

## APPENDIX C

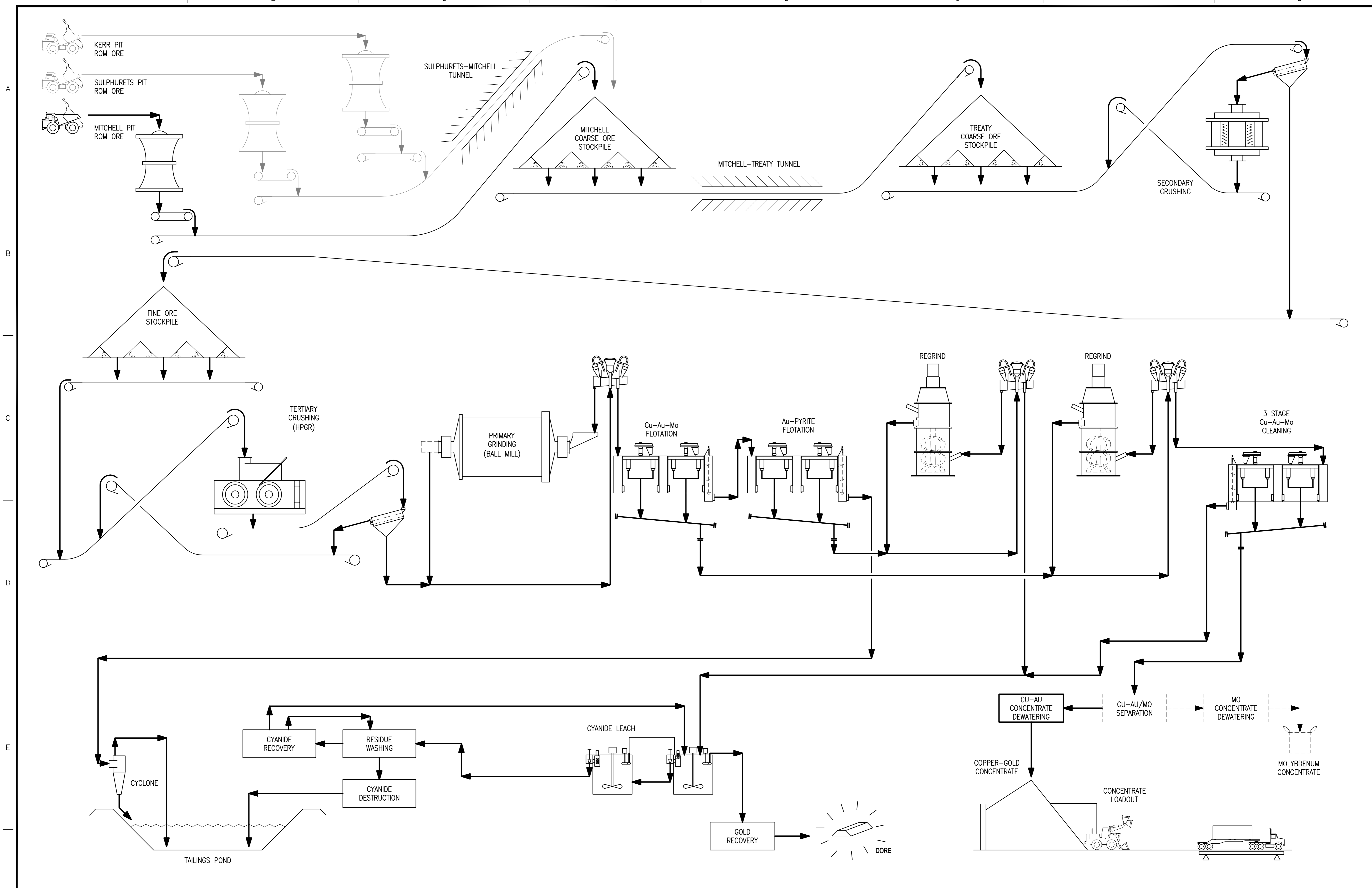
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PROCESS FLOWSHEETS, LAYOUTS, AND EQUIPMENT LIST

