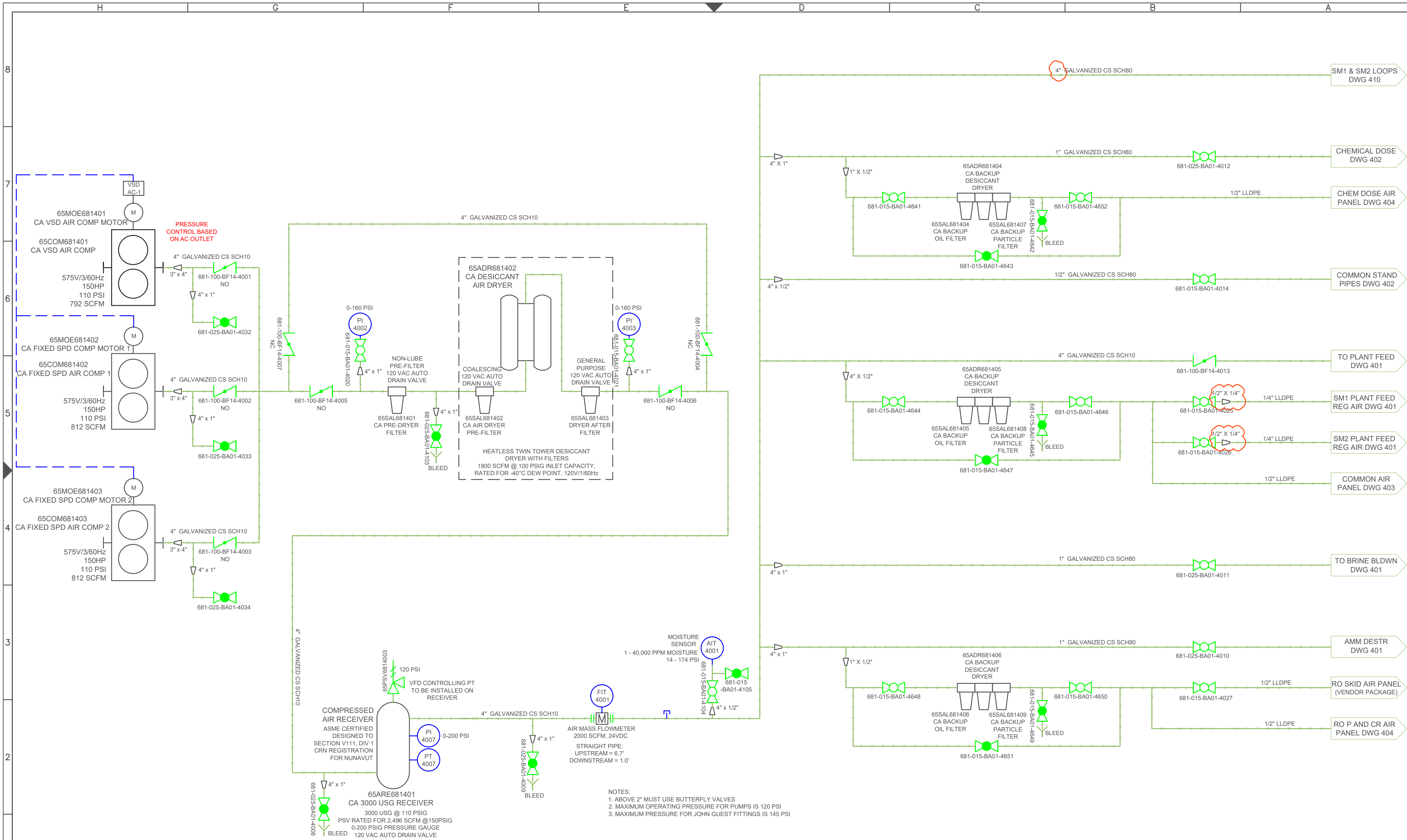
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	08–MAY–2018	NO CHANGES	–

TITLE:	LEGEND		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION:	N		
PREPARED BY:	SNOW	DATE:	22–FEB–2018
CHECKED BY:	XXIAO	DATE:	23–FEB–2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	LEGEND		
JOB/CO NO:	(JOB NO.)		
SHEET:	# OF #		



NOTES:
1. ABOVE 2" MUST USE BUTTERFLY VALVES
2. MAXIMUM OPERATING PRESSURE FOR PUMPS IS 120 PSI
3. MAXIMUM PRESSURE FOR JOHN GUEST FITTINGS IS 145 PSI

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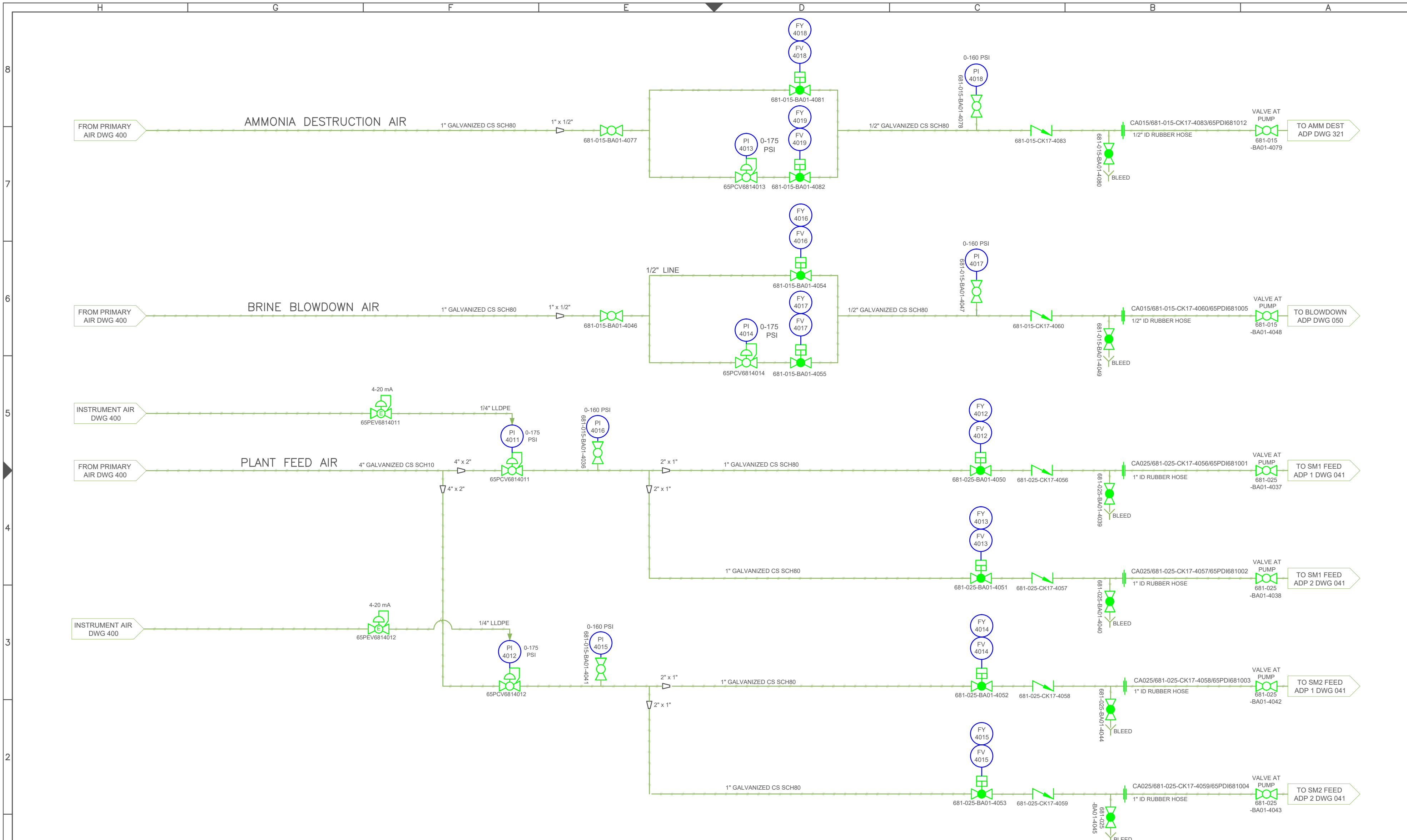
DO NOT SCALE DRAWING

LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	UPDATED LINE SIZE	JLAU
K	26–FEB–2018	NO CHANGES	–
L	16–MAR–2018	PENDING NEW DESICANT AIR DRYER	JLAU
M	08–MAY–2018	DESICANT SYSTEM UPDATED, BACK UP FILTER TRAIN ADDED	JLAU

TITLE: (COMMON) 400: COMPRESSED AIR SYSTEM

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	PH	DATE:	19–JAN–2018
CHECKED BY:	XXIAO	DATE:	23–JAN–2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_GEN III_PID_DWG_400	JOB/CO NO:	(JOB NO.)
SHEET:	55 OF117		



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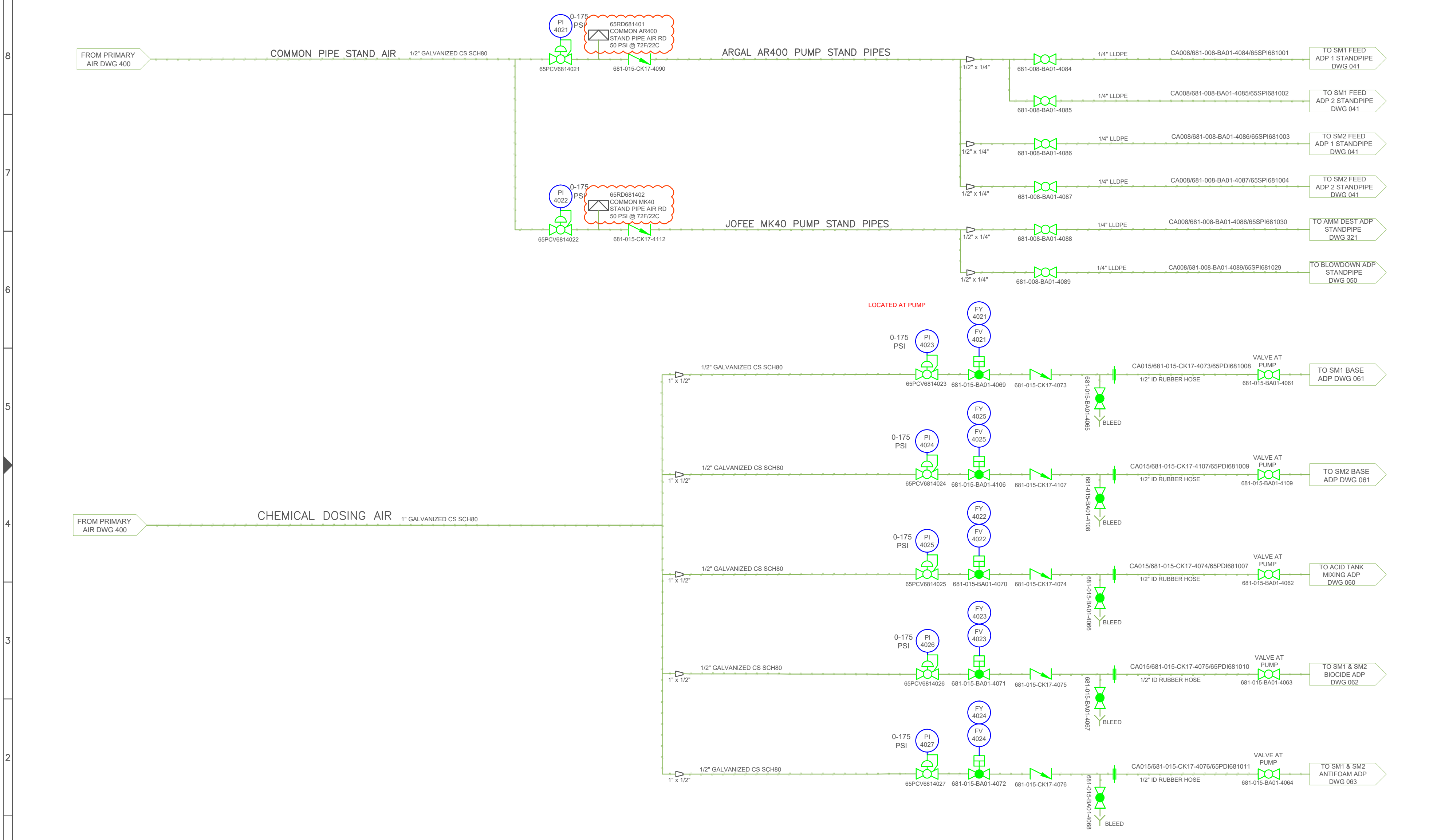
DO NOT SCALE DRAWING

LTR	DATE	DESCRIPTION	REV. BY:
N	06-JUL-2018	NO CHANGES	–
K	26-FEB-2018	UPDATED LINE LABELS	SNOW
L	16-MAR-2018	NO CHANGES	–
M	08-MAY-2018	NO CHANGES	–

TITLE: (COMMON) 401: AMM DESTR, BRINE BLOWDOWN, AND PLANT FEED AIR

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES		REVISION: N
PREPARED BY: SNOW	DATE: 22–FEB–2018	DWG. NO: SW_EN_SM_GEN III_PID_DWG_401		
CHECKED BY: XXIAO	DATE: 23–FEB–2018	JOB/CO NO: (JOB NO.)		
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 56 OF117		



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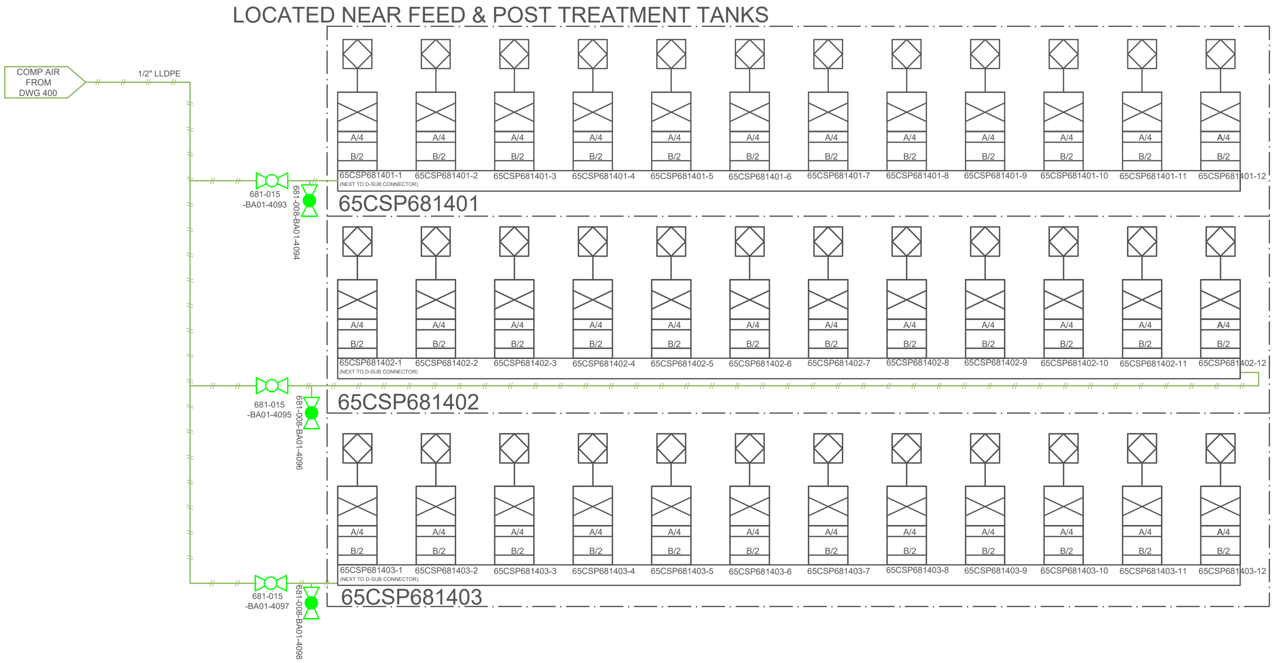
DO NOT SCALE DRAWING

LTR	DATE	DESCRIPTION	REV. BY:
N	06-JUL-2018	RUPTURE DISK CONFIRMED	JLAU
K	26-FEB-2018	UPDATED LINE LABELS	SNOW
L	16-MAR-2018	NO CHANGES	–
M	08-MAY-2018	NO CHANGES	–

TITLE: (COMMON) 402: CHEMICAL DOSING AND AMMOSNIA DESTRUCTION AIR

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: SNOW	DATE: 22-FEB-2018	DWG. NO: SW_EN_SM_GEN III_PID_DWG_402	
CHECKED BY: XXIAO	DATE: 23-FEB-2018	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 57 OF117	



65CSP681401

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681401-1	65FV6810401	65CSP681401-1/65FV6810401/A	65CSP681401-1/65FV6810401/B	PF/040	NC
65CSP681401-2	65FV6810402	65CSP681401-2/65FV6810402/A	65CSP681401-2/65FV6810402/B	PF/040	NC
65CSP681401-3	65FV6810409	65CSP681401-3/65FV6810409/A	65CSP681401-3/65FV6810409/B	PF-ACD/040	NC
65CSP681401-4	65FV6810406	65CSP681401-4/65FV6810406/A	65CSP681401-4/65FV6810406/B	PF/040	NC
65CSP681401-5	65FV6810403	65CSP681401-5/65FV6810403/A	65CSP681401-5/65FV6810403/B	PF/040	NO
65CSP681401-6	65FV6810413	65CSP681401-6/65FV6810413/A	65CSP681401-6/65FV6810413/B	PF/041	NO
65CSP681401-7	65FV6810414	65CSP681401-7/65FV6810414/A	65CSP681401-7/65FV6810414/B	PF/041	NC
65CSP681401-8	65FV6810415	65CSP681401-8/65FV6810415/A	65CSP681401-8/65FV6810415/B	PF/041	NC
65CSP681401-9	65FV6810417	65CSP681401-9/65FV6810417/A	65CSP681401-9/65FV6810417/B	PF/041	NC
65CSP681401-10	65FV6810418	65CSP681401-10/65FV6810418/A	65CSP681401-10/65FV6810418/B	PF/041	NC
65CSP681401-11	65FV6814012	65CSP681401-11/65FV6814012/A	65CSP681401-11/65FV6814012/B	CA-PF/401	NC
65CSP681401-12	65FV6814013	65CSP681401-12/65FV6814013/A	65CSP681401-12/65FV6814013/B	CA-PF/401	NC

65CSP681402

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681402-1	65FV6810420	65CSP681402-1/65FV6810420/A	65CSP681402-1/65FV6810420/B	PF/041	NO
65CSP681402-2	65FV6810419	65CSP681402-2/65FV6810419/A	65CSP681402-2/65FV6810419/B	PF/041	NC
65CSP681402-3	65FV6810410	65CSP681402-3/65FV6810410/A	65CSP681402-3/65FV6810410/B	PF/041	NC
65CSP681402-4	65FV6810412	65CSP681402-4/65FV6810412/A	65CSP681402-4/65FV6810412/B	PF/041	NC
65CSP681402-5	65FV6814014	65CSP681402-5/65FV6814014/A	65CSP681402-5/65FV6814014/B	CA-PF/401	NC
65CSP681402-6	65FV6814015	65CSP681402-6/65FV6814015/A	65CSP681402-6/65FV6814015/B	CA-PF/401	NC
65CSP681402-7	65FV6810702	65CSP681402-7/65FV6810702/A	65CSP681402-7/65FV6810702/B	UW/070 (PENDING MECH LAYOUT)	NC
65CSP681402-8	SPARE				
65CSP681402-9	SPARE				
65CSP681402-10	SPARE				
65CSP681402-11	SPARE				
65CSP681402-12	SPARE				

65CSP681403

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681403-1	65FV6813201	65CSP681403-1/65FV6813201/A	65CSP681403-1/65FV6813201/B	ND/320	NO
65CSP681403-2	65FV6813202	65CSP681403-2/65FV6813202/A	65CSP681403-2/65FV6813202/B	ND/320	NC
65CSP681403-3	65FV6813203	65CSP681403-3/65FV6813203/A	65CSP681403-3/65FV6813203/B	ND/320	NC
65CSP681403-4	65FV6813204	65CSP681403-4/65FV6813204/A	65CSP681403-4/65FV6813204/B	ND/320	NC
65CSP681403-5	65FV6813209	65CSP681403-5/65FV6813209/A	65CSP681403-5/65FV6813209/B	ND-ACD/320	NC
65CSP681403-6	65FV6813221	65CSP681403-6/65FV6813221/A	65CSP681403-6/65FV6813221/B	PC/320	NC
65CSP681403-7	65FV6813222	65CSP681403-7/65FV6813222/A	65CSP681403-7/65FV6813222/B	PC/320	NC
65CSP681403-8	65FV6813223	65CSP681403-8/65FV6813223/A	65CSP681403-8/65FV6813223/B	PC/320	NC
65CSP681403-9	65FV6813224	65CSP681403-9/65FV6813224/A	65CSP681403-9/65FV6813224/B	PC/320	NC
65CSP681403-10	65FV6813229	65CSP681403-10/65FV6813229/A	65CSP681403-10/65FV6813229/B	PC-BSE/320	NC
65CSP681403-11	65FV6813109	65CSP681403-11/65FV6813109/A	65CSP681403-11/65FV6813109/B	TSW/310	NC
65CSP681403-12	SPARE				

1. ALL ABV SUPPLIED IN NC CONFIGURATION
2. CONTROL LINE A ALWAYS START FROM SOLENOID A PORT
3. CONTROL LINE B ALWAYS START FROM SOLENOID B PORT
4. FOR NC ABV
   a. CONTROL LINE A TERMINATES AT ABV LEFT PORT
   b. CONTROL LINE B TERMINATES AT ABV RIGHT PORT
5. FOR NO ABV
   a. CONTROL LINE A TERMINATES AT ABV RIGHT PORT
   b. CONTROL LINE B TERMINATES AT ABV LEFT PORT

NOTE: ORIENTATION OF AIR PANEL AND AIRLINE FEEDING PANEL PENDING MECHANICAL LAYOUT. ALL SOLENOID VALVE POSITION 1 STARTS IMMEDIATELY ADJACENT TO D-SUB CONNECTOR

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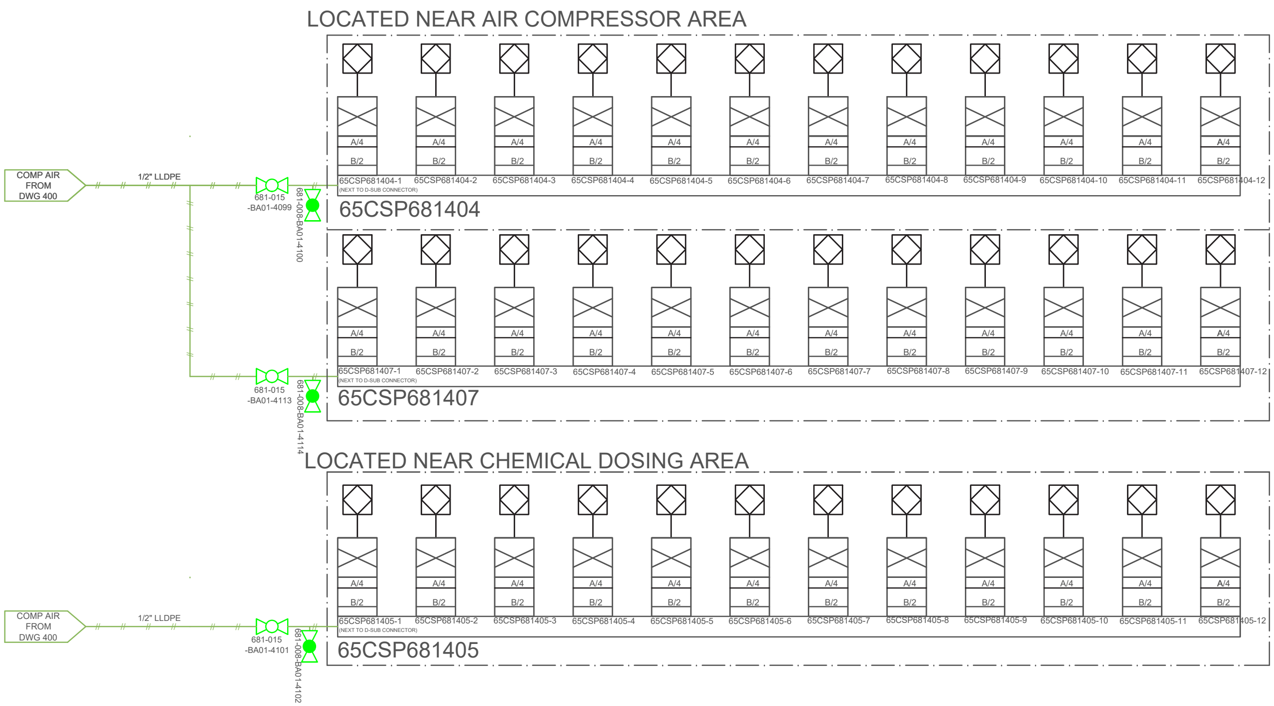
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	SOLENOID TABLE SYSTEM/DWG	SNOW
L	16–MAR–2018	UPDATED SOLENOID TABLE	JLAU
M	08–MAY–2018	NO CHANGES	–

TITLE: (COMMON) 403: COMMON & POST TREATMENT AIR BANKS 1

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	SNOW	DATE:	22–FEB–2018
CHECKED BY:	XXIAO	DATE:	23–FEB–2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:		JOB/CO NO:	(JOB NO.)
SHEET:	58 OF117		



65CSP681404

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681404-1	65FV6813211	65CSP681404-1/65FV6813211/A	65CSP681404-1/65FV6813211/B	AD/321	NC
65CSP681404-2	65FV6813212	65CSP681404-2/65FV6813212/A	65CSP681404-2/65FV6813212/B	AD/321	NC
65CSP681404-3	65FV6813213	65CSP681404-3/65FV6813213/A	65CSP681404-3/65FV6813213/B	AD/321	NC
65CSP681404-4	65FV6813214	65CSP681404-4/65FV6813214/A	65CSP681404-4/65FV6813214/B	AD/321	NO
65CSP681404-5	65FV6813215	65CSP681404-5/65FV6813215/A	65CSP681404-5/65FV6813215/B	AD/321	NC
65CSP681404-6	65FV6813216	65CSP681404-6/65FV6813216/A	65CSP681404-6/65FV6813216/B	AD/321	NO
65CSP681404-7	65FV6813219	65CSP681404-7/65FV6813219/A	65CSP681404-7/65FV6813219/B	AD-BSE/321	NC
65CSP681404-8	65FV6814018	65CSP681404-8/65FV6814018/A	65CSP681404-8/65FV6814018/B	CA-AD/401	NC
65CSP681404-9	65FV6814019	65CSP681404-9/65FV6814019/A	65CSP681404-9/65FV6814019/B	CA-AD/401	NC
65CSP681404-10	65FV6814016	65CSP681404-10/65FV6814016/A	65CSP681404-10/65FV6814016/B	CA-BD/401	NC
65CSP681404-11	65FV6814017	65CSP681404-11/65FV6814017/A	65CSP681404-11/65FV6814017/B	CA-BD/401	NC
65CSP681404-12	SPARE				

65CSP681407

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681407-1	65FV6810503	65CSP681407-1/65FV6810503/A	65CSP681407-1/65FV6810503/B	CR/050	NC
65CSP681407-2	65FV6810511	65CSP681407-2/65FV6810511/A	65CSP681407-2/65FV6810511/B	CR/050	NC
65CSP681407-3	65FV6810512	65CSP681407-3/65FV6810512/A	65CSP681407-3/65FV6810512/B	CR/050	NC
65CSP681407-4	65FV6810504	65CSP681407-4/65FV6810504/A	65CSP681407-4/65FV6810504/B	CR/050	NC
65CSP681407-5	65FV6810411	65CSP681407-5/65FV6810411/A	65CSP681407-5/65FV6810411/B	PF/041	NC
65CSP681407-6	65FV6813239	65CSP681407-6/65FV6813239/A	65CSP681407-6/65FV6813239/B	PE-BSE/323	NC
65CSP681407-7	65FV6813232	65CSP681407-7/65FV6813232/A	65CSP681407-7/65FV6813232/B	PE/323	NO
65CSP681407-8	65FV6813231	65CSP681407-8/65FV6813231/A	65CSP681407-8/65FV6813231/B	PE/323	NC
65CSP681407-9	65FV6810416	65CSP681407-9/65FV6810416/A	65CSP681407-9/65FV6810416/B	PF/041	NC
65CSP681407-10	SPARE				
65CSP681407-11	SPARE				
65CSP681407-12	SPARE				

65CSP681405

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681405-1	65FV6814021	65CSP681405-1/65FV6814021/A	65CSP681405-1/65FV6814021/B	CA-BSE/402	NC
65CSP681405-2	65FV6814025	65CSP681405-2/65FV6814025/A	65CSP681405-2/65FV6814025/B	CA-BSE/402	NC
65CSP681405-3	65FV6814022	65CSP681405-3/65FV6814022/A	65CSP681405-3/65FV6814022/B	CA-ACD/402	NC
65CSP681405-4	65FV6814023	65CSP681405-4/65FV6814023/A	65CSP681405-4/65FV6814023/B	CA-BIO/402	NC
65CSP681405-5	65FV6814024	65CSP681405-5/65FV6814024/A	65CSP681405-5/65FV6814024/B	CA-ATF/402	NC
65CSP681405-6	65FV6810621/65FV6810622	65CSP681405-6/65FV6810621/65FV6810622/A	65CSP681405-6/65FV6810621/65FV6810622/B	BIO/062	NO/NC
65CSP681405-7	65FV6810601	65CSP681405-7/65FV6810601/A	65CSP681405-7/65FV6810601/B	ACD/060	NC
65CSP681405-8	65FV6810641	65CSP681405-8/65FV6810641/A	65CSP681405-8/65FV6810641/B	ATS/064	NC
65CSP681405-9	SPARE				
65CSP681405-10	SPARE				
65CSP681405-11	SPARE				
65CSP681405-12	SPARE				

1. ALL ABV SUPPLIED IN NC CONFIGURATION
2. CONTROL LINE A ALWAYS START FROM SOLENOID A PORT
3. CONTROL LINE B ALWAYS START FROM SOLENOID B PORT
4. FOR NC ABV
   a. CONTROL LINE A TERMINATES AT ABV LEFT PORT
   b. CONTROL LINE B TERMINATES AT ABV RIGHT PORT
5. FOR NO ABV
   a. CONTROL LINE A TERMINATES AT ABV RIGHT PORT
   b. CONTROL LINE B TERMINATES AT ABV LEFT PORT

NOTE: ORIENTATION OF AIR PANEL AND AIRLINE FEEDING PANEL PENDING MECHANICAL LAYOUT. ALL SOLENOID VALVE POSITION 1 STARTS IMMEDIATELY ADJACENT TO D-SUB CONNECTOR

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LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	UPDATED SYSTEM/DWG, SOLENOID, VALVE NAMES	SNOW
L	16–MAR–2018	UPDATED SOLNEOID TABLE	JLAU
M	08–MAY–2018	NO CHANGES	–

TITLE: (COMMON) 404: COMMON & POST TREATMENT AIR BANKS 2
PROJECT: SALTMAKER GEN III
CUSTOMER: AGNICO EAGLE MINES
REVISION: N

PREPARED BY: SNOW	DATE: 22–FEB–2018	DWG. NO:	SW_EN_SM_GEN III_PID_DWG_404
CHECKED BY: XXIAO	DATE: 23–FEB–2018	JOB/CO NO:	(JOB NO.)
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET:	59 OF117

AGNICO EAGLE MINES
P&ID DRAWING PACKAGE

COMPRESSED AIR - SM1
REVISION N

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LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	AS MARKED BY REVISION CLOUDS	–
K	26–FEB–2018	LINE LABELS, UPDATE SOLENOID TABLE	SN
L	16–MAR–2018	UPDATED SOLENOID TABLES	JLAU
M	08–MAY–2018	AS MARKED BY REVISION CLOUDS	JLAU

TITLE: COVER SHEET

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION:	N		
PREPARED BY:	SN	DATE:	22–FEB–2018
CHECKED BY:	XXIAO	DATE:	23–FEB–2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	COVER SHEET	JOB/CO NO:	(JOB NO.)
SHEET:	# OF #		

DRAWING LIST 1

SHEET NO.	DRAWING NO.	DESCRIPTION
		COVER SHEET
		DRAWING LIST 1
		DRAWING LIST 2
		LEGEND
		COMMON
1	SW_EN_SM_AEM-01_PID_COMMON_DWG_000	MASTER PFD
2	SW_EN_SM_AEM-01_PID_COMMON_DWG_010	PROCESS FLOW DIAGRAM
3	SW_EN_SM_AEM-01_PID_COMMON_DWG_020	CONTAINER LAYOUT
4	SW_EN_SM_AEM-01_PID_COMMON_DWG_030	MODULES LAYOUT
5	SW_EN_SM_AEM-01_PID_COMMON_DWG_040	PLANT FEED TANKS
6	SW_EN_SM_AEM-01_PID_COMMON_DWG_041	PLANT FEED PUMP SKIDS
7	SW_EN_SM_AEM-01_PID_COMMON_DWG_050	CLEAN RESERVE AND BLOWDOWN SYSTEMS
8	SW_EN_SM_AEM-01_PID_COMMON_DWG_060	ACID DOSING SYSTEM
9	SW_EN_SM_AEM-01_PID_COMMON_DWG_061	BASE DOSING SYSTEM
10	SW_EN_SM_AEM-01_PID_COMMON_DWG_062	BIOCIDE DOSING SYSTEM
11	SW_EN_SM_AEM-01_PID_COMMON_DWG_063	ANTIFOAM DOSING SYSTEM
12	SW_EN_SM_AEM-01_PID_COMMON_DWG_064	ANTISCALANT DOSING SYSTEM
13	SW_EN_SM_AEM-01_PID_COMMON_DWG_070	UTILITY WATER DISTRIBUTION
		SALTMAKER 1 (SM1)
14	SW_EN_SM_AEM-01_PID_SM1_DWG_110	THERMAL SOURCE PRIMARY HEAT EXCHANGERS
15	SW_EN_SM_AEM-01_PID_SM1_DWG_120	CONDENSED WATER SYSTEM
16	SW_EN_SM_AEM-01_PID_SM1_DWG_130	FEED DISTRIBUTION
17	SW_EN_SM_AEM-01_PID_SM1_DWG_150	CIP TANKS
18	SW_EN_SM_AEM-01_PID_SM1_DWG_151	CIP PUMP SKID
19	SW_EN_SM_AEM-01_PID_SM1_DWG_160	EFFECT HOLD 1
20	SW_EN_SM_AEM-01_PID_SM1_DWG_161	EFFECT HOLD 2
21	SW_EN_SM_AEM-01_PID_SM1_DWG_162	SYSTEM HOLD
22	SW_EN_SM_AEM-01_PID_SM1_DWG_163	CALCIUM EXTRACTION
23	SW_EN_SM_AEM-01_PID_SM1_DWG_164	EH1 SOLIDS EXTRACTION
24	SW_EN_SM_AEM-01_PID_SM1_DWG_165	EH2 SOLIDS EXTRACTION
25	SW_EN_SM_AEM-01_PID_SM1_DWG_180	DRIP TRAYS
26	SW_EN_SM_AEM-01_PID_SM1_DWG_210	EFFECT 1 TANK AND PUMPS
27	SW_EN_SM_AEM-01_PID_SM1_DWG_211	EFFECT 1 MODULES
28	SW_EN_SM_AEM-01_PID_SM1_DWG_213	EFFECT 1 PUMP SEAL FLUSH
29	SW_EN_SM_AEM-01_PID_SM1_DWG_214	EFFECT 1 AIR SEALS
30	SW_EN_SM_AEM-01_PID_SM1_DWG_220	EFFECT 2 TANK AND PUMPS
31	SW_EN_SM_AEM-01_PID_SM1_DWG_221	EFFECT 2 MODULES
32	SW_EN_SM_AEM-01_PID_SM1_DWG_222	EFFECT 2 SOLIDS EXTRACTION
33	SW_EN_SM_AEM-01_PID_SM1_DWG_223	EFFECT 2 PUMP SEAL FLUSH
34	SW_EN_SM_AEM-01_PID_SM1_DWG_224	EFFECT 2 AIR SEALS
35	SW_EN_SM_AEM-01_PID_SM1_DWG_230	EFFECT 3 TANK AND PUMPS
36	SW_EN_SM_AEM-01_PID_SM1_DWG_231	EFFECT 3 MODULES
37	SW_EN_SM_AEM-01_PID_SM1_DWG_232	EFFECT 3 SOLIDS EXTRACTION
38	SW_EN_SM_AEM-01_PID_SM1_DWG_233	EFFECT 3 PUMP SEAL FLUSH
39	SW_EN_SM_AEM-01_PID_SM1_DWG_234	EFFECT 3 AIR SEALS
40	SW_EN_SM_AEM-01_PID_SM1_DWG_240	EFFECT 4 TANK AND PUMPS
41	SW_EN_SM_AEM-01_PID_SM1_DWG_241	EFFECT 4 MODULES
42	SW_EN_SM_AEM-01_PID_SM1_DWG_243	EFFECT 4 PUMP SEAL FLUSH
43	SW_EN_SM_AEM-01_PID_SM1_DWG_244	EFFECT 4 AIR SEALS
44	SW_EN_SM_AEM-01_PID_SM1_DWG_250	EFFECT 5 TANK AND PUMPS
45	SW_EN_SM_AEM-01_PID_SM1_DWG_251	EFFECT 5 MODULES
46	SW_EN_SM_AEM-01_PID_SM1_DWG_253	EFFECT 5 PUMP SEAL FLUSH
47	SW_EN_SM_AEM-01_PID_SM1_DWG_254	EFFECT 5 AIR SEALS
		THERMAL SYSTEM
48	SW_EN_SM_AEM-01_PID_DWG_310	THERMAL SKID: WATER LOOP
49	SW_EN_SM_AEM-01_PID_DWG_311	THERMAL SKID: WATER LOOP
50	SW_EN_SM_AEM-01_PID_DWG_312	THERMAL SKID: GYLCOL LOOP
		POST TREATMENT
51	SW_EN_SM_AEM-01_PID_COMMON_DWG_320	NITRITE DESTRUCTION AND RO PC SYSTEM
52	SW_EN_SM_AEM-01_PID_COMMON_DWG_321	AMMONIA DESTRUCTION SYSTEM
53	SW_EN_SM_AEM-01_PID_COMMON_DWG_322	RO BRINE FLUSH TANK
54	SW_EN_SM_AEM-01_PID_COMMON_DWG_323	RO PERMEATE TANK
		COMPRESSED AIR-COMMON PACKAGE
55	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_400	COMPRESSED AIR SYSTEM
56	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_401	AMMONIA DES, BRINE BLOWDOWN AND PLANT FEED AIR
57	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_402	CHEMICAL DOSING AND ANCILLARY STAND PIPE AIR
58	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_403	COMMON AND POST TREATMENT AIR BANK 1
59	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_404	COMMON AND POST TREATMENT AIR BANK 2
		COMPRESSED AIR-SM1
60	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_410	SM INSTRUMENT AND PROCESS AIR
61	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_411	EH1/EH2 EXTRACT AND CIP AIR

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LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	08–MAY–2018	NO CHANGES	–

TITLE:	DRAWING LIST 1		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	SN	DATE:	22–FEB–2018
CHECKED BY:	XXIAO	DATE:	23–FEB–2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	DRAWING LIST 1		
JOB/CO NO:	(JOB NO.)		
SHEET:	# OF #		

DRAWING LIST 2

SHEET NO.	DRAWING NO.	DESCRIPTION
62	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_412	EH1/EH2 EXTRACT AND CIP AIR
63	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_413	PLUG PREVENTION PUMP AIR
64	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_414	AIR SEAL, STAND PIPE AND E2/E3 SE AIR
65	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_415	UTILITY AIR
66	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_416	BOP1 AIR SOLENOID BANK
67	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_417	E2/E3 SE AIR SOLENOID BANK
68	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_418	BOP2 AIR SOLENOID BANK
69	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_419	BOP3 AIR SOLENOID BANK
70	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_420	CIP, EH/SY AIR SOLENOID BANK
71	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_421	H1/H2 SE AIR SOLENOID BANK
		COMPRESSED AIR-SM2
72	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_450	SM INSTRUMENT AND PROCESS AIR
73	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_451	EH1/EH2 EXTRACT AND CIP AIR
74	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_452	EFFECT/SYSTEM HOLD AND CAL EXTRACTION AIR
75	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_453	PLUG PREVENTION PUMP AIR
76	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_454	AIR SEAL, STAND PIPE AND E2/E3 SE AIR
77	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_455	UTILITY AIR
78	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_456	BOP1 AIR SOLENOID BANK
79	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_457	E2/E3 SE AIR SOLENOID BANK
80	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_458	BOP2 AIR SOLENOID BANK
81	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_459	BOP3 AIR SOLENOID BANK
82	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_460	CIP, EH/SY AIR SOLENOID BANK
83	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_461	H1/H2 SE AIR SOLENOID BANK

SHEET NO.	DRAWING NO.	DESCRIPTION
		SALTMAKER 2 (SM2)
84	SW_EN_SM_AEM-01_PID_SM2_DWG_510	THERMAL SOURCE PRIMARY HEAT EXCHANGERS
85	SW_EN_SM_AEM-01_PID_SM2_DWG_520	CONDENSED WATER SYSTEM
86	SW_EN_SM_AEM-01_PID_SM2_DWG_530	FEED DISTRIBUTION
87	SW_EN_SM_AEM-01_PID_SM2_DWG_550	CIP TANKS
88	SW_EN_SM_AEM-01_PID_SM2_DWG_551	CIP PUMP SKID
89	SW_EN_SM_AEM-01_PID_SM2_DWG_560	EFFECT HOLD 1
90	SW_EN_SM_AEM-01_PID_SM2_DWG_561	EFFECT HOLD 2
91	SW_EN_SM_AEM-01_PID_SM2_DWG_562	SYSTEM HOLD
92	SW_EN_SM_AEM-01_PID_SM2_DWG_563	CALCIUM EXTRACTION
93	SW_EN_SM_AEM-01_PID_SM2_DWG_564	EH1 SOLIDS EXTRACTION
94	SW_EN_SM_AEM-01_PID_SM2_DWG_565	EH2 SOLIDS EXTRACTION
	SW_EN_SM_AEM-01_PID_SM2_DWG_580	DRIP TRAYS
95		
96	SW_EN_SM_AEM-01_PID_SM2_DWG_610	EFFECT 1 TANK AND PUMPS
97	SW_EN_SM_AEM-01_PID_SM2_DWG_611	EFFECT 1 MODULES
98	SW_EN_SM_AEM-01_PID_SM2_DWG_613	EFFECT 1 PUMP SEAL FLUSH
	SW_EN_SM_AEM-01_PID_SM2_DWG_614	EFFECT 1 AIR SEALS
99		
100	SW_EN_SM_AEM-01_PID_SM2_DWG_620	EFFECT 2 TANK AND PUMPS
101	SW_EN_SM_AEM-01_PID_SM2_DWG_621	EFFECT 2 MODULES
102	SW_EN_SM_AEM-01_PID_SM2_DWG_622	EFFECT 2 SOLIDS EXTRACTION
103	SW_EN_SM_AEM-01_PID_SM2_DWG_623	EFFECT 2 PUMP SEAL FLUSH
	SW_EN_SM_AEM-01_PID_SM2_DWG_624	EFFECT 2 AIR SEALS
104		
105	SW_EN_SM_AEM-01_PID_SM2_DWG_630	EFFECT 3 TANK AND PUMPS
106	SW_EN_SM_AEM-01_PID_SM2_DWG_631	EFFECT 3 MODULES
107	SW_EN_SM_AEM-01_PID_SM2_DWG_632	EFFECT 3 SOLIDS EXTRACTION
108	SW_EN_SM_AEM-01_PID_SM2_DWG_633	EFFECT 3 PUMP SEAL FLUSH
	SW_EN_SM_AEM-01_PID_SM2_DWG_634	EFFECT 3 AIR SEALS
109		
110	SW_EN_SM_AEM-01_PID_SM2_DWG_640	EFFECT 4 TANK AND PUMPS
111	SW_EN_SM_AEM-01_PID_SM2_DWG_641	EFFECT 4 MODULES
112	SW_EN_SM_AEM-01_PID_SM2_DWG_643	EFFECT 4 PUMP SEAL FLUSH
	SW_EN_SM_AEM-01_PID_SM2_DWG_644	EFFECT 4 AIR SEALS
113		
114	SW_EN_SM_AEM-01_PID_SM2_DWG_650	EFFECT 5 TANK AND PUMPS
115	SW_EN_SM_AEM-01_PID_SM2_DWG_651	EFFECT 5 MODULES
116	SW_EN_SM_AEM-01_PID_SM2_DWG_653	EFFECT 5 PUMP SEAL FLUSH
117	SW_EN_SM_AEM-01_PID_SM2_DWG_654	EFFECT 5 AIR SEALS

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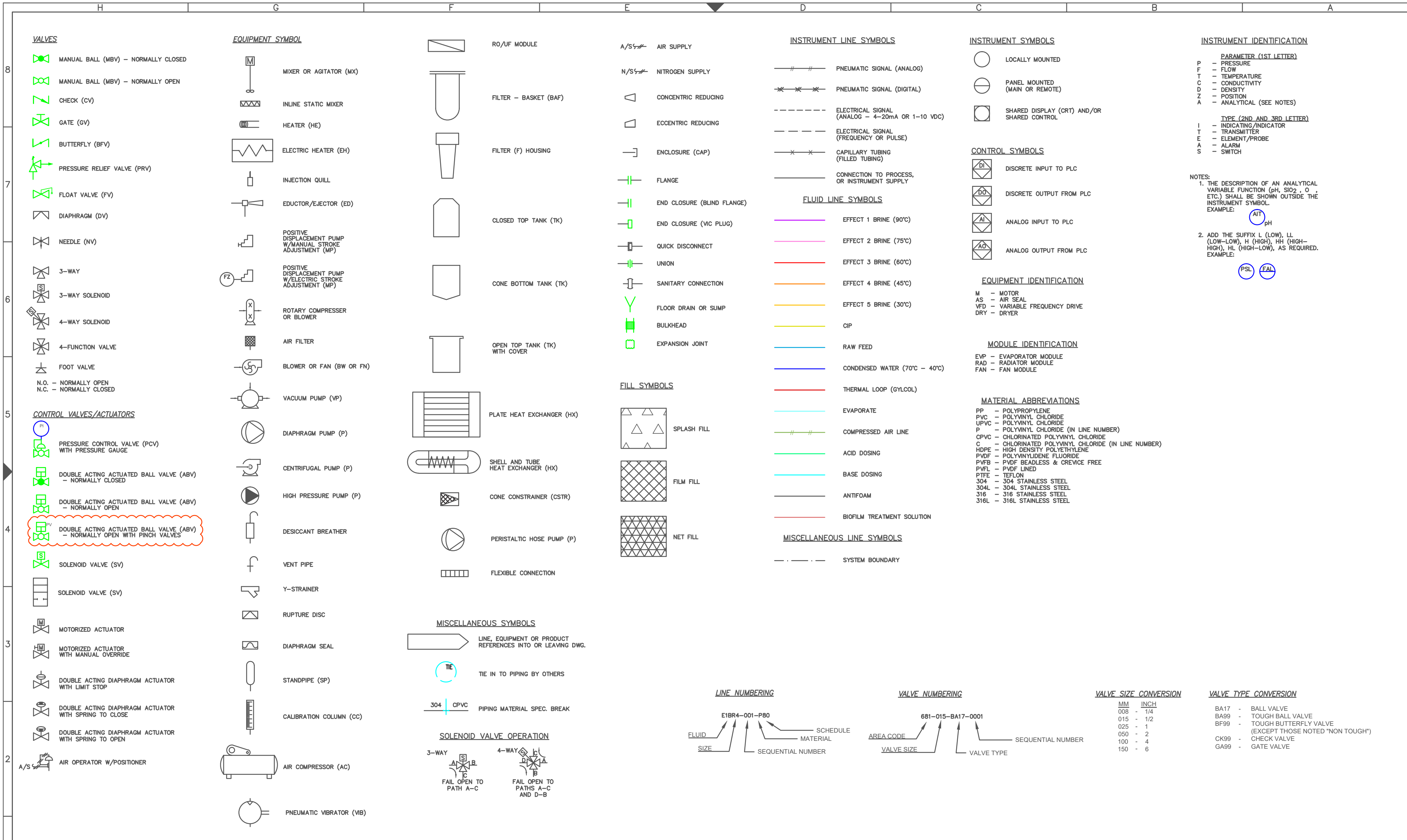
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	08–MAY–2018	NO CHANGES	–

TITLE:	DRAWING LIST 2		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	SN	DATE:	22–FEB–2018
CHECKED BY:	XXIAO	DATE:	23–FEB–2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	DRAWING LIST 2		
JOB/CO NO:	(JOB NO.)		
SHEET:	# OF #		



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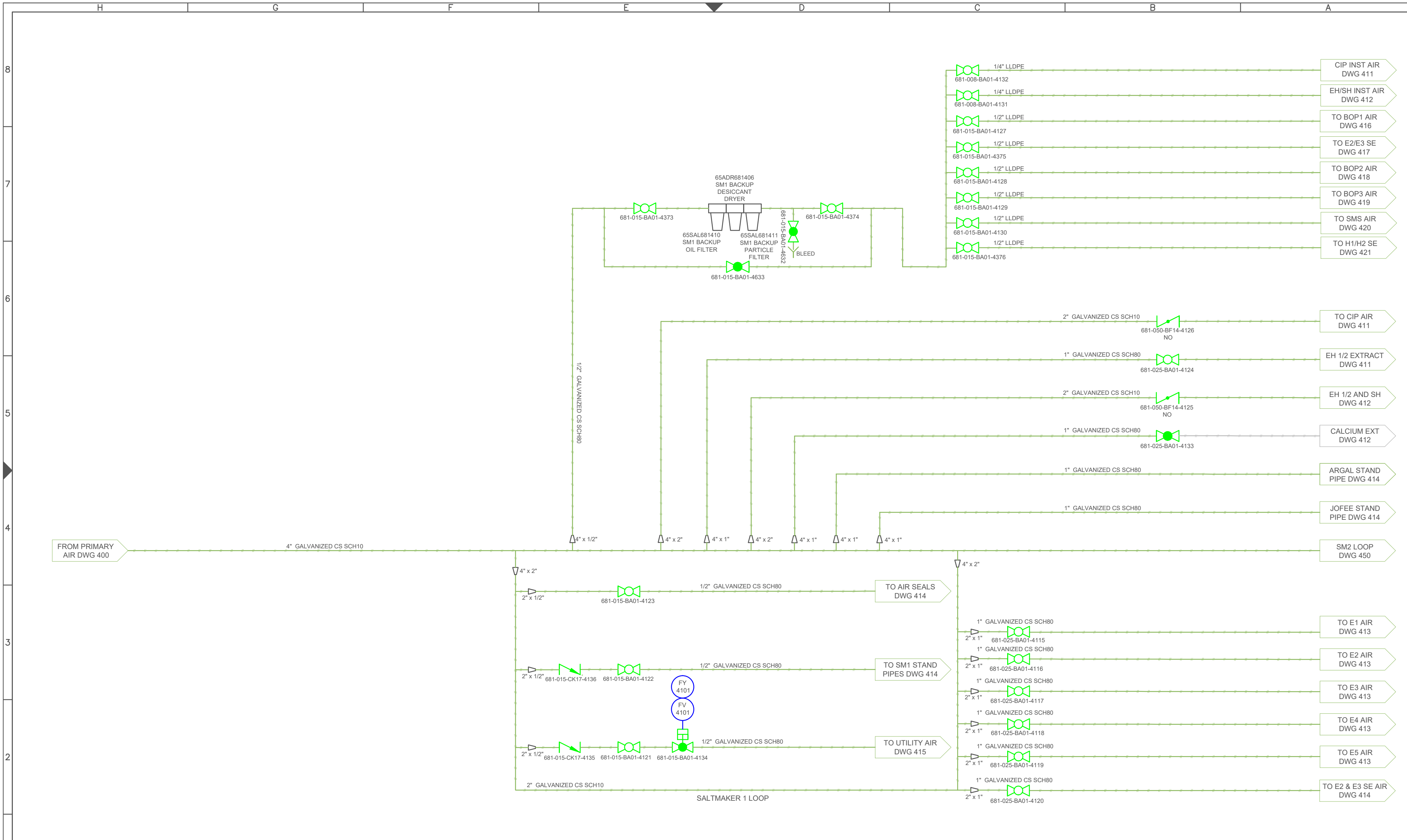
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	PINCH VALVE LEGEND ADDED	JLAU
K	26–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	08–MAY–2018	NO CHANGES	–

TITLE: LEGEND

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	SN	DATE:	22–FEB–2018
CHECKED BY:	XXIAO	DATE:	23–FEB–2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	LEGEND	JOB/CO NO:	(JOB NO.)
SHEET:	# OF #		



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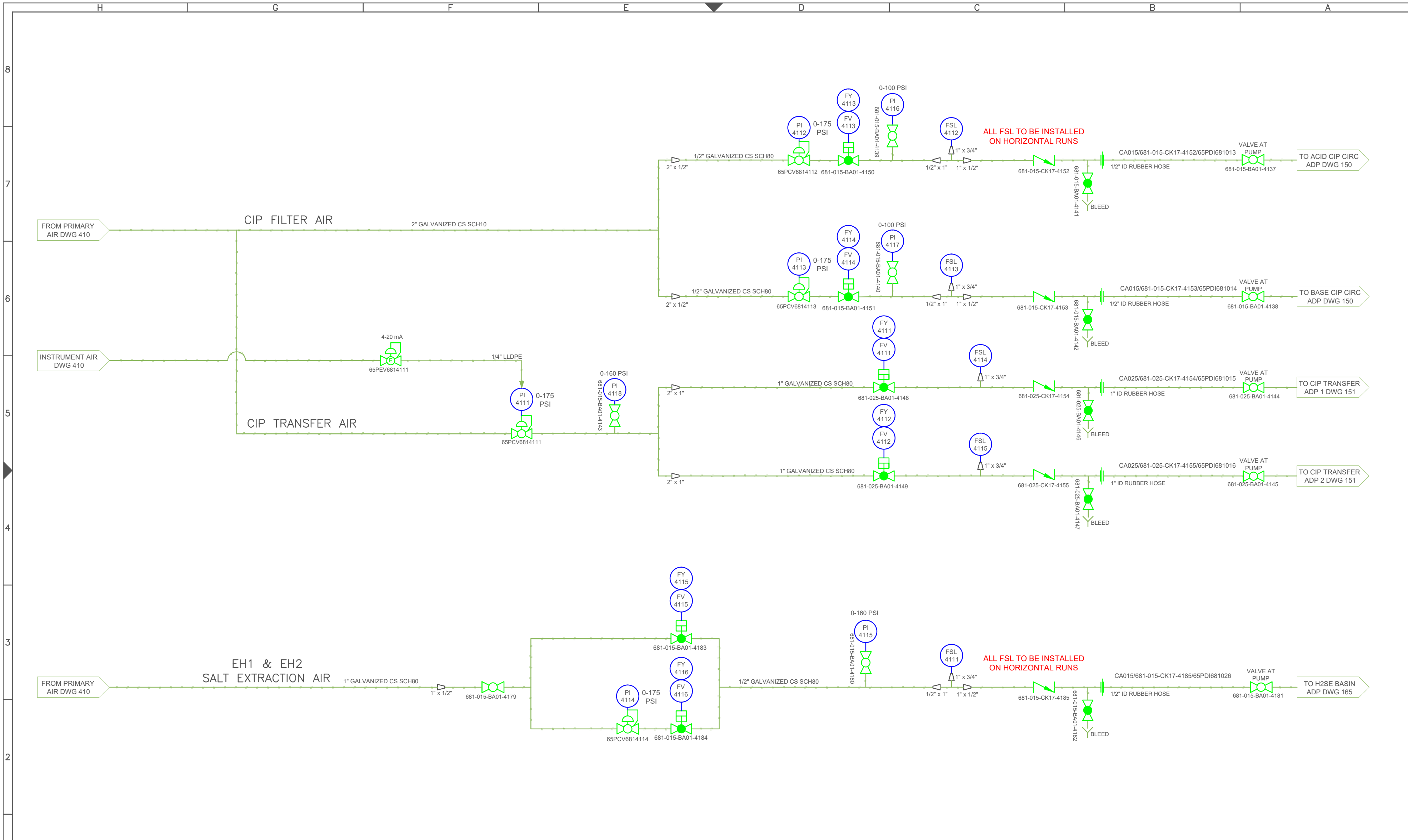
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	NO CHANGES	–
L	16–MAR–2018	INSTRUMENT AIR UPDATED, FILTER PACK ADDED	JLAU
M	08–MAY–2018	REMOVED MANIFOLD	JLAU

TITLE: (SM1) 410: SM1 INSTRUMENT AND PROCESS AIR

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY: SN	DATE: 22–FEB–2018	DWG. NO:	SW_EN_SM_GEN III_PID_DWG_410
CHECKED BY: XXIAO	DATE: 23–FEB–2018	JOB/CO NO:	(JOB NO.)
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET:	60 OF117



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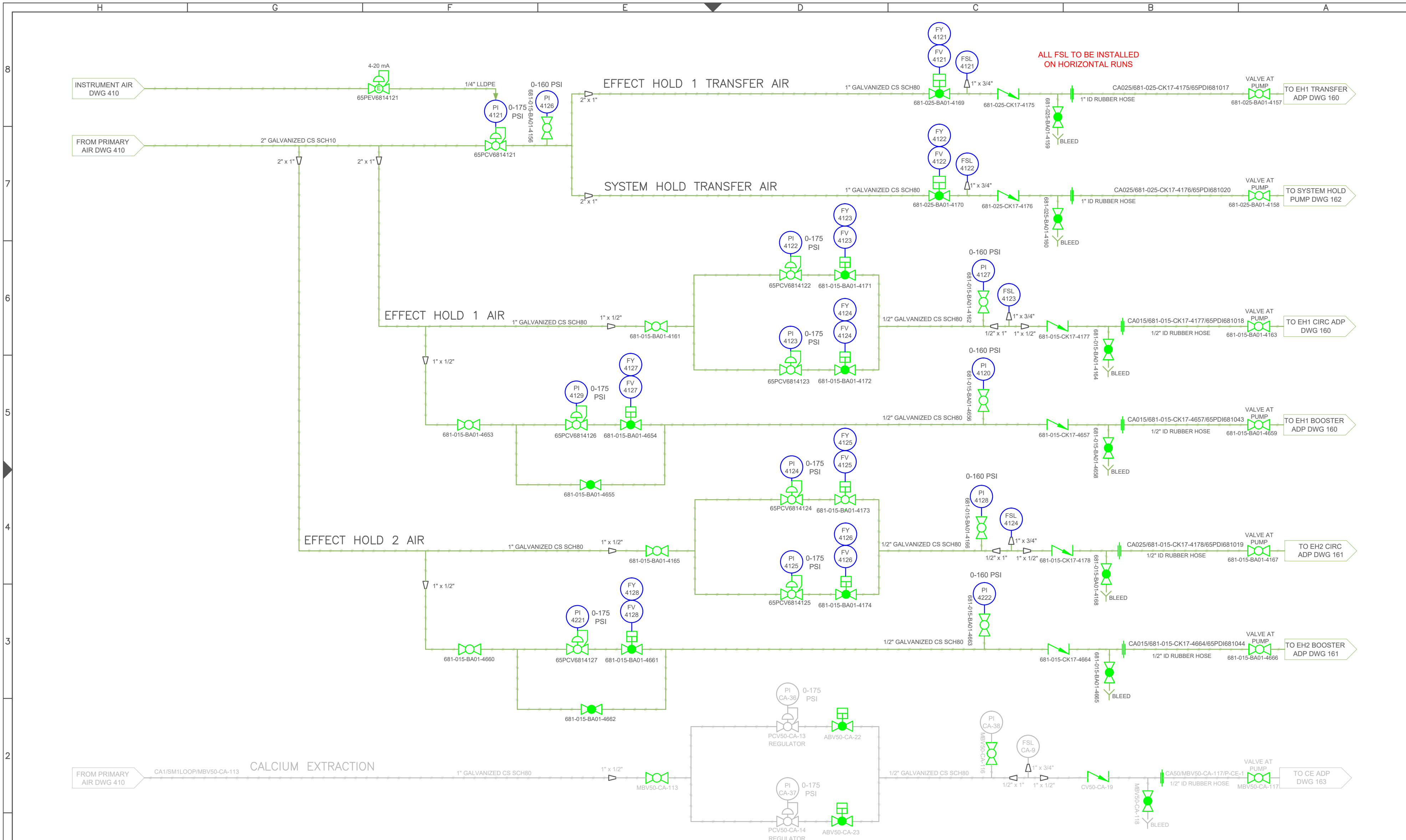
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	UPDATED LINE LABLES	SN
L	16–MAR–2018	NO CHANGES	–
M	08–MAY–2018	NO CHANGES	–

TITLE: (SM1) 411: EH1/EH2 EXTRACT AND CIP AIR

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: SN	DATE: 22–FEB–2018	DWG. NO: SW_EN_SM_GEN III_PID_DWG_411	
CHECKED BY: XXIAO	DATE: 23–FEB–2018	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 61 OF117	



DRAWING STATUS: FACTORY AS BUILT	LTR	DATE	DESCRIPTION	REV. BY:
	N	06–JUL–2018	NO CHANGES	–
	K	26–FEB–2018	UPDATED LINE LABELS	SN
	L	16–MAR–2018	NO CHANGES	–
DO NOT SCALE DRAWING	M	08–MAY–2018	ADDED P3 BOOSTER MANIFOLDS	JLAU

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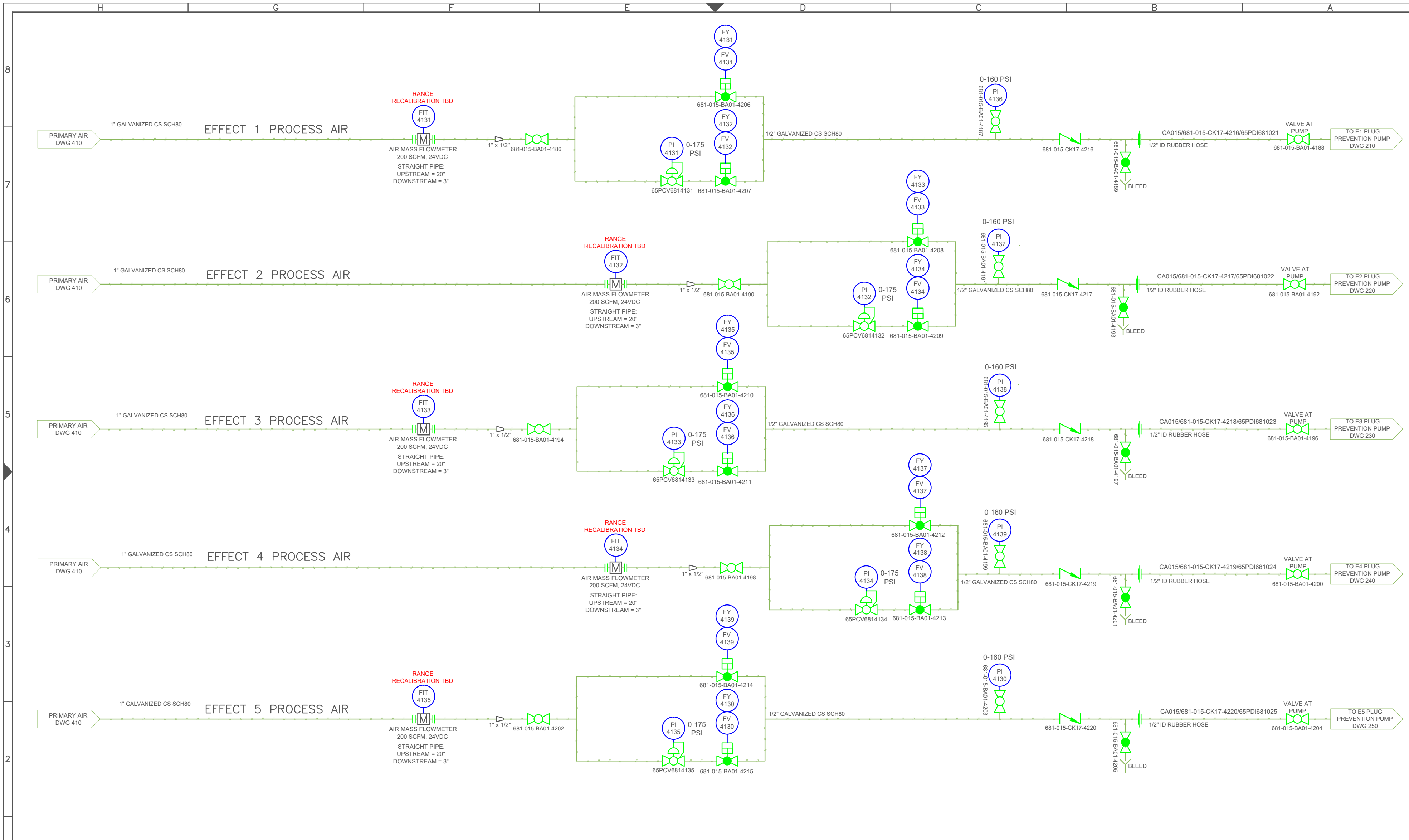
TITLE: (SM1) 412: EFFECT HOLD, SYSTEM HOLD, AND CALCIUM EXTRACTION AIR

PROJECT: SALTMAKER GEN III
CUSTOMER: AGNICO EAGLE MINES
REVISION: N
PREPARED BY: SN DATE: 22–FEB–2018
CHECKED BY: XXIAO DATE: 23–FEB–2018
APPROVED BY: APPROVED BY DATE: APPROVED DATE
DWG. NO: SW_EN_SM_GEN III_PID_DWG_412
JOB/CO NO: (JOB NO.)
SHEET: 62 OF117



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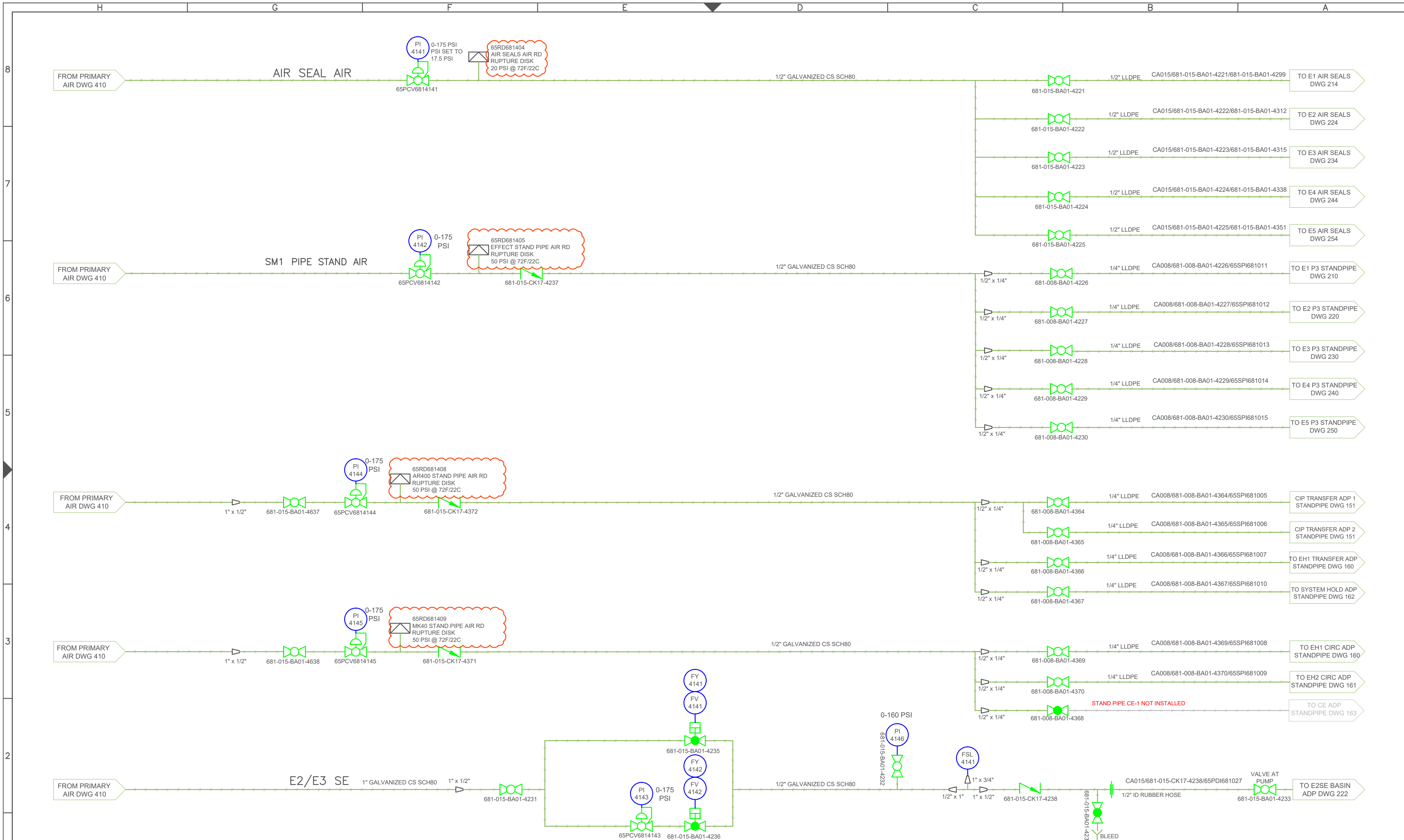
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	UPDATED LINE LABELS	SN
L	16–MAR–2018	NO CHANGES	–
M	08–MAY–2018	NO CHANGES	–

TITLE: (SM1) 413: EFFECT PUMP COMPRESSED AIR

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
PREPARED BY: SN	DATE: 22–FEB–2018	DWG. NO:	SW_EN_SM_GEN III_PID_DWG_413
CHECKED BY: XXIAO	DATE: 23–FEB–2018	JOB/CO NO:	(JOB NO.)
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET:	63 OF117

REVISION: N



LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	RUPTURE DISK CONFIRMED	JLAU
K	26–FEB–2018	UPDATED LINE LABELS	SN
L	16–MAR–2018	ADDED 2 ISOLATION VALVES	JLAU
M	08–MAY–2018	NO CHANGES	–

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TITLE: (SM1) 414: SM1 AIR SEAL, PIPE STAND, AND E2/E3 SE AIR

PROJECT: SALTMAKER GEN III

CUSTOMER: AGNICO EAGLE MINES

REVISION: N

PREPARED BY: SN — DATE: 22–FEB–2018

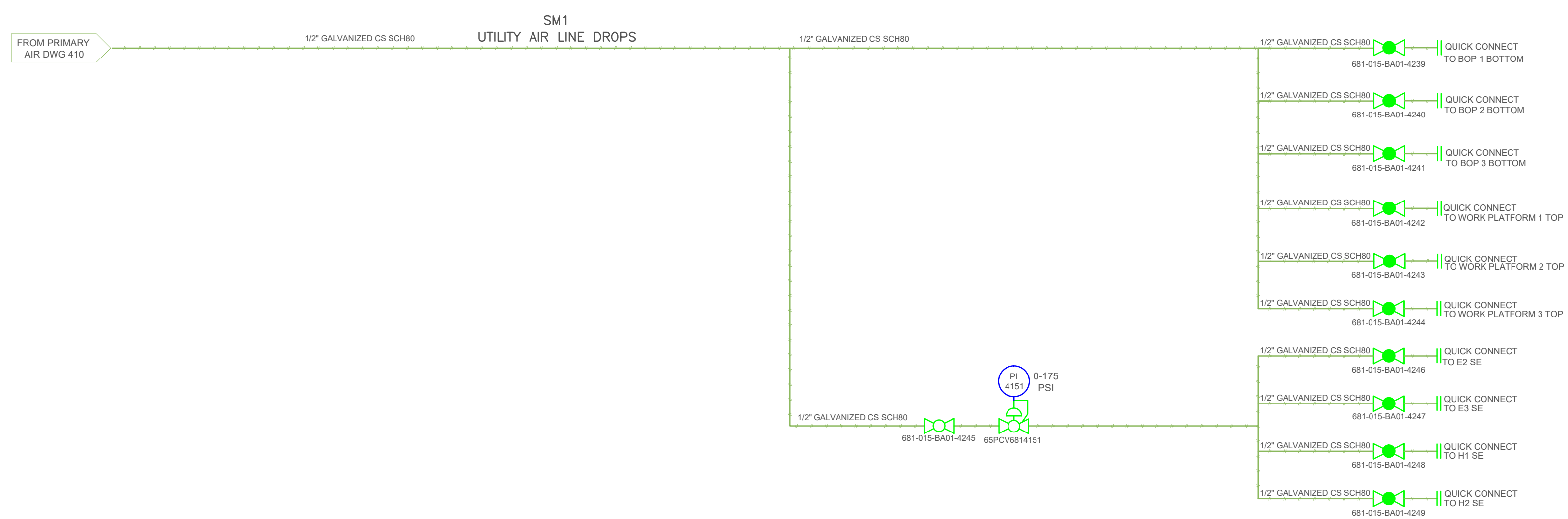
CHECKED BY: XXIAO — DATE: 23–FEB–2018

APPROVED BY: APPROVED BY — DATE: APPROVED DATE

DWG. NO: SW_EN_SM_GEN III_PID_DWG_414

JOB/CO NO: (JOB NO.)

SHEET: 64 OF117



DRAWING STATUS: FACTORY AS BUILT	LTR	DATE	DESCRIPTION	REV. BY:
	N	06-JUL-2018	NO CHANGES	–
	K	26-FEB-2018	NO CHANGES	SN
	L	16-MAR-2018	NO CHANGES	–
DO NOT SCALE DRAWING	M	08-MAY-2018	NO CHANGES	–

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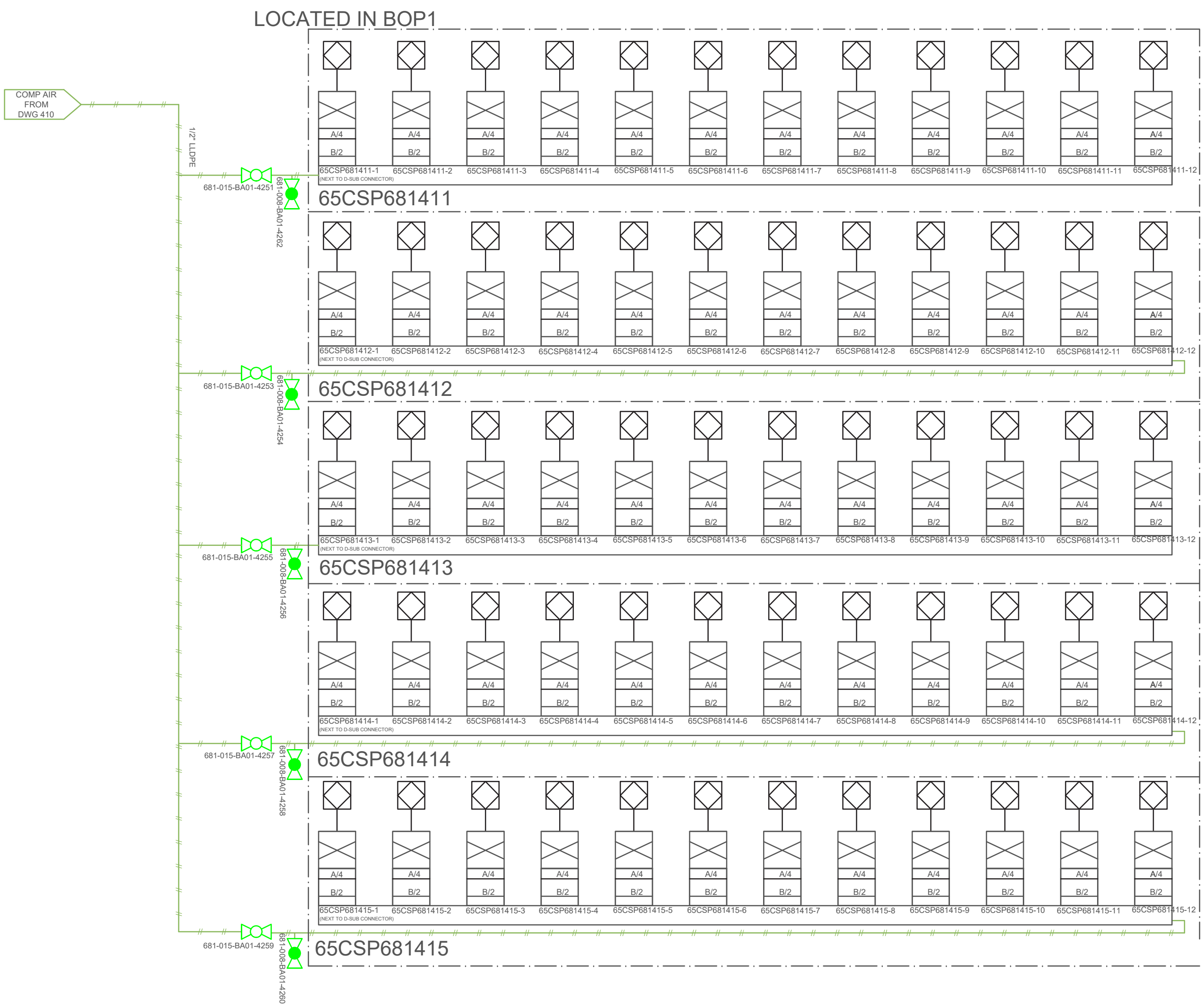
TITLE:	(SM1) 415: SM1 UTILITY AIR		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION:	N		
PREPARED BY:	SN	DATE:	22-FEB-2018
CHECKED BY:	XXIAO	DATE:	23-FEB-2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_GEN III_PID_DWG_415	JOB/CO NO:	(JOB NO.)
SHEET:	65 OF117		



65CSP681411

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681411-1	65FV6812202	65CSP681411-1/65FV6812202/A	65CSP681411-1/65FV6812202/B	E2/220	NC
65CSP681411-2	65FV6812203	65CSP681411-2/65FV6812203/A	65CSP681411-2/65FV6812203/B	E2/220	NC
65CSP681411-3	65FV6812204	65CSP681411-3/65FV6812204/A	65CSP681411-3/65FV6812204/B	E2/220	NC
65CSP681411-4	65FV6812205	65CSP681411-4/65FV6812205/A	65CSP681411-4/65FV6812205/B	E2/220	NC
65CSP681411-5	65FV6812206	65CSP681411-5/65FV6812206/A	65CSP681411-5/65FV6812206/B	E2/220	NO
65CSP681411-6	65FV6812207	65CSP681411-6/65FV6812207/A	65CSP681411-6/65FV6812207/B	E2/220	NC
65CSP681411-7	65FV6812208	65CSP681411-7/65FV6812208/A	65CSP681411-7/65FV6812208/B	E2/220	NC
65CSP681411-8	65FV6812201	65CSP681411-8/65FV6812201/A	65CSP681411-8/65FV6812201/B	E2/220	NC
65CSP681411-9	65FV6812217	65CSP681411-9/65FV6812217/A	65CSP681411-9/65FV6812217/B	E2/220	NC
65CSP681411-10	65FV6812218	65CSP681411-10/65FV6812218/A	65CSP681411-10/65FV6812218/B	E2/220	NC
65CSP681411-11	65FV6812200	65CSP681411-11/65FV6812200/A	65CSP681411-11/65FV6812200/B	E2-ACD/220	NC
65CSP681411-12	65FV6812209	65CSP681411-12/65FV6812209/A	65CSP681411-12/65FV6812209/B	E2-BSE/220	NC

65CSP681412

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681412-1	65FV6812216	65CSP681412-1/65FV6812216/A	65CSP681412-1/65FV6812216/B	E2/223	NC
65CSP681412-2	65FV6812212	65CSP681412-2/65FV6812212/A	65CSP681412-2/65FV6812212/B	E2/220	NC
65CSP681412-3	65FV6812213	65CSP681412-3/65FV6812213/A	65CSP681412-3/65FV6812213/B	E2/220	NC
65CSP681412-4	65FV6812219	65CSP681412-4/65FV6812219/A	65CSP681412-4/65FV6812219/B	E2/220	NC
65CSP681412-5	65FV6814133	65CSP681412-5/65FV6814133/A	65CSP681412-5/65FV6814133/B	CA-E2/413	NC
65CSP681412-6	65FV6814134	65CSP681412-6/65FV6814134/A	65CSP681412-6/65FV6814134/B	CA-E2/413	NC
65CSP681412-7	65FV6812302	65CSP681412-7/65FV6812302/A	65CSP681412-7/65FV6812302/B	E3/230	NC
65CSP681412-8	65FV6812303	65CSP681412-8/65FV6812303/A	65CSP681412-8/65FV6812303/B	E3/230	NC
65CSP681412-9	65FV6812304	65CSP681412-9/65FV6812304/A	65CSP681412-9/65FV6812304/B	E3/230	NC
65CSP681412-10	65FV6812305	65CSP681412-10/65FV6812305/A	65CSP681412-10/65FV6812305/B	E3/230	NC
65CSP681412-11	65FV6812306	65CSP681412-11/65FV6812306/A	65CSP681412-11/65FV6812306/B	E3/230	NO
65CSP681412-12	65FV6812307	65CSP681412-12/65FV6812307/A	65CSP681412-12/65FV6812307/B	E3/230	NC

65CSP681413

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681413-1	65FV6812308	65CSP681413-1/65FV6812308/A	65CSP681413-1/65FV6812308/B	E3/230	NC
65CSP681413-2	65FV6812301	65CSP681413-2/65FV6812301/A	65CSP681413-2/65FV6812301/B	E3/230	NC
65CSP681413-3	65FV6812317	65CSP681413-3/65FV6812317/A	65CSP681413-3/65FV6812317/B	E3/230	NC
65CSP681413-4	65FV6812318	65CSP681413-4/65FV6812318/A	65CSP681413-4/65FV6812318/B	E3/230	NC
65CSP681413-5	65FV6812300	65CSP681413-5/65FV6812300/A	65CSP681413-5/65FV6812300/B	E3-ACD/230	NC
65CSP681413-6	65FV6812309	65CSP681413-6/65FV6812309/A	65CSP681413-6/65FV6812309/B	E3-BSE/230	NC
65CSP681413-7	65FV6812316	65CSP681413-7/65FV6812316/A	65CSP681413-7/65FV6812316/B	E3/233	NC
65CSP681413-8	65FV6812312	65CSP681413-8/65FV6812312/A	65CSP681413-8/65FV6812312/B	E3/230	NC
65CSP681413-9	65FV6812313	65CSP681413-9/65FV6812313/A	65CSP681413-9/65FV6812313/B	E3/230	NC
65CSP681413-10	65FV6812319	65CSP681413-10/65FV6812319/A	65CSP681413-10/65FV6812319/B	E3/230	NC
65CSP681413-11	65FV6814135	65CSP681413-11/65FV6814135/A	65CSP681413-11/65FV6814135/B	CA-E3/413	NC
65CSP681413-12	65FV6814136	65CSP681413-12/65FV6814136/A	65CSP681413-12/65FV6814136/B	CA-E3/413	NC

65CSP681414

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681414-1	65FV6811301	65CSP681414-1/65FV6811301/A	65CSP681414-1/65FV6811301/B	FD/130	NC
65CSP681414-2	65FV6811302	65CSP681414-2/65FV6811302/A	65CSP681414-2/65FV6811302/B	FD/130	NC
65CSP681414-3	65FV6811303	65CSP681414-3/65FV6811303/A	65CSP681414-3/65FV6811303/B	FD/130	NC
65CSP681414-4	65FV6811304	65CSP681414-4/65FV6811304/A	65CSP681414-4/65FV6811304/B	FD/130	NC
65CSP681414-5	65FV6811305	65CSP681414-5/65FV6811305/A	65CSP681414-5/65FV6811305/B	FD/130	NC
65CSP681414-6	65FV6811306	65CSP681414-6/65FV6811306/A	65CSP681414-6/65FV6811306/B	FD/130	NC
65CSP681414-7	65FV6811307	65CSP681414-7/65FV6811307/A	65CSP681414-7/65FV6811307/B	FD/130	NC
65CSP681414-8	65FV6811308	65CSP681414-8/65FV6811308/A	65CSP681414-8/65FV6811308/B	FD/130	NC
65CSP681414-9	65FV6811309	65CSP681414-9/65FV6811309/A	65CSP681414-9/65FV6811309/B	FD/130	NC
65CSP681414-10	65FV6811310	65CSP681414-10/65FV6811310/A	65CSP681414-10/65FV6811310/B	FD/130	NC
65CSP681414-11	65FV6811311	65CSP681414-11/65FV6811311/A	65CSP681414-11/65FV6811311/B	FD/130	NC
65CSP681414-12	SPARE				

65CSP681415

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681415-1	65FV6810623	65CSP681415-1/65FV6810623/A	65CSP681415-1/65FV6810623/B	BIO/062	NC
65CSP681415-2	65FV6810624	65CSP681415-2/65FV6810624/A	65CSP681415-2/65FV6810624/B	BIO/062	NC
65CSP681415-3	65FV6810625	65CSP681415-3/65FV6810625/A	65CSP681415-3/65FV6810625/B	BIO/062	NC
65CSP681415-4	65FV6810626	65CSP681415-4/65FV6810626/A	65CSP681415-4/65FV6810626/B	BIO/062	NC
65CSP681415-5	65FV6810690	65CSP681415-5/65FV6810690/A	65CSP681415-5/65FV6810690/B	BIO/062	NC
65CSP681415-6		TBD - VALVE MAY NOT EXIST			
65CSP681415-7	65FV6810631	65CSP681415-7/65FV6810631/A	65CSP681415-7/65FV6810631/B	ATF/063	NC
65CSP681415-8	65FV6810632	65CSP681415-8/65FV6810632/A	65CSP681415-8/65FV6810632/B	ATF/063	NC
65CSP681415-9	65FV6810633	65CSP681415-9/65FV6810633/A	65CSP681415-9/65FV6810633/B	ATF/063	NC
65CSP681415-10	65FV6810634	65CSP681415-10/65FV6810634/A	65CSP681415-10/65FV6810634/B	ATF/063	NC
65CSP681415-11	65FV6810635	65CSP681415-11/65FV6810635/A	65CSP681415-11/65FV6810635/B	ATF/063	NC
65CSP681415-12		TBD - VALVE MAY NOT EXIST			