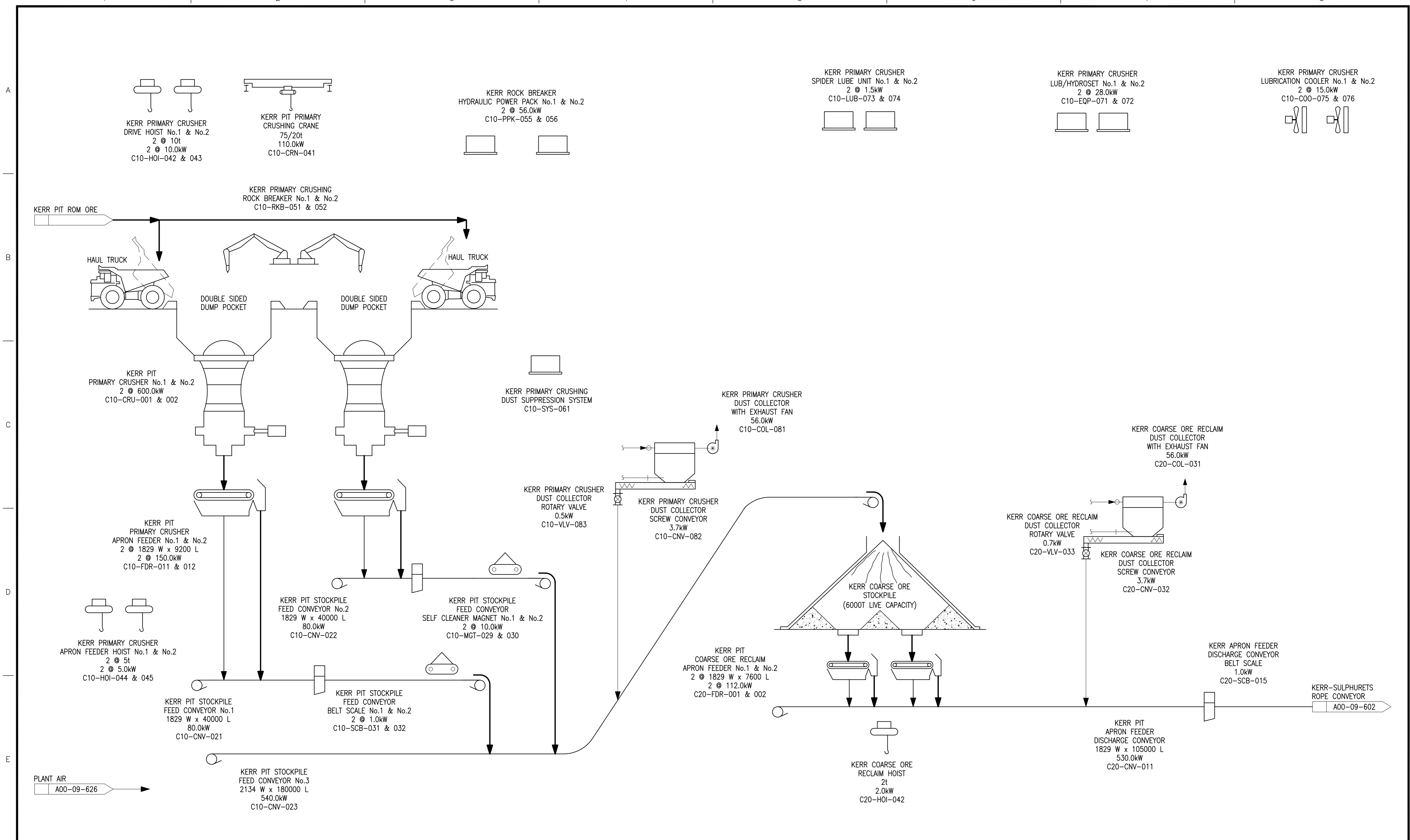
## *Appendix C1*

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### *Process Flowsheet Diagrams*



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	CLIENT	PROJ. NO.	PROCESS	ELECTR.	INSTR.	MECH.	STRUCT.	SPRINK.	ARCH.	REV. No.	ISSUE No.	DESCRIPTION	DATE	BY																				
										A	1	ISSUED FOR REPORT	12JUL12	AO																				
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FILENAME	PROJECT NUMBER	DRAWING NUMBER	REV.																															
A0009640.DWG	12528801.00	A00-09-640	A																															



WATER SOLUTIONS		LEGEND	
t/HR-m <sup>3</sup> /HR		t/HR solids	S.G. solids m <sup>3</sup> /HR solids
t/HR water	% solids	m <sup>3</sup> /HR water	
t/HR pulp	S.G. pulp	m <sup>3</sup> /HR pulp	

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DWG. NO.	REFERENCE DRAWINGS

CLIENT	PROJ. NO.	PROJ. NAME	PROJ. LOCATION	PROJ. DATE	PROJ. STATUS	PROJ. DESCRIPTION	PROJ. CONTACT	PROJ. PHONE	PROJ. FAX	PROJ. EMAIL	PROJ. WEBSITE

CLIENT	PROJ. NO.	PROJ. NAME	PROJ. LOCATION	PROJ. DATE	PROJ. STATUS	PROJ. DESCRIPTION	PROJ. CONTACT	PROJ. PHONE	PROJ. FAX	PROJ. EMAIL	PROJ. WEBSITE

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CLIENT	PROJ. NO.	PROJ. NAME	PROJ. LOCATION	PROJ. DATE	PROJ. STATUS	PROJ. DESCRIPTION	PROJ. CONTACT	PROJ. PHONE	PROJ. FAX	PROJ. EMAIL	PROJ. WEBSITE

SECTION: PROCESS

SCALE: NONE DATE: 15MAR12

DESIGN. BY: JH 15MAR12

DRAWN BY: AO 15MAR12

CHECK. BY:

APP. BY:

CLIENT: SEABRIDGE GOLD

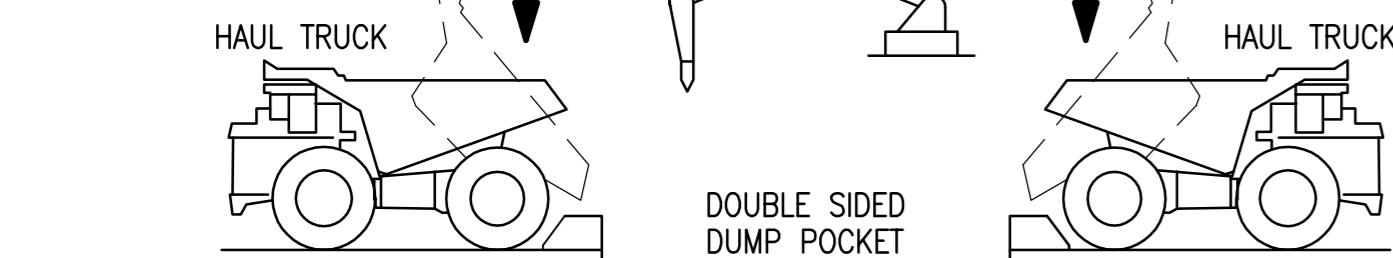
BRITISH COLUMBIA, CANADA

TETRA TECH WARDROP

TITLE			
KERR-SULPHURETS-MITCHELL PROJECT (PFS UPDATE - 2012)			
PROCESS FLOW DIAGRAM No.01			
KERR PIT PRIMARY CRUSHING AND COARSE ORE STOCKPILE			
FILENAME	PROJECT NUMBER	DRAWING NUMBER	REV.
A0009601.DWG	12528801.00	A00-09-601	A

SULPHURETS PIT ROM ORE  
A00-09-601

SULPHURETS PIT ROM ORE



SULPHURETS PIT PRIMARY CRUSHER  
1524 x 2261  
600.0kW  
C12-CRU-001

SULPHURETS PIT PRIMARY CRUSHER APRON FEEDER  
1829 W x 9200 L  
150.0kW  
C12-FDR-011

SULPHURETS PRIMARY CRUSHER APRON FEEDER HOIST  
5t  
5.0kW  
C12-HOI-043

SULPHURETS PRIMARY CRUSHER DRIVE HOIST  
10t  
10.0kW  
C12-HOI-042

PLANT AIR  
A00-09-626

SULPHURETS PRIMARY CRUSHING ROCK BREAKER  
C12-RKB-051

SULPHURETS ROCK BREAKER HYDRAULIC POWER PACK  
56.0kW  
C12-PPK-055

SULPHURETS PIT PRIMARY CRUSHING CRANE  
75/20t  
110.0kW  
C12-CRN-041

SULPHURETS PRIMARY CRUSHING DUST SUPPRESSION SYSTEM  
C12-SYS-061

SULPHURETS PRIMARY CRUSHER DUST COLLECTOR WITH EXHAUST FAN  
56.0kW  
C12-COL-081

SULPHURETS PRIMARY CRUSHER DUST COLLECTOR ROTARY VALVE  
0.5kW  
C12-VLV-083

SULPHURETS PRIMARY CRUSHER DUST COLLECTOR SCREW CONVEYOR  
3.7kW  
C12-CNV-082

SULPHURETS CRUSHER DISCHARGE CONVEYOR No.1  
1829 W x 280000 L  
80.0kW  
C12-CNV-021

SULPHURETS CRUSHER DISCHARGE CONVEYOR No.1 SELF CLEANER MAGNET  
10.0kW  
C12-MGT-029

SULPHURETS CRUSHER DISCHARGE CONVEYOR No.1 BELT SCALE  
1.0kW  
C12-SCB-031

KERR PIT APRON FEEDER DISCHARGE CONVEYOR  
1829 W x 105000 L  
530.0kW  
C20-CNV-011

KERR-SULPHURETS ROPE CONVEYOR  
1829 W x 2482000 L  
(7650.0)kW  
D30-CNV-010

KERR CONVEYOR No.1 TO SULPHURETS PORTAL  
1829 W x 400000 L  
2985.0kW  
D30-CNV-011

KERR CONVEYOR No.2 TO SULPHURETS PORTAL  
1829 W x 250000 L  
1870.0kW  
D30-CNV-012

SULPHURETS CRUSHER DISCHARGE CONVEYOR No.2  
1524 W x 250000 L  
1120.0kW  
C12-CNV-022

SULPHURETS-MITCHELL TUNNEL CONVEYOR  
1829 W x 2960000 L  
(4575.0)kW  
D24-CNV-311

SULPHURETS-MITCHELL TUNNEL

SULPHURETS-MITCHELL ORE TRANSFER CONVEYOR  
A00-09-603

SULPHURETS PRIMARY CRUSHER SPIDER LUBE UNIT  
1.5kW  
C12-LUB-072

SULPHURETS PRIMARY CRUSHER LUB/HYDROSET  
28.0kW  
C12-EQP-071

SULPHURETS PRIMARY CRUSHER LUBRICATION COOLER  
15.0kW  
C12-COO-073

WATER SOLUTIONS		LEGEND	
t/HR-m <sup>3</sup> /HR	t/HR solids	S.G. solids	m <sup>3</sup> /HR solids
t/HR water	% solids	m <sup>3</sup> /HR water	
t/HR pulp	S.G. pulp	m <sup>3</sup> /HR pulp	