1. ALL ABV SUPPLIED IN NC CONFIGURATION
2. CONTROL LINE A ALWAYS START FROM SOLENOID A PORT
3. CONTROL LINE B ALWAYS START FROM SOLENOID B PORT
4. FOR NC ABV
   a. CONTROL LINE A TERMINATES AT ABV LEFT PORT
   b. CONTROL LINE B TERMINATES AT ABV RIGHT PORT
5. FOR NO ABV
   a. CONTROL LINE A TERMINATES AT ABV RIGHT PORT
   b. CONTROL LINE B TERMINATES AT ABV LEFT PORT

NOTE: ORIENTATION OF AIR PANEL AND AIRLINE FEEDING PANEL PENDING MECHANICAL LAYOUT. ALL SOLENOID VALVE POSITION 1 STARTS IMMEDIATELY ADJACENT TO D-SUB CONNECTOR

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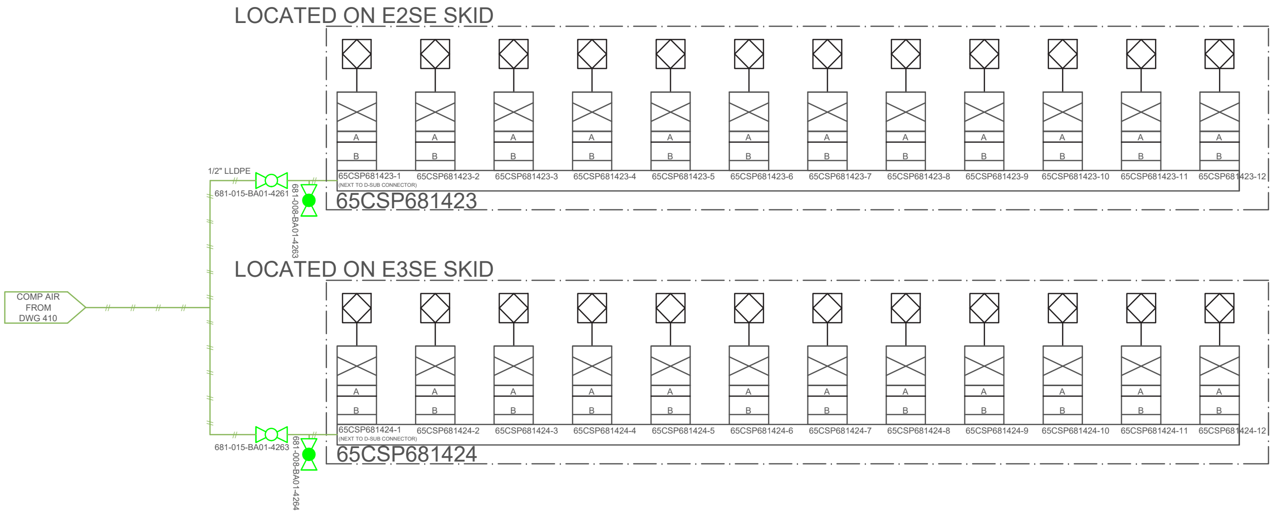
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	UPDATED SOLENOID BANK, LINES MATCH AS BUILT	SN
L	16–MAR–2018	UPDATED SOLENOID TABLE	JLAU
M	08–MAY–2018	NO CHANGES	–

TITLE: (SM1) 416: BOP1 AIR SOLENOID BANK

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	SN	DATE:	22–FEB–2018
CHECKED BY:	XXIAO	DATE:	23–FEB–2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_GEN III_PID_DWG_416		
JOB/CO NO:	(JOB NO.)		
SHEET:	66 OF117		



65CSP681423

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681423-1	65FV6812221	65CSP681423-1/65FV6812221/A	65CSP681423-1/65FV6812221/B	E2SE/222	NC
65CSP681423-2	65FV6812222	65CSP681423-2/65FV6812222/A	65CSP681423-2/65FV6812222/B	E2SE/222	NC
65CSP681423-3	65FV6812223	65CSP681423-3/65FV6812223/A	65CSP681423-3/65FV6812223/B	E2SE/222	NC
65CSP681423-4	65FV6812224	65CSP681423-4/65FV6812224/A	65CSP681423-4/65FV6812224/B	E2SE/222	NC
65CSP681423-5	65FV6812225	65CSP681423-5/65FV6812225/A	65CSP681423-5/65FV6812225/B	E2SE/222	NC
65CSP681423-6	65FV6812226	65CSP681423-6/65FV6812226/A	65CSP681423-6/65FV6812226/B	E2SE/222	NO
65CSP681423-7	SPARE				
65CSP681423-8	SPARE				
65CSP681423-9	SPARE				
65CSP681423-10	SPARE				
65CSP681423-11	SPARE				
65CSP681423-12	SPARE				

65CSP681424

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681424-1	65FV6812321	65CSP681424-1/65FV6812321/A	65CSP681424-1/65FV6812321/B	E3SE/232	NC
65CSP681424-2	65FV6812322	65CSP681424-2/65FV6812322/A	65CSP681424-2/65FV6812322/B	E3SE/232	NC
65CSP681424-3	65FV6812323	65CSP681424-3/65FV6812323/A	65CSP681424-3/65FV6812323/B	E3SE/232	NC
65CSP681424-4	65FV6812324	65CSP681424-4/65FV6812324/A	65CSP681424-4/65FV6812324/B	E3SE/232	NC
65CSP681424-5	65FV6812325	65CSP681424-5/65FV6812325/A	65CSP681424-5/65FV6812325/B	E3SE/232	NC
65CSP681424-6	65FV6812326	65CSP681424-6/65FV6812326/A	65CSP681424-6/65FV6812326/B	E3SE/232	NO
65CSP681424-7	65FV6812227	65CSP681424-7/65FV6812227/A	65CSP681424-7/65FV6812227/B	E2SE/222	NO
65CSP681424-8	65FV6812228	65CSP681424-8/65FV6812228/A	65CSP681424-8/65FV6812228/B	E2SE/222	NC
65CSP681424-9	65FV6814141	65CSP681423-7/65FV6814141/A	65CSP681423-7/65FV6814141/B	CA-E2SE/414	NC
65CSP681424-10	65FV6814142	65CSP681423-8/65FV6814142/A	65CSP681423-8/65FV6814142/B	CA-E2SE/414	NC
65CSP681424-11	SPARE				
65CSP681424-12	SPARE				

1. ALL ABV SUPPLIED IN NC CONFIGURATION
2. CONTROL LINE A ALWAYS START FROM SOLENOID A PORT
3. CONTROL LINE B ALWAYS START FROM SOLENOID B PORT
4. FOR NC ABV
   a. CONTROL LINE A TERMINATES AT ABV LEFT PORT
   b. CONTROL LINE B TERMINATES AT ABV RIGHT PORT
5. FOR NO ABV
   a. CONTROL LINE A TERMINATES AT ABV RIGHT PORT
   b. CONTROL LINE B TERMINATES AT ABV LEFT PORT

NOTE: ORIENTATION OF AIR PANEL AND AIRLINE FEEDING PANEL PENDING MECHANICAL LAYOUT. ALL SOLENOID VALVE POSITION 1 STARTS IMMEDIATELY ADJACENT TO D-SUB CONNECTOR

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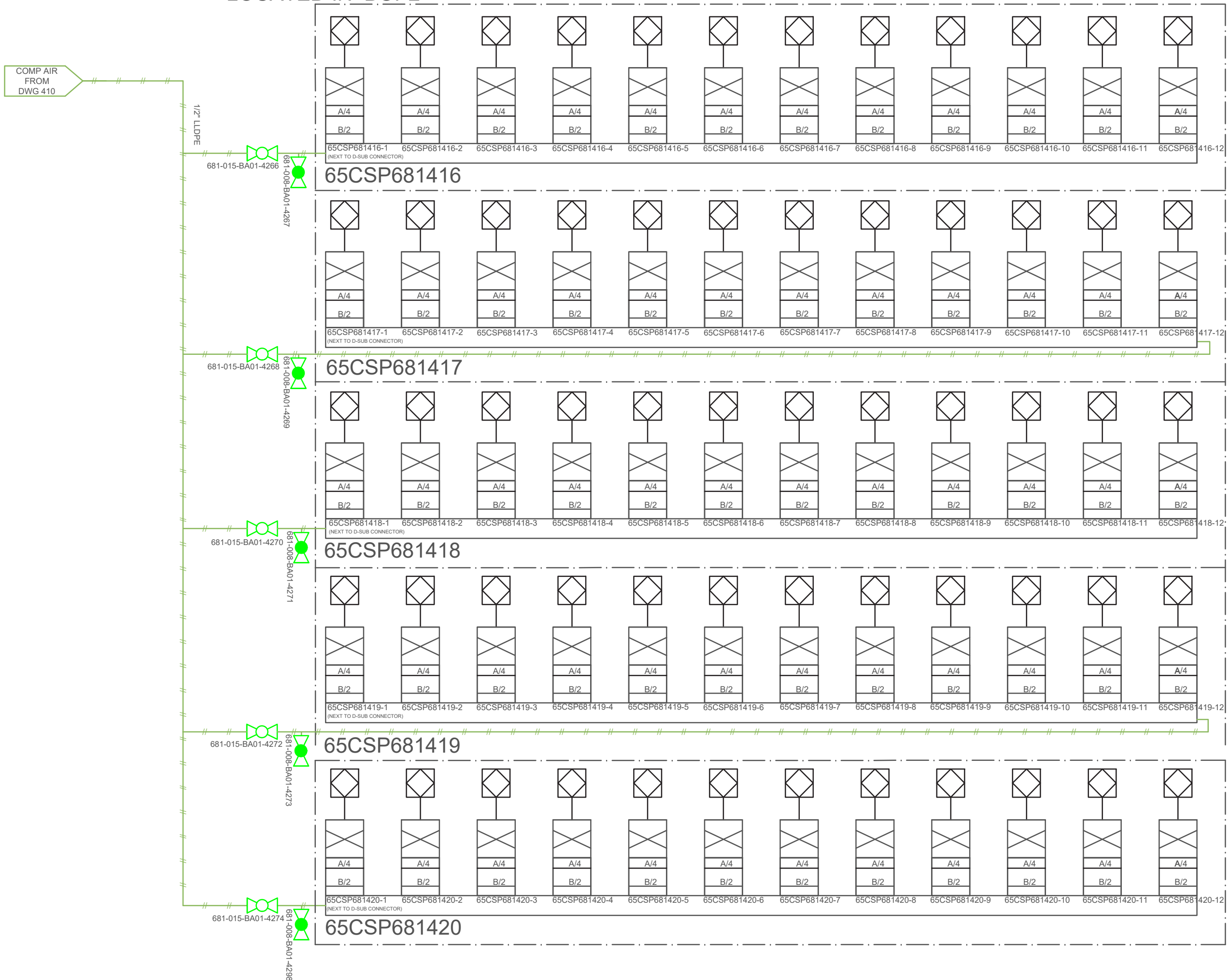
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	UPDATED SOLENOID BANK	SN
L	16–MAR–2018	UPDATED SOLENOID TABLE	JLAU
M	08–MAY–2018	NO CHANGES	–

TITLE: (SM1) 417: E2/E3 SE AIR SOLENOID BANK

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	SN	DATE:	22–FEB–2018
CHECKED BY:	XXIAO	DATE:	23–FEB–2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_GEN III_PID_DWG_417	JOB/CO NO:	(JOB NO.)
SHEET:	67 OF117		

LOCATED IN BOP2



65CSP681416

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681416-1	65FV6811201	65CSP681416-1/65FV6811201/A	65CSP681416-1/65FV6811201/B	CW/120	NO
65CSP681416-2	65FV6811202	65CSP681416-2/65FV6811202/A	65CSP681416-2/65FV6811202/B	CW/120	NO
65CSP681416-3	65FV6811203	65CSP681416-3/65FV6811203/A	65CSP681416-3/65FV6811203/B	CW/120	NC
65CSP681416-4	65FV6811204	65CSP681416-4/65FV6811204/A	65CSP681416-4/65FV6811204/B	CW/120	NC
65CSP681416-5	65FV6811208	65CSP681416-5/65FV6811208/A	65CSP681416-5/65FV6811208/B	CW-ACD/120	NC
65CSP681416-6	65FV6811209	65CSP681416-6/65FV6811209/A	65CSP681416-6/65FV6811209/B	CW-UW/120	NC
65CSP681416-7	65FV6814101	65CSP681416-7/65FV6814101/A	65CSP681416-7/65FV6814101/B	CA/410	NC
65CSP681416-8		TBD - VALVE MAY NOT EXIST			
65CSP681416-9		TBD - VALVE MAY NOT EXIST			
65CSP681416-10	SPARE				
65CSP681416-11	SPARE				
65CSP681416-12	SPARE				

65CSP681417

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681417-1	65FV6812101	65CSP681417-1/65FV6812101/A	65CSP681417-1/65FV6812101/B	E1/210	NC
65CSP681417-2	65FV6812103	65CSP681417-2/65FV6812103/A	65CSP681417-2/65FV6812103/B	E1/210	NC
65CSP681417-3	65FV6812104	65CSP681417-3/65FV6812104/A	65CSP681417-3/65FV6812104/B	E1/210	NC
65CSP681417-4	65FV6812105	65CSP681417-4/65FV6812105/A	65CSP681417-4/65FV6812105/B	E1/210	NC
65CSP681417-5	65FV6812106	65CSP681417-5/65FV6812106/A	65CSP681417-5/65FV6812106/B	E1/210	NO
65CSP681417-6	65FV6812107	65CSP681417-6/65FV6812107/A	65CSP681417-6/65FV6812107/B	E1/210	NC
65CSP681417-7	65FV6812108	65CSP681417-7/65FV6812108/A	65CSP681417-7/65FV6812108/B	E1/210	NC
65CSP681417-8	65FV6812109	65CSP681417-8/65FV6812109/A	65CSP681417-8/65FV6812109/B	E1/210	NC
65CSP681417-9	65FV6812110	65CSP681417-9/65FV6812110/A	65CSP681417-9/65FV6812110/B	E1/210	NC
65CSP681417-10	65FV6812111	65CSP681417-10/65FV6812111/A	65CSP681417-10/65FV6812111/B	E1/210	NO
65CSP681417-11	65FV6812112	65CSP681417-11/65FV6812112/A	65CSP681417-11/65FV6812112/B	E1/210	NC
65CSP681417-12	65FV6812113	65CSP681417-12/65FV6812113/A	65CSP681417-12/65FV6812113/B	E1/210	NC

65CSP681418

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681418-1	65FV6812114	65CSP681418-1/65FV6812114/A	65CSP681418-1/65FV6812114/B	E1/210	NC
65CSP681418-2	65FV6812115	65CSP681418-2/65FV6812115/A	65CSP681418-2/65FV6812115/B	E1/210	NC
65CSP681418-3	65FV6812118	65CSP681418-3/65FV6812118/A	65CSP681418-3/65FV6812118/B	E1-ACD/210	NC
65CSP681418-4	65FV6812119	65CSP681418-4/65FV6812119/A	65CSP681418-4/65FV6812119/B	E1-BSE/210	NC
65CSP681418-5	65FV6814131	65CSP681418-5/65FV6814131/A	65CSP681418-5/65FV6814131/B	CA-E1/413	NC
65CSP681418-6	65FV6814132	65CSP681418-6/65FV6814132/A	65CSP681418-6/65FV6814132/B	CA-E1/413	NC
65CSP681418-7	65FV6812402	65CSP681418-7/65FV6812402/A	65CSP681418-7/65FV6812402/B	E4/240	NC
65CSP681418-8	65FV6812403	65CSP681418-8/65FV6812403/A	65CSP681418-8/65FV6812403/B	E4/240	NC
65CSP681418-9	65FV6812404	65CSP681418-9/65FV6812404/A	65CSP681418-9/65FV6812404/B	E4/240	NC
65CSP681418-10	65FV6812405	65CSP681418-10/65FV6812405/A	65CSP681418-10/65FV6812405/B	E4/240	NC
65CSP681418-11	65FV6812406	65CSP681418-11/65FV6812406/A	65CSP681418-11/65FV6812406/B	E4/240	NO
65CSP681418-12	65FV6812407	65CSP681418-12/65FV6812407/A	65CSP681418-12/65FV6812407/B	E4/240	NC

65CSP681419

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681419-1	65FV6812408	65CSP681419-1/65FV6812408/A	65CSP681419-1/65FV6812408/B	E4/240	NC
65CSP681419-2	65FV6812411	65CSP681419-2/65FV6812411/A	65CSP681419-2/65FV6812411/B	E4/240	NO
65CSP681419-3	65FV6812412	65CSP681419-3/65FV6812412/A	65CSP681419-3/65FV6812412/B	E4/240	NC
65CSP681419-4	65FV6812413	65CSP681419-4/65FV6812413/A	65CSP681419-4/65FV6812413/B	E4/240	NC
65CSP681419-5	65FV6812414	65CSP681419-5/65FV6812414/A	65CSP681419-5/65FV6812414/B	E4/240	NC
65CSP681419-6	65FV6812401	65CSP681419-6/65FV6812401/A	65CSP681419-6/65FV6812401/B	E4/240	NC
65CSP681419-7	65FV6812400	65CSP681419-7/65FV6812400/A	65CSP681419-7/65FV6812400/B	E4-ACD/240	NC
65CSP681419-8	65FV6812409	65CSP681419-8/65FV6812409/A	65CSP681419-8/65FV6812409/B	E4-BSE/240	NC
65CSP681419-9	65FV6814137	65CSP681419-9/65FV6814137/A	65CSP681419-9/65FV6814137/B	CA-E4/413	NC
65CSP681419-10	65FV6814138	65CSP681419-10/65FV6814138/A	65CSP681419-10/65FV6814138/B	CA-E4/413	NC
65CSP681419-11	65FV6812116	65CSP681419-11/65FV6812116/A	65CSP681419-11/65FV6812116/B	E1/213	NC
65CSP681419-12	65FV6812416	65CSP681419-12/65FV6812416/A	65CSP681419-12/65FV6812416/B	E4/243	NC

65CSP681420

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681420-1	65FV6813111	65CSP681420-1/65FV6813111/A	65CSP681420-1/65FV6813111/B	TSW/311	NO
65CSP681420-2	65FV6813112	65CSP681420-2/65FV6813112/A	65CSP681420-2/65FV6813112/B	TSW/311	NC
65CSP681420-3	65FV6813113	65CSP681420-3/65FV6813113/A	65CSP681420-3/65FV6813113/B	TSW/311	NO
65CSP681420-4	65FV6813114	65CSP681420-4/65FV6813114/A	65CSP681420-4/65FV6813114/B	TSW/311	NC
65CSP681420-5	65FV6812500	65CSP681421-9/65FV6812500/A	65CSP681421-9/65FV6812500/B	E5-ACD/250	NC
65CSP681420-6	65FV6812509	65CSP681421-10/65FV6812509/A	65CSP681421-10/65FV6812509/B	E5-BSE/250	NC
65CSP681420-7	65FV6811516	65CSP681426-1/65FV6811516/A	65CSP681426-1/65FV6811516/B	CIP-ACD/150	NC
65CSP681420-8	65FV6811517	65CSP681426-2/65FV6811517/A	65CSP681426-2/65FV6811517/B	CIP-BSE/150	NC
65CSP681420-9	65FV6812230/65FV6812231	65CSP681426-3/65FV6812230/65FV6812231/A	65CSP681426-3/65FV6812230/65FV6812231/B	E2/220	NC/NO
65CSP681420-10	65FV6812330/65FV6812331	65CSP681426-4/65FV6812330/65FV6812331/A	65CSP681426-4/65FV6812330/65FV6812331/B	E3/230	NC/NO
65CSP681420-11	SPARE				
65CSP681420-12	SPARE				

1. ALL ABV SUPPLIED IN NC CONFIGURATION
2. CONTROL LINE A ALWAYS START FROM SOLENOID A PORT
3. CONTROL LINE B ALWAYS START FROM SOLENOID B PORT
4. FOR NC ABV
   a. CONTROL LINE A TERMINATES AT ABV LEFT PORT
   b. CONTROL LINE B TERMINATES AT ABV RIGHT PORT
5. FOR NO ABV
   a. CONTROL LINE A TERMINATES AT ABV RIGHT PORT
   b. CONTROL LINE B TERMINATES AT ABV LEFT PORT

NOTE: ORIENTATION OF AIR PANEL AND AIRLINE FEEDING PANEL PENDING MECHANICAL LAYOUT. ALL SOLENOID VALVE POSITION 1 STARTS IMMEDIATELY ADJACENT TO D-SUB CONNECTOR

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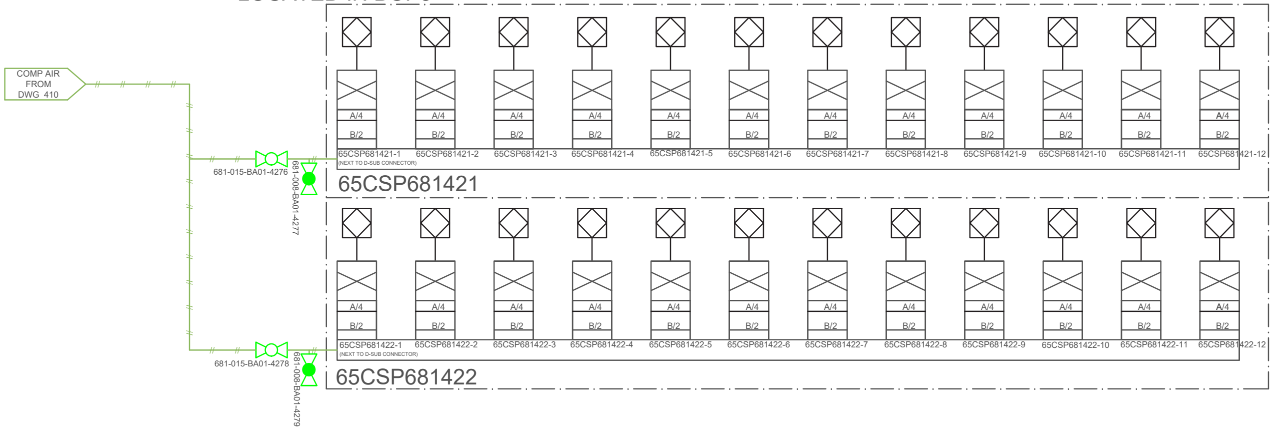
DO NOT SCALE DRAWING

LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	UPDATED SOLENOID BANK, LINES MATCH AS BUILT	SN
L	16–MAR–2018	UPDATED SOLENOID TABLE	JLAU
M	08–MAY–2018	UPDATED SOLENOID TABLE	JLAU

TITLE: (SM1) 418: BOP2 AIR SOLENOID BANK

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: SN	DATE: 22–FEB–2018	DWG. NO: SW_EN_SM_GEN III_PID_DWG_418	
CHECKED BY: XXIAO	DATE: 23–FEB–2018	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 68 OF117	

LOCATED IN BOP3



65CSP681421

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681421-1	65FV6812502	65CSP681421-1/65FV6812502/A	65CSP681421-1/65FV6812502/B	E5/250	NC
65CSP681421-2	65FV6812503	65CSP681421-2/65FV6812503/A	65CSP681421-2/65FV6812503/B	E5/250	NC
65CSP681421-3	65FV6812504	65CSP681421-3/65FV6812504/A	65CSP681421-3/65FV6812504/B	E5/250	NC
65CSP681421-4	65FV6812505	65CSP681421-4/65FV6812505/A	65CSP681421-4/65FV6812505/B	E5/250	NC
65CSP681421-5	65FV6812506	65CSP681421-5/65FV6812506/A	65CSP681421-5/65FV6812506/B	E5/250	NO
65CSP681421-6	65FV6812507	65CSP681421-6/65FV6812507/A	65CSP681421-6/65FV6812507/B	E5/250	NC
65CSP681421-7	65FV6812508	65CSP681421-7/65FV6812508/A	65CSP681421-7/65FV6812508/B	E5/250	NC
65CSP681421-8	65FV6812501	65CSP681421-8/65FV6812501/A	65CSP681421-8/65FV6812501/B	E5/250	NC
65CSP681421-9	SPARE				
65CSP681421-10	SPARE				
65CSP681421-11	65FV6812511	65CSP681421-11/65FV6812511/A	65CSP681421-11/65FV6812511/B	E5/250	NO
65CSP681421-12	65FV6812512	65CSP681421-12/65FV6812512/A	65CSP681421-12/65FV6812512/B	E5/250	NC

65CSP681422

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681422-1	65FV6812513	65CSP681422-1/65FV6812513/A	65CSP681422-1/65FV6812513/B	E5/250	NC
65CSP681422-2	65FV6812514	65CSP681422-2/65FV6812514/A	65CSP681422-2/65FV6812514/B	E5/250	NC
65CSP681422-3	65FV6814139	65CSP681422-3/65FV6814139/A	65CSP681422-3/65FV6814139/B	CA-E5/413	NC
65CSP681422-4	65FV6814130	65CSP681422-4/65FV6814130/A	65CSP681422-4/65FV6814130/B	CA-E5/413	NC
65CSP681422-5	65FV6812516	65CSP681422-5/65FV6812516/A	65CSP681422-5/65FV6812516/B	E5/253	NC
65CSP681422-6		TBD - VALVE MAY NOT EXIST			
65CSP681422-7	SPARE				
65CSP681422-8	SPARE				
65CSP681422-9	SPARE				
65CSP681422-10	SPARE				
65CSP681422-11	SPARE				
65CSP681422-12	SPARE				

1. ALL ABV SUPPLIED IN NC CONFIGURATION
2. CONTROL LINE A ALWAYS START FROM SOLENOID A PORT
3. CONTROL LINE B ALWAYS START FROM SOLENOID B PORT
4. FOR NC ABV
   a. CONTROL LINE A TERMINATES AT ABV LEFT PORT
   b. CONTROL LINE B TERMINATES AT ABV RIGHT PORT
5. FOR NO ABV
   a. CONTROL LINE A TERMINATES AT ABV RIGHT PORT
   b. CONTROL LINE B TERMINATES AT ABV LEFT PORT

NOTE: ORIENTATION OF AIR PANEL AND AIRLINE FEEDING PANEL PENDING MECHANICAL LAYOUT. ALL SOLENOID VALVE POSITION 1 STARTS IMMEDIATELY ADJACENT TO D-SUB CONNECTOR

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13800 Steveston Hwy
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DO NOT SCALE DRAWING

LTR	DATE	DESCRIPTION	REV. BY:
N	06-JUL-2018	NO CHANGES	–
K	26-FEB-2018	UPDATED SOLENOID BANK	SN
L	16-MAR-2018	UPDATED SOLENOID TABLE	JLAU
M	08-MAY-2018	NO CHANGES	–

TITLE:	(SM1) 419: BOP3 AIR BANK		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	SN	DATE:	22-FEB-2018
CHECKED BY:	XXIAO	DATE:	23-FEB-2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_GEN III_PID_DWG_419		
JOB/CO NO:	(JOB NO.)		
SHEET:	69 OF117		

65CSP681425

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM	NO/NC
65CSP681425-1	65FV6811505	65CSP681425-1/65FV6811505/A	65CSP681425-1/65FV6811505/B	CIP/150	NC
65CSP681425-2	65FV6811511	65CSP681425-2/65FV6811511/A	65CSP681425-2/65FV6811511/B	CIP/150	NC
65CSP681425-3	65FV6811501	65CSP681425-3/65FV6811501/A	65CSP681425-3/65FV6811501/B	CIP/150	NC
65CSP681425-4	65FV6811502	65CSP681425-4/65FV6811502/A	65CSP681425-4/65FV6811502/B	CIP/150	NC
65CSP681425-5	SPARE				
65CSP681425-6	65FV6811504	65CSP681425-6/65FV6811504/A	65CSP681425-6/65FV6811504/B	CIP/150	NO
65CSP681425-7	65FV6811506	65CSP681425-7/65FV6811506/A	65CSP681425-7/65FV6811506/B	CIP/150	NC
65CSP681425-8	65FV6811507	65CSP681425-8/65FV6811507/A	65CSP681425-8/65FV6811507/B	CIP/150	NC
65CSP681425-9	SPARE				
65CSP681425-10	65FV6811508	65CSP681425-10/65FV6811508/A	65CSP681425-10/65FV6811508/B	CIP/150	NC
65CSP681425-11	65FV6811510	65CSP681425-11/65FV6811510/A	65CSP681425-11/65FV6811510/B	CIP/150	NO
65CSP681425-12	65FV6811512	65CSP681425-12/65FV6811512/A	65CSP681425-12/65FV6811512/B	CIP/150	NC

65CSP681426

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM	NO/NC
65CSP681426-1	SPARE				
65CSP681426-2	SPARE				
65CSP681426-3	65FV6811518	65CSP681426-3/65FV6811518/A	65CSP681426-3/65FV6811518/B	CIP-UW/150	NC
65CSP681426-4	65FV6811519	65CSP681426-4/65FV6811519/A	65CSP681426-4/65FV6811519/B	CIP-UW/150	NC
65CSP681426-5	65FV6811523	65CSP681426-5/65FV6811523/A	65CSP681426-5/65FV6811523/B	CIP/151	NC
65CSP681426-6	65FV6811525	65CSP681426-6/65FV6811525/A	65CSP681426-6/65FV6811525/B	CIP/151	NC
65CSP681426-7	65FV6811524	65CSP681426-7/65FV6811524/A	65CSP681426-7/65FV6811524/B	CIP/151	NC
65CSP681426-8	65FV6811526	65CSP681426-8/65FV6811526/A	65CSP681426-8/65FV6811526/B	CIP/151	NC
65CSP681426-9	65FV6814111	65CSP681426-9/65FV6814111/A	65CSP681426-9/65FV6814111/B	CA-CIP/411	NC
65CSP681426-10	65FV6814112	65CSP681426-10/65FV6814112/A	65CSP681426-10/65FV6814112/B	CA-CIP/411	NC
65CSP681426-11	65FV6814113	65CSP681426-11/65FV6814113/A	65CSP681426-11/65FV6814113/B	CA-CIP/411	NC
65CSP681426-12	65FV6814114	65CSP681426-12/65FV6814114/A	65CSP681426-12/65FV6814114/B	CA-CIP/411	NC

65CSP681427

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM	NO/NC
65CSP681427-1	65FV6811601	65CSP681427-1/65FV6811601/A	65CSP681427-1/65FV6811601/B	H1/160	NC
65CSP681427-2	65FV6811604	65CSP681427-2/65FV6811604/A	65CSP681427-2/65FV6811604/B	H1/160	NC
65CSP681427-3	65FV6811600	65CSP681427-3/65FV6811600/A	65CSP681427-3/65FV6811600/B	H1/160	NC
65CSP681427-4	SPARE				
65CSP681427-5	65FV6811605	65CSP681427-5/65FV6811605/A	65CSP681427-5/65FV6811605/B	H1/160	NC
65CSP681427-6	65FV6814121	65CSP681427-6/65FV6814121/A	65CSP681427-6/65FV6814121/B	CA-H1/412	NC
65CSP681427-7	65FV6814123	65CSP681427-7/65FV6814123/A	65CSP681427-7/65FV6814123/B	CA-H1/412	NC
65CSP681427-8	65FV6814124	65CSP681427-8/65FV6814124/A	65CSP681427-8/65FV6814124/B	CA-H1/412	NC
65CSP681427-9	65FV6811610	65CSP681427-9/65FV6811610/A	65CSP681427-9/65FV6811610/B	H2/161	NC
65CSP681427-10	65FV6811611	65CSP681427-10/65FV6811611/A	65CSP681427-10/65FV6811611/B	H2/161	NC
65CSP681427-11	65FV6811614	65CSP681427-11/65FV6811614/A	65CSP681427-11/65FV6811614/B	H2/161	NC
65CSP681427-12	65FV6814125	65CSP681427-12/65FV6814125/A	65CSP681427-12/65FV6814125/B	CA-H2/412	NC

65CSP681428

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM	NO/NC
65CSP681428-1	65FV6814126	65CSP681428-1/65FV6814126/A	65CSP681428-1/65FV6814126/B	CA-H2/412	NC
65CSP681428-2	65FV6811621	65CSP681428-2/65FV6811621/A	65CSP681428-2/65FV6811621/B	SY/162	NC
65CSP681428-3	65FV6811625	65CSP681428-3/65FV6811625/A	65CSP681428-3/65FV6811625/B	SY/162	NC
65CSP681428-4	65FV6811627	65CSP681428-4/65FV6811627/A	65CSP681428-4/65FV6811627/B	SY/162	NC
65CSP681428-5	65FV6811628	65CSP681428-5/65FV6811628/A	65CSP681428-5/65FV6811628/B	SY/162	NC
65CSP681428-6	65FV6811629	65CSP681428-6/65FV6811629/A	65CSP681428-6/65FV6811629/B	SY/162	NC
65CSP681428-7	65FV6814122	65CSP681428-7/65FV6814122/A	65CSP681428-7/65FV6814122/B	CA-SY/412	NC
65CSP681428-8	SPARE				
65CSP681428-9	SPARE				
65CSP681428-10	SPARE				
65CSP681428-11	SPARE				
65CSP681428-12	SPARE				

1. ALL ABV SUPPLIED IN NC CONFIGURATION
2. CONTROL LINE A ALWAYS START FROM SOLENOID A PORT
3. CONTROL LINE B ALWAYS START FROM SOLENOID B PORT
4. FOR NC ABV
   a. CONTROL LINE A TERMINATES AT ABV LEFT PORT
   b. CONTROL LINE B TERMINATES AT ABV RIGHT PORT
5. FOR NO ABV
   a. CONTROL LINE A TERMINATES AT ABV RIGHT PORT
   b. CONTROL LINE B TERMINATES AT ABV LEFT PORT

NOTE: ORIENTATION OF AIR PANEL AND AIRLINE FEEDING PANEL PENDING MECHANICAL LAYOUT. ALL SOLENOID VALVE POSITION 1 STARTS IMMEDIATELY ADJACENT TO D-SUB CONNECTOR

RESERVE PHYSICAL AND ELECTRICAL SPACE FOR 1 ADDITIONAL BANK

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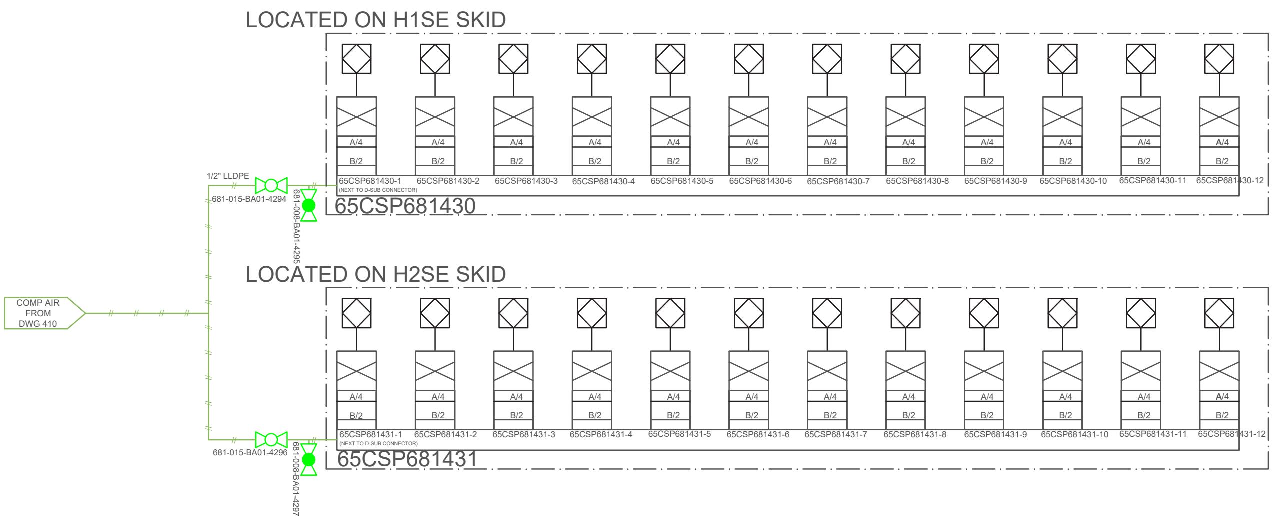
LTR	DATE	DESCRIPTION	REV. BY:
N	06-JUL-2018	NO CHANGES	-
K	26-FEB-2018	UPDATED SOLENOID BANK	SN
L	16-MAR-2018	UPDATED SOLENOID TABLE	JLAU
M	08-MAY-2018	NO CHANGES	-

TITLE: (SM1) 420: CIP & EH/SH AIR BANK

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	SN	DATE:	22-FEB-2018
CHECKED BY:	XXIAO	DATE:	23-FEB-2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_GEN III_PID_DWG_420	JOB/CO NO:	(JOB NO.)
SHEET:	70 OF117		



65CSP681430

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM	NO/NC
65CSP681430-1	65FV6811641	65CSP681430-1/65FV6811641/A	65CSP681430-1/65FV6811641/B	H1SE/164	NC
65CSP681430-2	65FV6811642	65CSP681430-2/65FV6811642/A	65CSP681430-2/65FV6811642/B	H1SE/164	NC
65CSP681430-3	65FV6811643	65CSP681430-3/65FV6811643/A	65CSP681430-3/65FV6811643/B	H1SE/164	NC
65CSP681430-4	65FV6811644	65CSP681430-4/65FV6811644/A	65CSP681430-4/65FV6811644/B	H1SE/164	NC
65CSP681430-5	65FV6811645	65CSP681430-5/65FV6811645/A	65CSP681430-5/65FV6811645/B	H1SE/164	NC
65CSP681430-6	65FV6811646	65CSP681430-6/65FV6811646/A	65CSP681430-6/65FV6811646/B	H1SE/164	NO
65CSP681430-7	65FV6811647	65CSP681430-7/65FV6811647/A	65CSP681430-7/65FV6811647/B	H1SE/164	NC
65CSP681430-8	65FV6811659	65CSP681430-8/65FV6811659/A	65CSP681430-8/65FV6811659/B	H2SE/165	NO
65CSP681430-9	65FV6811650	65CSP681430-9/65FV6811650/A	65CSP681430-9/65FV6811650/B	H2SE/165	NC
65CSP681430-10	RESERVED				
65CSP681430-11	65FV6814115	65CSP681430-11/65FV6814115/A	65CSP681430-11/65FV6814115/B	CA-H2SE/411	NC
65CSP681430-12	65FV6814116	65CSP681430-12/65FV6814116/A	65CSP681430-12/65FV6814116/B	CA-H2SE/411	NC

65CSP681431

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM	NO/NC
65CSP681431-1	65FV6811651	65CSP681431-1/65FV6811651/A	65CSP681431-1/65FV6811651/B	H2SE/165	NC
65CSP681431-2	65FV6811652	65CSP681431-2/65FV6811652/A	65CSP681431-2/65FV6811652/B	H2SE/165	NC
65CSP681431-3	65FV6811653	65CSP681431-3/65FV6811653/A	65CSP681431-3/65FV6811653/B	H2SE/165	NC
65CSP681431-4	65FV6811654	65CSP681431-4/65FV6811654/A	65CSP681431-4/65FV6811654/B	H2SE/165	NC
65CSP681431-5	65FV6811655	65CSP681431-5/65FV6811655/A	65CSP681431-5/65FV6811655/B	H2SE/165	NC
65CSP681431-6	RESERVED				
65CSP681431-7	65FV6811656	65CSP681431-7/65FV6811656/A	65CSP681431-7/65FV6811656/B	H2SE/165	NO
65CSP681431-8	65FV6811657	65CSP681431-8/65FV6811657/A	65CSP681431-8/65FV6811657/B	H2SE/165	NC
65CSP681431-9	65FV6811658	65CSP681431-9/65FV6811658/A	65CSP681431-9/65FV6811658/B	H2SE/165	NC
65CSP681431-10	RESERVED				
65CSP681431-11	RESERVED				
65CSP681431-12	SPARE				

1. ALL ABV SUPPLIED IN NC CONFIGURATION
2. CONTROL LINE A ALWAYS START FROM SOLENOID A PORT
3. CONTROL LINE B ALWAYS START FROM SOLENOID B PORT
4. FOR NC ABV
   a. CONTROL LINE A TERMINATES AT ABV LEFT PORT
   b. CONTROL LINE B TERMINATES AT ABV RIGHT PORT
5. FOR NO ABV
   a. CONTROL LINE A TERMINATES AT ABV RIGHT PORT
   b. CONTROL LINE B TERMINATES AT ABV LEFT PORT

NOTE: ORIENTATION OF AIR PANEL AND AIRLINE FEEDING PANEL PENDING MECHANICAL LAYOUT. ALL SOLENOID VALVE POSITION 1 STARTS IMMEDIATELY ADJACENT TO D-SUB CONNECTOR

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DO NOT SCALE DRAWING

LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	UPDATED SOLENOID BANK	SN
L	16–MAR–2018	UPDATED SOLENOID TABLE	JLAU
M	08–MAY–2018	NO CHANGES	–

TITLE: (SM1) 421: H1/H2 SE AIR BANK

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	SN	DATE:	02–FEB–2018
CHECKED BY:	XXIAO	DATE:	23–FEB–2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_GEN III_PID_DWG_421	JOB/CO NO:	(JOB NO.)
SHEET:	71 OF117		

AGNICO EAGLE MINES
P&ID DRAWING PACKAGE

COMPRESSED AIR - SM2
REVISION N

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LTR	DATE	DESCRIPTION	REV. BY:
N	06-JUL-2018	AS MARKED BY REVISION CLOUDS	JLAU
K	26-FEB-2018	VALVE TAGS, LINE LABELS	SN
L	16-MAR-2018	AS MARKED BY REVISION CLOUDS	JLAU
M	08-MAY-2018	AS MARKED BY REVISION CLOUDS	JLAU

TITLE:	COVER SHEET		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	SN	DATE:	22-FEB-2018
CHECKED BY:	XXIAO	DATE:	23-FEB-2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	COVER SHEET		
JOB/CO NO:	(JOB NO.)		
SHEET:	# OF #		

DRAWING LIST 1

SHEET NO.	DRAWING NO.	DESCRIPTION
		COVER SHEET
		DRAWING LIST 1
		DRAWING LIST 2
		LEGEND
		COMMON
1	SW_EN_SM_AEM-01_PID_COMMON_DWG_000	MASTER PFD
2	SW_EN_SM_AEM-01_PID_COMMON_DWG_010	PROCESS FLOW DIAGRAM
3	SW_EN_SM_AEM-01_PID_COMMON_DWG_020	CONTAINER LAYOUT
4	SW_EN_SM_AEM-01_PID_COMMON_DWG_030	MODULES LAYOUT
5	SW_EN_SM_AEM-01_PID_COMMON_DWG_040	PLANT FEED TANKS
6	SW_EN_SM_AEM-01_PID_COMMON_DWG_041	PLANT FEED PUMP SKIDS
7	SW_EN_SM_AEM-01_PID_COMMON_DWG_050	CLEAN RESERVE AND BLOWDOWN SYSTEMS
8	SW_EN_SM_AEM-01_PID_COMMON_DWG_060	ACID DOSING SYSTEM
9	SW_EN_SM_AEM-01_PID_COMMON_DWG_061	BASE DOSING SYSTEM
10	SW_EN_SM_AEM-01_PID_COMMON_DWG_062	BIOCIDE DOSING SYSTEM
11	SW_EN_SM_AEM-01_PID_COMMON_DWG_063	ANTIFOAM DOSING SYSTEM
12	SW_EN_SM_AEM-01_PID_COMMON_DWG_064	ANTISCALANT DOSING SYSTEM
13	SW_EN_SM_AEM-01_PID_COMMON_DWG_070	UTILITY WATER DISTRIBUTION
		SALTMAKER 1 (SM1)
14	SW_EN_SM_AEM-01_PID_SM1_DWG_110	THERMAL SOURCE PRIMARY HEAT EXCHANGERS
15	SW_EN_SM_AEM-01_PID_SM1_DWG_120	CONDENSED WATER SYSTEM
16	SW_EN_SM_AEM-01_PID_SM1_DWG_130	FEED DISTRIBUTION
17	SW_EN_SM_AEM-01_PID_SM1_DWG_150	CIP TANKS
18	SW_EN_SM_AEM-01_PID_SM1_DWG_151	CIP PUMP SKID
19	SW_EN_SM_AEM-01_PID_SM1_DWG_160	EFFECT HOLD 1
20	SW_EN_SM_AEM-01_PID_SM1_DWG_161	EFFECT HOLD 2
21	SW_EN_SM_AEM-01_PID_SM1_DWG_162	SYSTEM HOLD
22	SW_EN_SM_AEM-01_PID_SM1_DWG_163	CALCIUM EXTRACTION
23	SW_EN_SM_AEM-01_PID_SM1_DWG_164	EH1 SOLIDS EXTRACTION
24	SW_EN_SM_AEM-01_PID_SM1_DWG_165	EH2 SOLIDS EXTRACTION
25	SW_EN_SM_AEM-01_PID_SM1_DWG_180	DRIP TRAYS
26	SW_EN_SM_AEM-01_PID_SM1_DWG_210	EFFECT 1 TANK AND PUMPS
27	SW_EN_SM_AEM-01_PID_SM1_DWG_211	EFFECT 1 MODULES
28	SW_EN_SM_AEM-01_PID_SM1_DWG_213	EFFECT 1 PUMP SEAL FLUSH
29	SW_EN_SM_AEM-01_PID_SM1_DWG_214	EFFECT 1 AIR SEALS
30	SW_EN_SM_AEM-01_PID_SM1_DWG_220	EFFECT 2 TANK AND PUMPS
31	SW_EN_SM_AEM-01_PID_SM1_DWG_221	EFFECT 2 MODULES
32	SW_EN_SM_AEM-01_PID_SM1_DWG_222	EFFECT 2 SOLIDS EXTRACTION
33	SW_EN_SM_AEM-01_PID_SM1_DWG_223	EFFECT 2 PUMP SEAL FLUSH
34	SW_EN_SM_AEM-01_PID_SM1_DWG_224	EFFECT 2 AIR SEALS

SHEET NO.	DRAWING NO.	DESCRIPTION
35	SW_EN_SM_AEM-01_PID_SM1_DWG_230	EFFECT 3 TANK AND PUMPS
36	SW_EN_SM_AEM-01_PID_SM1_DWG_231	EFFECT 3 MODULES
37	SW_EN_SM_AEM-01_PID_SM1_DWG_232	EFFECT 3 SOLIDS EXTRACTION
38	SW_EN_SM_AEM-01_PID_SM1_DWG_233	EFFECT 3 PUMP SEAL FLUSH
39	SW_EN_SM_AEM-01_PID_SM1_DWG_234	EFFECT 3 AIR SEALS
40	SW_EN_SM_AEM-01_PID_SM1_DWG_240	EFFECT 4 TANK AND PUMPS
41	SW_EN_SM_AEM-01_PID_SM1_DWG_241	EFFECT 4 MODULES
42	SW_EN_SM_AEM-01_PID_SM1_DWG_243	EFFECT 4 PUMP SEAL FLUSH
43	SW_EN_SM_AEM-01_PID_SM1_DWG_244	EFFECT 4 AIR SEALS
44	SW_EN_SM_AEM-01_PID_SM1_DWG_250	EFFECT 5 TANK AND PUMPS
45	SW_EN_SM_AEM-01_PID_SM1_DWG_251	EFFECT 5 MODULES
46	SW_EN_SM_AEM-01_PID_SM1_DWG_253	EFFECT 5 PUMP SEAL FLUSH
47	SW_EN_SM_AEM-01_PID_SM1_DWG_254	EFFECT 5 AIR SEALS
		THERMAL SYSTEM
48	SW_EN_SM_AEM-01_PID_DWG_310	THERMAL SKID: WATER LOOP
49	SW_EN_SM_AEM-01_PID_DWG_311	THERMAL SKID: WATER LOOP
50	SW_EN_SM_AEM-01_PID_DWG_312	THERMAL SKID: GYLCOL LOOP
		POST TREATMENT
51	SW_EN_SM_AEM-01_PID_COMMON_DWG_320	NITRITE DESTRUCTION AND RO PC SYSTEM
52	SW_EN_SM_AEM-01_PID_COMMON_DWG_321	AMMONIA DESTRUCTION SYSTEM
53	SW_EN_SM_AEM-01_PID_COMMON_DWG_322	RO BRINE FLUSH TANK
54	SW_EN_SM_AEM-01_PID_COMMON_DWG_323	RO PERMEATE TANK
		COMPRESSED AIR-COMMON PACKAGE
55	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_400	COMPRESSED AIR SYSTEM
56	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_401	AMMONIA DES, BRINE BLOWDOWN AND PLANT FEED AIR
57	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_402	CHEMICAL DOSING AND ANCILLARY STAND PIPE AIR
58	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_403	COMMON AND POST TREATMENT AIR BANK 1
59	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-COMMON_DWG_404	COMMON AND POST TREATMENT AIR BANK 2
		COMPRESSED AIR-SM1
60	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_410	SM INSTRUMENT AND PROCESS AIR
61	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_411	EH1/EH2 EXTRACT AND CIP AIR

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N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	08–MAY–2018	NO CHANGES	–

TITLE: DRAWING LIST 1			
PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: SN	DATE: 22–FEB–2018	DWG. NO: DRAWING LIST 1	
CHECKED BY: XXIAO	DATE: 23–FEB–2018	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: # OF #	

DRAWING LIST 2

SHEET NO.	DRAWING NO.	DESCRIPTION
62	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_412	EH1/EH2 EXTRACT AND CIP AIR
63	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_413	PLUG PREVENTION PUMP AIR
64	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_414	AIR SEAL, STAND PIPE AND E2/E3 SE AIR
65	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_415	UTILITY AIR
66	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_416	BOP1 AIR SOLENOID BANK
67	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_417	E2/E3 SE AIR SOLENOID BANK
68	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_418	BOP2 AIR SOLENOID BANK
69	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_419	BOP3 AIR SOLENOID BANK
70	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_420	CIP, EH/SY AIR SOLENOID BANK
71	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM1_DWG_421	H1/H2 SE AIR SOLENOID BANK
		COMPRESSED AIR-SM2
72	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_450	SM INSTRUMENT AND PROCESS AIR
73	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_451	EH1/EH2 EXTRACT AND CIP AIR
74	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_452	EFFECT/SYSTEM HOLD AND CAL EXTRACTION AIR
75	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_453	PLUG PREVENTION PUMP AIR
76	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_454	AIR SEAL, STAND PIPE AND E2/E3 SE AIR
77	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_455	UTILITY AIR
78	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_456	BOP1 AIR SOLENOID BANK
79	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_457	E2/E3 SE AIR SOLENOID BANK
80	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_458	BOP2 AIR SOLENOID BANK
81	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_459	BOP3 AIR SOLENOID BANK
82	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_460	CIP, EH/SY AIR SOLENOID BANK
83	SW_EN_SM_AEM-01_PID_COMPRESSED AIR-SM2_DWG_461	H1/H2 SE AIR SOLENOID BANK

SHEET NO.	DRAWING NO.	DESCRIPTION
		SALTMAKER 2 (SM2)
84	SW_EN_SM_AEM-01_PID_SM2_DWG_510	THERMAL SOURCE PRIMARY HEAT EXCHANGERS
85	SW_EN_SM_AEM-01_PID_SM2_DWG_520	CONDENSED WATER SYSTEM
86	SW_EN_SM_AEM-01_PID_SM2_DWG_530	FEED DISTRIBUTION
87	SW_EN_SM_AEM-01_PID_SM2_DWG_550	CIP TANKS
88	SW_EN_SM_AEM-01_PID_SM2_DWG_551	CIP PUMP SKID
89	SW_EN_SM_AEM-01_PID_SM2_DWG_560	EFFECT HOLD 1
90	SW_EN_SM_AEM-01_PID_SM2_DWG_561	EFFECT HOLD 2
91	SW_EN_SM_AEM-01_PID_SM2_DWG_562	SYSTEM HOLD
92	SW_EN_SM_AEM-01_PID_SM2_DWG_563	CALCIUM EXTRACTION
93	SW_EN_SM_AEM-01_PID_SM2_DWG_564	EH1 SOLIDS EXTRACTION
94	SW_EN_SM_AEM-01_PID_SM2_DWG_565	EH2 SOLIDS EXTRACTION
95	SW_EN_SM_AEM-01_PID_SM2_DWG_580	DRIP TRAYS
96	SW_EN_SM_AEM-01_PID_SM2_DWG_610	EFFECT 1 TANK AND PUMPS
97	SW_EN_SM_AEM-01_PID_SM2_DWG_611	EFFECT 1 MODULES
98	SW_EN_SM_AEM-01_PID_SM2_DWG_613	EFFECT 1 PUMP SEAL FLUSH
99	SW_EN_SM_AEM-01_PID_SM2_DWG_614	EFFECT 1 AIR SEALS
100	SW_EN_SM_AEM-01_PID_SM2_DWG_620	EFFECT 2 TANK AND PUMPS
101	SW_EN_SM_AEM-01_PID_SM2_DWG_621	EFFECT 2 MODULES
102	SW_EN_SM_AEM-01_PID_SM2_DWG_622	EFFECT 2 SOLIDS EXTRACTION
103	SW_EN_SM_AEM-01_PID_SM2_DWG_623	EFFECT 2 PUMP SEAL FLUSH
104	SW_EN_SM_AEM-01_PID_SM2_DWG_624	EFFECT 2 AIR SEALS
105	SW_EN_SM_AEM-01_PID_SM2_DWG_630	EFFECT 3 TANK AND PUMPS
106	SW_EN_SM_AEM-01_PID_SM2_DWG_631	EFFECT 3 MODULES
107	SW_EN_SM_AEM-01_PID_SM2_DWG_632	EFFECT 3 SOLIDS EXTRACTION
108	SW_EN_SM_AEM-01_PID_SM2_DWG_633	EFFECT 3 PUMP SEAL FLUSH
109	SW_EN_SM_AEM-01_PID_SM2_DWG_634	EFFECT 3 AIR SEALS
110	SW_EN_SM_AEM-01_PID_SM2_DWG_640	EFFECT 4 TANK AND PUMPS
111	SW_EN_SM_AEM-01_PID_SM2_DWG_641	EFFECT 4 MODULES
112	SW_EN_SM_AEM-01_PID_SM2_DWG_643	EFFECT 4 PUMP SEAL FLUSH
113	SW_EN_SM_AEM-01_PID_SM2_DWG_644	EFFECT 4 AIR SEALS
114	SW_EN_SM_AEM-01_PID_SM2_DWG_650	EFFECT 5 TANK AND PUMPS
115	SW_EN_SM_AEM-01_PID_SM2_DWG_651	EFFECT 5 MODULES
116	SW_EN_SM_AEM-01_PID_SM2_DWG_653	EFFECT 5 PUMP SEAL FLUSH
117	SW_EN_SM_AEM-01_PID_SM2_DWG_654	EFFECT 5 AIR SEALS
		VENDOR DRAWINGS
	USW_17041_100D	POST TREATMENT RO

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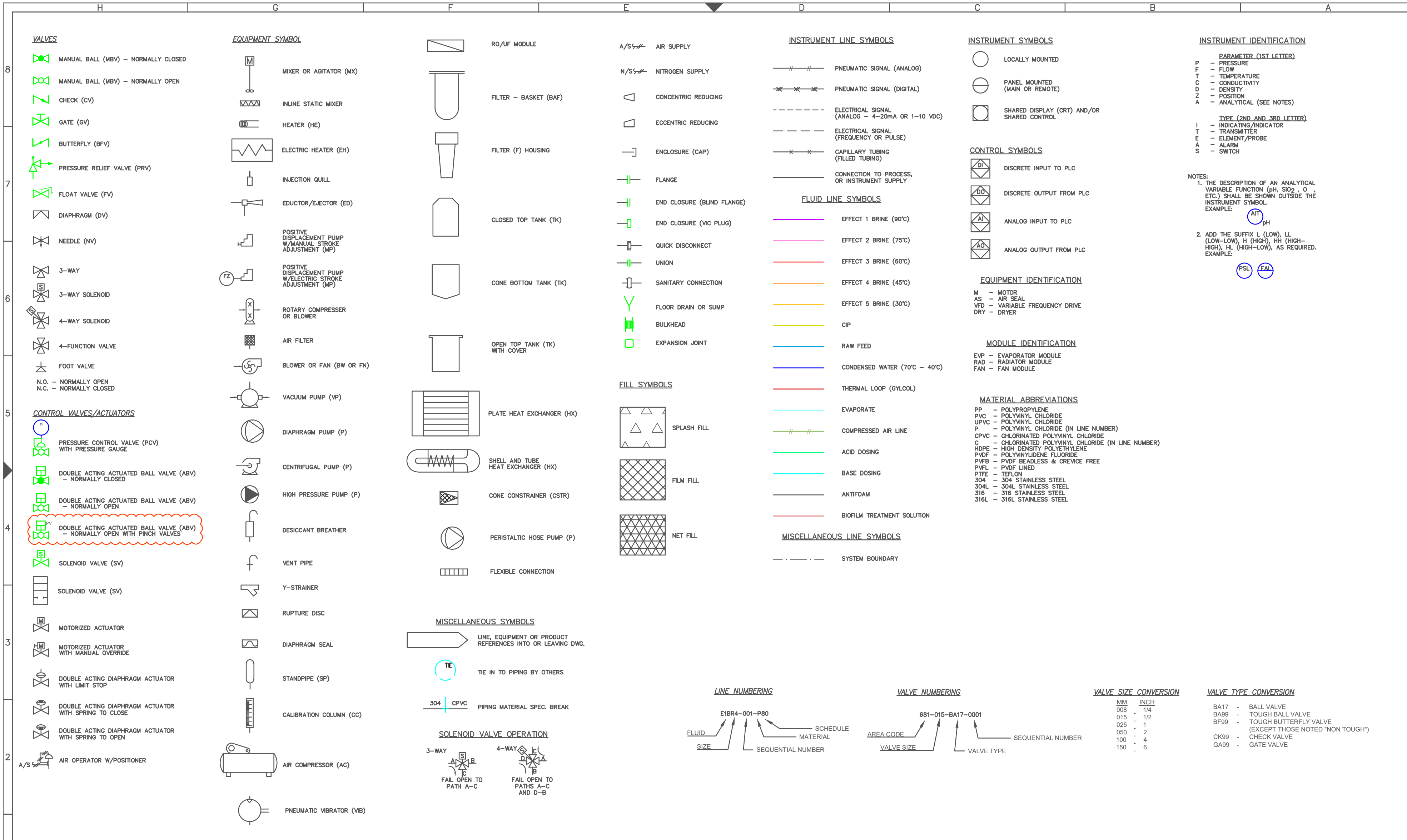
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	08–MAY–2018	NO CHANGES	–

TITLE:			
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	SN	DATE:	22–FEB–2018
CHECKED BY:	XXIAO	DATE:	23–FEB–2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	DRAWING LIST 2		
JOB/CO NO:	(JOB NO.)		
SHEET:	# OF #		



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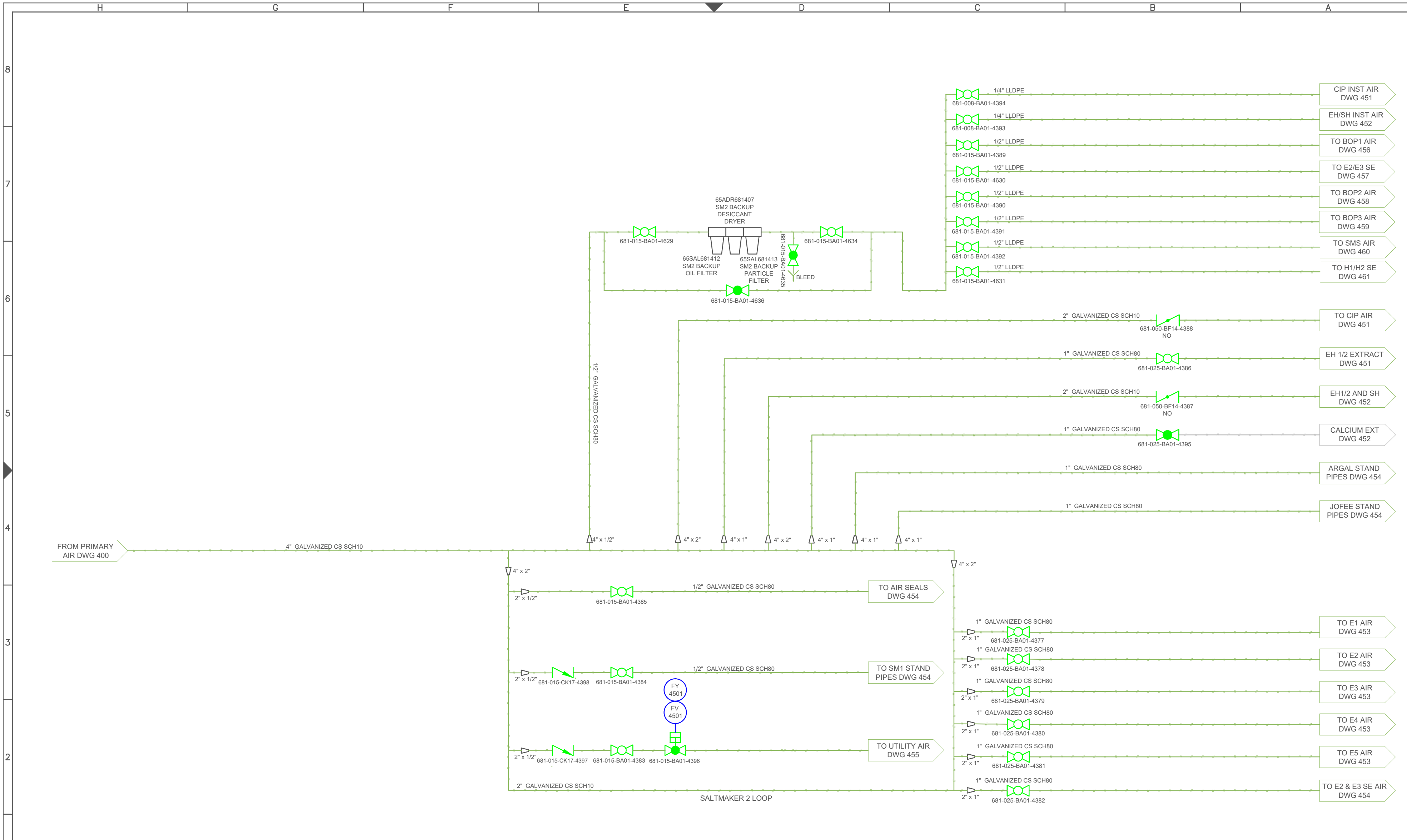
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	08–MAY–2018	NO CHANGES	–

TITLE:	LEGEND		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION:	N		
PREPARED BY:	SN	DATE:	22–FEB–2018
DWG. NO:	LEGEND		
CHECKED BY:	XXIAO	DATE:	23–FEB–2018
JOB/CO NO:	(JOB NO.)		
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
SHEET:	# OF #		



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LTR	DATE	DESCRIPTION	REV. BY:
N	06-JUL-2018	NO CHANGES	–
K	26-FEB-2018	NO CHANGES	–
L	16-MAR-2018	INSTRUMENT AIR UPDATED, FILTER PACK ADDED	JLAU
M	08-MAY-2018	MANIFOLD REMOVED	JLAU

TITLE: (SM2) 450: SM2 INSTRUMENT AND PROCESS AIR

PROJECT: SALTMAKER GEN III

CUSTOMER: AGNICO EAGLE MINES

REVISION: N

PREPARED BY: SN	DATE: 22-FEB-2018	DWG. NO:	SW_EN_SM_GEN III_PID_DWG_450
CHECKED BY: XXIAO	DATE: 23-FEB-2018	JOB/CO NO:	(JOB NO.)
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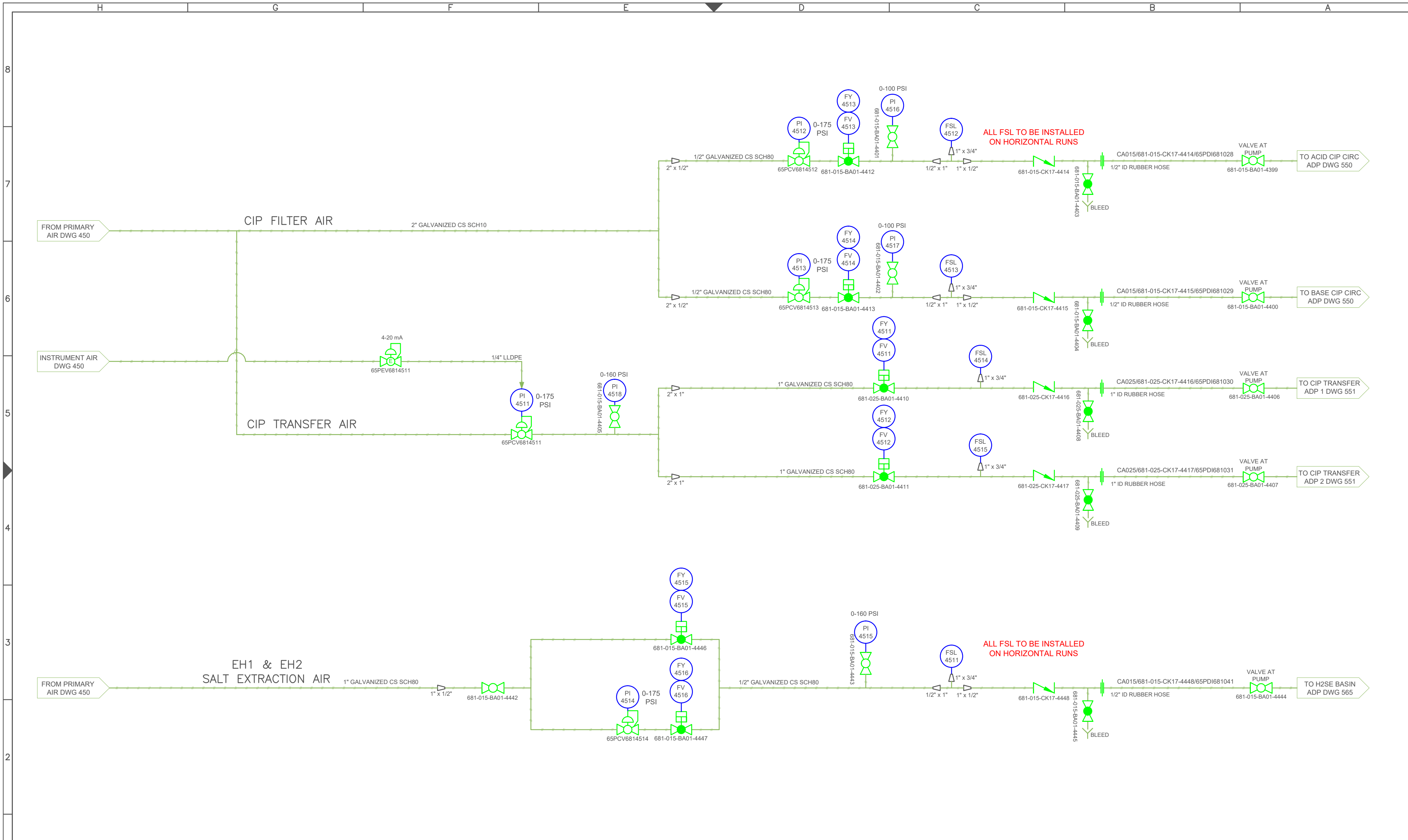

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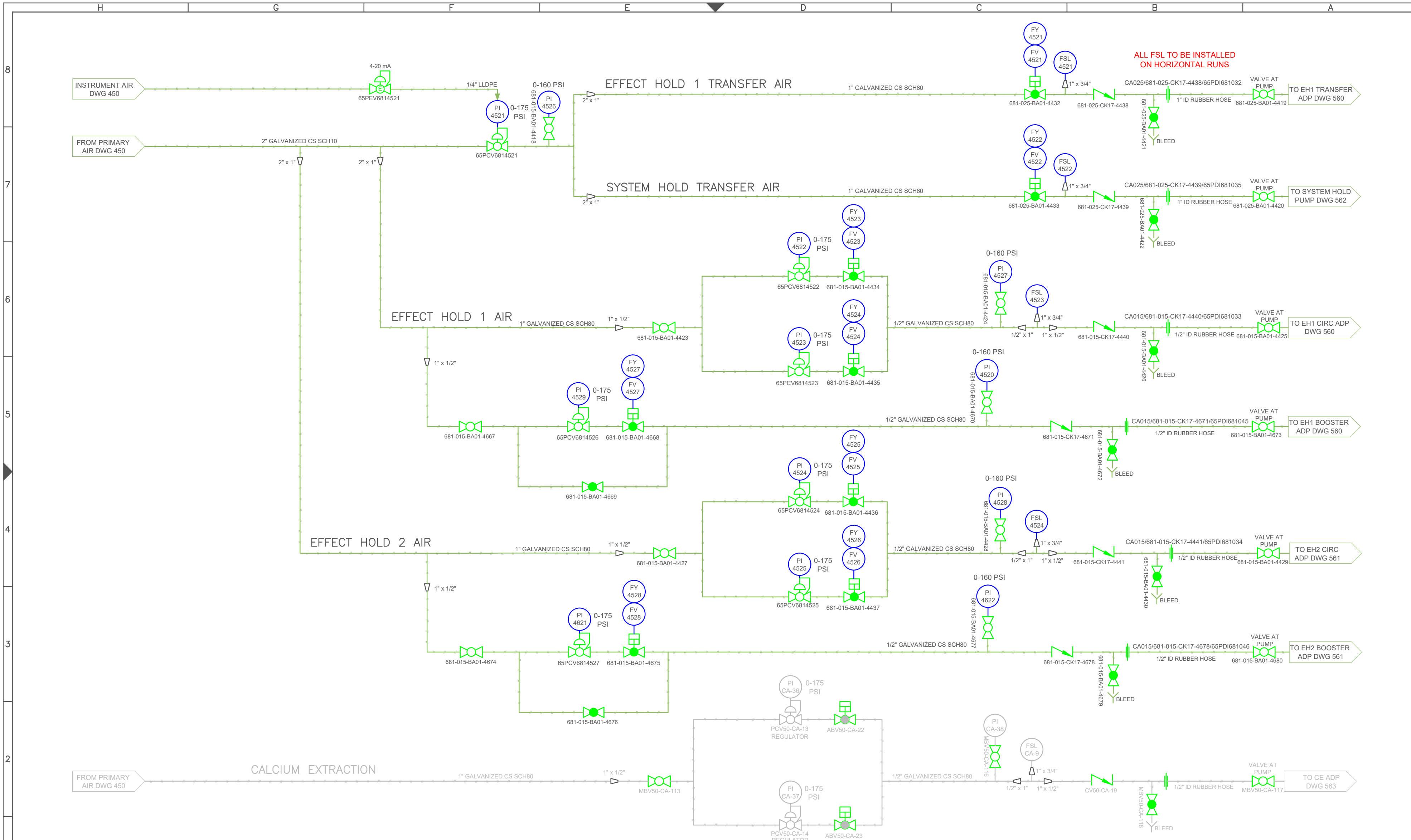
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	NO CHANGES	–
L	16–MAR–2018	ADDED AIR LINE TAG	JLAU
M	08–MAY–2018	NO CHANGES	–

TITLE: (SM2) 451: EH1/EH2 EXTRACT AND CIP AIR

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY: SN	DATE: 22–FEB–2018	DWG. NO:	SW_EN_SM_GEN III_PID_DWG_451
CHECKED BY: XXIAO	DATE: 23–FEB–2018	JOB/CO NO:	(JOB NO.)
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET:	73 OF117



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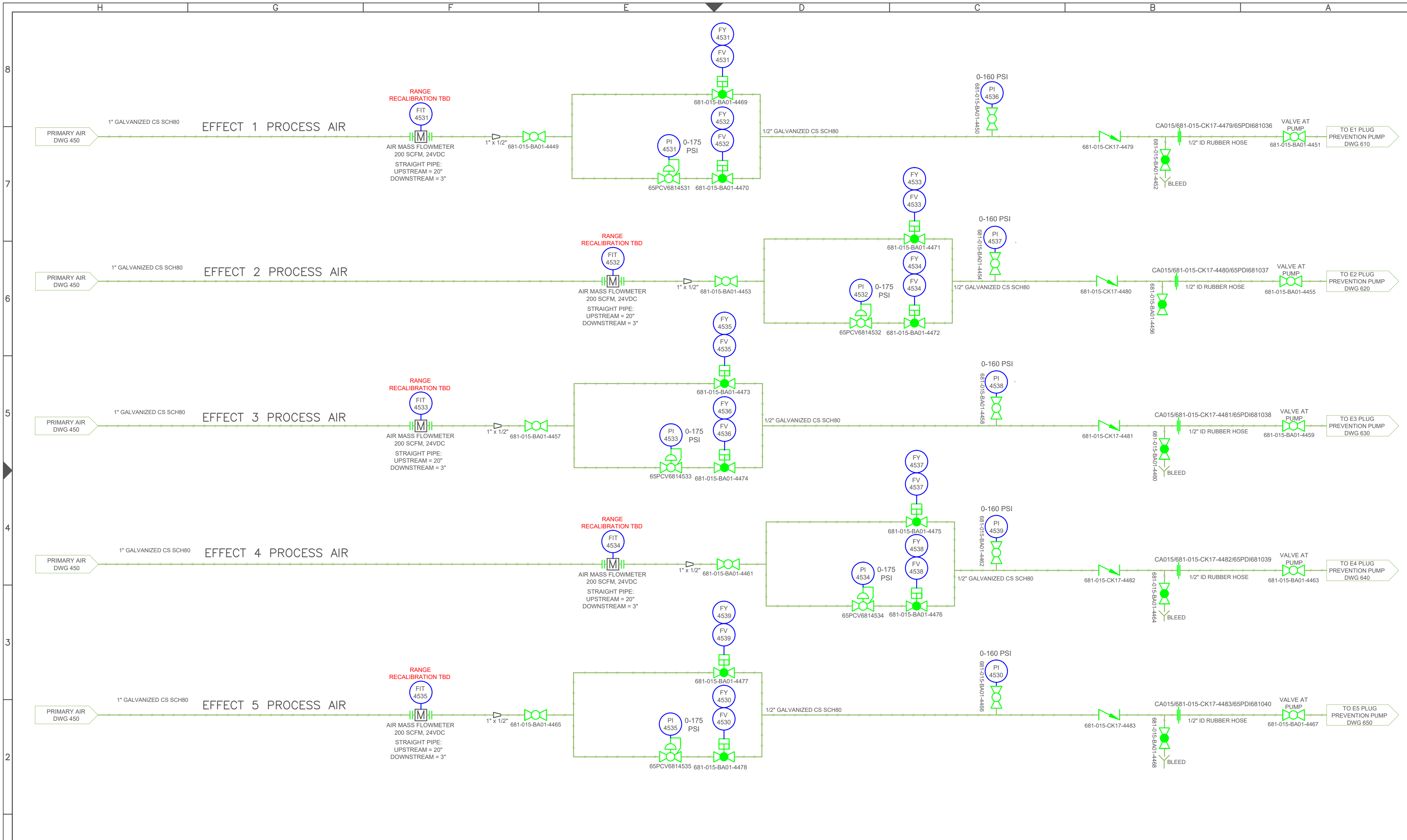
Tel: 604.628.6508 Fax: 604.676.2463		K	26–FEB–2018	INSTRUMENT TAGS	SN
www.saltworkstech.com		L	16–MAR–2018	ADDED AIR LINE TAGS	JLAU
	DO NOT SCALE DRAWING	M	08–MAY–2018	NO CHANGES	–

TITLE: (SM2) 452: EFFECT HOLD, SYSTEM HOLD, AND CALCIUM EXTRACTION AIR

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: SN	DATE: 22–FEB–2018	DWG. NO: SW_EN_SM_GEN III_PID_DWG_452	
CHECKED BY: XXIAO	DATE: 23–FEB–2018	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 74 OF117	



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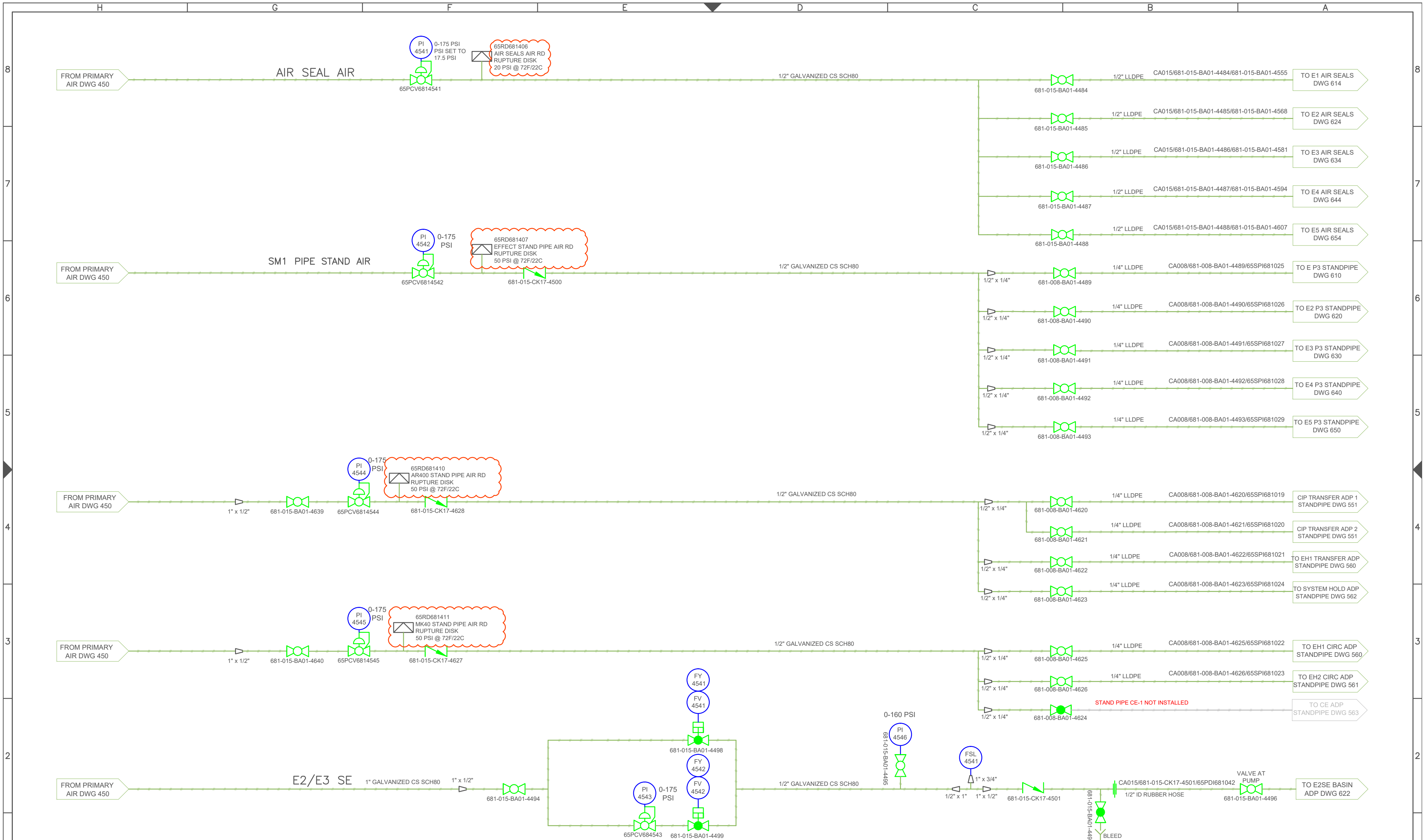
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	NO CHANGES	–
L	16–MAR–2018	ADDED AIR LINE TAGS	JLAU
M	08–MAY–2018	NO CHANGES	–

TITLE: (SM2) 453: EFFECT PUMP COMPRESSED AIR

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: SN	DATE: 22–FEB–2018	DWG. NO: SW_EN_SM_GEN III_PID_DWG_453	
CHECKED BY: XXIAO	DATE: 23–FEB–2018	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 75 OF117	



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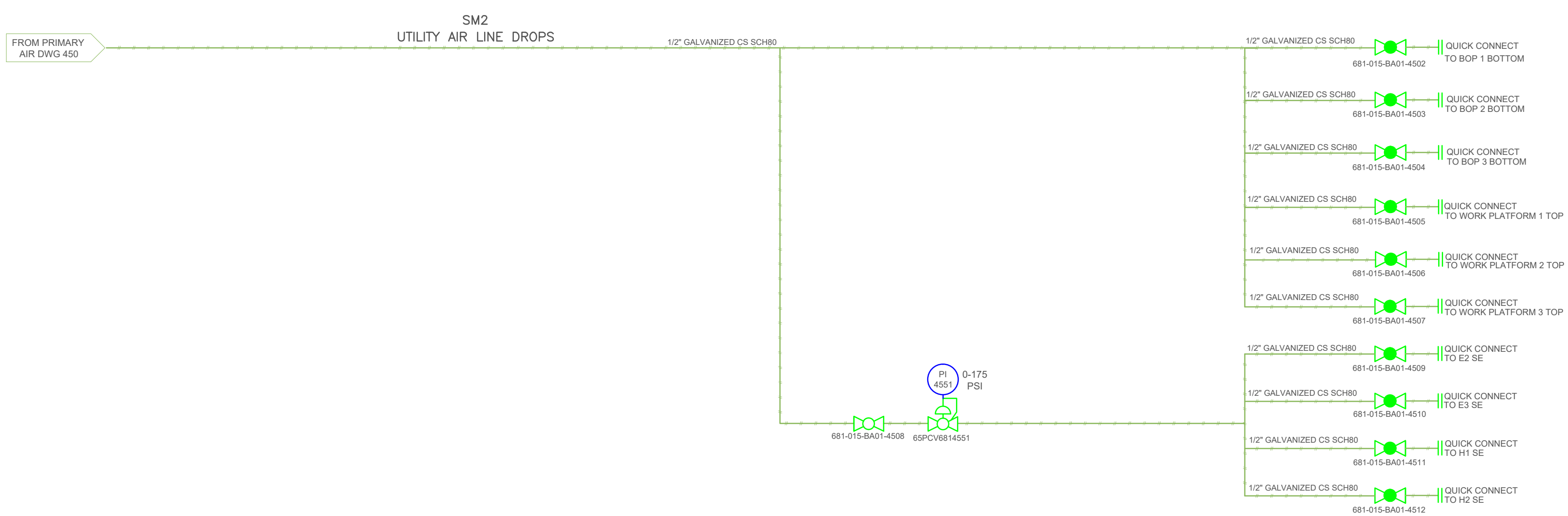
LTR	DATE	DESCRIPTION	REV. BY:
N	06-JUL-2018	RUPTURE DISK CONFIRMED	JLAU
K	26-FEB-2018	NO CHANGES	–
L	16-MAR-2018	ADDED AIR LINE TAGS, ADDED 2 ISOLATION VALVES	JLAU
M	08-MAY-2018	NO CHANGES	–

TITLE: (SM2) 454: SM2 AIR SEAL, PIPE STAND, AND E2/E3 SE AIR

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION N
PREPARED BY: SN	DATE: 22-FEB-2018	DWG. NO: SW_EN_SM_GEN III_PID_DWG_454	
CHECKED BY: XXIAO	DATE: 23-FEB-2018	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 76 OF117	



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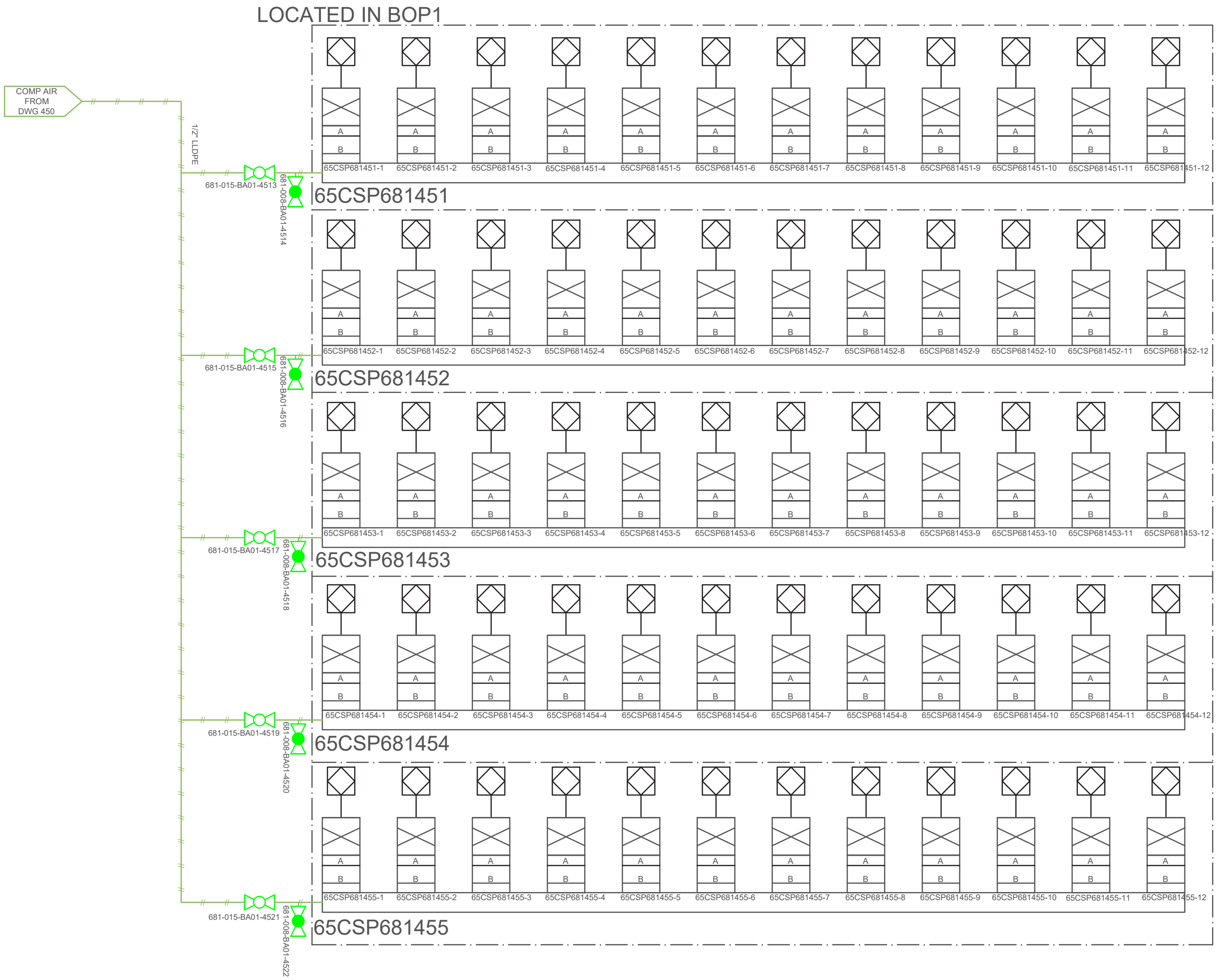
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	NO CHANGES	–
L	16–MAR–2018	NO CHANGES	–
M	08–MAY–2018	NO CHANGES	–