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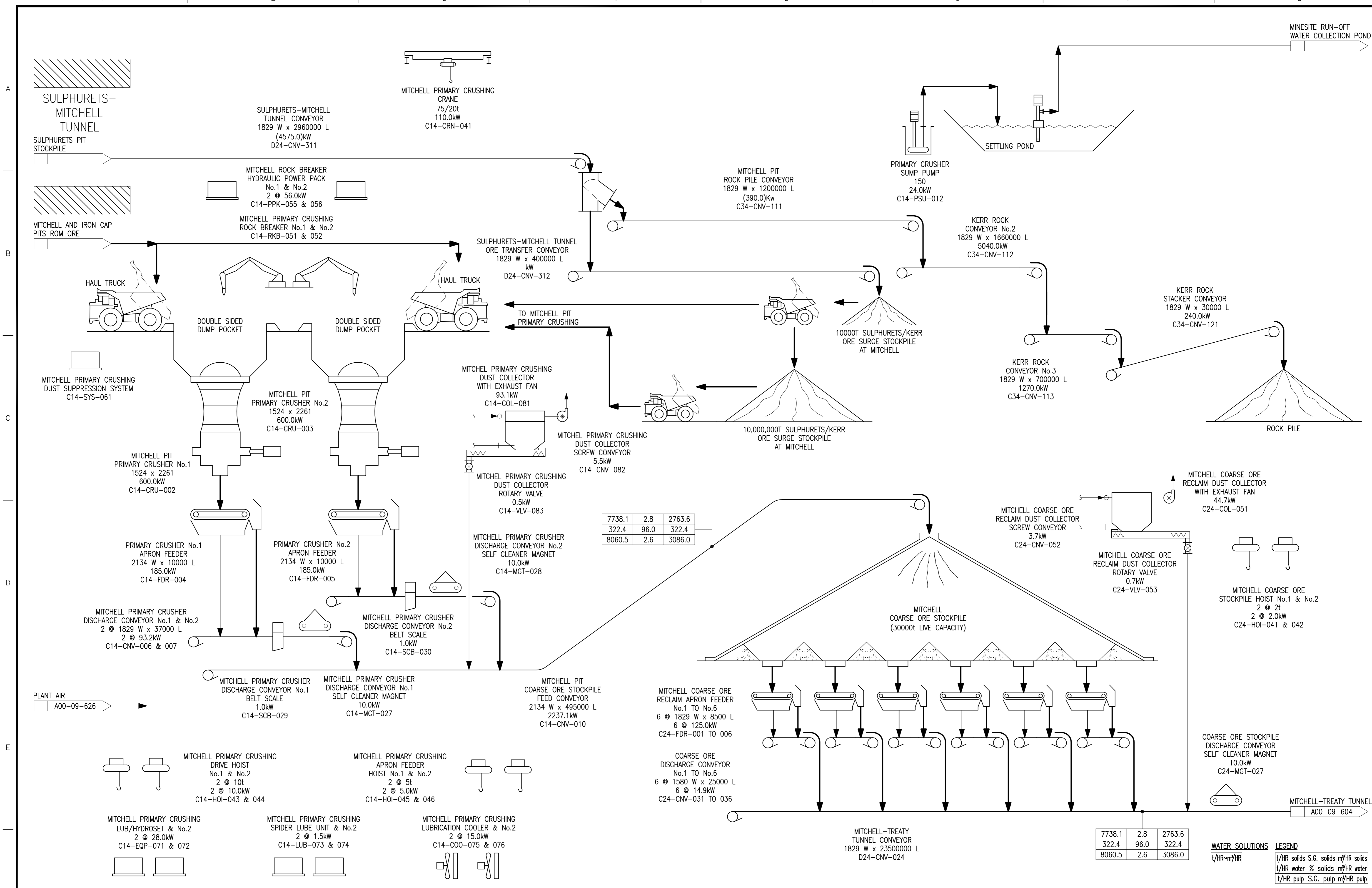
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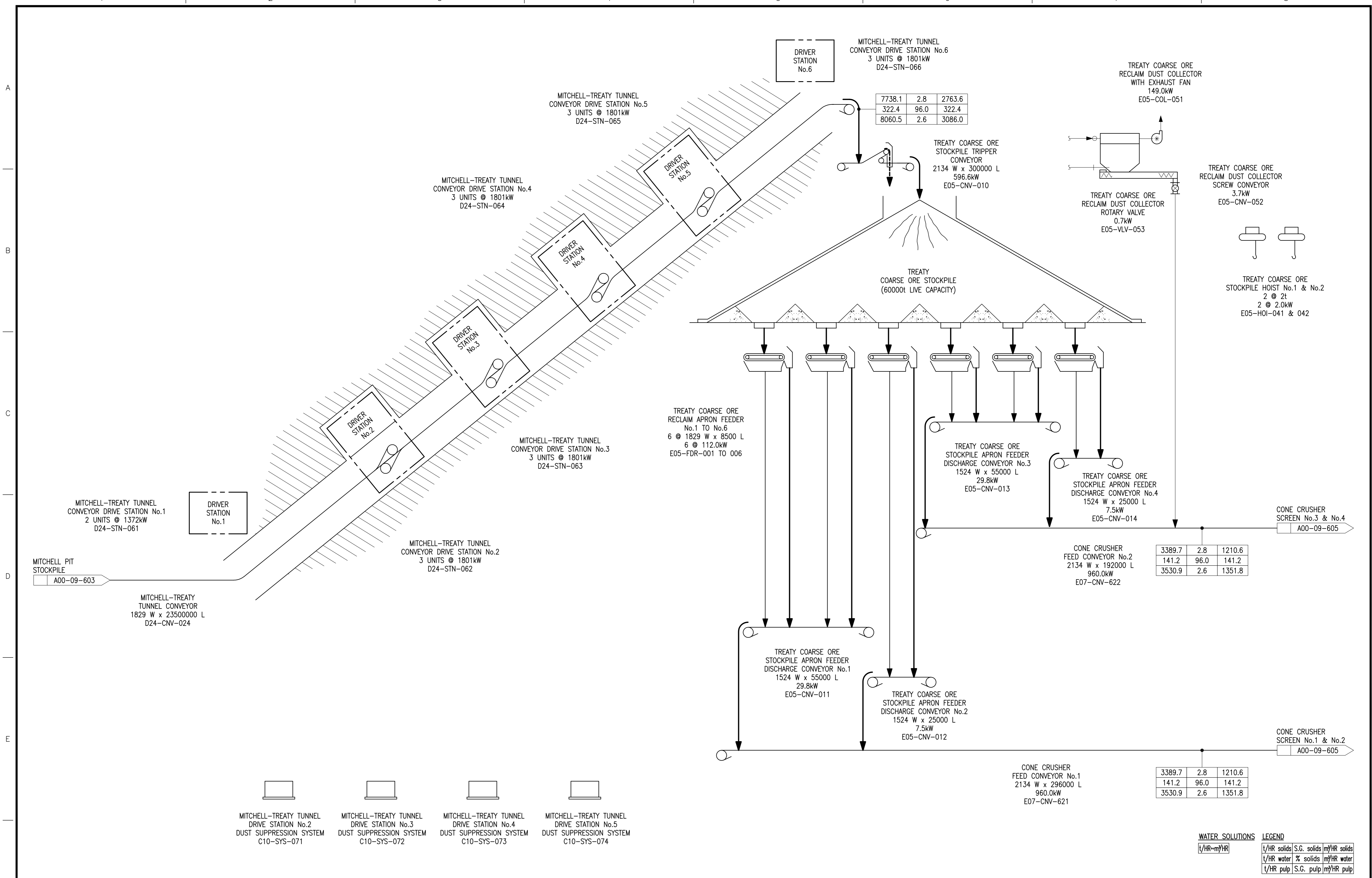
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DESIGN. BY:	JH
DATE:	15MAR12
DRAWN BY:	AO
DATE:	15MAR12
CHECK. BY:	
APP. BY:	