TITLE: (SM2) 455: SM2 UTILITY AIR

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: SN	DATE: 22–FEB–2018	DWG. NO: SW_EN_SM_GEN III_PID_DWG_455	
CHECKED BY: XXIAO	DATE: 23–FEB–2018	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 77 OF117	



65CSP681451

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681451-1	65FV6816202	65CSP681451-1/65FV6816202/A	65CSP681451-1/65FV6816202/B	E2/620	NC
65CSP681451-2	65FV6816203	65CSP681451-2/65FV6816203/A	65CSP681451-2/65FV6816203/B	E2/620	NC
65CSP681451-3	65FV6816204	65CSP681451-3/65FV6816204/A	65CSP681451-3/65FV6816204/B	E2/620	NC
65CSP681451-4	65FV6816205	65CSP681451-4/65FV6816205/A	65CSP681451-4/65FV6816205/B	E2/620	NC
65CSP681451-5	65FV6816206	65CSP681451-5/65FV6816206/A	65CSP681451-5/65FV6816206/B	E2/620	NO
65CSP681451-6	65FV6816207	65CSP681451-6/65FV6816207/A	65CSP681451-6/65FV6816207/B	E2/620	NC
65CSP681451-7	65FV6816208	65CSP681451-7/65FV6816208/A	65CSP681451-7/65FV6816208/B	E2/620	NC
65CSP681451-8	65FV6816201	65CSP681451-8/65FV6816201/A	65CSP681451-8/65FV6816201/B	E2/620	NC
65CSP681451-9	65FV6816217	65CSP681451-9/65FV6816217/A	65CSP681451-9/65FV6816217/B	E2/620	NC
65CSP681451-10	65FV6816218	65CSP681451-10/65FV6816218/A	65CSP681451-10/65FV6816218/B	E2/620	NC
65CSP681451-11	65FV6816200	65CSP681451-11/65FV6816200/A	65CSP681451-11/65FV6816200/B	E2-ACD/620	NC
65CSP681451-12	65FV6816209	65CSP681451-12/65FV6816209/A	65CSP681451-12/65FV6816209/B	E2-BSE/620	NC

65CSP681452

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681452-1	65FV6816216	65CSP681452-1/65FV6816216/A	65CSP681452-1/65FV6816216/B	E2/623	NC
65CSP681452-2	65FV6816212	65CSP681452-2/65FV6816212/A	65CSP681452-2/65FV6816212/B	E2/620	NC
65CSP681452-3	65FV6816213	65CSP681452-3/65FV6816213/A	65CSP681452-3/65FV6816213/B	E2/620	NC
65CSP681452-4	65FV6816219	65CSP681452-4/65FV6816219/A	65CSP681452-4/65FV6816219/B	E2/620	NC
65CSP681452-5	65FV6814533	65CSP681452-5/65FV6814533/A	65CSP681452-5/65FV6814533/B	CA-E2/453	NC
65CSP681452-6	65FV6814534	65CSP681452-6/65FV6814534/A	65CSP681452-6/65FV6814534/B	CA-E2/453	NC
65CSP681452-7	65FV6816302	65CSP681452-7/65FV6816302/A	65CSP681452-7/65FV6816302/B	E3/630	NC
65CSP681452-8	65FV6816303	65CSP681452-8/65FV6816303/A	65CSP681452-8/65FV6816303/B	E3/630	NC
65CSP681452-9	65FV6816304	65CSP681452-9/65FV6816304/A	65CSP681452-9/65FV6816304/B	E3/630	NC
65CSP681452-10	65FV6816305	65CSP681452-10/65FV6816305/A	65CSP681452-10/65FV6816305/B	E3/630	NC
65CSP681452-11	65FV6816306	65CSP681452-11/65FV6816306/A	65CSP681452-11/65FV6816306/B	E3/630	NO
65CSP681452-12	65FV6816307	65CSP681452-12/65FV6816307/A	65CSP681452-12/65FV6816307/B	E3/630	NC

65CSP681453

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681453-1	65FV6816308	65CSP681453-1/65FV6816308/A	65CSP681453-1/65FV6816308/B	E3/630	NC
65CSP681453-2	65FV6816301	65CSP681453-2/65FV6816301/A	65CSP681453-2/65FV6816301/B	E3/630	NC
65CSP681453-3	65FV6816317	65CSP681453-3/65FV6816317/A	65CSP681453-3/65FV6816317/B	E3/630	NC
65CSP681453-4	65FV6816318	65CSP681453-4/65FV6816318/A	65CSP681453-4/65FV6816318/B	E3/630	NC
65CSP681453-5	65FV6816300	65CSP681453-5/65FV6816300/A	65CSP681453-5/65FV6816300/B	E3-ACD/630	NC
65CSP681453-6	65FV6816309	65CSP681453-6/65FV6816309/A	65CSP681453-6/65FV6816309/B	E3-BSE/630	NC
65CSP681453-7	65FV6816316	65CSP681453-7/65FV6816316/A	65CSP681453-7/65FV6816316/B	E3/633	NC
65CSP681453-8	65FV6816312	65CSP681453-8/65FV6816312/A	65CSP681453-8/65FV6816312/B	E3/630	NC
65CSP681453-9	65FV6816313	65CSP681453-9/65FV6816313/A	65CSP681453-9/65FV6816313/B	E3/630	NC
65CSP681453-10	65FV6816319	65CSP681453-10/65FV6816319/A	65CSP681453-10/65FV6816319/B	E3/630	NC
65CSP681453-11	65FV6814535	65CSP681453-11/65FV6814535/A	65CSP681453-11/65FV6814535/B	CA-E3/453	NC
65CSP681453-12	65FV6814536	65CSP681453-12/65FV6814536/A	65CSP681453-12/65FV6814536/B	CA-E3/453	NC

65CSP681454

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681454-1	65FV6815301	65CSP681454-1/65FV6815301/A	65CSP681454-1/65FV6815301/B	FD/530	NC
65CSP681454-2	65FV6815302	65CSP681454-2/65FV6815302/A	65CSP681454-2/65FV6815302/B	FD/530	NC
65CSP681454-3	65FV6815303	65CSP681454-3/65FV6815303/A	65CSP681454-3/65FV6815303/B	FD/530	NC
65CSP681454-4	65FV6815304	65CSP681454-4/65FV6815304/A	65CSP681454-4/65FV6815304/B	FD/530	NC
65CSP681454-5	65FV6815305	65CSP681454-5/65FV6815305/A	65CSP681454-5/65FV6815305/B	FD/530	NC
65CSP681454-6	65FV6815306	65CSP681454-6/65FV6815306/A	65CSP681454-6/65FV6815306/B	FD/530	NC
65CSP681454-7	65FV6815307	65CSP681454-7/65FV6815307/A	65CSP681454-7/65FV6815307/B	FD/530	NC
65CSP681454-8	65FV6815308	65CSP681454-8/65FV6815308/A	65CSP681454-8/65FV6815308/B	FD/530	NC
65CSP681454-9	65FV6815309	65CSP681454-9/65FV6815309/A	65CSP681454-9/65FV6815309/B	FD/530	NC
65CSP681454-10	65FV6815310	65CSP681454-10/65FV6815310/A	65CSP681454-10/65FV6815310/B	FD/530	NC
65CSP681454-11	65FV6815311	65CSP681454-11/65FV6815311/A	65CSP681454-11/65FV6815311/B	FD/530	NC
65CSP681454-12	SPARE				

65CSP681455

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681455-1	65FV6810627	65CSP681455-1/65FV6810627/A	65CSP681455-1/65FV6810627/B	BIO/062	NC
65CSP681455-2	65FV6810628	65CSP681455-2/65FV6810628/A	65CSP681455-2/65FV6810628/B	BIO/062	NC
65CSP681455-3	65FV6810629	65CSP681455-3/65FV6810629/A	65CSP681455-3/65FV6810629/B	BIO/062	NC
65CSP681455-4	65FV6810620	65CSP681455-4/65FV6810620/A	65CSP681455-4/65FV6810620/B	BIO/062	NC
65CSP681455-5	65FV6810691	65CSP681455-5/65FV6810691/A	65CSP681455-5/65FV6810691/B	BIO/062	NC
65CSP681455-6		TBD - VALVE MAY NOT EXIST			
65CSP681455-7	65FV6810636	65CSP681455-7/65FV6810636/A	65CSP681455-7/65FV6810636/B	ATF/063	NC
65CSP681455-8	65FV6810637	65CSP681455-8/65FV6810637/A	65CSP681455-8/65FV6810637/B	ATF/063	NC
65CSP681455-9	65FV6810638	65CSP681455-9/65FV6810638/A	65CSP681455-9/65FV6810638/B	ATF/063	NC
65CSP681455-10	65FV6810639	65CSP681455-10/65FV6810639/A	65CSP681455-10/65FV6810639/B	ATF/063	NC
65CSP681455-11	65FV6810630	65CSP681455-11/65FV6810630/A	65CSP681455-11/65FV6810630/B	ATF/063	NC
65CSP681455-12		TBD - VALVE MAY NOT EXIST			

1. ALL ABV SUPPLIED IN NC CONFIGURATION
2. CONTROL LINE A ALWAYS START FROM SOLENOID A PORT
3. CONTROL LINE B ALWAYS START FROM SOLENOID B PORT
4. FOR NC ABV
   a. CONTROL LINE A TERMINATES AT ABV LEFT PORT
   b. CONTROL LINE B TERMINATES AT ABV RIGHT PORT
5. FOR NO ABV
   a. CONTROL LINE A TERMINATES AT ABV RIGHT PORT
   b. CONTROL LINE B TERMINATES AT ABV LEFT PORT

NOTE: ORIENTATION OF AIR PANEL AND AIRLINE FEEDING PANEL PENDING MECHANICAL LAYOUT. ALL SOLENOID VALVE POSITION 1 STARTS IMMEDIATELY ADJACENT TO D-SUB CONNECTOR

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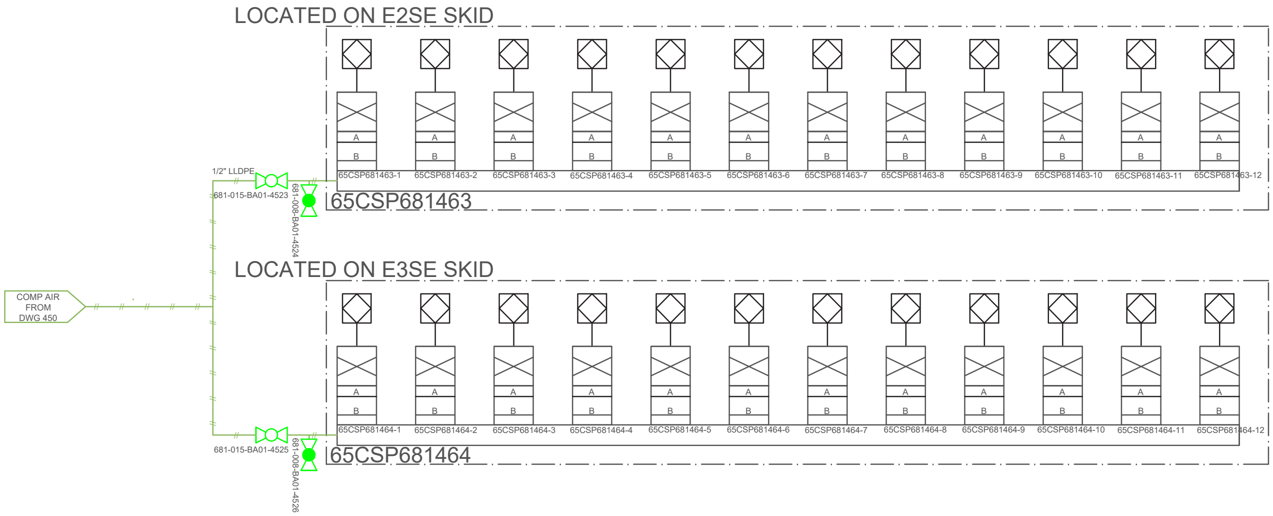
LTR	DATE	DESCRIPTION	REV. BY:
N	06-JUL-2018	NO CHANGES	–
K	26-FEB-2018	UPDATED SOLENOID BANK	SN
L	16-MAR-2018	UPDATED SOLENOID TABLE	JLAU
M	08-MAY-2018	NO CHANGES	–

TITLE:	(SM2) 456: BOP1 AIR SOLENOID BANK		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	SN	DATE:	22-FEB-2018
CHECKED BY:	XXIAO	DATE:	23-FEB-2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_GEN III_PID_DWG_456		
JOB/CO NO:	(JOB NO.)		
SHEET:	78 OF117		



65CSP681463

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681463-1	65FV6816221	65CSP681463-1/65FV6816221/A	65CSP681463-1/65FV6816221/B	E2SE/622	NC
65CSP681463-2	65FV6816222	65CSP681463-2/65FV6816222/A	65CSP681463-2/65FV6816222/B	E2SE/622	NC
65CSP681463-3	65FV6816223	65CSP681463-3/65FV6816223/A	65CSP681463-3/65FV6816223/B	E2SE/622	NC
65CSP681463-4	65FV6816224	65CSP681463-4/65FV6816224/A	65CSP681463-4/65FV6816224/B	E2SE/622	NC
65CSP681463-5	65FV6816225	65CSP681463-5/65FV6816225/A	65CSP681463-5/65FV6816225/B	E2SE/622	NC
65CSP681463-6	65FV6816226	65CSP681463-6/65FV6816226/A	65CSP681463-6/65FV6816226/B	E2SE/622	NO
65CSP681463-7	SPARE				
65CSP681463-8	SPARE				
65CSP681463-9	SPARE				
65CSP681463-10	SPARE				
65CSP681463-11	SPARE				
65CSP681463-12	SPARE				

65CSP681464

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681464-1	65FV6816321	65CSP681464-1/65FV6816321/A	65CSP681464-1/65FV6816321/B	E3SE/632	NC
65CSP681464-2	65FV6816322	65CSP681464-2/65FV6816322/A	65CSP681464-2/65FV6816322/B	E3SE/632	NC
65CSP681464-3	65FV6816323	65CSP681464-3/65FV6816323/A	65CSP681464-3/65FV6816323/B	E3SE/632	NC
65CSP681464-4	65FV6816324	65CSP681464-4/65FV6816324/A	65CSP681464-4/65FV6816324/B	E3SE/632	NC
65CSP681464-5	65FV6816325	65CSP681464-5/65FV6816325/A	65CSP681464-5/65FV6816325/B	E3SE/632	NC
65CSP681464-6	65FV6816326	65CSP681464-6/65FV6816326/A	65CSP681464-6/65FV6816326/B	E3SE/632	NO
65CSP681464-7	65FV6816227	65CSP681463-9/65FV6816227/A	65CSP681463-9/65FV6816227/B	E2SE/622	NO
65CSP681464-8	65FV6816228	65CSP681463-10/65FV6816228/A	65CSP681463-10/65FV6816228/B	E2SE/622	NC
65CSP681464-9	65FV6814541	65CSP681463-7/65FV6814541/A	65CSP681463-7/65FV6814541/B	CA-E2SE/454	NC
65CSP681464-10	65FV6814542	65CSP681463-8/65FV6814542/A	65CSP681463-8/65FV6814542/B	CA-E2SE/454	NC
65CSP681464-11	SPARE				
65CSP681464-12	SPARE				

1. ALL ABV SUPPLIED IN NC CONFIGURATION
2. CONTROL LINE A ALWAYS START FROM SOLENOID A PORT
3. CONTROL LINE B ALWAYS START FROM SOLENOID B PORT
4. FOR NC ABV
   a. CONTROL LINE A TERMINATES AT ABV LEFT PORT
   b. CONTROL LINE B TERMINATES AT ABV RIGHT PORT
5. FOR NO ABV
   a. CONTROL LINE A TERMINATES AT ABV RIGHT PORT
   b. CONTROL LINE B TERMINATES AT ABV LEFT PORT

NOTE: ORIENTATION OF AIR PANEL AND AIRLINE FEEDING PANEL PENDING MECHANICAL LAYOUT. ALL SOLENOID VALVE POSITION 1 STARTS IMMEDIATELY ADJACENT TO D-SUB CONNECTOR

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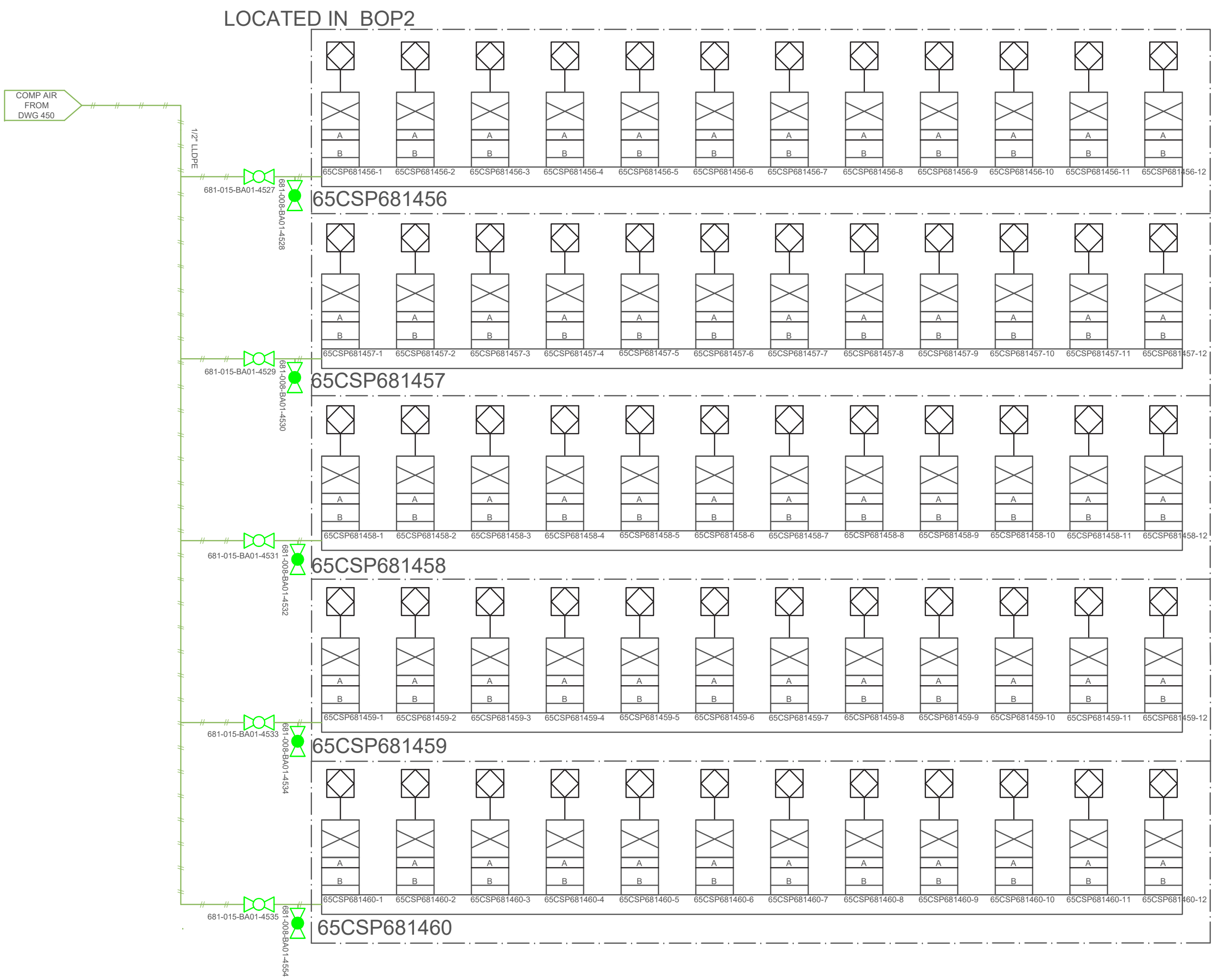
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	UPDATED SOLENOID BANK	SN
L	16–MAR–2018	UPDATED SOLENOID TABLE	JLAU
M	08–MAY–2018	NO CHANGES	–

TITLE: (SM2) 457: E2/E3 SE AIR SOLENOID BANK

PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	SN	DATE:	22–FEB–2018
CHECKED BY:	XXIAO	DATE:	23–FEB–2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_GEN III_PID_DWG_457	JOB/CO NO:	(JOB NO.)
SHEET:	79 OF117		



65CSP681456

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681456-1	65FV6815201	65CSP681456-1/65FV6815201/A	65CSP681456-1/65FV6815201/B	CW/520	NO
65CSP681456-2	65FV6815202	65CSP681456-2/65FV6815202/A	65CSP681456-2/65FV6815202/B	CW/520	NO
65CSP681456-3	65FV6815203	65CSP681456-3/65FV6815203/A	65CSP681456-3/65FV6815203/B	CW/520	NC
65CSP681456-4	65FV6815204	65CSP681456-4/65FV6815204/A	65CSP681456-4/65FV6815204/B	CW/520	NC
65CSP681456-5	65FV6815208	65CSP681456-5/65FV6815208/A	65CSP681456-5/65FV6815208/B	CW-ACD/520	NC
65CSP681456-6	65FV6815200	65CSP681456-6/65FV6815200/A	65CSP681456-6/65FV6815200/B	CW-UW/520	NC
65CSP681456-7	65FV6814501	65CSP681456-7/65FV6814501/A	65CSP681456-7/65FV6814501/B	CA/450	NC
65CSP681456-8		TBD - VALVE MAY NOT EXIST			
65CSP681456-9		TBD - VALVE MAY NOT EXIST			
65CSP681456-10	SPARE				
65CSP681456-11	SPARE				
65CSP681456-12	SPARE				

65CSP681457

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681457-1	65FV6816101	65CSP681457-1/65FV6816101/A	65CSP681457-1/65FV6816101/B	E1/610	NC
65CSP681457-2	65FV6816103	65CSP681457-2/65FV6816103/A	65CSP681457-2/65FV6816103/B	E1/610	NC
65CSP681457-3	65FV6816104	65CSP681457-3/65FV6816104/A	65CSP681457-3/65FV6816104/B	E1/610	NC
65CSP681457-4	65FV6816105	65CSP681457-4/65FV6816105/A	65CSP681457-4/65FV6816105/B	E1/610	NC
65CSP681457-5	65FV6816106	65CSP681457-5/65FV6816106/A	65CSP681457-5/65FV6816106/B	E1/610	NO
65CSP681457-6	65FV6816107	65CSP681457-6/65FV6816107/A	65CSP681457-6/65FV6816107/B	E1/610	NC
65CSP681457-7	65FV6816108	65CSP681457-7/65FV6816108/A	65CSP681457-7/65FV6816108/B	E1/610	NC
65CSP681457-8	65FV6816109	65CSP681457-8/65FV6816109/A	65CSP681457-8/65FV6816109/B	E1/610	NC
65CSP681457-9	65FV6816110	65CSP681457-9/65FV6816110/A	65CSP681457-9/65FV6816110/B	E1/610	NC
65CSP681457-10	65FV6816111	65CSP681457-10/65FV6816111/A	65CSP681457-10/65FV6816111/B	E1/610	NO
65CSP681457-11	65FV6816112	65CSP681457-11/65FV6816112/A	65CSP681457-11/65FV6816112/B	E1/610	NC
65CSP681457-12	65FV6816113	65CSP681457-12/65FV6816113/A	65CSP681457-12/65FV6816113/B	E1/610	NC

65CSP681458

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681458-1	65FV6816114	65CSP681458-1/65FV6816114/A	65CSP681458-1/65FV6816114/B	E1/610	NC
65CSP681458-2	65FV6816115	65CSP681458-2/65FV6816115/A	65CSP681458-2/65FV6816115/B	E1/610	NC
65CSP681458-3	65FV6816118	65CSP681458-3/65FV6816118/A	65CSP681458-3/65FV6816118/B	E1-ACD/610	NC
65CSP681458-4	65FV6816119	65CSP681458-4/65FV6816119/A	65CSP681458-4/65FV6816119/B	E1-BSE/610	NC
65CSP681458-5	65FV6814531	65CSP681458-5/65FV6814531/A	65CSP681458-5/65FV6814531/B	CA-E1/453	NC
65CSP681458-6	65FV6814532	65CSP681458-6/65FV6814532/A	65CSP681458-6/65FV6814532/B	CA-E1/453	NC
65CSP681458-7	65FV6816402	65CSP681458-7/65FV6816402/A	65CSP681458-7/65FV6816402/B	E4/640	NC
65CSP681458-8	65FV6816403	65CSP681458-8/65FV6816403/A	65CSP681458-8/65FV6816403/B	E4/640	NC
65CSP681458-9	65FV6816404	65CSP681458-9/65FV6816404/A	65CSP681458-9/65FV6816404/B	E4/640	NC
65CSP681458-10	65FV6816405	65CSP681458-10/65FV6816405/A	65CSP681458-10/65FV6816405/B	E4/640	NC
65CSP681458-11	65FV6816406	65CSP681458-11/65FV6816406/A	65CSP681458-11/65FV6816406/B	E4/640	NO
65CSP681458-12	65FV6816407	65CSP681458-12/65FV6816407/A	65CSP681458-12/65FV6816407/B	E4/640	NC

65CSP681459

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681459-1	65FV6816408	65CSP681459-1/65FV6816408/A	65CSP681459-1/65FV6816408/B	E4/640	NC
65CSP681459-2	65FV6816411	65CSP681459-2/65FV6816411/A	65CSP681459-2/65FV6816411/B	E4/640	NO
65CSP681459-3	65FV6816412	65CSP681459-3/65FV6816412/A	65CSP681459-3/65FV6816412/B	E4/640	NC
65CSP681459-4	65FV6816413	65CSP681459-4/65FV6816413/A	65CSP681459-4/65FV6816413/B	E4/640	NC
65CSP681459-5	65FV6816414	65CSP681459-5/65FV6816414/A	65CSP681459-5/65FV6816414/B	E4/640	NC
65CSP681459-6	65FV6816401	65CSP681459-6/65FV6816401/A	65CSP681459-6/65FV6816401/B	E4/640	NC
65CSP681459-7	65FV6816400	65CSP681459-7/65FV6816400/A	65CSP681459-7/65FV6816400/B	E4-ACD	NC
65CSP681459-8	65FV6816409	65CSP681459-8/65FV6816409/A	65CSP681459-8/65FV6816409/B	E4-BSE	NC
65CSP681459-9	65FV6814537	65CSP681459-9/65FV6814537/A	65CSP681459-9/65FV6814537/B	CA-E4/453	NC
65CSP681459-10	65FV6814538	65CSP681459-10/65FV6814538/A	65CSP681459-10/65FV6814538/B	CA-E4/453	NC
65CSP681459-11	65FV6816116	65CSP681459-11/65FV6816116/A	65CSP681459-11/65FV6816116/B	E1/613	NC
65CSP681459-12	65FV6816416	65CSP681459-12/65FV6816416/A	65CSP681459-12/65FV6816416/B	E4/643	NC

65CSP681460

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681460-1	65FV6813115	65CSP681460-1/65FV6813115/A	65CSP681460-1/65FV6813115/B	TSW/311	NO
65CSP681460-2	65FV6813116	65CSP681460-2/65FV6813116/A	65CSP681460-2/65FV6813116/B	TSW/311	NC
65CSP681460-3	65FV6813117	65CSP681460-3/65FV6813117/A	65CSP681460-3/65FV6813117/B	TSW/311	NO
65CSP681460-4	65FV6813118	65CSP681460-4/65FV6813118/A	65CSP681460-4/65FV6813118/B	TSW/311	NC
65CSP681460-5	65FV6816500	65CSP681460-5/65FV6816500/A	65CSP681460-5/65FV6816500/B	E5-ACD/550	NC
65CSP681460-6	65FV6816509	65CSP681460-6/65FV6816509/A	65CSP681460-6/65FV6816509/B	E5-BSE/550	NC
65CSP681460-7	65FV6815516	65CSP681460-7/65FV6815516/A	65CSP681460-7/65FV6815516/B	CIP-ACD/550	NC
65CSP681460-8	65FV6815517	65CSP681460-8/65FV6815517/A	65CSP681460-8/65FV6815517/B	CIP-BSE/550	NC
65CSP681460-9	65FV6816230/65FV6816231	65CSP681460-9/65FV6816230/65FV6816231/A	65CSP681460-9/65FV6816230/65FV6816231/B	E2/620	NC/NO
65CSP681460-10	65FV6816330/65FV6816331	65CSP681460-10/65FV6816330/65FV6816331/A	65CSP681460-10/65FV6816330/65FV6816331/B	E3/630	NC/NO
65CSP681460-11	SPARE				
65CSP681460-12	SPARE				

1. ALL ABV SUPPLIED IN NC CONFIGURATION
2. CONTROL LINE A ALWAYS START FROM SOLENOID A PORT
3. CONTROL LINE B ALWAYS START FROM SOLENOID B PORT
4. FOR NC ABV
   a. CONTROL LINE A TERMINATES AT ABV LEFT PORT
   b. CONTROL LINE B TERMINATES AT ABV RIGHT PORT
5. FOR NO ABV
   a. CONTROL LINE A TERMINATES AT ABV RIGHT PORT
   b. CONTROL LINE B TERMINATES AT ABV LEFT PORT

NOTE: ORIENTATION OF AIR PANEL AND AIRLINE FEEDING PANEL PENDING MECHANICAL LAYOUT. ALL SOLENOID VALVE POSITION 1 STARTS IMMEDIATELY ADJACENT TO D-SUB CONNECTOR

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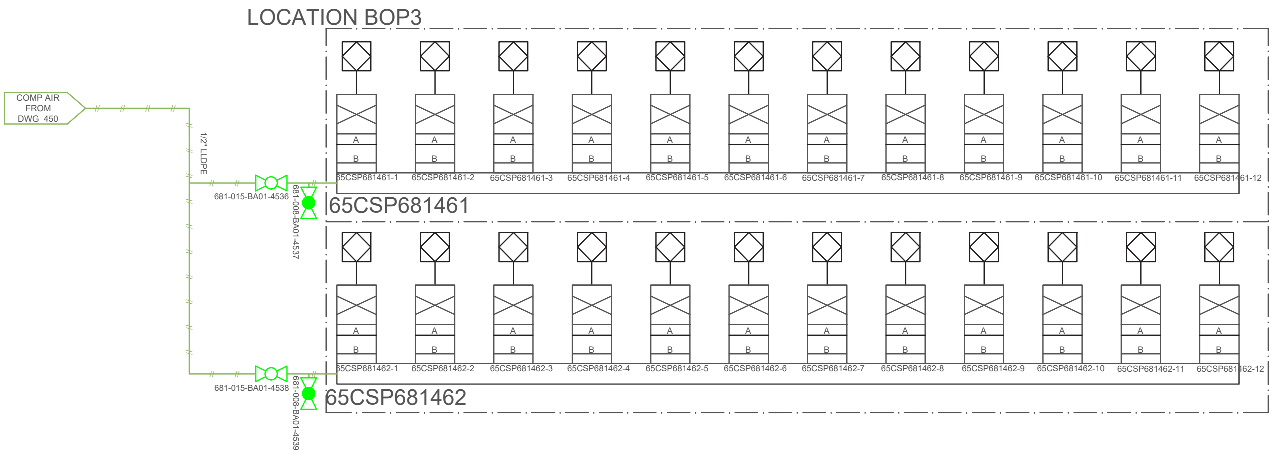
LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	UPDATED SOLENOID BANK	SN
L	16–MAR–2018	UPDATED SOLENOID TABLE	JLAU
M	08–MAY–2018	UPDATED SOLENOID TABLE	JLAU

TITLE:	(SM2) 458: BOP2 AIR SOLENOID BANK		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	SN	DATE:	22–FEB–2018
CHECKED BY:	XXIAO	DATE:	23–FEB–2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_GEN III_PID_DWG_458		
JOB/CO NO:	(JOB NO.)		
SHEET:	80 OF117		



65CSP681461

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681461-1	65FV6816502	65CSP681461-1/65FV6816502/A	65CSP681461-1/65FV6816502/B	E5/650	NC
65CSP681461-2	65FV6816503	65CSP681461-2/65FV6816503/A	65CSP681461-2/65FV6816503/B	E5/650	NC
65CSP681461-3	65FV6816504	65CSP681461-3/65FV6816504/A	65CSP681461-3/65FV6816504/B	E5/650	NC
65CSP681461-4	65FV6816505	65CSP681461-4/65FV6816505/A	65CSP681461-4/65FV6816505/B	E5/650	NC
65CSP681461-5	65FV6816506	65CSP681461-5/65FV6816506/A	65CSP681461-5/65FV6816506/B	E5/650	NO
65CSP681461-6	65FV6816507	65CSP681461-6/65FV6816507/A	65CSP681461-6/65FV6816507/B	E5/650	NC
65CSP681461-7	65FV6816508	65CSP681461-7/65FV6816508/A	65CSP681461-7/65FV6816508/B	E5/650	NC
65CSP681461-8	65FV6816501	65CSP681461-8/65FV6816501/A	65CSP681461-8/65FV6816501/B	E5/650	NC
65CSP681461-9	SPARE				
65CSP681461-10	SPARE				
65CSP681461-11	65FV6816511	65CSP681461-11/65FV6816511/A	65CSP681461-11/65FV6816511/B	E5/650	NO
65CSP681461-12	65FV6816512	65CSP681461-12/65FV6816512/A	65CSP681461-12/65FV6816512/B	E5/650	NC

65CSP681462

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681462-1	65FV6816513	65CSP681462-1/65FV6816513/A	65CSP681462-1/65FV6816513/B	E5/650	NC
65CSP681462-2	65FV6816514	65CSP681462-2/65FV6816514/A	65CSP681462-2/65FV6816514/B	E5/650	NC
65CSP681462-3	65FV6814539	65CSP681462-3/65FV6814539/A	65CSP681462-3/65FV6814539/B	CA-E5/453	NC
65CSP681462-4	65FV6814530	65CSP681462-4/65FV6814530/A	65CSP681462-4/65FV6814530/B	CA-E5/453	NC
65CSP681462-5	65FV6816516	65CSP681462-5/65FV6816516/A	65CSP681462-5/65FV6816516/B	E5/653	NC
65CSP681462-6		TBD - VALVE MAY NOT EXIST			
65CSP681462-7	SPARE				
65CSP681462-8	SPARE				
65CSP681462-9	SPARE				
65CSP681462-10	SPARE				
65CSP681462-11	SPARE				
65CSP681462-12	SPARE				

1. ALL ABV SUPPLIED IN NC CONFIGURATION
2. CONTROL LINE A ALWAYS START FROM SOLENOID A PORT
3. CONTROL LINE B ALWAYS START FROM SOLENOID B PORT
4. FOR NC ABV
   a. CONTROL LINE A TERMINATES AT ABV LEFT PORT
   b. CONTROL LINE B TERMINATES AT ABV RIGHT PORT
5. FOR NO ABV
   a. CONTROL LINE A TERMINATES AT ABV RIGHT PORT
   b. CONTROL LINE B TERMINATES AT ABV LEFT PORT

NOTE: ORIENTATION OF AIR PANEL AND AIRLINE FEEDING PANEL PENDING MECHANICAL LAYOUT. ALL SOLENOID VALVE POSITION 1 STARTS IMMEDIATELY ADJACENT TO D-SUB CONNECTOR

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LTR	DATE	DESCRIPTION	REV. BY:
N	06–JUL–2018	NO CHANGES	–
K	26–FEB–2018	UPDATED SOLENOID BANK	SN
L	16–MAR–2018	UPDATED SOLENOID TABLE	JLAU
M	08–MAY–2018	NO CHANGES	–

TITLE: (SM2) 459: BOP3 AIR BANK

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: SN	DATE: 22–FEB–2018	DWG. NO: SW_EN_SM_GEN III_PID_DWG_459	
CHECKED BY: XXIAO	DATE: 23–FEB–2018	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 81 OF117	

LOCATED NEAR CIP & EH/SH TANKS

RESERVE PHYSICAL AND ELECTRICAL SPACE FOR 1 ADDITIONAL BANK

65CSP681465

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681465-1	65FV6815505	65CSP681465-1/65FV6815505/A	65CSP681465-1/65FV6815505/B	CIP/550	NC
65CSP681465-2	65FV6815511	65CSP681465-2/65FV6815511/A	65CSP681465-2/65FV6815511/B	CIP/550	NC
65CSP681465-3	65FV6815501	65CSP681465-3/65FV6815501/A	65CSP681465-3/65FV6815501/B	CIP/550	NC
65CSP681465-4	65FV6815502	65CSP681465-4/65FV6815502/A	65CSP681465-4/65FV6815502/B	CIP/550	NC
65CSP681465-5	SPARE				
65CSP681465-6	65FV6815504	65CSP681465-6/65FV6815504/A	65CSP681465-6/65FV6815504/B	CIP/550	NO
65CSP681465-7	65FV6815506	65CSP681465-7/65FV6815506/A	65CSP681465-7/65FV6815506/B	CIP/550	NC
65CSP681465-8	65FV6815507	65CSP681465-8/65FV6815507/A	65CSP681465-8/65FV6815507/B	CIP/550	NC
65CSP681465-9	SPARE				
65CSP681465-10	65FV6815508	65CSP681465-9/65FV6815508/A	65CSP681465-9/65FV6815508/B	CIP/550	NC
65CSP681465-11	65FV6815510	65CSP681465-11/65FV6815510/A	65CSP681465-11/65FV6815510/B	CIP/550	NO
65CSP681465-12	65FV6815512	65CSP681465-12/65FV6815512/A	65CSP681465-12/65FV6815512/B	CIP/550	NC

65CSP681466

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681466-1	SPARE				
65CSP681466-2	SPARE				
65CSP681466-3	65FV6815518	65CSP681466-3/65FV6815524/A	65CSP681466-3/65FV6815524/B	CIP-UW/550	NC
65CSP681466-4	65FV6815519	65CSP681466-4/65FV6815519/A	65CSP681466-4/65FV6815519/B	CIP-UW/550	NC
65CSP681466-5	65FV6815523	65CSP681466-5/65FV6815523/A	65CSP681466-5/65FV6815523/B	CIP/551	NC
65CSP681466-6	65FV6815525	65CSP681466-6/65FV6815525/A	65CSP681466-6/65FV6815525/B	CIP/551	NC
65CSP681466-7	65FV6815524	65CSP681466-7/65FV6815524/A	65CSP681466-7/65FV6815524/B	CIP/551	NC
65CSP681466-8	65FV6815526	65CSP681466-8/65FV6815526/A	65CSP681466-8/65FV6815526/B	CIP/551	NC
65CSP681466-9	65FV6814511	65CSP681466-9/65FV6814511/A	65CSP681466-9/65FV6814511/B	CA-CIP/451	NC
65CSP681466-10	65FV6814512	65CSP681466-10/65FV6814512/A	65CSP681466-10/65FV6814512/B	CA-CIP/451	NC
65CSP681466-11	65FV6814513	65CSP681466-11/65FV6814513/A	65CSP681466-11/65FV6814513/B	CA-CIP/451	NC
65CSP681466-12	65FV6814514	65CSP681466-12/65FV6814514/A	65CSP681466-12/65FV6814514/B	CA-CIP/451	NC

65CSP681467

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681467-1	65FV6815601	65CSP681467-1/65FV6815601/A	65CSP681467-1/65FV6815601/B	H1/560	NC
65CSP681467-2	65FV6815604	65CSP681467-2/65FV6815604/A	65CSP681467-2/65FV6815604/B	H1/560	NC
65CSP681467-3	65FV6815600	65CSP681467-3/65FV6815600/A	65CSP681467-3/65FV6815600/B	H1/560	NC
65CSP681467-4	SPARE				
65CSP681467-5	65FV6815605	65CSP681467-5/65FV6815613/A	65CSP681467-5/65FV6815613/B	H1/560	NC
65CSP681467-6	65FV6814521	65CSP681467-6/65FV6814521/A	65CSP681467-6/65FV6814521/B	CA-H1/452	NC
65CSP681467-7	65FV6814523	65CSP681467-7/65FV6814523/A	65CSP681467-7/65FV6814523/B	CA-H1/452	NC
65CSP681467-8	65FV6814524	65CSP681467-8/65FV6814524/A	65CSP681467-8/65FV6814524/B	CA-H1/452	NC
65CSP681467-9	65FV6815610	65CSP681467-9/65FV6815610/A	65CSP681467-9/65FV6815610/B	H2/561	NC
65CSP681467-10	65FV6815611	65CSP681467-10/65FV6815611/A	65CSP681467-10/65FV6815611/B	H2/561	NC
65CSP681467-11	65FV6815614	65CSP681467-11/65FV6815614/A	65CSP681467-11/65FV6815614/B	H2/561	NC
65CSP681467-12	65FV6814525	65CSP681467-12/65FV6814525/A	65CSP681467-12/65FV6814525/B	CA-H2/452	NC

65CSP681468

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681468-1	65FV6814526	65CSP681468-1/65FV6814526/A	65CSP681468-1/65FV6814526/B	CA-H2/452	NC
65CSP681468-2	65FV6815621	65CSP681468-2/65FV6815621/A	65CSP681468-2/65FV6815621/B	SY/562	NC
65CSP681468-3	65FV6815625	65CSP681468-3/65FV6815625/A	65CSP681468-3/65FV6815625/B	SY/562	NC
65CSP681468-4	65FV6815627	65CSP681468-4/65FV6815627/A	65CSP681468-4/65FV6815627/B	SY/562	NC
65CSP681468-5	65FV6815628	65CSP681468-5/65FV6815628/A	65CSP681468-5/65FV6815628/B	SY/562	NC
65CSP681468-6	65FV6815629	65CSP681468-6/65FV6815629/A	65CSP681468-6/65FV6815629/B	SY/562	NC
65CSP681468-7	65FV6814522	65CSP681468-7/65FV6814522/A	65CSP681468-7/65FV6814522/B	CA-SY/452	NC
65CSP681468-8	SPARE				
65CSP681468-9	SPARE				
65CSP681468-10	SPARE				
65CSP681468-11	SPARE				
65CSP681468-12	SPARE				

1. ALL ABV SUPPLIED IN NC CONFIGURATION
2. CONTROL LINE A ALWAYS START FROM SOLENOID A PORT
3. CONTROL LINE B ALWAYS START FROM SOLENOID B PORT
4. FOR NC ABV
   a. CONTROL LINE A TERMINATES AT ABV LEFT PORT
   b. CONTROL LINE B TERMINATES AT ABV RIGHT PORT
5. FOR NO ABV
   a. CONTROL LINE A TERMINATES AT ABV RIGHT PORT
   b. CONTROL LINE B TERMINATES AT ABV LEFT PORT

NOTE: ORIENTATION OF AIR PANEL AND AIRLINE FEEDING PANEL PENDING MECHANICAL LAYOUT. ALL SOLENOID VALVE POSITION 1 STARTS IMMEDIATELY ADJACENT TO D-SUB CONNECTOR