CLIENT: **SEABRIDGE GOLD**  
BRITISH COLUMBIA, CANADA  
**TETRA TECH WARDROP**

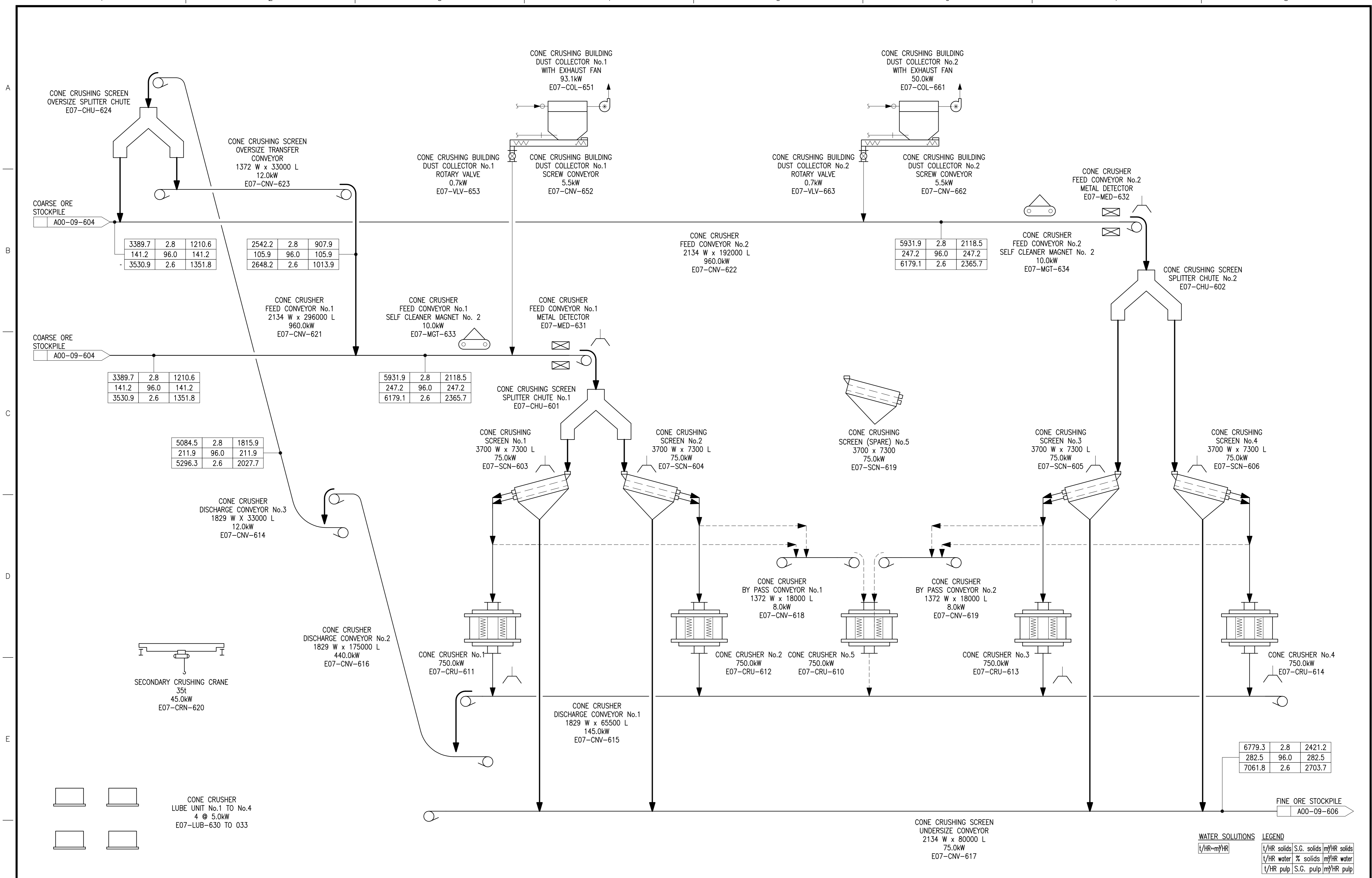
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FILENAME	PROJECT NUMBER	DRAWING NUMBER	REV.
A0009602.DWG	12528801.00	A00-09-602	A



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			ISSUED FOR REPORT	12JUL12	AO	APP. BY:	TETRA TECH WARDROP	MITCHELL TREATY TUNNEL CONVEYOR AND TREATY COARSE ORE STOCKPILE																												
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	CLIENT	PROJ. NO.	PROCESS	ELECTR.	INSTR.	MECH.	STRUCT.	SPRINGS	ARCH.	REV. No.	ISSUE No.	DATE	BY																			
									A	1	12JUL12	AO																				
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FILENAME	PROJECT NUMBER	DRAWING NUMBER	REV.																													
A0009605.DWG	12528801.00	A00-09-605	A																													



SCREEN OVERSIZE  
CONVEYOR No.3  
A00-09-608

CONE CRUSHING  
SCREEN UNDERSIZE  
A00-09-605

CONE CRUSHING SCREEN  
UNDERSIZE CONVEYOR  
2134 W x 80000 L  
75.0kW  
E07-CNV-617

FINE ORE STOCKPILE  
FEED CONVEYOR  
2134 W x 369000 L  
1675.0kW  
E07-CNV-636

HPGR SCREEN OVERSIZE  
CONVEYOR No.3  
1372 W x 163000 L  
235.0kW  
E15-CNV-617

2305.0	2.8	823.2
256.1	90.0	256.1
2561.1	2.4	1079.3

FINE ORE STOCKPILE  
DUST COLLECTOR  
WITH EXHAUST FAN  
56.0kW  
E08-COL-651

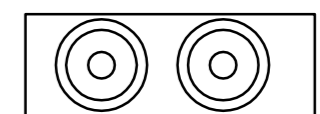
FINE ORE STOCKPILE  
DUST COLLECTOR  
SCREW CONVEYOR  
3.7kW  
E08-CNV-652

FINE ORE STOCKPILE  
DUST COLLECTOR  
ROTARY VALVE  
0.7kW  
E08-VLV-653

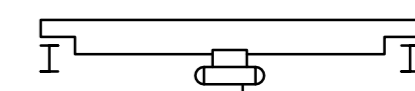
HPGR OVERSIZE CONVEYOR No.3  
SPLITTER CHUTE  
E09-CHU-617

1152.5	2.8	411.6
128.1	90.0	128.1
1280.5	2.4	539.7

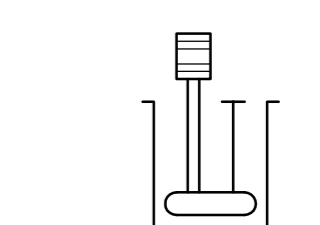
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1280.5	2.4	539.7