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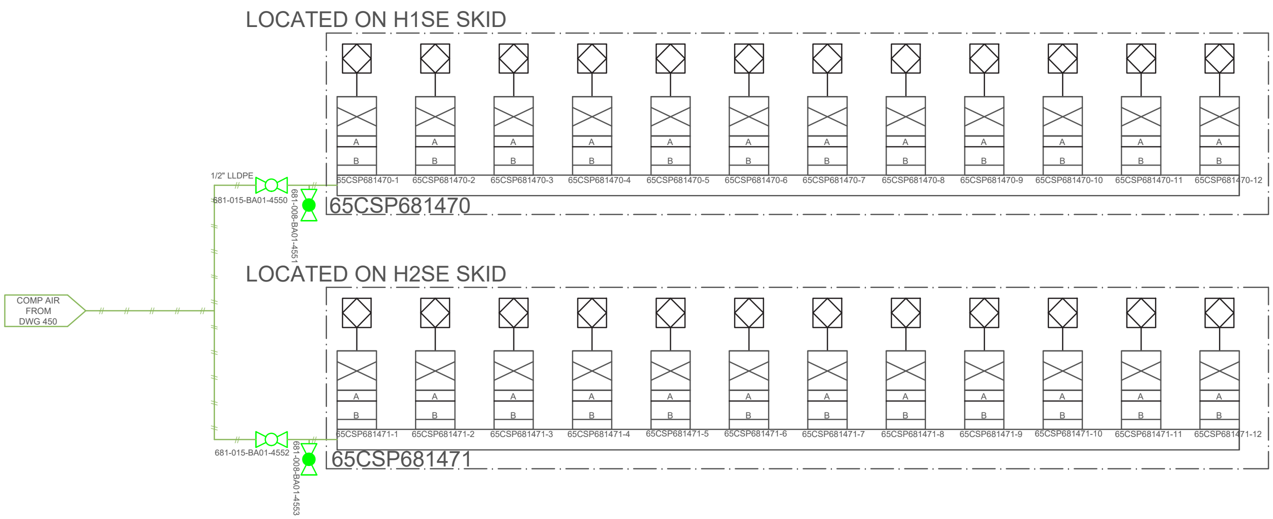
LTR	DATE	DESCRIPTION	REV. BY:
N	06-JUL-2018	NO CHANGES	–
K	26-FEB-2018	UPDATED SOLENOID BANK	SN
L	16-MAR-2018	UPDATED SOLENOID TABLE	JLAU
M	08-MAY-2018	NO CHANGES	–

TITLE:	(SM2) 460: CIP & EH/SH AIR BANK		
PROJECT:	SALTMAKER GEN III	CUSTOMER:	AGNICO EAGLE MINES
REVISION	N		
PREPARED BY:	SN	DATE:	22-FEB-2018
CHECKED BY:	XXIAO	DATE:	23-FEB-2018
APPROVED BY:	APPROVED BY	DATE:	APPROVED DATE
DWG. NO:	SW_EN_SM_GEN III_PID_DWG_460		
JOB/CO NO:	(JOB NO.)		
SHEET:	82 OF117		



65CSP681470

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681470-1	65FV6815641	65CSP681470-1/65FV6815641/A	65CSP681470-1/65FV6815641/B	H1SE/564	NC
65CSP681470-2	65FV6815642	65CSP681470-2/65FV6815642/A	65CSP681470-2/65FV6815642/B	H1SE/564	NC
65CSP681470-3	65FV6815643	65CSP681470-3/65FV6815643/A	65CSP681470-3/65FV6815643/B	H1SE/564	NC
65CSP681470-4	65FV6815644	65CSP681470-4/65FV6815644/A	65CSP681470-4/65FV6815644/B	H1SE/564	NC
65CSP681470-5	65FV6815645	65CSP681470-5/65FV6815645/A	65CSP681470-5/65FV6815645/B	H1SE/564	NC
65CSP681470-6	65FV6815646	65CSP681470-6/65FV6815646/A	65CSP681470-6/65FV6815646/B	H1SE/564	NO
65CSP681470-7	65FV6815647	65CSP681470-7/65FV6815647/A	65CSP681470-7/65FV6815647/B	H1SE/564	NC
65CSP681470-8	65FV6815659	65CSP681471-10/65FV6815659/A	65CSP681471-10/65FV6815659/B	H2SE/565	NO
65CSP681470-9	65FV6815650	65CSP681471-11/65FV6815650/A	65CSP681471-11/65FV6815650/B	H2SE/565	NC
65CSP681470-10	RESERVED				
65CSP681470-11	65FV6814515	65CSP681470-11/65FV6814515/A	65CSP681470-11/65FV6814515/B	CA-H2SE/451	NC
65CSP681470-12	65FV6814516	65CSP681470-12/65FV6814516/A	65CSP681470-12/65FV6814516/B	CA-H2SE/451	NC

65CSP681471

SOLENOID	ABV	CONTROL LINE A	CONTROL LINE B	SYSTEM/DWG	NO/NC
65CSP681471-1	65FV6815651	65CSP681471-1/65FV6815651/A	65CSP681471-1/65FV6815651/B	H2SE/565	NC
65CSP681471-2	65FV6815652	65CSP681471-2/65FV6815652/A	65CSP681471-2/65FV6815652/B	H2SE/565	NC
65CSP681471-3	65FV6815653	65CSP681471-3/65FV6815653/A	65CSP681471-3/65FV6815653/B	H2SE/565	NC
65CSP681471-4	65FV6815654	65CSP681471-4/65FV6815654/A	65CSP681471-4/65FV6815654/B	H2SE/565	NC
65CSP681471-5	65FV6815655	65CSP681471-5/65FV6815655/A	65CSP681471-5/65FV6815655/B	H2SE/565	NC
65CSP681471-6	RESERVED				
65CSP681471-7	65FV6815656	65CSP681471-7/65FV6815656/A	65CSP681471-7/65FV6815656/B	H2SE/565	NO
65CSP681471-8	65FV6815657	65CSP681471-8/65FV6815657/A	65CSP681471-8/65FV6815657/B	H2SE/565	NC
65CSP681471-9	65FV6815658	65CSP681471-9/65FV6815658/A	65CSP681471-9/65FV6815658/B	H2SE/565	NC
65CSP681471-10	RESERVED				
65CSP681471-11	RESERVED				
65CSP681471-12	SPARE				

1. ALL ABV SUPPLIED IN NC CONFIGURATION
2. CONTROL LINE A ALWAYS START FROM SOLENOID A PORT
3. CONTROL LINE B ALWAYS START FROM SOLENOID B PORT
4. FOR NC ABV
   a. CONTROL LINE A TERMINATES AT ABV LEFT PORT
   b. CONTROL LINE B TERMINATES AT ABV RIGHT PORT
5. FOR NO ABV
   a. CONTROL LINE A TERMINATES AT ABV RIGHT PORT
   b. CONTROL LINE B TERMINATES AT ABV LEFT PORT

NOTE: ORIENTATION OF AIR PANEL AND AIRLINE FEEDING PANEL PENDING MECHANICAL LAYOUT. ALL SOLENOID VALVE POSITION 1 STARTS IMMEDIATELY ADJACENT TO D-SUB CONNECTOR

Saltworks
13800 Steveston Hwy
Richmond, BC, Canada, V6W 1A8
Tel: 604.628.6508 Fax: 604.676.2463
www.saltworkstech.com

DRAWING STATUS: FACTORY AS BUILT

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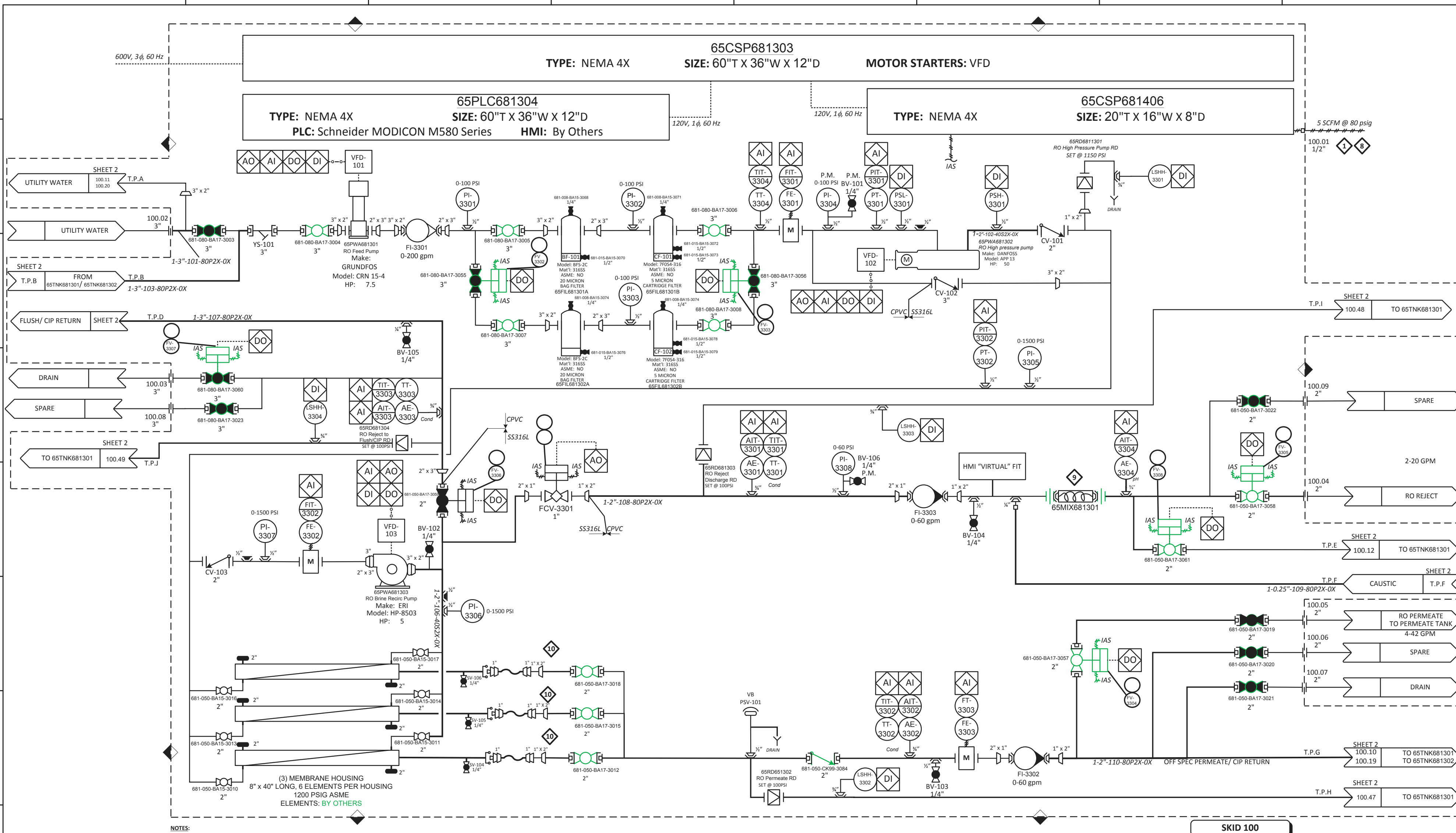
DO NOT SCALE DRAWING

LTR	DATE	DESCRIPTION	REV. BY:
N	06-JUL-2018	NO CHANGES	–
K	26-FEB-2018	UPDATED SOLENOID BANK	SN
L	16-MAR-2018	NO CHANGES	–
M	08-MAY-2018	NO CHANGES	–

TITLE: (SM2) 461: H1/H2 SE AIR BANK

PROJECT: SALTMAKER GEN III		CUSTOMER: AGNICO EAGLE MINES	REVISION: N
PREPARED BY: SN	DATE: 22-FEB-2018	DWG. NO: SW_EN_SM_GEN III_PID_DWG_461	
CHECKED BY: XXIAO	DATE: 23-FEB-2018	JOB/CO NO: (JOB NO.)	
APPROVED BY: APPROVED BY	DATE: APPROVED DATE	SHEET: 83 OF117	



USWS SCOPE | CUSTOMER SCOPE

NOTES:

1) OIL-FREE AIR BY OTHERS.
2) INTERCONNECTING PIPING BY OTHERS.
3) MEMBRANES ELEMENTS BY OTHERS.
4) TANK SHIPPED LOOSE. INSTALL BY OTHERS.
5) COLORED ITEMS WILL BE SUPPLIED BY SALTWORKS.
6) T.P.*X* (TIE POINT) DENOTES PAGE CONNECTOR. NO PHYSICAL CONNECTION POINT ON SKID.
7) P.M. DENOTES PANEL MOUNTED DEVICE.
8) H-8 AIR REGULATOR. REGULATOR TO BE EQUIPPED WITH DIGITAL PRESSURE INDICATOR AND SWITCH SIGNAL TO PLC
9) STATIC MIXER WITH HAVE 20 PIPE DIAMETERS BEFORE, AND 9 AFTER AS PER GA LAYOUT
10) ALL PERMEATE LINES TO BE CPVC AFTER FLEXIBLE HOSE

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REV	DESCRIPTION	DATE	DRWN	CHK'D	APP'D
0	INITIAL RELEASE	10/30/17	KAE	KAE	ARS
1	Engineer Comments	11/20/17	KAE	KAE	ARS
2	Engineer Comments/ Design Update	12/6/17	KAE	KAE	ARS
3	See Page 2	1/23/18	KAE	KAE	ARS

U.S. WATER
The future of water

SYSTEM NAME: SYSTEM 100: POST TREATMENT RO

CUSTOMER: SALTWORKS TECHNOLOGIES, INC.

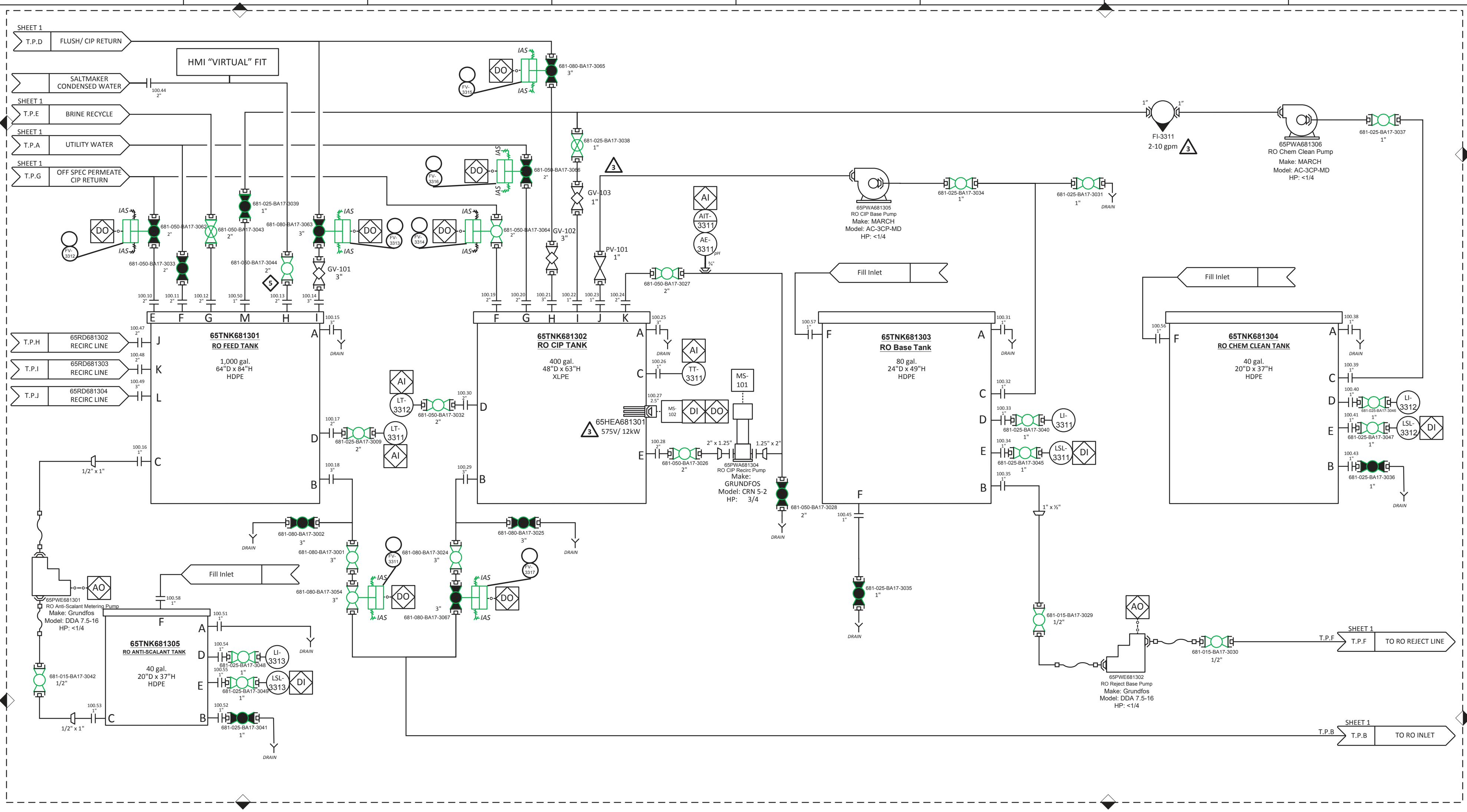
REV: 3

NAV NUMBER: 49-0462

DATE: 10/30/2017

PAGE: 1 OF 2

PROJECT NUMBER/ SHEET: 17041_100D



USWS SCOPE | CUSTOMER SCOPE

NOTES:
1) TANKS SIHIP LOOSE, AND ARE INSTALLED BY OTHERS.
2) COLORED ITEMS ARE SUPPLIED BY SALTWORKS.
3) T.P.*X* (TIE POINT) DENOTES PAGE CONNECTOR. NO PHYSICAL CONNECTION POINT ON SKID.
4) 7) P.M. DENOTES PANEL MOUNTED DEVICE.
5) ITEM(S) SHIPPED LOOSE & INSTALLED BY OTHERS.

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REV	DESCRIPTION	DATE	DRWN	CHK'D	APP'D
0	INITIAL RELEASE	10/30/17	KAE	KAE	ARS
1	Engineer Comments	11/20/17	KAE	KAE	ARS
2	Engineer Comments/ Design Update	12/6/17	KAE	KAE	ARS
3	Updated Tag, and Electrical on CIP Heater	1/23/18	KAE	KAE	ARS

U.S. WATER
The future of water

SYSTEM NAME: SYSTEM 100: POST TREATMENT RO		
CUSTOMER: SALTWORKS TECHNOLOGIES, INC.	REV: 3	NAV NUMBER: 49-0462
DATE: 10/30/2017	PAGE: 2 OF 2	PROJECT NUMBER/ SHEET: 17041_100D

Appendix B: Pumps selection

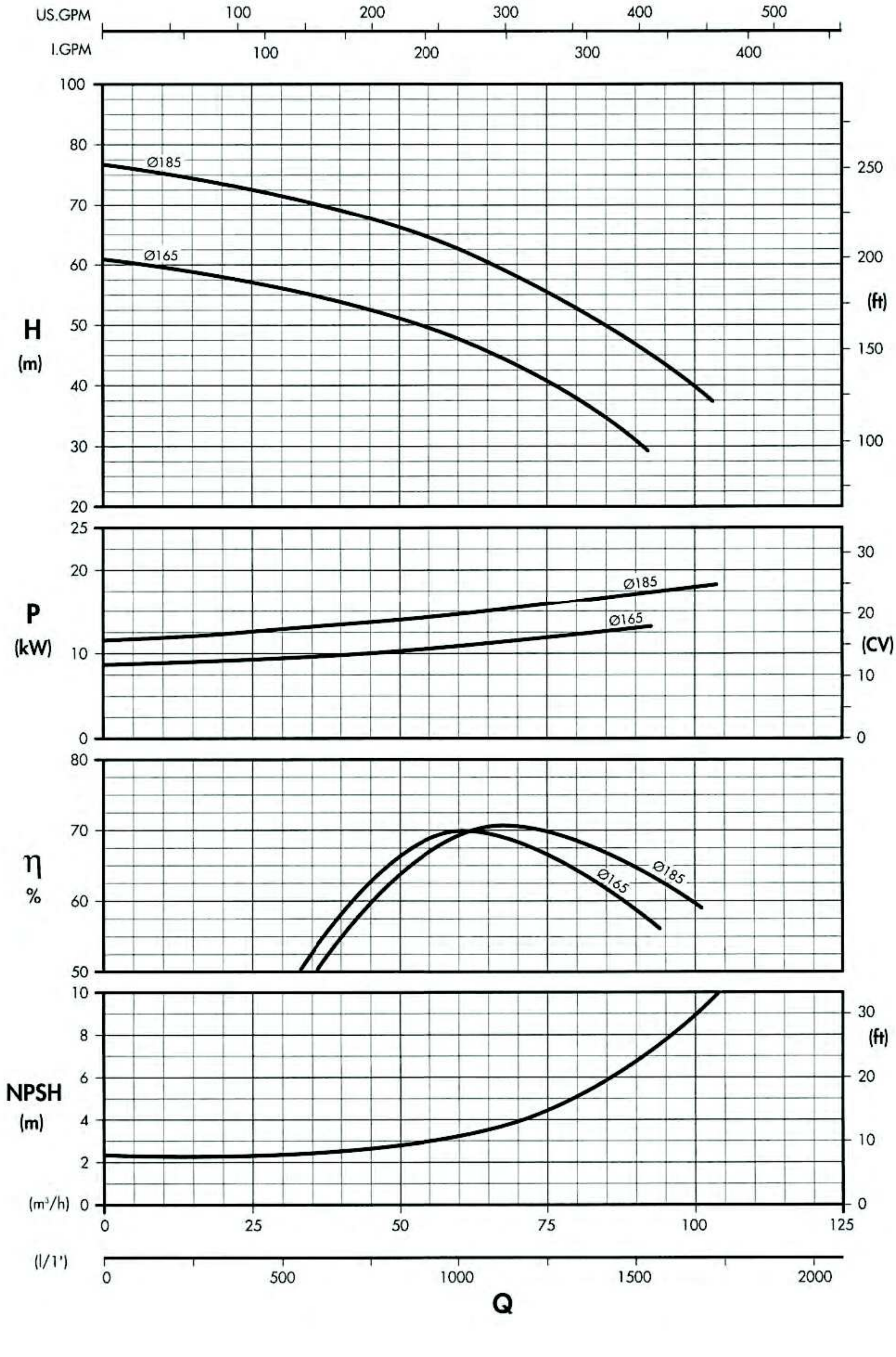
3.1.1.4.2 – Technojet MH50-80/5 150HP 3600RPM

TECHNOJET

MH 50-80

Characteristic curves at 3500 r.p.m. - *Characteristic curve for each stage with liquid at specific weight 1*
Courbes caractéristiques à 3500 tours/min. - Courbe caractéristique pour chaque étape avec liquide de poid spécifique 1

Multistage pumps
Pompes multicellulaires



TECO Westinghouse
MOTORS (CANADA) INC.

	Date: July 10, 2017

Technical Documentation

PDH15025
Optim TEFC | AEHH8N

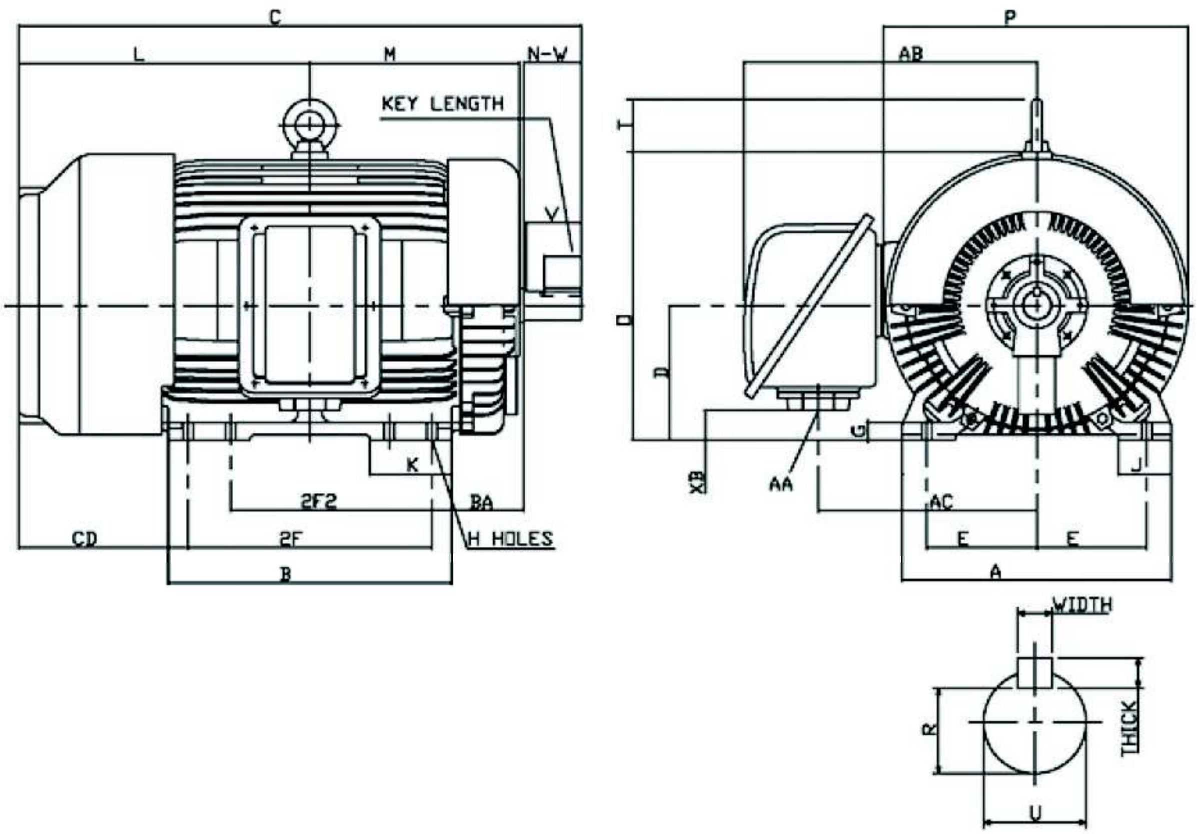
Date: July 10, 2017

TECO Westinghouse MOTORS (CANADA) INC.

Date: July 10, 2017

Dimensional Drawing

Catalogue	Model	HP	Pole	kW	Rating	Voltage	Hz	RPM
PDH15025	AEHH8N	150	2	112	Continuous	575 V	60	3600



Frame Size	Mounting					A	B	C	CD	D
	E	2F	2F2	H	BA					
445TS	9	16.5	14.5	0.81	7.5	22.05	19.5	42.65	13.9	11

G	J	K	L	M	O	P	T	Key			Keyseat
								Width	Thick	Length	R
1.4	4.35	5.1	22.15	15.4	23.55	24.75	4.35	0.625	0.625	3.03	2.021

Terminal Housing				Aux Box		C/D Flange					
AA	AB	AC	XB	AE	AX	BB	AH	AK	BD	AJ	BF
3 NPT	24	17.9	2.4								

Shaft Extension			Bearings		Approx. Weight Lbs	SPL dBA/3ft	Ins. Class	S.F.	Drive Method	Dimensions
N-W	U	V	DE	NDE						
4.75	2.375	4.5	6314C3	6314C3	1696	83	F	1.15	Direct Coupling	Inches

TECO Westinghouse
MOTORS (CANADA) INC.

Date: July 10, 2017

Technical Data Sheet

Motor Type: AEHH8N	Catalogue No: PDH15025

Nameplate Information

HP	Pole	RPM	Frame	Voltage	Hz	Phase
150	2	3570	445TS	575	60	3
Enclosure	Ins. Class	Service Factor	Time Rating	NEMA Design	Rated Amb.	Rated Altitude
TEFC	F	1.15	Continuous	B	-40 to 40 °C	<3300 ft

Typical Performance

Efficiency (%)				Power Factor (%)		
Full Load		3/4 Load	1/2 Load	Full Load	3/4 Load	1/2 Load
Nom.	Min.					
95.0	94.1	94.5	93.6	87.0	84.5	81.0

Torque				Current (A)		
Full Load (lb-ft)	Locked Rotor (% FLT)	Pull Up (% FLT)	Break Down (% FLT)	No Load	Full Load	Locked Rotor
220.00	110	88	220	33.6	136.0	868

NEMA KVA Code	Inertia (WR^2)			Safe Stall Time (s)		Noise Level Sound Press. dB(A)
	Rotor ($lb\text{-}ft^2$)	NEMA Load ($lb\text{-}ft^2$)	Max. Allowable ($lb\text{-}ft^2$)	Cold	Hot	
0	20.000	133.0	133.0	28	19	83

VFD Duty Information

Speed Range			VFD		S.F.
Constant Torque	Variable Torque	Constant Power	Carrier	Type	
12-60Hz	3-60Hz	60-60Hz	≤ 5 kHz	VPWM or CPWM	1.0 Only

Additional Information

Bearings		Approx. Weight
DE	NDE	lbs
6314C3	6314C3	1696

Hazardous Locations Information

CSA Certified	
Class I, Div 2, Groups B, C & D Class I, Zone 2, Groups IIB+H2, IIB & IIA	
Temp Code (Sinewave / VFD)	T3C / T3

TECO Westinghouse
MOTORS (CANADA) INC.

Date: July 10, 2017

Nameplate Drawing

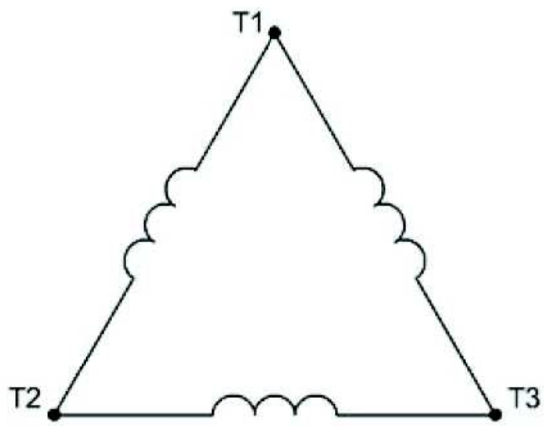
Optim TEFC

TYPE	AEHH8N	CAT. NO.	PDH15025		
OUTPUT	150 HP 112 kW	FRAME	445TS	TEFC	
R.P.M.	3570	POLE	2	INS.	F
VOLTS	575	PHASE	3	Hz	60
AMPS	136.0	CODE	0	S.F.	1.15
AMBIENT	40 °C	NOM. EFF. 95.0		MIN. EFF. 94.1	
BEARINGS	6314C3 / 6314C3			RATING Cont.	

SER. NO.	TBD	DESIGN	B	WT. 1696 LBS

PWM VFD DUTY	VT	CT	CP	S.F.
	3-60Hz	12-60Hz	60-60Hz	1.0 Only

Connection Diagram



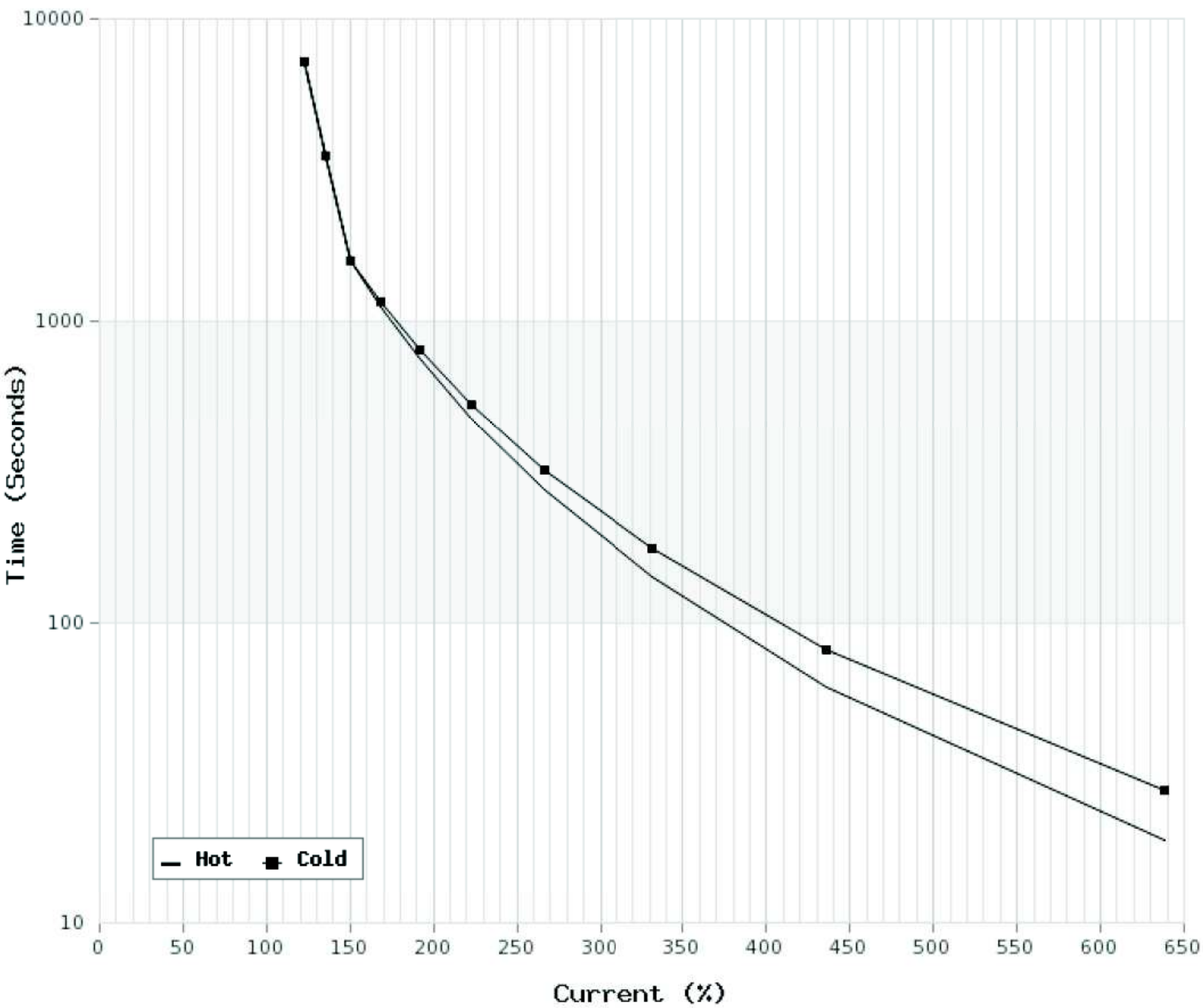
3 LEAD SINGLE VOLTAGE DELTA					
VOLTAGE	CONN.	L1	L2	L3	
-	DELTA	1	2	3	

WD_3D

TECO Westinghouse MOTORS (CANADA) INC.	
	Date: July 10, 2017

Thermal Limit Curves

Motor Type: AEHH8N		Catalogue No: PDH15025		Family: Optim TEFC	
HP	150	Safe Stall Time		Full Load A	0.0 / 136.0 A
Voltage	0 / 575V 60Hz	Hot	19 s	Locked Rotor A	638 %
RPM	3600	Cold	28 s	Locked Rotor A	0.0 / 868 A



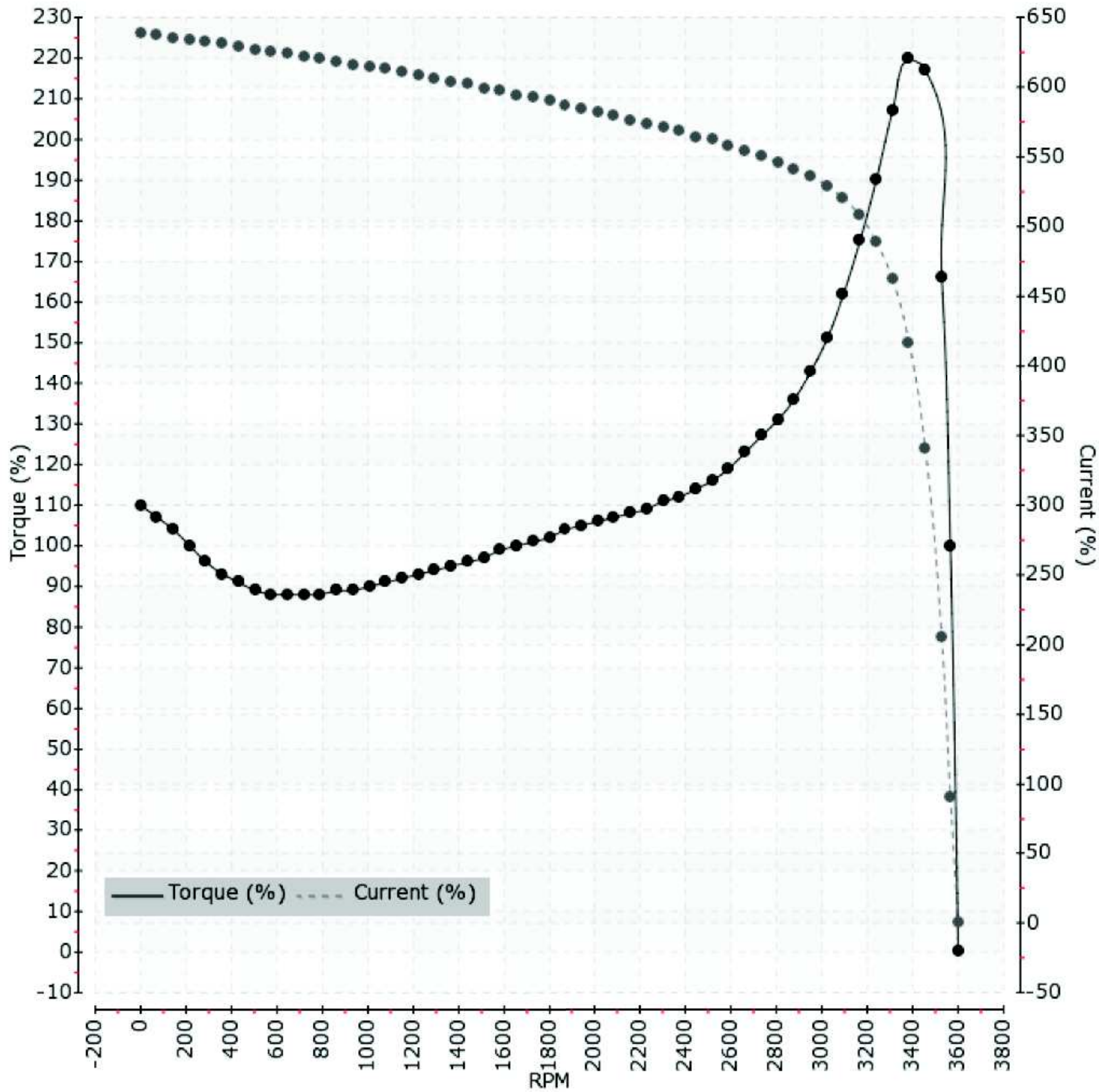
TECO Westinghouse MOTORS (CANADA) INC.