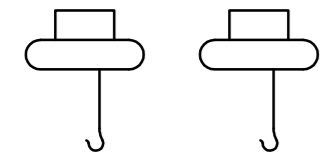
HPGR  
SPARE ROLLER SET  
E09-ROL-681



HPGR BUILDING AREA CRANE  
50t  
75.0kW  
E09-CRN-610



FINE ORE STOCKPILE  
SUMP PUMP  
15.0kW  
E08-PSU-601



FINE ORE STOCKPILE  
HOIST No.1 & No.2  
2 @ 2t  
2 @ 2.0kW  
E08-HOI-641 & 642

FINE ORE RECLAIM APRON  
FEEDER No.1 TO No.6  
6 @ 1524 W x 7600 L  
6 @ 112.0kW  
E08-FDR-601 TO 606

2881.2	2.8	1029.0
120.1	96.0	120.1
3001.3	2.6	1149.1

2881.2	2.8	1029.0
120.1	96.0	120.1
3001.3	2.6	1149.1

HPGR  
FEED CONVEYOR No.1  
1372 W x 645000 L  
600.0kW  
E08-CNV-621

HPGR FEED CONVEYOR No.1  
SELF CLEANER MAGNET  
10.0kW  
E08-MGT-627

HPGR FEED CONVEYOR No.1  
METAL DETECTOR  
10.0kW  
E08-MED-625

HPGR  
FEED CONVEYOR No.2  
1372 W x 645000 L  
600.0kW  
E08-CNV-622

HPGR FEED CONVEYOR No.2  
SELF CLEANER MAGNET  
10.0kW  
E08-MGT-628

HPGR FEED CONVEYOR No.2  
METAL DETECTOR  
10.0kW  
E08-MED-626

HPGR SURGE BIN No.2  
400t  
E09-BIN-604

HPGR SURGE BIN No.2  
VENT  
E09-EQP-606

HPGR SCREEN OVERSIZE  
CONVEYOR No.4  
1372 W x 60000 L  
12.0kW  
E09-CNV-654

HPGR SURGE BIN No.1  
400t  
E09-BIN-603

HPGR SURGE BIN No.1  
VENT  
E09-EQP-605

HPGR DUST COLLECTOR No.1  
WITH EXHAUST FAN  
50.0kW  
E09-COL-661

HPGR DUST COLLECTOR No.1  
SCREW CONVEYOR  
3.7kW  
E09-CNV-662

HPGR DUST COLLECTOR No.2  
WITH EXHAUST FAN  
50.0kW  
E09-COL-671

HPGR DUST COLLECTOR No.2  
SCREW CONVEYOR  
3.7kW  
E09-CNV-672

HPGR DUST COLLECTOR No.2  
ROTARY VALVE  
0.7kW  
E09-VLV-673

HPGR BELT FEEDER No. 4  
1524 W x 10000 L  
80.0kW  
E09-FDR-618

HPGR BELT FEEDER No. 3  
1524 W x 10000 L  
80.0kW  
E09-FDR-617

HIGH PRESSURE  
GRINDING ROLL No.4  
2 @ 2900kW (VFD)  
E09-CRU-635

HIGH PRESSURE  
GRINDING ROLL No.3  
2 @ 2900kW (VFD)  
E09-CRU-630

HPGR BELT FEEDER No. 2  
1524 W x 10000 L  
80.0kW  
E09-FDR-616

HPGR BELT FEEDER No. 1  
1524 W x 10000 L  
80.0kW  
E09-FDR-615

HIGH PRESSURE  
GRINDING ROLL No.2  
2 @ 2900kW (VFD)  
E09-CRU-625

HIGH PRESSURE  
GRINDING ROLL No.1  
2 @ 2900kW (VFD)  
E09-CRU-620

HPGR DUST COLLECTOR No.1  
ROTARY VALVE  
0.7kW  
E09-VLV-663

HPGR CRUSHER  
DISCHARGE CONVEYOR No.2  
1829 W x 25600 L  
70.0kW  
E09-CNV-651

HPGR SCREEN  
FEED CONVEYOR No.1  
1829 W x 205000 L  
440.0kW  
E09-CNV-652

HPGR CRUSHER  
DISCHARGE CONVEYOR No.1  
1829 W x 25600 L  
70.0kW  
E09-CNV-650

4033.7	2.8	1440.6
248.1	94.2	248.1
4281.8	2.5	1688.7

HPGR SCREEN SPLITTER  
CHUTE No.1  
A00-09-607

HPGR SCREEN SPLITTER  
CHUTE No.2  
A00-09-608

HPGR SCREEN  
FEED CONVEYOR No.2  
1829 W x 205000 L  
440.0kW  
E09-CNV-653

HPGR CRUSHER No.4  
LUBE UNIT  
E09-LUB-643

HPGR CRUSHER No.4  
LUBRICATION COOLER  
E09-COO-648

HPGR CRUSHER No.3  
LUBRICATION COOLER  
E09-COO-647

HPGR CRUSHER No.3  
LUBE UNIT  
E09-LUB-642

HPGR CRUSHER No.2  
LUBE UNIT  
E09-LUB-641

HPGR CRUSHER No.2  
LUBRICATION COOLER  
E09-COO-646

HPGR CRUSHER No.2  
LUBE UNIT  
E09-LUB-645

HPGR CRUSHER No.1  
LUBRICATION COOLER  
E09-COO-645

HPGR CRUSHER No.1  
LUBE UNIT  
E09-LUB-640

WATER SOLUTIONS  
LEGEND

t/HR	solids	S.G.	solids	m <sup>3</sup> /HR	solids
t/HR	water	%	solids	m <sup>3</sup> /HR	water
t/HR	pulp	S.G.	pulp	m <sup>3</sup> /HR	pulp