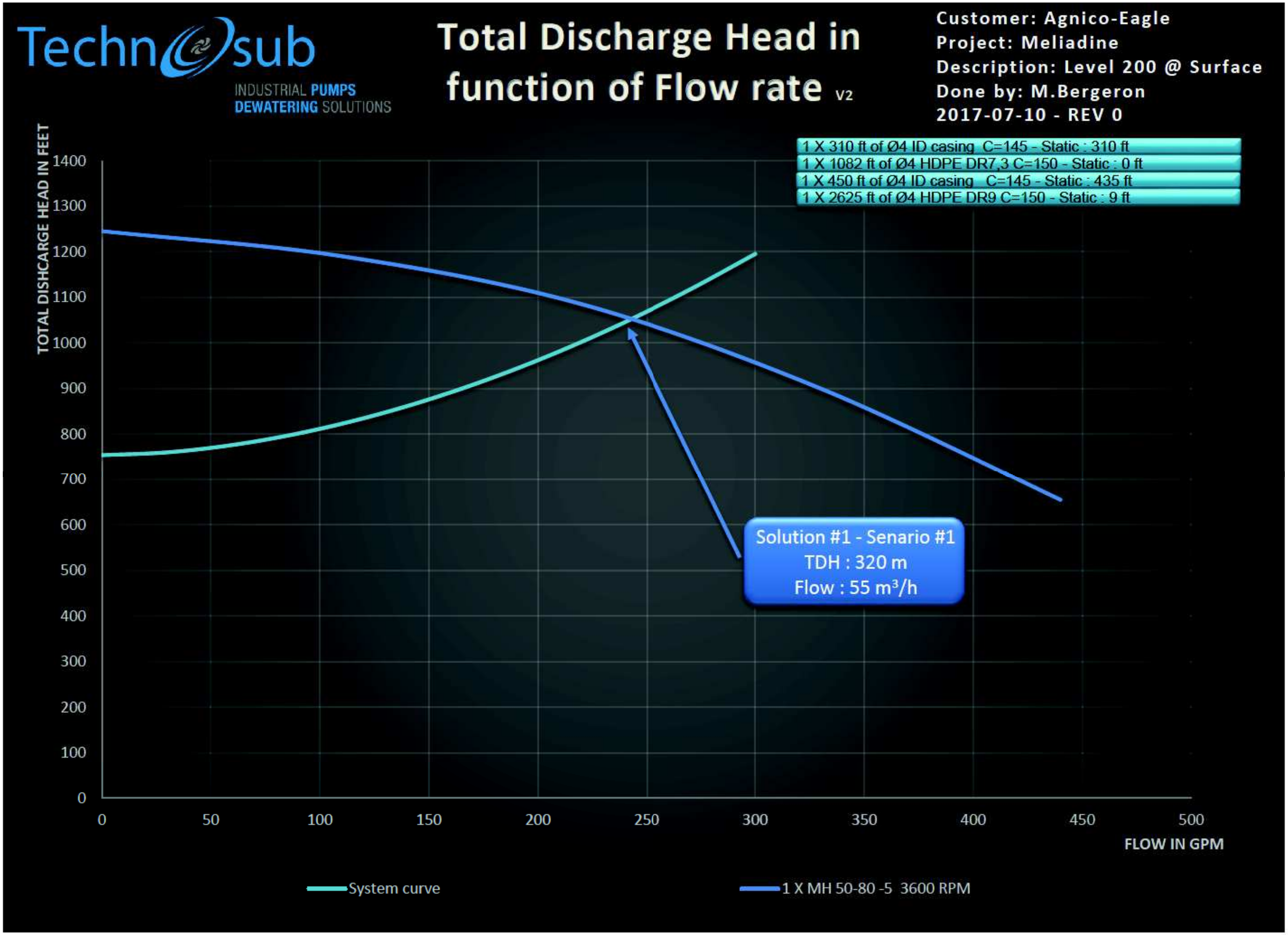
Date: July 10, 2017

T-N and I-N Curves

Motor Type: AEHH8N	Catalogue No: PDH15025	Family: Optim TEFC

HP	150	Full Load T	220.00 lb-ft	Full Load A	136.0 A
Voltage	575V 60Hz	Locked Rotor T	110 %	Locked Rotor A	868.0 A
RPM	3600	Pull Up T	88 %	Break Down T	220 %




Technosub
INDUSTRIAL PUMPS
DEWATERING SOLUTIONS
Total Discharge Head in function of Flow rate v2
Customer: Agnico-Eagle
Project: Meliadine
Description: Level 200 @ Surface
Done by: M.Bergeron
2017-07-10 - REV 0
1 X 310 ft of Ø4 ID casing C=145 - Static : 310 ft
1 X 1082 ft of Ø4 HDPE DR7,3 C=150 - Static : 0 ft
1 X 450 ft of Ø4 ID casing C=145 - Static : 435 ft
1 X 2625 ft of Ø4 HDPE DR9 C=150 - Static : 9 ft
TOTAL DISHCARGE HEAD IN FEET
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
0
50
100
150
200
250
300
350
400
450
500
FLOW IN GPM
Solution #1 - Senario #1
TDH : 320 m
Flow : 55 m³/h
System curve
1 X MH 50-80 -5 3600 RPM

3.1.1.4.3 – 150HP Soft-Start Control Panel

BENSHAW
ADVANCED CONTROLS & DRIVES

Technosub

SPECIFICATIONS

ITEM	QTY	DESCRIPTION
A	1	**TEC-150-600-04-10000 c/w** **0000- Will change depending on options chosen** **RB = Solid State Reduced Voltage Non Reversing Motor Starter With Built - In Bypass Contactor** **2** = MX^2 Control, **1** = Integrated Bypass Contactor , **S** = Standard Withstand Rating (18K), **150** = Horsepower Rated **600** = Voltage, **S** = Power Rating (350% for 30 Seconds), **04** = NEMA Enclosure **CB** = Circuit Breaker, **OP** = Options Included (RB2-1-S-156A-14C) **Circuit Breaker** (Square 'D', 14KIC / **NON VISI**) **- Flange Handle** **Starter with Breaker Withstand Rating: 18 KA** (consult Benshaw for higher rating) **Class 10 = 350% Current for 30 Seconds, 115% Continuously Rated** **156 Amp Rated (600 Volts, 3 Phase, 50 / 60 Hertz)** **Microprocessor Based Control** (Switch Mode Power Supply) - **Integrated Card Mounted Display** - L.E.D.. (4 Digit 7 Segment) Status & Diagnostics Parameter, Down, Up, Enter, Reset Push Buttons = Buttons have Tactile Feedback **Card displays** - Starter Status, Operation Parameters, Condition Codes, Alarm / Fault Codes, Thermal Overload Content, Phase Rotation , Metering - Universal Line Voltage 100 - 650 Volts (optional 1,000 Volts), Line Frequency Tracking (23 - 72 Hertz), Control (50 / 60 Hertz) - All Wires Numbered At Each End With Permanent Lettering **Control Function Features** - Remote 120 VAC Start / Stop Control Provisions (Optional 240 VAC) - **Local / Remote Source:** Keypad, Terminal or Source - **Start Mode:** Voltage, Current, Torque or KW - **Stop Mode:** Coast, Voltage, Torque or Braking **I/O Group:** - One Digital Input fixed for start - **3 Programmable Digital Inputs:** Off, Stop, Fault High, Fault Low, Fault Reset, Disconnect, Inline Confirm, Bypass Confirm, E O/L Reset Local / Remote, Heat Disable, Heat Enable, Slow Speed Forward, Slow Speed Reverse, Brake Enable - **Analog Input:** 0-5 / 10Vdc, 0/4-20mA - Analog input trip type: Off, Low, Hi Trip Level: 0-100% Trip Time: 0.1 - 90.0 sec. - **Analog Output:** 0-5/10Vdc, 0/4-20mA - Off, 0-200/800% Current, 0-150% Voltage, 0-10kW, 0-100kW, 0-1MW, 0-10MW 0-100%Ain, 0-100% Firing, Calibration **Continued on next page**

ITEM	QTY	DESCRIPTION

Relay Outputs:

- Quantity 2 (1 N/O, Form C, 5 Amp 125VAC Resistive, 5 Amp 250VAC Resistive,5 Amp 30VDC, Make/Break VA 1250/125
  (1 N/C, Form C, 3 Amp 125VAC Resistive, 3 Amp 250VAC Resistive,3 Amp 30VDC, Make/Break VA 750/75
- Quantity 1 (1 N/O, 1 N/C, Form C, 10 Amp 125VAC Resistive 10 Amp 30 , 250VAC Resistive, 30VDC Resistive, Make/Break VA 250

Confiugurable to the Following:

- Off, Fault (fail safe), Fault (Non Fail Safe), Running, UTS, Alarm, Ready, Locked Out, Overcurrent, Undercurrent
- OL Alarm, Shunt Trip (fail safe), Shunt Trip (Non Fail Safe), Ground Fault, Energy Saver, Heating, Slow Speed,
- Slow Speed Forward, Slow Speed Reverse, DC Bracking, Cooling Fan
- Keypad Stop Enable / Disable
- Auto Start Power on / Start Selection

Protection Features

- **Solid State Overload: Indipendent Starting and Running** (Programmable Class 1, 2, 3,4 to 40 or OFF)
- **Motor Overload Hot / Cold Ratio** - **Motor Overload Cooling Time** (1.0 to 999.9 sec.)
- **Residual Ground Fault:** Off, 5 to 100% of F.L.A., (Trip Time: 3 sec.) - **Instantaneous Over-current Trip** (I.O.C.)
- **Service Factor Adjustable** (1.00 to 1.99 in .01 Increments)
- **Phase Rotation Selectable** (ABC, CBA, INS- Insensitive, SPH- Single Phase)
- **Line Current Imbalance Detection** (5 - 40%), IEEE Negative Sequence Overload Biasing
- Control Power Under Voltage Protection, Control Power L.E.D. Status Indication
- Pre-Start Fault Indication, Shorted SCR Detection, Stalled / Blocked Rotor Detection (Adjustable 0 - 900 seconds)
- **Parameter Pass code Protection** [OFF (disabled) or 0 thru 9,999]
- **Programmable Undercurrent Trip Level** - 5% to 100%, (Trip Time Off 0.1 to 90 sec.) - Auto / Manual Reset
- **Programmable Over current Trip Level** - 50% to 800%, (Trip Time Off 0.1 to 90 sec.) - Auto / Manual Reset
- **Over / Under Voltage** (1 to 40% Trip Times: Off, 0.1 to 90 sec.)
- Auto Reset (Reset Time Off, 1 to 900 sec.) -Auto Fault Reset Count Limit (OFF. 1-10 - Controlled Fault Stop (On - off)
- 9 Event Fault Log ; each event recordes starter state, L1, L2,L3 Voltages and Currents, kW, Hz and Run Time.

Meters: (RMS Rated with 3% Accuracy)

- Status, Average Current, L1, L2, L3 Phase Current , Current Imbalance, Residual Ground Fault, Average Voltage, Overload, Phase Or
- Average Volts, L1-L2, L2-L3, L1-L3 volts, P.F., Watts, VA, VARS, Line Frequency, KWh, MWh, Hz, Analog In & Out, Run Days, Run H
- TruTorque%, Power (kW)% , Peak Starting Current, Starting Duration
- Reset able meters: None, Run Time, kWh/MWh, Re-flash mode, Factory Reset

Quick Meters: Status, Overload and Phase Order

Advanced Funtions:

- **Reflash Mode, Store Parameter, Load Parameter**
- **Preset Slow Speeds** (Cycloconverter) 7 or 14 % Forward or Reverse
- **Standard BIST** (Built In Self Test) - No line power supplied to starter
- **Powered BIST** (Built In Self Test) - Line power supplied to starter.
- **Motor Winding Heater** Level (0 to 25% of F.L.A..)
- **Anti-Windmilling Brake**
- **Energy Saver**
- **Factory Parameters Group**
- **Starter Type:** Single, Three-Phase, Inside Delta, ATL, Wye/Delta, Phase Control and Current Follower
- **Variable Voltage Controller** = External Input: 0/4 - 20 mA, 0 - 5/10 VDC, 5 K Ohm Potentiometer
- **10VDC Reference Supply** (max. 4mA)
- **Overload Emergency Restart Capability**

Communications:

- RS485 ModBus RTU, Monitoring, Starting & Stopping from Computer (1.2, 2.4, 4.8, 9.6, 19.2 Kbps)

Continued on next page

ITEM	QTY	DESCRIPTION
		RSC-50 Benshaw Bypass Contactor (One Per Phase, 70 Amp Rated) Auxiliary Contacts 2 N/O & 2 N/C
		10A6 - 350 VA Control Power Transformer (Fused Primary)
		KPMX3CBL2M (2 X 16) Door Mount Display
		The remote L.C.D.. backlit keypad has the same basic functions with enhancements which allows using plain text instead of codes and a menu structure instead of a line of parameters. Start, Stop/reset, Up, Down, Left, Menu, Enter.
		Plus L.E.D.. status indicators: Run, Stop and Alarm
		22A1 - Door Component Cover - 12" X 7" (A-31-DT) - NEMA 4 Rated / Hinged - Clear
		1A1 - Stop Push Button (Raised), **1A2 - Start Push Button** (Flush)
		3A2 - Three Position Selector Switch (HAND / OFF / AUTO)
		2A2 - Run Pilot Light (Green)
		2A3 - Fault Pilot Light (Amber)
		Customer Control Terminals - for High / Low level float controls
		1A8 - Emergency Stop Push Button (Mushroom Head, Maintain)
		NEMA 4 Indoor Enclosure (Wall Mount, Polyester Powder Coated Beige Paint, 14 Gauge Fully Welded Construction)
		Line Power Top Entry Terminals (Connects to top of disconnect)
		Load Power Top or Bottom Exit Terminal Pads (Connects to top or bottom of the starter)
		LG-200030-00 - Lug Kit (Qty 3 = #6 - 350 Lugs)
		Dimensions 46"H X 30"W X 16"D
		Additional Options
A1		***Startco Ground Fault / Ground Check Monitoring*** **c/w**
		36A2 - SE-105 Startco Ground-Fault Ground-Check Monitor
		- Non-Hazardous Resistance-Ground Installation Unit, Shunt or Undervoltage Output Contact
		- Ground Fault Trip Times (0.1, 1.0, 2.0 Seconds), 5.6 V Zener Diode Supplied Loose
		36A14 - RK-102 Remote Indication And Reset Assembley
		- LED Ground Check Indicator, LED Ground Fault Indicator, Reset Push Button Switch
		36A15 - Startco CT200
		- 200:5 CT, 2.25" Window, 600 Volt Class
		UV Trip contact added to Circuit Breaker
		10A20 - Transformer Feed Fusible Disconnect (30amp / Three Pole - GS1DU3) **- Rotary**
A2		***Float Control Timers***
		Qty. of 2 - 12A4 - Analog Timer (H3CR)
		- 0.05 - 300 hours, 2 set N/O - DPDT Delayed Contacts, 120 VAC
A3		**Heater Option for Technosub Packages**
		17A2D - 250W Cabinet Strip Heater & Thermostat (OS1212-250, 250 Watt, Cold Rolled Steel)
		10A7 - 500 VA Control Power Transformer (Fused Primary)
A4		**Heater Option for Technosub Packages**
		17A2C - Cabinet space heater with thermostat & fan 800 Watts (D-AH8001B)
		10A10 - 1500 VA Control Power Transformer (Fused Primary & Secondary)

ITEM	QTY	DESCRIPTION
A5		**33A3 - 30 Amp 600 Volt Class J Triple pole fuse holder** (Fuses Supplied) **Sales Note :** Dimensions 4" H x 4.65" W x 2.12" D (0 - 30 amp AJT's) (Ferraz - 60308J) **NOTE: Customer to notify size of fuses at time of order** 1HP = QTY 3 @ FU-AJT0001/5 (FUSE 1.5A 600V 200KAIR CLASS J) 3HP = QTY 3 @ FU-AJT0004/5 (FUSE 4.5A 600V 200KAIR CLASS J) 5HP = QTY 3 @ FU-723 (FUSE 8A 600V 200KAIR CLASS J)
		Gem Sensors - Supplied by Benshaw
A6		**Electrode System for start-stop requires 3 electrodes and 2 relays. Electrode 1 - Start, Electrode 2 - Stop and Electrode 3 - Reference. If pumps are installed in a pond an electrode has to be installed for reference. If installed in a steel pipe 2 Electrodes are required and the steel pipe is used as the reference. 200 feet of cable per Electrode is supplied loose.**
A7		**Electrode System for Start-Stop and Alarm requires 4 electrodes and 2 relays. Electrode 1 – Start, Electrode 2 – Stop , Electrode 3 – Alarm and Electrode 4 - Reference. If pumps are installed in a pond an electrode has to be installed for reference. If installed in a steel pipe 3 Electrodes are required and the steel pipe is used as the reference. 200 feet of cable per Electrode is supplied loose.**
A8		**Electrode System for redundant Start-Stop or redundant starters requires 5 electrodes and 3 relays. Electrode 1 – Start, Electrode 2 – Stop, Electrode 3 – Start, Electrode 4 . Stop, and Electrode 5. - Reference. If pumps are installed in a pond an electrode has to be installed for reference. If installed in a steel pipe 4 Electrodes are required and the steel pipe is used as the reference. 200 feet of cable per Electrode is supplied loose.**
A9		**Enclosure Upgrade for Electrode Systems (46"X 30"X 16" Enclosure)** Note You will need this option if you require Relays & electrodes in the enclosure.
		Note 1 - If cable lengths are different than what is included please advise. Note 2 - If application differs from above list of options please advise. Note 3 - If steel pipe is used as a reference please advise.

AGNICO EAGLE	**EQUIPMENT DATA SHEET** **Treated water feed pump-Saline water treatment plant**			WSP
Client	Agnico Eagle	Data Sheet Number	Revision	Date:	2018-04-11
Project	6515 - Meliadine	6515-132-REQ-018-265-EDS-001	R0	Prepared by	Paul Rivest, P. Eng.
#	151-06440-10			Verified by	Bertrand Fortin, P. Eng.

1	**GENERAL**				
2	Equipment Name / Number	-	Treated water feed pump #1		65PWA68103A
3			Treated water feed pump #2		65PWA68103B
4	Expected Equipment Life	years	25		
5	Site Location	-	Near Rankin Inlet, Nunavut Territory, CAN		
6	Equipment Location	-	Indoor, heated building		
7	Description	Units	3000 tpd	5500 tpd	*Required Vendor Information
8	**SERVICE CONDITIONS**				
9	Environment		Humid, dusty		
10	Ambient Temperature	°C	10 to 36		
11	Duty (365 days / year)	h/day	24		
12	Circuit availability	%	92		
13	Altitude Above Sea Level	m	62		
14	Quantity	-	2 (1 operating and 1 standby)		
15	Purpose phase 1 & 2		Treated Water from Saline Water Treatment Plant to CP1 Pond		
16	**PROCESS DATA**				
17	**Material Characteristics**				
18	Feed Material Description	-	Water		
19	Material Temperature	°C	10 to 35		
20	Material pH	-	7		
21	**Feed**				
22	Water Volume Flowrate (nominal)	m^3/h	8,32		
23	**TECHNICAL DATA - GENERAL REQUIREMENTS**				
24	Operation	-	Continuous		
25	Expected Pump Type	-	Centrifugal - Heavy Duty		
26	VSD Driven	-	No		
27	Total Dynamic Head	m	110		
28	Maximum Static Head	m	4		
29	**Operation Paramaters 1**				
30	Minimum Dynamic Head	m			
31	Minimum Flowrate	m^3/h			
32	Minimum Discharge Velocity	m/s			
33	**Operation Paramaters 2**				
34	Nominal Dynamic Head	m			
35	Nominal Flowrate	m^3/h			
36	Nominal Discharge Velocity	m/s			
37	**TECHNICAL DATA - PUMP DATA**				
38	Manufacturer	-			*
39	Model	-			*
40	Pump Type	-			*
41	Pump Size	-			*
42	Pump Curve	-			*
43	Brake Power	kW			*
44	Shut-off Head	m			*
45	NPSH Required	m			*
46	Flowrate - Nominal	m^3/h			*
47	Nominal Discharge Velocity	m/s			*
48	Seal Type	-	Mechanical seal		*
49	Gland Service Requirements	m^3/h			*
50	Max. Allowable Casing Pressure	kPa			*
51	Operating Efficiency	%			*
52	HR-ER Ratio (ER valid if %v/v<20%)	-			*
53	Seal Arrangment	-			*
54	Noise Level	dB			*
55	**TECHNICAL DATA - IMPELLER**				
56	Impeller Type	-			*
57	Impeller Model	-			*
58	Impeller Diameter	mm			*
59	Impeller Speed	RPM			*
60	Impeller Tip Speed	m/s			*
61	Max. Stop Pressure	m			*
62	Impeller Attachment Method	-			*
63	**TECHNICAL DATA - SUCTION AND DISCHARGE**				
64	Suction Diameter	mm			*
65	Suction Flange				*
66	Discharge Diameter	mm			*
67	Discharge Flange				*
68	**TECHNICAL DATA - DRIVE**				
69	Drive Type	-	Direct Drive		*
70	**TECHNICAL DATA - MATERIAL**				
71	Casing	-			*
72	Casing Liners	-			*
73	Casing Liner Thickness	mm			*

AGNICO EAGLE	EQUIPMENT DATA SHEET Treated water feed pump-Saline water treatment plant				WSP
Client	Agnico Eagle	Data Sheet Number	Revision	Date:	2018-04-11
Project	6515 - Meliadine	6515-132-REQ-018-265-EDS-001	R0	Prepared by	Paul Rivest, P. Eng.
#	151-06440-10			Verified by	Bertrand Fortin, P. Eng.

74	Casing Bolts	-		*
75	Impeller Material	-		*
76	Impeller Liner Materal	-		*
77	Impeller Liner Thickness	mm		*
78	Shaft	-		*
79	Shaft Sleeve	-		*
80	Packing (Seal)	-		*
81	Bearing Housing	-		*
82	Base Plate			*
83	**TECHNICAL DATA - WEIGHT**			
84	Pump	kg		*
85	Motor	kg		*
86	Base Plate	kg		*
87	Gearbox / Coupling	kg		*
88	Total Shipping Weight	kg		*
89	Heaviest Component for Maintenance	kg		*
90	**TECHNICAL DATA - MOTOR**			
91	Manufacturer	-		*
92	Motor Type	-		*
93	Service Factor	-		*
94	Control Type	-		*
95	Absorbed Power	kW		*
96	Installed Power	kW		*
97	**Notes**			
98	1) Depending on the application, this specification can be revised with the Engineer's approval only. Refer to the general specification.			
99	2) The Static Head and total Dynamic Head are not corrected according to the head ratio.			
100	3) The supplier is responsible of validating the head ratio and efficiency ratio for every application.			
101				
102				
103				
104				
105				

Rev.	Description	Prepared	Verified	Date
R0	For REQ	P.R.	B.F.	2018-04-11

Prepared by : Paul Rivest, P. Eng.	34 367		Paul Rivest ing	2018-04-11
Verified by : Bertrand Fortin, P. Eng.	129 024	L2199	Bertrand Fortin P.Eng.	2018-04-11
Name and Title	OIQ N°	NAPEG N°	Signature	Date

APPENDIX F • WATER QUALITY AND FLOW MONITORING PLAN

AGNICO EAGLE

MELIADINE GOLD MINE

Water Quality and Flow Monitoring Plan

JANUARY 2019

VERSION 1

EXECUTIVE SUMMARY

The Water Quality and Flow Monitoring Plan (the Plan) has been prepared in accordance with the requirements of the Nunavut Water Board Type A water license 2AM-MEL1631. The Plan is one component of the *Aquatic Effects Management Program* (AEMP) and is closely associated with the *Water Management Plan* and the *Metal and Diamond Mining Effluent Regulations (MDMER)*.

Section 2 of this Plan includes an overview of the monitoring programs and mine development schedule. Section 3 provides specific details (including sampling locations and parameters to be measured) for the compliance monitoring program, along with general guidance for the event monitoring program. An adaptive management program is described for regulated discharge and non-regulated discharges in Section 3. Requirements of the flow monitoring program are described in Section 4, and an overview of the reporting requirements in Section 5.

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ᐃᒪᐅᑉ ᖃᓄᐃᓐᓂᖓᓄᑦ ᐊᒻᒪᓗ ᑯᕕᔪᒥᒃ ᖃᐅᔨᓯᐊᖃᑦᑕᓂᕐᒧᑦ ᐸᕐᓇᐅᑎ (ᐸᕐᓇᐅᑎ) ᐱᓕᕆᐊᖑᓚᐅᖅᑐᖅ ᒪᓕᒃᓱᒋᑦ ᐱᔭᕆᐊᖃᖅᑎᑕᐅᔪᑦ ᓄᓇᕗᒻᒥ ᐃᒪᓕᕆᔨᒃᑯᖓᓄᑦ Type A ᓚᐃᓴᓐᓯᒧᑦ 2AM-MEL1631. ᐸᕐᓇᐅᑎ ᐃᓚᖓᔪᖅ *ᐃᒪᕐᒥᐅᑕᓂᒃ ᖃᓄᐃᖕᒐᓕᖅᑎᑦᑎᓂᕐᒧᑦ ᐊᐅᓚᑦᑎᓂᕐᒥᒃ ᑐᕌᖕᒐᔪᖅ* (AEMP) ᐊᒻᒪᓗ ᐊᒃᑐᐊᓂᖃᖅᑐᓂ *ᐃᒪᕐᒥᒃ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᐸᕐᓇᐅᑎ-ᒥᒃ* ᐊᒻᒪᓗ *ᓯᑎᔪᓂᒃ ᐅᔭᕋᕐᓂᒃ ᐅᔭᕋᒃᑕᓇᕐᒥᑦ ᑯᕕᑎᑦᑎᓂᕐᒧᑦ ᒪᓕᒐᕆᓂᒃ* (MDMER).

ᐃᓚᒋᔭᐅᔪᖅ 2 ᐸᕐᓇᐅᑎᒥᑦ ᐃᓚᐅᔪᑦ ᑕᒪᒃᑖᒥᒃ ᕿᒥᕐᕈᓂᖅ ᖃᐅᔨᓯᐊᖃᑦᑕᕐᓂᕐᒧᑦ ᑐᕌᖕᒐᔪᓂᒃ ᐊᒻᒪᓗ ᐅᔭᕋᒃᑕᓇᐊᕐᒥᒃ ᐱᕙᓪᓕᐊᓂᕐᒧᑦ ᖃᖕᒐᒃᑯᖕᒐᔪᒥᒃ. ᐃᓚᒋᔭᐅᔪᖅ 3 ᑕᑯᒃᓴᐅᑎᑦᑎᔪᖅ ᐱᑦᔪᑎᖃᖅᑐᓂᒃ ᓇᓗᓇᐃᔭᐅᑎᓂᒃ (ᐃᓚᐅᑉᓗᓂ ᐆᒃᑐᕋᐃᓂᕐᒧᑦ ᐃᓂᐅᔪᑦ ᐊᒻᒪᓗ ᑭᒡᓕᕆᔭᐅᔪᑦ ᐆᒃᑐᕋᖅᑕᐅᓂᐊᖅᑐᓂᒃ) ᒪᓕᒃᑕᐅᓂᖓᓄᑦ ᖃᐅᔨᓯᐊᖃᑦᑕᕐᓂᕐᒧᑦ ᑐᕌᖕᒐᔪᖅ, ᐃᓚᐅᑉᓗᑎᒃ ᒪᓕᒃᑕᐅᔭᒃᓴᖅ ᖃᐅᔨᓯᐊᖃᑦᑕᕐᓂᕐᒧᑦ ᑐᕌᖕᒐᔪᒥᒃ. ᐊᑐᓕᖅᑎᑦᑎᓂᕐᒧᑦ ᐊᐅᓚᑦᑎᓂᕐᒥᒃ ᑐᕌᖕᒐᔪᖅ ᐅᖃᐅᓯᐅᓂᖕᒐᑐᑦ ᒪᓕᒐᑎᒍᑦ ᑯᕕᑦᑎᓂᕐᒧᑦ ᐊᒻᒪᓗ ᒪᓕᒐᑎᒎᖖᒋᑦᑐᖅ ᑯᕕᑦᑎᓂᕐᓄᑦ ᐃᓚᒋᔭᐅᔪᖅ 3-ᒥᑦ. ᐱᔭᕆᐊᖃᖅᑐᑦ ᑯᕕᔪᓂᒃ ᖃᐅᔨᓯᐊᖃᑦᑕᕐᓂᕐᒧᑦ ᑐᕌᖕᒐᔪᕐᒧᑦ ᐅᖃᐅᓯᐅᔪᑦ ᐃᓚᒋᔭᐅᔪᖅ 4-ᒥᑦ, ᐊᒻᒪᓗ ᑕᒪᒃᑖᕐᒥᒃ ᕿᒥᕐᕈᓂᕐᒧᑦ ᐅᓂᒃᑳᓕᐅᕆᓂᕐᒧᑦ ᐱᔭᕆᐊᓕᖕᓄᑦ ᐃᓚᒋᔭᐅᔪᖅ 5-ᒥᑦ.

IMPLEMENTATION SCHEDULE

As required by Water License 2AM-MEL1631, Part B, Item 10, the proposed implementation schedule for this Plan is outlined below.

This Plan will be implemented immediately (December 2018) subject to any modifications proposed by the NWB as a result of the review and approval process.

DISTRIBUTION LIST

Environmental Superintendent
Environmental Coordinators
Environmental Technicians

DOCUMENT CONTROL

Version	Date (YMD)	Section	Page	Revision
1	18/12/16	All	All	Comprehensive plan for Meliadine project. First version composed by Meliadine Environment Department.

Prepared by:

Agnico Eagle Mines Limited - Meliadine Division

Approved by:

Kevin Buck - General Supervisor

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SECTION 1. INTRODUCTION

The Water Quality and Flow Monitoring Plan (the Plan) has been prepared in accordance with the requirements of the Nunavut Water Board Type A water license 2AM-MEL1631 (the License). The Plan is one component of the *Aquatic Effects Management Program* (AEMP) and is closely associated with the *Water Management Plan* and the *Metal and Diamond Mining Effluent Regulations (MDMER)*. The implementation and periodic updates to this Plan are the responsibility of the Meliadine Environment Department under the guidance of the Meliadine Environment Superintendent.

The Plan summarizes the monitoring locations, sampling frequency, monitoring parameters, compliance discharge criteria and an adaptive management plan for water quality at the Meliadine Gold Project.

The purpose of this Water Quality and Flow Monitoring Plan is to establish the program that is to be implemented and followed by AEM's Meliadine environmental management team to monitor the performance of the waste and water management systems at the Meliadine Gold Project. The program includes:

- Verifying and validating the predicted water quality values with empirical measurements of the mine site water quality and flows;
- A comparison of measured water quality data to compliance requirements stipulated in the License; and
- A framework for adaptive management that allows the identification and rectification, where necessary, of unexpected trends or non-compliance in water quality and flows.

The Plan provides information on the locations of the monitoring stations at the various stages of mining. These monitoring locations are used to evaluate the performance of the mine waste and water management system.

The objectives of the monitoring program are:

1) To track the chemistry of the contact and non-contact water prior to and during discharge;

2) To assist in identifying if water treatment is required prior to discharge; and

3) To minimize the potential impacts of mining activities on the surrounding environment.

Additional locations outside the footprint of the mine (and outside the scope of this Plan) will be monitored under the *Meliadine Gold Project Aquatic Effects Management Program* (Golder 2016).

SECTION 2. OVERVIEW

2.1 OVERVIEW OF SITE WATER MANAGEMENT PLAN

Details of overall water management are discussed in the Meliadine Water Management Plan which is updated annually. A network of berms, dikes, containment ponds, channels, culverts and sumps are in place and maintained to facilitate water management (Section 3 of the *Water Management Plan*).

As specified in the *Water Management Plan*, surface contact water is intercepted, diverted and contained within various containment ponds prior to evaporation or treatment. Contact water from the Underground Mine is collected in underground sumps and recirculated for use in various underground operations. Underground contact water that is not used for operations is stored underground and any excess water that cannot be stored underground is pumped to the Saline Pond or to the Saline Water Treatment Plant (SWTP) for treatment (See Section 3.9 of the *Water Management Plan*). Additional Saline Storage ponds will likely be developed on the Meliadine site (surface) in the future as groundwater inflows in the underground workings of the mine are greater than predicted. Agnico Eagle is currently seeking approval from the Nunavut Impact Review Board to discharge saline water via a diffuser to the sea in Rankin Inlet (Melvin Bay).

2.2 MONITORING PROGRAMS

This Plan has been divided into two levels of monitoring to characterize the range of impacts between the sources of contact water in the individual mine facilities and the point of discharge or release to the receiving environment. The two levels of monitoring include:

1) Compliance monitoring; and

2) Event monitoring.

2.2.1 Compliance Monitoring Program (CM)

The CM sites are those stipulated in the License; these sites vary from contact water collection ponds, structures such as ditches, culverts prior to discharge to the receiving environment and local lakes surrounding the mine site. The requirements of the License, including water quality limits, will be applied at the applicable mine discharge points identified in the CM program.

The CM program provides a mechanism to assess water quality at specified sites, and to confirm and document compliance of discharge with regulatory requirements. As part of adaptive water management, these internal monitoring stations provide protection to the receiving water environment, provide data to predict pit re-flooding water quality and ensure exceedances of predicted or regulated levels are appropriately managed or mitigated to reduce impacts.

2.2.2 Event Monitoring Program (EM)

The EM sites result from unexpected events such as spills, accidents, and malfunctions. The response programs for such events are discussed in greater detail in the following four (4) documents:

- Meliadine Spill Contingency Plan (March 2018);
- Meliadine Emergency Response Plan (May 2017);
- Meliadine Freshet Action Plan (January 2019); and
- Meliadine Water Management Plan (January 2019).

Each accidental release will require mobilization of site equipment to stabilize the release, procedures to contain, neutralize, and dispose of the discharge, and recommendations for monitoring the site following the incident.

2.3 OVERVIEW OF MINE DEVELOPMENT SCHEDULE

The Mine Plan and key mine development activities, including mine waste management are currently used concurrently with the *Water Management Plan*.

The Mine Plan proposes one underground mine (Tiriganiaq Underground Mine) and two open pits (Tiriganiaq Open Pit 1 and Tiriganiaq Open Pit 2) for the development of the Tiriganiaq gold deposit.

The Mine is estimated to produce approximately 14.9 million tonnes (Mt) of ore, 31.8 Mt of waste rock, 7.4 Mt of overburden waste, and 14.9 Mt of tailings. The following phased approach is proposed for the development of the Tiriganiaq gold deposit;

- Phase 1: 3.5 years for Mine Construction. Construction began in 2015 and is estimated to be completed in Q2 of 2019 (Q4 Year -5 to Year Q2 -1);
- Phase 2: 8.5 years for Mine Operations, beginning in 2019 (Q2 Year -1 to Year 8);
- Phase 3: 3 years Mine Closure (Year 9 to Year 11); and;
- Phase 4: Post-Closure (Year 11 forward).

Mining facilities on surface will include a plant site and accommodation buildings, three ore stockpiles, a temporary overburden stockpile, a tailings storage facility (TSF), three waste rock storage facilities (WRSFs), a water management system that includes containment ponds, water diversion channels, retention dikes/berms, and a series of water treatment plant

SECTION 3. MONITORING PROGRAM

The monitoring program is presented in three sections; requirements of the compliance monitoring program, an overview of the event monitoring program, and then details of the adaptive management program for monitoring results.

3.1 COMPLIANCE MONITORING PROGRAM

The CM program monitors the chemistry of four local lake surrounding the mine site (E3, G2, H1 and B5) as well as mine contact water collected and diverted at specified locations prior to release into the receiving water environment. The sampling is conducted in order to confirm and document compliance with regulatory requirements. The types of water and the timing of the CM program include:

- Non-contact water from local lakes;
- Mine contact water collected from drainage of different structures; and
- Monitoring points located within the containment ponds prior to release into the receiving water environment

The CM sampling program has multiple monitoring stations across the project site, with sampling at different stages of the mine life. All of the CM stations, a description of their location, parameters to be monitored and sampling frequency are listed in Table 3.1. Specific details for the monitoring parameter groups are provided in Table 3.2. In summary, Agnico Eagle follows 5 groups of parameters, as identified in Meliadine's Type A Water License Schedule I Table 1.

Figures 3.1 shows the approximate location of each of the sampling sites. The actual location of each sampling site is determined by access and safety considerations and are marked by a stake that defines the exact location of the collection point for sampling events with appropriate attached signage in English, Inuktitut and French.

GPS coordinates for all compliance monitoring stations were confirmed, as required in Part I, Item 6 of the NWB Type A water license.

3.1.1 General Sampling and Analysis Program

Samples are collected in clean laboratory-supplied containers and preserved as directed by the analytical laboratory. During all phases, samples are analyzed offsite at an accredited commercial lab (ALS in Burnaby BC, Maxxam Analytics in Ottawa or H2Lab in Val d'Or).

Table 3.3 summarizes the minimum sample volumes, container, preservation, and holding times for each analyte. This information is from the *USEPA Methods for Chemical Analysis of Water and Waste Water* (*EPA-600/4-79-020, 1979*).

Table 3.1: Monitoring Program

Station	Description	Phase	Monitoring Parameters	Frequency
Mine Site				
MEL-D-1	Dewatering: Water transferred from lakes to Meliadine Lake during dewatering of lakes	Construction	As defined in the Water Management Plan referred to in Part D, Item 12	Prior to discharge and Weekly during discharge
			Volume (m3)	Daily during periods of discharge
MEL-SR-1 to TBD	Surface Runoff – runoff downstream of Construction areas at Meliadine Site and Itivia Site, Seeps in contact with the roads, earthworks and any Runoff and/or discharge from borrow pits and quarries	Construction, and Operation	As defined in the Water Management Plan referred to in Part D, Item 18 and Part I, Item 11	Prior to Construction, Weekly during Construction
			Group 1	Monthly during open water or when water is present upon completion
MEL-11	Water Intake from Meliadine Lake	Construction, Operation, and Closure	Full Suite	Monthly during periods of intake
			Volume (m3)	Daily during periods of intake
MEL-12	Water treatment plant (pre-treatment) coming from CP1, off the pipe and not in the pond	Construction (prior to release), Operations, and Closure	Group 1	Monthly during periods of discharge
MEL-03-01 (and AEMP Stations)	Mixing zone in Meliadine Lake, Station 1; and MMER exposure stations for final discharge point within mixing zone	Construction (prior to release), Operations, and Closure	Full Suite, Group 3 (MMER)	Monthly during periods of discharge
MEL-14	Water treatment plant from CP-1 (post-treatment), end of pipe (before offsite release) in the plant before release.	Construction (upon effluent release), Operations, and Closure	Full Suite, Group 3	Prior to discharge and Weekly during discharge

			Volume (m3)	Daily during periods of discharge Once prior to discharge and Monthly thereafter
			Acute Lethality	Once prior to discharge and Monthly thereafter
MEl-15	Local lake E-3	Operations, and Closure	Group 2	Bi-annually during open water
MEL-16	Local Lake G2	Construction, Operations, and Closure	Group 2	Bi-annually during open water
MEL-17	Local Pond H1	Construction, Operations, and Closure	Group 2	Bi-annually during open water
MEL-18	Local Lake B5	Construction, Operations, and Closure	Group 2	Bi-annually during open water
MEL-19	CP-2 Collection of natural catchment drainage from the outer berm slopes of the Landfarm and industrial pad	Construction, Operations, and Closure	Group 1	Monthly during open water or when Water is present
MEL-20	CP-3 Collection of drainage from dry stacked tailings	Operations, and Closure	Group 1	Monthly during open water or when Water is present
MEL-21	CP-4 Collection of drainage from WRSF1	Operations, and Closure	Group 1	Monthly during open water or when Water is present
MEL-22	CP-5 Collection of drainage from WRSF1 and WRSF2	Construction, Operations, and Closure	Group 1	Monthly during open water or when Water is present
MEL-23	CP-6 Collection of drainage from WRSF3	Construction, Operations, and Closure	Group 1	Monthly during open water or when Water is present
MEL-24	Seepage from the Landfill between the landfill and Pond H3	Construction, Operations, and Closure	Group 1	Monthly during open water or when Water is present
MEL-25	Secondary containment area at the Itivia Site Fuel Storage and Containment Facility	Construction, Operation, Closure	Group 4, Volume (m3)	Prior to discharge or transfer of Effluent

Table 3.2: Monitoring Parameters

Group	Parameters
1	pH, turbidity, hardness, alkalinity, chloride, fluoride, sulphate, total dissolved solids (TDS), total suspended solids (TSS), total cyanide, ammonia nitrogen, nitrate, nitrite, phosphorus, orthophosphate, Total Metals (aluminum, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, and zinc).
2	**Total and Dissolved Metals**: aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, iron, lead, lithium, manganese, mercury, molybdenum, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium, and zinc. **Nutrients**: ammonia-nitrogen, total Kjeldahl nitrogen, nitrate-nitrogen, nitrite-nitrogen, orthophosphate, total phosphorus, total organic carbon, dissolved organic carbon, and reactive silica. **Conventional Parameters**: bicarbonate alkalinity, chloride, carbonate alkalinity, turbidity, conductivity, hardness, calcium, potassium, magnesium, sodium, sulphate, pH, total alkalinity, TDS, TSS, total cyanide, free cyanide, and weak acid dissociable (WAD) cyanide..
3	**MDMER parameters**: total cyanide, arsenic, copper, lead, nickel, zinc, radium-226, TSS, pH, total ammonia and temperature. **MDMER additional requirements**: Effluent volumes and flow rate of discharge, Acutely Lethality tests (Rainbow Trout and Daphnia magna) and environmental effects monitoring (EEM).
4	Total arsenic, total copper, total lead, total nickel, TSS, ammonia, benzene, toluene, ethylbenzene, xylene, total petroleum hydrocarbons (TPH), and pH
Full Suite	Group 2, Total Petroleum Hydrocarbons, Turbidity. Non Acutely-lethal (Rainbow Trout and Daphnia magna) for discharge only.
Flow	Flow data-logger
Field measurements	Field pH, specific conductivity, dissolved oxygen, and temperature.

Table 3.3: Summary of Sampling Requirements for each Analyte

Parameters	Matrix				Type of Bottle	Preservative	Volume
	Drinking Water	Waste Water	Surface Water	Ground Water (1)			
Microbiology							
Escherichia coli, total coliforms, A.A.H.B	48h	48h	48h	48h	PPS	TS, E	250ml
Enterococcus	48h	48h	48h	48h	PPS	TS, E	250ml
Thermo tolerant coliforms (fecal)	48h	48h	48h	48h	PPS	TS, E	250ml
Inorganic Chemistry							
Absorbance UV, Transmittance UV				24h	P. T. V	N	125ml
Alkalinity, Acidity, Bicarbonates, Carbonates	14d	14d	14d	14d	P, T, V	N	250ml
Ammonia nitrogen (NH_3-NH_4)	28d	28d	28d	28d	P, T, V	AS	125ml
Kjeldahl ammonia (NTK)		28d	28d	28d	P, T, V	AS	125ml
Anions (Cl, F,SO_4)	28d	28d	28d	28d	P, T, V	N	250ml
Color, Free & total Chlorine	48h	48h	48h	48h	P, T, V	N	125ml
Conductivity	28d	28d	28d	28d	P, T, V	N	250ml
Cyanides total/available, Cyanides	14d	14d	14d	14d	P, T, V	NaOH	250ml
BOD_5/Carbonated BOD_5 (2)		48h/4°	48h/4°		P, T, V	N	250ml
COD (chemical oxygen demand)		28d	28d		P, T, V	AS	125ml
Mercury (Hg)	28d	28d	28d	28d	P, T, V	AN	250ml
Total/dissolved metals (filtered on field)	180d	180d	180d	180d	P, T, V	AN	250ml
Dissolved Metals (filtered in the laboratory)	24h	24h	24h	24h	P, T, V	N	250ml
Total suspended solids & Volatile TSS		7d	7d	7d	P. T. V	N	500ml
NH_3 or NH_4		24h	24h	24h	P.T.V	N+AS	2/125ml
Nitrites (NO_2), Nitrates (NO_3), Turbidity	48h	48h	48h	48h	P, T, V	N	250ml
Nitrites-Nitrates (NO_2-NO_3)	28d	28d	28d	28d	P, T, V	AS	250ml
O-Phosphates (O-PO_4)	48h	48h	48h	48h	P, T, V	N	500ml
pH	24h	24h	24h	24h	P, T, V	N	125ml
Total Phosphorus (P-tot)	28d	28d	28d	28d	P, T, V	AS	125ml
Dissolved solids (TDS)		7d	7d	7d	P. T. V	N	250ml
Total solids		7d	7d	7d	P. T. V	N	250ml
Sulphides (H_2S) (3)	28d	28d	28d	28d	P. T. V	AcZn + NaOH	125ml
Thiosulfates	48h	48h	48h	48h	P. T. V	N	125ml
Radioactive & Organic Chemistry							
Fatty resin acids (S-T)	--	28d	28d	--	VA, VT	AS	1L
Congeners PCB (S-T)	28d	28d	28d	28d	VA, VT	N	1L
Chlorobenzene	28d	28d	28d	28d	2 Vial+1 blank	TSS	2/40ml
Total Organic Carbon (TOC)	28d	28d	28d	28d	P, T, V (B)	AC	100ml
Dissolved Organic Carbon (DOC)	48h	48h	48h	48h	P, T, V (B)	N	100ml
Total Inorganic Carbon (CIT)	48h	48h	48h	48h	P, T, V (B)	N	100ml
Phenolic compound (GC-MS)	28d	28d	28d	28d	VA, VT	AS	1L
Glyphosate (S-T)	14d	14d	14d	14d	P.T	N	500ml
PAH	28d	28d	28d	28d	VB	AS	1L
Oil & Greases (total and non-polar)	28d	28d	28d	28d	VA, VT	AS	1L
C10-C50 HP and/or Petroleum Product Identification	28d	28d	28d	28d	VA, VT	AS	1L

Phenol index	28d	28d	28d	28d	VA, VT	AS	500ml
Radium-226	180d	180d	180d	180d	P, T. V	AN	1L
VOC (MAH, CAH, THM, BTEX) (3)	28d	28d	28d	28d	2 Vial+1 blank	TSS	2/40ml

Type of bottle:
P.S.V.T.: plastic bottle, bag or glass bottle with Teflon cap
P, T: Plastic bottle or plastic bottle with Teflon cap
P.T.V.: Plastic bottle or glass bottle with plastic or Teflon cap
PPS: Sterile propyl ethylene bottle
VA: Clear or amber glass with aluminium or Teflon seal
VB: Amber glass (or clear glass covered with aluminium paper) aluminium seal of Teflon
VT: Clear or amber glass bottle with Teflon seal
Preservative:
AC: 0.1ml (100µl) of HCl per 100ml of sample
AcZn: 0.2ml zinc acetate 2N per 100ml of sample and NaOH 10N to pH >9
AN: HNO3 to pH <2
AS: H2SO4 to pH <2
E: 2.5ml EDTA 1.5% (p/v) per 100ml of sample if heavy metals are suspected
ED: 0.1ml diamine ethylene 45 mg/l per 100 ml of sample
EDTA: 1ml EDTA 0.25M per 100ml of sample
N: No preservative
NaOH: NaOH 10N to >12
TS: Sodium thiosulfate final concentration in the sample of 0.1% (p/v)

3.1.2 Compliance Monitoring Stations and Discharge Criteria

Further details of the specific CM stations and discharge criteria stipulated under the License are provided below.

3.1.2.1 *Dewatering Activities*

All Waters from dewatering activities at Monitoring Program Stations MEL-D-1 through MEL-D-TBD shall be directed to Meliadine Lake and shall not exceed the quality limits presented in Table 3.4 as stipulated in Part D, Item 12 of the License.

Table 3.4: TSS and pH Criteria at CM Stations MEL-D-1 through MEL-D-TBD

Parameter	Maximum Average Concentration (mg/L)	Maximum Concentration of Any Grab Sample
TSS	15.0	30
pH	6.0 to 9.5	6.0 to 9.5

All surface runoff and/or discharge from drainage management systems, at the Monitoring Program Stations MEL-SR-1 to MEL-SR-TBD during the Construction/Operation of any facilities and infrastructure associated with this project, including laydown areas and All-weather Access Road, where flow may directly or indirectly enter a Water body, shall not exceed the Effluent quality limits presented in Table 3.5, as stipulated in Part D, Item 18 of the License.

Table 3.5: Effluent Criteria at CM Station MEL-SR-1 to MEL-SR-TBD

Parameter	Maximum Average Concentration	Maximum Concentration of Any Grab Sample
Total Suspended Solids (TSS) (mg/L)	50.0	100.0
Oil and Grease	No Visible Sheen	No Visible Sheen
pH	6.0 to 9.5	6.0 to 9.5

3.1.2.2 *Water Collection System*

A water collection system comprised of berms, dikes, containment ponds, channels, culverts and sumps was developed to control water at the Meliadine project (Section 3 of the *Water Management Plan*). Diversion berms, diversion channels and culverts will direct surface water towards containment ponds and associated dikes. Pending salinity levels, water in containment pond CP5 will be treated by a Reverse Osmosis (RO) treatment plant prior to be discharged in CP1.

Contact water from the Underground Mine is collected in underground sumps and recirculated for use in various underground operations. Underground contact water that is not used for operations is stored underground and any excess water that cannot be stored underground is pumped to the Saline Pond. Saline water collected in the Saline Pond is temporarily stored and then actively evaporated or pumped to the SWTP for treatment prior to being pumped to CP1.

At CP1, the water is treated for total suspended solids (TSS) at the Effluent Water Treatment Plant (EWTP) and either transferred to the process plant for use as make-up water or discharged through the diffuser located in Meliadine Lake

Effluent discharged from CP1 at CM station MEL-14 shall be directed to Meliadine Lake through the Meliadine Lake Outfall Diffuser and shall not exceed the effluent quality limits presented in Table 3.7, as stipulated in Part F, Item 3 of the License.

Table 3.6: Effluent Criteria at CM Station MEL-14

Parameter	Maximum Average Concentration	Maximum Concentration of Any Grab Sample
pH	6.0 to 9.5	6.0 to 9.5
TSS (mg/L)	15	30
TDS (mg/L)	1400	1400
Total (T)-Al (mg/L)	2.0	3.0
T-As (mg/L)	0.3	0.6
T-CN (mg/L)	0.5	1
T-Cu (mg/L)	0.2	0.4
NH_4-N (mg/L)	14	18
T-Ni (mg/L)	0.5	1
T-Pb (mg/L)	0.2	0.4
T-P (mg/L)	2.0	4.0

T-Zn (mg/L)	0.4	0.8
Total Petroleum Hydrocarbons (TPH) (mg/L)	5	5

The Discharge of Effluent from the Final Discharge Point at Monitoring Program Station MEL-14 shall be demonstrated to be non-Acutely Lethal under the following test in accordance with the Schedule I of the License:

a. Acute Lethality of Effluents to Rainbow Trout (as per Environment Canada's Environmental Protection Series Biological Test Method EPS/1/RM/13 July 1990, published by the Department of the Environment, as amended in December 2000, and as may be further amended from time to time

Itivia Marshalling Area

Surface water runoff from the bulk fuel tank storage areas is collected within the tank's secondary containment enclosures that are equipped with an HDPE liner; these are designed to contain petroleum products released due to spill events. Water collected in the secondary containment enclosures at CM station MEL-25 is discharged to land in a controlled manner according to the Nunavut Water Board Type A water license # 2AM-MEL16331.

All effluent being discharged from the secondary containment enclosures at the itivia marshalling facility shall not exceed the effluent quality limits presented in Table 3.9, as stipulated in Part F, Item 5 of the water license.

Table 3.7: Effluent Criteria at CM Station MEL-25

Parameter	Maximum Average Concentration	Maximum Concentration of Any Grab Sample
pH	6.0 to 9.5	6.0 to 9.5
TSS (mg/L)	15.0	30.0
Benzene (ug/L)	370	370
Toluene (ug/l)	2	2
Ethylbenzene (ug/L)	90	90
Lead (mg/L)	0.1	0.1
Oil and Grease (mg/L)	5.0 and no visible sheen	5.0 and no visible sheen

3.1.2.3 *Receiving Environment*

Receiving water quality monitoring is discussed in the Aquatic Effects Management Program (AEMP) (March 2019). Within the AEMP are numerous monitoring programs: water quality, sediment quality, benthic invertebrate communities, and fish health and fish tissue chemistry. The Meliadine Lake monitoring program was designed around the key aspects of Environmental Effects Monitoring (EEM) requirements under the Metal and Diamond Mining Effluent Regulations. Water quality data are analyzed to determine if there are differences between the Near-field exposure area, the Mid-field exposure area, and the pooled reference areas of Meliadine Lake.

3.2 EVENT MONITORING

The Event Monitoring (EM) program addresses the site specific monitoring that is required following any accidental release. A "release" may be caused by:

- Spills, including unidentified seepage (Meliadine Spill Contingency Plan; March 2018); or
- Emergencies (Meliadine Emergency Response Plan; May 2017).

The EM program is designed to verify whether contamination of the surface soil and/or any nearby receiving environment and active zone has occurred as a result of an accidental release of a hazardous material or contaminated water. Verification is done through monitoring of surface runoff and nearby receiving environment during and following remedial activity. It is anticipated that due to the presence of permafrost beneath most of the mine footprint (active layer app 1.5m in depth), there will be minimal impact to groundwater from surface spills or accidental releases.

The EM plan is developed on a site specific basis subsequent to a spill or other incident, and considers the type of product spilled, the potential receptors and the potential for any remaining contamination after clean up. The plan is coordinated by the Environmental Department

In the event of an accidental release, the water quality of any downstream receptor as well as an upstream reference (background) is sampled to determine severity of impact. Should the spill have happened over snow cover, as much contaminated snow will be removed. Verification sampling would occur in the area after thaw to determine if the clean – up is complete or if further remediation is necessary. The specific parameters monitored as part of the EM program will depend on the nature of the spill, and will be determined for the specific material released.

The EM program for a particular spill will cease upon obtaining satisfactory analytical results from the potentially affected areas or as required by regulators.

3.3 ADAPTIVE MANAGEMENT PROGRAM

Results of the water quality monitoring are reviewed by the Meliadine Environment Department. Chemical trends of constituents of interest are tracked for mine site monitoring and for the AEMP program. This allows for early detection of significant changes in water quality within the mine site prior to discharge. If triggers and thresholds, such as in the AEMP program, are exceeded in the receiving environment action plans are then implemented to ensure that environmental protection objectives are met.

An adaptive management program has been designed for the Meliadine Gold Project to evaluate the monitoring data and provide a framework for action, if necessary. The program has two levels - a trigger level to compare the monitoring data against, and an action plan of mitigative measures for identified exceedances.

The adaptive management program is divided into two sections, one for parameters with regulated discharge criteria at specific monitoring locations, as specified in the License and by the Metal Mining Effluent Regulations (MMER). The second section is for measured parameters for which no discharge limits have been identified in the License such as those in the AEMP or EEM.

<u>Saline Water Treatment Plant Influent and Effluent</u>

Water samples are collected weekly at both the inlet and outlet of the SWTP. Samples taken at the inlet of the SWTP represent the water quality of either Sump 75 or the Saline Pond, which will vary depending on the treatment priority for saline water storage. The results of the sample analysis are used by SWTP operators to fine-tune the treatment process and ensure its optimal performance. Samples taken at the outlet of the SWTP are analyzed to provide the quality of treated water produced by the SWTP that is transferred to CP1.

Water samples are analyzed for the following parameters: pH, conductivity, temperature, Total Suspended Solids (TSS), Total Dissolved Solids (TDS), chloride, ammonia, nitrite, nitrate, total phosphorus, total metals, total cyanide, and total mercury.

3.3.1 Adaptive Management Program for Regulated Discharge

3.3.1.1 *Action Plan*

In the case of an exceedance of a License limit or MDMER discharge limit, an action plan will be implemented. The adaptive management program requires that if one or more of the key monitored parameters exceed the respective limits, a staged sequence of responses will follow. Table 3.12 summarizes the staged adaptive action plan for the CM program for regulated discharge. Figure 3.1 is a logic diagram showing the decision path for evaluating analytical results for regulated discharges.

In addition to the mitigative measures listed above, a number of other possible alternatives are available to reduce or treat contaminants. These mitigation measures include:

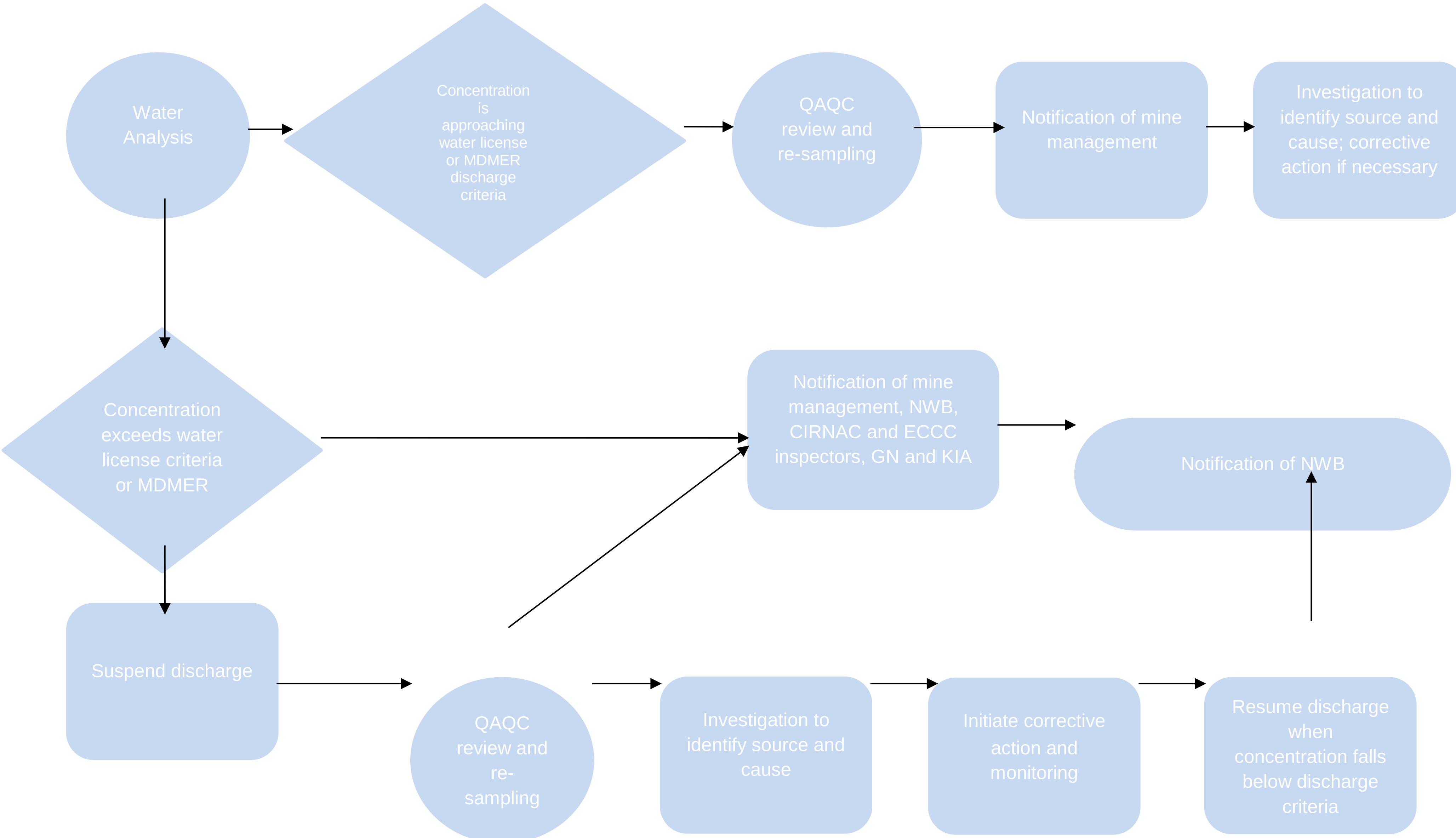
- Best management practices for sediment and erosion control would be employed to reduce TSS concentrations (i.e., flow control, sedimentation basin construction silt fencing, etc; see Sediment and Erosion Management Plan)
- Addition of a coagulant for the reduction of TSS in pond water;
- Use of geotextile or reamouring of banks to filter and reduce TSS in pond/ditch water;
- Deployment of absorbent booms and/or barriers within ponds to isolate surface petroleum hydrocarbon films for removal and/or treatment;
- Adjustments to on-site sewage treatment for the reduction of BOD and E. coli concentrations; Addition of lime to increase a low pH value or reduce metal concentrations;
- Removal of the offending source rock or the prevention of surface waters coming into contact with the offending source rock in the case of ARD; and/or
- Implementation of the *Freshet Action Plan* to proactively identify any issues around areas of concern; conduct additional monitoring, and control and contain seepage or movement of TSS on site.

Table 3.6: Action Plan for Regulated Discharge

Example	Action Plan

Exceeds water license discharge criteria or MDMER	1. Suspension of discharge activities; 2. QA/QC review and analysis, and re-sample water at the particular location if necessary; 3. Notification of mine management (General Mine Manager and Environment Superintendent) and the regulators: Nunavut Water Board, CIRNAC and ECCC inspectors, GN and the Kivalliq Inuit Association; 4. Investigation to identify possible source(s) and cause(s) of the exceedance; 5. Initiation of corrective actions or water treatment, and follow up monitoring; and 6. Resumption of discharge when concentrations are below the discharge criteria

Figure 3.2: Logic Diagram for Regulated Discharge



3.3.2 Adaptive Management Program for Non-Regulated Discharge

Aside from targeted monitoring studies (i.e. “Effects Assessment Studies”) such as those following construction, the AEMP is the main program aimed at measuring and assessing potential impacts of contaminants in the receiving aquatic environment that are not regulated under MMER or NWB. This program combines with the Environmental Effects Monitoring (EEM) required under MDMER.

The program is designed to take an integrated, ecosystem-based approach that links mitigation and monitoring of physical/chemical effects to key ecological receptors in the receiving environment. It addresses key issues identified in the Meliadine EA (i.e., mining-related activities with the potential to affect water quality, fish habitat and fish populations). Monitoring results are intended to inform the “adaptive management” process”, supporting the early identification of potential problems and development of mitigation options to address them by comparing results to established threshold and trigger levels.

3.3.2.1 *AEMP Action Level and Significance Threshold*

The AEMP Response Framework links monitoring results to management actions, with the purpose of maintaining the assessment endpoints within acceptable ranges. It is a systematic approach for evaluating AEMP results and responding appropriately, such that potential unexpected effects are identified and mitigation is undertaken to reduce or reverse them, thereby preventing the occurrence of a significant adverse effect. This is accomplished by continually evaluating monitoring data and implementing follow-up actions (e.g., confirmation, further study, mitigation) at pre-defined levels of change in measurement endpoints (i.e., Action Levels). For purposes of this Response Framework, the following terms are used: effect, normal range, benchmark, Action Level, and Significance Threshold.

Action Level – Action Levels (Low, Moderate, and High) are pre-defined levels of environmental change that exceeds normal ranges or benchmarks, or results of statistical tests, or a combination of these. For example, exceedance of the normal range and approach of a benchmark by a water quality parameter in the near-field exposure area may be defined as the Low Action Level. A change that falls within the normal range of variability for the study area would not trigger an Action Level.

Significance Threshold – The Significance Threshold, for the purposes of an AEMP Response Framework, is a magnitude of change that would result in significant adverse effects. It is a clear statement of environmental change that must never be reached. The AEMP Response Framework is designed to prevent reaching the significance threshold for all assessment endpoints.

3.3.2.2 *Action Levels*

The proposed Action Levels are designed to provide an early warning indication of potential adverse effects to plankton and benthos (i.e., food for fish), to fish health, and to the assurance of normal ecological function (including water quality and sediment quality). The proposed Low Action Levels (Table 8-2 and 8-3) are designed such that changes of sufficient magnitude to trigger a Low Action Level response are reported, documented, investigated, and ultimately addressed (i.e., mitigation measures or operation changes are implemented) before Significance Thresholds would ever be reached; if a Low Action Level is reached, Medium and High Action Levels (with response actions) are developed to provide further adaptive management guidance to the Mine to avoid reaching the Significance Thresholds. The type of management response taken after reaching an Action Level will depend on the type and magnitude of effect observed.

Further details on the integrated aquatic effects action plan are provided in Golder, 2018.

SECTION 4. FLOW VOLUMES

Flow volumes within the mine footprint will be measured daily during periods of discharge. Flow volume measurements will be conducted using volumetric flow meters attached to applicable pumps. For permanent pumping arrangements such as fresh water pumping systems flows will be measured using permanent in line flow meters. For periodic batch discharges, such as secondary containment sumps, portable flow meters or calculated pump time and capacity methods will be used.

Detailed pump records are maintained including date, pond/sump number, receiving location of pumped water, pump ID, duration of pumping, and total volume pumped. The average flow rates, total discharge per event and total cumulative discharge will be reported annually.

The monitoring locations for water flow volumes, in accordance with Part I, Item 9, and Table 2 of the Water License, include:

- The volume of fresh Water obtained from Meliadine Lake at Monitoring Program Station MEL-11;
- The volume of fresh Water transferred to the Meliadine Lake during lakes' dewatering activities;
- The volume of fresh Water obtained along the road and Meliadine River for dust suppression activities;
- The volume of Effluent discharged from Final Discharge Point at Monitoring Program Station MEL-14;
- The volume of reclaim Water obtained from the CP1;
- The volume of Effluent discharged onto tundra at Monitoring Program Station MEL-25 or transferred to CP1 from the Itivia Site Fuel Storage and Containment Facility;
- The volume of Effluent and Fresh Water transferred to the pits during pits' flooding;

SECTION 5. REPORTING

Reporting of water quality results is to be conducted on two levels a) monthly and annually with the results of the monitoring program and per MDMER requirements and b) in response to exceedances.

5.1 ANNUAL REPORTING

An annual report is to be submitted to the NWB, KIA, Department of Fisheries and Oceans, Crown-Indigenous Relations and Northern Affairs Canada, Nunavut Impact Review Board, Government of Nunavut, and other interested parties by March 31st of the following year. The report is to summarize the following:

- Monitoring results for each sampling station during the year and for the life of mine (construction to end of closure); activities during the year at each station; and any exceedances at stations, the action plan applied to the exceedance, and the results of the action plan;
- Annual seep water chemistry results; including location of the samples, sources of the water collected, and results of chemical analyses of the samples;
- Receiving water monitoring results;

- Spills and any accidental releases; event monitoring activities conducted following containment, remediation, and reclamation; and the results of EM program, any exceedance in EM results, and the action plan following the exceedance;
- Measured flow volumes;
- Effluent flow rates, volumes and calculated chemical loadings following the requirements of MDMER; and
- Results of QA/QC analytical data.

5.2 EXCEEDANCE REPORTING

Any measured concentration at a CM station exceeding a regulated discharge criterion stipulated in the License or MDMER will be reported to the NWB and Environment Canada and Climate Change upon receipt of the analysis. In addition, results of the action plan will be reported and, where necessary, mitigation options identified within 90 days after receipt of the analyses.

Exceedances in the concentration of a parameter in receiving water will be reported as specified in the AEMP and EEM – MDMER accordingly.

SECTION 6. REFERENCES

Golder Associates Ltd. 2016. Aquatic Effects Monitoring Program (AEMP) Design Plan. Version 1. June 2016. 6513-REP-03.

APPENDIX G • WATER MANAGEMENT STRUCTURE INSPECTION TEMPLATE

Environmental Inspection Report for Meliadine Gold Project

Water Licence 2AM-1424 Part E Item 15 – Water Management Structures – (Site Services Owner)

DATE : Inspected By :

Location :

In Compliance with	Subject	Conform	Non-conform	N/A	Comments
Water Management Plan Section 3.11.1 Culvert and Water Crossing Inspections	Ensure no damage to the inlet or outlet of culverts **on site** which may impede flow capacity.				
Water Management Plan Section 3.11.1 Culvert and Water Crossing Inspections	Ensure no damage to the inlet or outlet of culverts on the **AWAR and Bypass Road and at Itivia** which may impede flow capacity.				
Water Management Plan Section 3.11.1 Culvert and Water Crossing Inspections	Ensure no blockages within the culvert including snow, ice, and debris.				
Water Management Plan Section 3.11.1 Culvert and Water Crossing Inspections	Ensure no snow cover or snow piles, which would prevent routing of water into or out of the culvert (only applicable within 1 month prior to freshet and during freshet).				
Water Management Plan Section 3.11.1 Culvert and Water Crossing Inspections	Ensure no bed erosion upstream and downstream of watercourse crossing structures.				
Water Management Plan Section 3.11.1 Culvert and Water Crossing Inspections	Ensure no scour under bridge abutments and abutment foundations.				

Water Management Plan Section 3.11.1 Culvert and Water Crossing Inspections	Ensure no erosion along cutslopes and fillslopes of embankments (rill and gully erosion)				
Water Management Plan Section 3.11.2 Containment Pond Inspections	Ensure no unplanned inputs to containment ponds via surface runoff which are not part of the water management system				
Water Management Plan Section 3.11.2 Containment Pond Inspections	Ensure water level elevations in containment ponds are not above the operating manual maximum (OMM)				
Water Management Plan Section 3.11.3 Dike Inspections	Monitoring and documentation of **changes** in previously observed movement and /or deterioration of dikes. Weekly during flow and monthly thereafter.				
Water Management Plan Section 3.11.3 Dike Inspections	Monitoring and documentation of **newly** observed movement and /or deterioration dikes. Weekly during flow and monthly thereafter.				
Water Management Plan Section 3.11.3 Dike Inspections	Monitoring and documentation of seepage through the downstream dike slope. Weekly during flow and monthly thereafter.				
Water Management Plan Section 3.11.3 Dike Inspections	Monitoring and documentation of water presence in channel/sump downstream of dike. Weekly during flow and monthly thereafter.				
Water Management Plan Section 3.11.3 Dike Inspections	Monitoring and documentation of areas of deterioration or movement of dike channel/sump. Weekly during flow and monthly thereafter.				

Water Management Plan Section 3.11.3 Dike Inspections	Issues observed as part of dike inspections will be addressed by Agnico Eagle geotechnical engineer				
Water Management Plan Section 3.11.4 Diversion Channel and Berm Inspections	Ensure no obstructions to flow (i.e., ice, debris) within channels on site which would impede maximum flow capacity				
Water Management Plan Section 3.11.4 Diversion Channel and Berm Inspections	Ensure no inflows to channels on site which are not part of the water management system				
Water Management Plan Section 3.11.4 Diversion Channel and Berm Inspections	Ensure no slumping or failure of banks of channels on site which could impede flow or introduce TSS				
Water Management Plan Section 3.11.4 Diversion Channel and Berm Inspections	No seepage through water diversion berms resulting in water movement to areas not planned within the water management system				
Water Management Plan Section 3.11.4 Diversion Channel and Berm Inspections	No erosion of diversion berms (i.e., undercutting, slope failure)				

Comments / Recommendations

Environmental Personnel Name :

Signature :

Actions Corrected:
____
____
____
____

Supervisor Name: ____

Signature: ____

Picture 1:

Picture 2:

Picture 3:

APPENDIX H • 2019 WATER BALANCE AND QUALITY FORECAST RESULTS

Containment Pond 1										
	Volume	TDS	Inflows								
Result:	Volume (end of month)	Monthly Average TDS	South of Esker	H15 Watershed	CP1 East Watershed	CP1 West Watershed	Ore Stockpiles	CP1 West Shore Watershed	Industrial Pad Runoff	Portal 2 Catchment	Crusher Pad Runoff
Unit:	m3	mg/L	m3	m3	m3	m3	m3	m3	m3	m3	m3
2019 Jan	112247.2	1969.523	0	0	0	0	0	0	0	0	0
2019 Feb	119396.3	1879.312	0	0	0	0	0	0	0	0	0
2019 Mar	126733.5	1797.157	0	0	0	0	0	0	0	0	0
2019 Apr	131650.3	1745.63	0	0	0	0	0	0	0	0	0
2019 May	136730.4	1709.831	0	0	0	0	0	0	0	0	0
2019 Jun	235123.7	1804.616	9371.438	17273.25	11579.31	22168.33	1932.813	11475.49	24239.98	3237.486	1029.42
2019 Jul	262239.8	2329.541	1625.417	2995.935	2125.795	3981.168	521.462	1381.294	6038.066	876.312	278.64
2019 Aug	314478.2	2786.252	2357.999	4346.216	3000.123	5678.327	799.5072	1715.708	7451.265	1046.706	332.82
2019 Sep	365789.9	3026.668	1927.459	3552.654	2414.665	4597.84	484.9281	1156.391	5502.455	754.602	239.94
2019 Oct	390387	3174.841	595.223	1097.103	731.3918	1403.299	66.20123	313.6647	1476.144	194.736	61.92
2019 Nov	398063.8	3222.95	0	0	0	0	0	0	0	0	0
2019 Dec	405744.6	3171.37	0	0	0	0	0	0	0	0	0

Containment Pond 1											
	Inflows										
Result:	Landfill Runoff	H13 Catchment Runoff	WRSF2 Catchment	Direct Precipitation	Runoff from TSF	WRSF1 Runoff	Recirculated from EWTP	Pumped from CP3	Pumped from CP4	Pumped from CP5	SWTP Permeate
Unit:	m3	m3	m3	m3	m3	m3	m3	m3	m3	m3	m3
2019 Jan	0	0	0	0	0	0	0	0	0	0	3303.72
2019 Feb	0	0	0	0	0	0	0	0	0	0	3696
2019 Mar	0	0	0	0	0	0	0	0	0	0	3493
2019 Apr	0	0	0	0	0	0	0	0	0	0	1200
2019 May	0	0	0	0	0	0	0	0	0	0	1240
2019 Jun	931.266	24362.21	18771.24	15324.5	7095.284	2972.649	0	24074.28	0	0	1551.942
2019 Jul	252.072	4225.471	3554.507	0	1920.528	750.6201	0	10481.84	0	0	4119.5
2019 Aug	301.086	6129.909	4943.415	0	2293.964	908.4846	0	13856.72	0	0	4092
2019 Sep	217.062	5010.668	3944.967	2233.305	1653.788	617.0021	0	10719.85	0	0	3965.5
2019 Oct	56.016	1547.356	1181.911	4082.843	426.784	119.1622	0	3080.324	0	0	4092
2019 Nov	0	0	0	0	0	0	0	0	0	0	3960
2019 Dec	0	0	0	0	0	0	0	0	0	0	3960

Containment Pond 1										
	Inflows			Outflows						
Result:	Truck Wash	STP	RO Permeate	Steady Rate Treatment	Overflow	Discharge to Sea	Evaporation	To CP5	Seepage through DCP1	EWTP
Unit:	m3	m3	m3	m3	m3	m3	m3	m3	m3	m3
2019 Jan	16	3798.21	0	0	0	0	0	0	0	0
2019 Feb	16	3437.13	0	0	0	0	0	0	0	0
2019 Mar	20	3824.16	0	0	0	0	0	0	0	0
2019 Apr	16	3700.8	0	0	0	0	0	0	0	0
2019 May	16	3824.16	0	0	0	0	0	0	0	0
2019 Jun	20	3700.8	0	0	0	0	0	0	0	106353.2
2019 Jul	16	3824.16	0	0	0	0	18444.97	0	0	4038.207
2019 Aug	16	3824.16	0	0	0	0	7409.704	0	0	4360.83
2019 Sep	20	3700.8	0	0	0	0	0	0	0	2149.706
2019 Oct	16	3824.16	0	0	0	0	0	0	0	0
2019 Nov	16	3700.8	0	0	0	0	0	0	0	0
2019 Dec	20	3700.8	0	0	0	0	0	0	0	0

Containment Pond 3								
	Volume	TDS	Inflows				Outflows	
Result:	Volume (end of month)	Monthly Average TDS	Direct Precipitation	Natural Runoff	Disturbed Runoff	TSF Runoff	To Environment	To CP1
Unit:	m3	mg/l	m3	m3	m3	m3	m3	m3
2019 Jan	0	0	0	0	0	0	0	0
2019 Feb	0	0	0	0	0	0	0	0
2019 Mar	0	0	0	0	0	0	0	0
2019 Apr	0	0	0	0	0	0	0	0
2019 May	0	0	0	0	0	0	0	0
2019 Jun	25454	4872.601	0	30075.3	5054	14398.98	0	24074.28
2019 Jul	25454	5158.659	0	5216.37	1368	3897.468	0	10481.84
2019 Aug	25454	5441.455	0	7567.41	1634	4655.309	0	13856.72
2019 Sep	25454	5460.194	0	6185.7	1178	3356.153	0	10719.85
2019 Oct	25454	5387.477	0	1910.22	304	866.104	0	3080.324
2019 Nov	25454	5349.831	0	0	0	0	0	0
2019 Dec	25454	5349.831	0	0	0	0	0	0

Containment Pond 5											
	Volume	TDS	Inflows							Outflows	
Result:	Volume (end of month)	Monthly Average TDS	CP5 Catchment	WRSF 1 Catchment	Direct Precipitation	WRSF1 Runoff	Pumped from DCP5	Pumped from P3	Pumped from CP1	Overflow to CP1	Overflow to P1
Unit:	m3	mg/L	m3	m3	m3	m3	m3	m3	m3	m3	m3
2019 Jan	21482.37	12200	0	0	0	0	0	0	0	0	0
2019 Feb	21482.37	12200	0	0	0	0	0	0	0	0	0
2019 Mar	21482.37	12200	0	0	0	0	0	0	0	0	0
2019 Apr	21482.37	12200	0	0	0	0	0	0	0	0	0
2019 May	21482.37	12200	0	0	0	0	0	0	0	0	0
2019 Jun	10000	5592.921	22712.53	18195.42	2956.112	3973.06	0	0	0	0	0
2019 Jul	10000	4334.254	4361.398	3340.417	0	1002.185	0	0	0	0	0
2019 Aug	10000	5705.95	6155.219	4714.314	0	1213.01	0	0	0	0	0
2019 Sep	13591.38	5630.497	4923.284	3794.34	287.2397	824.9692	0	0	0	0	0
2019 Oct	16964.68	6914.495	1431.923	1149.29	633.2043	158.8829	0	0	0	0	0
2019 Nov	16964.68	7950.064	0	0	0	0	0	0	0	0	0
2019 Dec	16964.68	7950.064	0	0	0	0	0	0	0	0	0

Containment Pond 5							
	Outflows						
Result:	Overflow to P2	Overflow to P3	Pumped to CP1	Seepage to DCP5	Evaporation	RO Unit - Brine	RO Unit - Permeate
Unit:	m3	m3	m3	m3	m3	m3	m3
2019 Jan	0	0	0	0	0	0	0
2019 Feb	0	0	0	0	0	0	0
2019 Mar	0	0	0	0	0	0	0
2019 Apr	0	0	0	0	0	0	0
2019 May	0	0	0	0	0	0	0
2019 Jun	0	0	0	0	0	10084.31	49235.18
2019 Jul	0	0	0	0	2460.033	2497.587	3746.38
2019 Aug	0	0	0	0	953.5013	4451.617	6677.425
2019 Sep	0	0	0	0	0	2495.382	3743.073
2019 Oct	0	0	0	0	0	0	0
2019 Nov	0	0	0	0	0	0	0
2019 Dec	0	0	0	0	0	0	0

Saline Pond												
	Volume	**TDS**	**Inflows**						**Outflows**		
Result:	Volume (end of month)	Monthly Average TDS	Catchment Runoff	Direct Precipitation	Pumped P3	RO Brine	SWTP Brine	Pumped from UG	Evaporation	Pumped to SWTP Brine Mode	Pumped to SWTP Solids Mode
Unit:	m3	mg/L	m3	m3	m3	m3	m3	m3	m3	m3	m3
2019 Jan	13742.88	14808.54	0	0	0	0	1415.88	0	0	0	0
2019 Feb	13742.88	13903.09	0	0	0	0	0	0	0	0	0
2019 Mar	13742.88	13903.09	0	0	0	0	0	0	0	0	0
2019 Apr	13742.88	13903.09	0	0	0	0	0	0	0	0	0
2019 May	13742.88	13903.09	0	0	0	0	0	0	0	0	0
2019 Jun	24627.83	20260.96	1006.166	346.7753	0	10084.31	0	0	0	0	552.3078
2019 Jul	22919.93	19988.99	266.0104	0	0	2497.587	0	0	379.4909	0	4092
2019 Aug	23451.4	19071.36	318.4354	0	0	4451.617	0	0	146.5843	0	4092
2019 Sep	22715.32	18078	229.4377	42.59506	0	2495.382	0	0	0	0	3503.5
2019 Oct	22850.69	17785.79	59.33286	76.04437	0	0	0	0	0	0	0
2019 Nov	22850.69	17736.85	0	0	0	0	0	0	0	0	0
2019 Dec	22850.69	17736.85	0	0	0	0	0	0	0	0	0

Saline Pond		
	Outflows	
Result:	Pumped to P3	Overflow (tracked)
Unit:	m3	m3
2019 Jan	0	0
2019 Feb	0	0
2019 Mar	0	0
2019 Apr	0	0
2019 May	0	0
2019 Jun	0	0
2019 Jul	0	0
2019 Aug	0	0
2019 Sep	0	0
2019 Oct	0	0
2019 Nov	0	0
2019 Dec	0	0

Underground										
	Volume				**TDS**			**Inflows**		**Outflows**	
Result:	Sump System Volume (end of month)	Stope 75 Volume (end of month)	Stope 350 Volume (end of month)	Cumulative Underground Overflow (tracked)	Sump System Monthly Average TDS	Stope 75 Monthly Average TDS	Stope 350 Monthly Average TDS	Truck Wash	Groundwater Inflow	Lost to Rock Water Content	To SWTP Solids Mode
Unit:	m3	m3	m3	m3	mg/L	mg/L	mg/L	m3	m3	m3	m3
2019 Jan	830	4830	1100	0	55800	55794.9	55800	0	1240	0	0
2019 Feb	830	2254	1100	0	55800	55772.9	55800	0	1120	0	3696
2019 Mar	830	1	1100	0	55800	56572.61	55800	0	1240	0	3493
2019 Apr	830	1	1100	0	55800	55800	55800	0	1200	0	1200
2019 May	830	1	1100	0	55800	55800	55800	0	1240	0	1240
2019 Jun	830	168.366	1100	0	55800	55800	55800	0	1200	0	1032.634
2019 Jul	813.2645	1370.033	1100	0	55800	55800	55800	0	1240	55.06886	0
2019 Aug	830	7253.963	1100	0	55800	55800	55800	0	7440	1539.334	0
2019 Sep	830	10000	3543.666	0	55800	55800	55800	0	7200	1553.797	456.5
2019 Oct	830	10000	5169.999	0	55800	55800	55800	0	7440	1721.668	4092
2019 Nov	830	10000	6340	509.5294	55800	55800	55800	0	7200	1560.469	3960
2019 Dec	830	10000	6340	2390.044	55800	55800	55800	0	7200	1359.485	3960

Underground							
	Outflows						
Result:	To SWTP Brine Mode	Pumped to P3	Pumped to P2	Pumped to P1	Pumped to Saline Pond	Discharged to Sea	Uncontained
Unit:	m3	m3	m3	m3	m3	m3	m3
2019 Jan	5244	0	0	0	0	0	0
2019 Feb	0	0	0	0	0	0	0
2019 Mar	0	0	0	0	0	0	0
2019 Apr	0	0	0	0	0	0	0
2019 May	0	0	0	0	0	0	0
2019 Jun	0	0	0	0	0	0	0
2019 Jul	0	0	0	0	0	0	0
2019 Aug	0	0	0	0	0	0	0
2019 Sep	0	0	0	0	0	0	0
2019 Oct	0	0	0	0	0	0	0
2019 Nov	0	0	0	0	0	0	509.5294
2019 Dec	0	0	0	0	0	0	1880.515

P-Area (P1)												
	Volume	**TDS**	**Inflows**									
Result:	Volume (end of month)	Monthly Average TDS	Pumped from Portal 2	Overflow from CP5	Natural Runoff	Disturbed Runoff	Direct Precipitation	Waste Rock Runoff	From WRSF1	Batch Plant	Pumped from DP1
Unit:	m3	mg/L	m3	m3	m3	m3	m3	m3	m3	m3	m3
2019 Jan	4780.69	21869.53	0	0	0	0	0	0	0	0	0
2019 Feb	4780.69	22578.54	0	0	0	0	0	0	0	0	0
2019 Mar	4780.69	23287.54	0	0	0	0	0	0	0	0	0
2019 Apr	4780.69	24020.59	0	0	0	0	0	0	0	0	0
2019 May	4780.69	24753.63	0	0	0	0	0	0	0	0	0
2019 Jun	2519.543	71092.29	0	0	0	10797.06	1339.07	1442.724	0	0	0
2019 Jul	1000	385783.2	0	0	0	3301.09	0	390.5118	0	0	0
2019 Aug	1000	477220.1	0	0	0	3957.756	0	466.4446	0	0	0
2019 Sep	1000	553830.9	0	0	0	2853.266	61.0435	336.274	0	0	0
2019 Oct	2447.435	406213.1	0	0	0	705.5518	171.3472	86.7804	0	0	0
2019 Nov	2447.435	250700.6	0	0	0	0	0	0	0	0	0
2019 Dec	2447.435	252109	0	0	0	0	0	0	0	0	0

P-Area (P1)								
	Inflows				**Outflows**			
Result:	Cement Truck Water	Pumped from P2	Pumped from P3	Overflow from P3	Evaporators	Seepage to DP1	Evaporation	Overflow (tracked)
Unit:	m3	m3	m3	m3	m3	m3	m3	m3
2019 Jan	0	0	0	0	0	0	0	0
2019 Feb	0	0	0	0	0	0	0	0
2019 Mar	0	0	0	0	0	0	0	0
2019 Apr	0	0	0	0	0	0	0	0
2019 May	0	0	0	0	0	0	0	0
2019 Jun	0	0	0	0	15840	0	0	0
2019 Jul	0	0	0	0	4641.166	0	569.9786	0
2019 Aug	0	0	0	0	4213.94	0	210.2609	0
2019 Sep	0	0	0	0	3250.583	0	0	0
2019 Oct	0	0	0	513.8342	30.0788	0	0	0
2019 Nov	0	0	0	0	0	0	0	0
2019 Dec	0	0	0	0	0	0	0	0

P-Area (P2)											
	Volume	TDS	Inflows								Outflows
Result:	Volume (end of month)	Monthly Average Concentration	Natural Runoff	Disturbed Runoff	Direct Precipitation	Waste Rock Runoff	Pumped from P3	Pumped from Stope 75	Overflow from CP5	Waste Rock Drainage	Evaporation
Unit:	m3	mg/L	m3	m3	m3	m3	m3	m3	m3	m3	m3
2019 Jan	104.81	19600	0	0	0	0	0	0	0	0	0
2019 Feb	104.81	19600	0	0	0	0	0	0	0	0	0
2019 Mar	104.81	19600	0	0	0	0	0	0	0	0	0
2019 Apr	104.81	19600	0	0	0	0	0	0	0	0	0
2019 May	104.81	19600	0	0	0	0	0	0	0	0	0
2019 Jun	5563.494	11014.63	378.162	3440.459	463.2935	1176.769	0	0	0	0	0
2019 Jul	6226.724	10836.17	65.5898	880.3659	0	318.524	0	0	0	0	601.2498
2019 Aug	6828.18	11539.06	95.1514	1044.319	0	380.4593	0	0	0	0	238.2542
2019 Sep	6828.18	11569.89	77.778	751.9566	69.43901	274.2846	0	0	0	0	0
2019 Oct	6828.18	11355.95	24.0188	194.0533	124.373	70.78312	0	0	0	0	0
2019 Nov	6828.18	11245.97	0	0	0	0	0	0	0	0	0
2019 Dec	6828.18	11245.97	0	0	0	0	0	0	0	0	0

P-Area (P2)		
	Outflows	
Result:	Pumped to P1	Overflow (to P3)
Unit:	m3	m3
2019 Jan	0	0
2019 Feb	0	0
2019 Mar	0	0
2019 Apr	0	0
2019 May	0	0
2019 Jun	0	0
2019 Jul	0	0
2019 Aug	0	680.2193
2019 Sep	0	1173.458
2019 Oct	0	413.2282
2019 Nov	0	0
2019 Dec	0	0

P-Area (P3)											
	Volume	**TDS**	**Inflows**								
Result:	Volume (end of month)	Monthly Average TDS	Natural Runoff	Disturbed Runoff	Direct Precipitation	Waste Rock Runoff	Pumped from DP3	Pumped from Saline Pond	Pumped from Portal 1	Overflow from P2	Pumped from Stope 75
Unit:	m3	mg/L	m3	m3	m3	m3	m3	m3	m3	m3	m3
2019 Jan	7482.97	20100	0	0	0	0	0	0	0	0	0
2019 Feb	7482.97	20100	0	0	0	0	0	0	0	0	0
2019 Mar	7482.97	20100	0	0	0	0	0	0	0	0	0
2019 Apr	7482.97	20100	0	0	0	0	0	0	0	0	0
2019 May	7482.97	20100	0	0	0	0	0	0	0	0	0
2019 Jun	13783.23	16377.66	0	3433.21	1228.547	0	0	0	1638.5	0	0
2019 Jul	13747.94	14232.56	0	892.0443	0	0	0	0	450	0	0
2019 Aug	15480.77	14502.28	0	1055.891	0	0	0	0	537.5	680.2193	0
2019 Sep	17951.49	13947.89	0	749.296	160.4624	0	0	0	387.5	1173.458	0
2019 Oct	18431.67	13431.39	0	193.3503	287.4392	0	0	0	100	413.2282	0
2019 Nov	18431.67	13259.85	0	0	0	0	0	0	0	0	0
2019 Dec	18431.67	13259.85	0	0	0	0	0	0	0	0	0

P-Area (P3)								
	Inflows	**Outflows**						
Result:	Overflow from CP5	Evaporation	Pumped to P1	Pumped to P2	Pumped to CP5	Seepage to DP3	Pumped to Saline Pond	Overflow (to P1)
Unit:	m3	m3	m3	m3	m3	m3	m3	m3
2019 Jan	0	0	0	0	0	0	0	0
2019 Feb	0	0	0	0	0	0	0	0
2019 Mar	0	0	0	0	0	0	0	0
2019 Apr	0	0	0	0	0	0	0	0
2019 May	0	0	0	0	0	0	0	0
2019 Jun	0	0	0	0	0	0	0	0
2019 Jul	0	1377.335	0	0	0	0	0	0
2019 Aug	0	540.7764	0	0	0	0	0	0
2019 Sep	0	0	0	0	0	0	0	0
2019 Oct	0	0	0	0	0	0	0	513.8342
2019 Nov	0	0	0	0	0	0	0	0
2019 Dec	0	0	0	0	0	0	0	0