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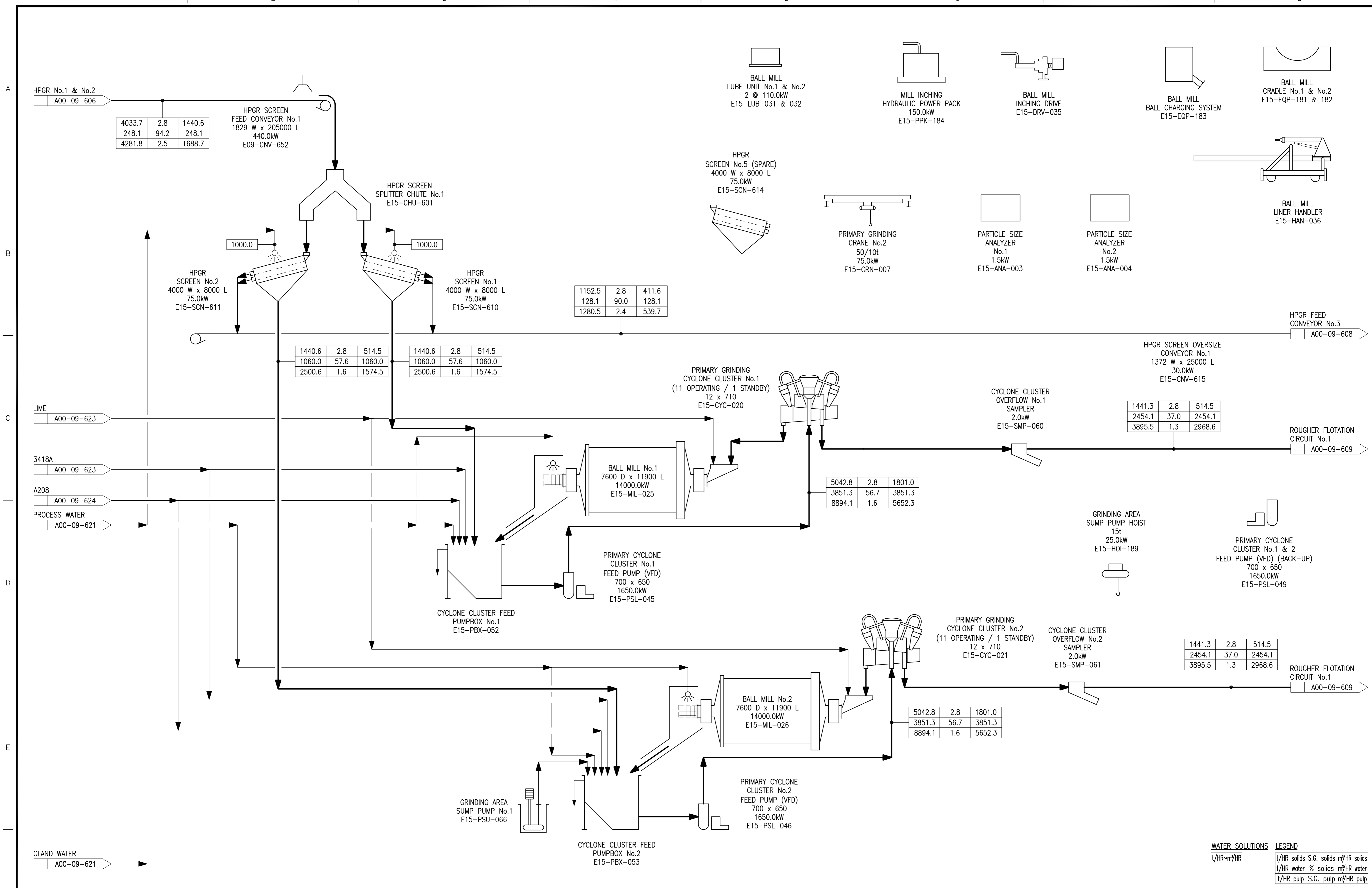
DWG. NO.	REFERENCE DRAWINGS
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CLIENT	PROJ. NO.	PROJ. NAME	PROJ. PURPOSE	ELECTR.	INSTR.	MECH.	STRUC.	SPRINK.	ARCH.	LAYOUT	REV. No.	ISSUE No.	DESCRIPTION	DATE	BY
											A	1	ISSUED FOR REPORT	12JUL12	AO

SECTION:	PROCESS
SCALE:	NONE
DATE:	
DESIGN BY:	JH
15MAR12	
DRAWN BY:	AO
15MAR12	
CHECK BY:	
APP. BY:	

CLIENT:  
**SEABRIDGE GOLD**  
BRITISH COLUMBIA, CANADA

TITLE	KERR-SULPHURETS-MITCHELL PROJECT (PFS UPDATE - 2012) PROCESS FLOW DIAGRAM No.06 FINE ORE STOCKPILE AND TERTIARY CRUSHING (HPGR)		
FILENAME	PROJECT NUMBER	DRAWING NUMBER	REV.
A0009606.DWG	12528801.00	A00-09-606	A



4033.7	2.8	1440.6
248.1	94.2	248.1
4281.8	2.5	1688.7

1440.6	2.8	514.5
1060.0	57.6	1060.0
2500.6	1.6	1574.5

1440.6	2.8	514.5
1060.0	57.6	1060.0
2500.6	1.6	1574.5

1152.5	2.8	411.6
128.1	90.0	128.1
1280.5	2.4	539.7

5042.8	2.8	1801.0
3851.3	56.7	3851.3
8894.1	1.6	5652.3

5042.8	2.8	1801.0
3851.3	56.7	3851.3
8894.1	1.6	5652.3

1441.3	2.8	514.5
2454.1	37.0	2454.1
3895.5	1.3	2968.6

1441.3	2.8	514.5
2454.1	37.0	2454.1
3895.5	1.3	2968.6

WATER SOLUTIONS		LEGEND	
t/HR-m <sup>3</sup> /HR		t/HR solids	S.G. solids
t/HR water	% solids	m <sup>3</sup> /HR solids	
t/HR pulp	S.G. pulp	m <sup>3</sup> /HR pulp	

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	CLIENT	PROJ.MAN	PROJ.ENGR	ELECTR.	INSTR.	MECH.	STRUCT.	SPRINGS	ARCH.	LAYOUT	REV. No.	ISSUE No.	DESCRIPTION	DATE	BY																				
											A 1	ISSUED FOR REPORT	12JUL12	AO																					
				SCALE: NONE	DATE: 15MAR12	DESIGN. BY: JH	DRAWN BY: AO	BRITISH COLUMBIA, CANADA	TETRA TECH WARDROP	FILENAME: A0009607.DWG	PROJECT NUMBER: 12528801.00	DRAWING NUMBER: A00-09-607	REV. A																						

HPGR SCREEN No.1 & No.2  
OVERSIZE

A00-09-607

HPGR No.3 & No.4

A00-09-606

4033.7	2.8	1440.6
248.1	94.2	248.1
4281.8	2.5	1688.7

HPGR SCREEN  
FEED CONVEYOR No.2  
1829 W x 205000 L  
440.0kW  
E09-CNV-653

HPGR SCREEN  
SPLITTER CHUTE No.2  
E15-CHU-602

HPGR SCREEN OVERSIZE  
CONVEYOR No.1  
1372 W x 25000 L  
30.0kW  
E15-CNV-615

PRIMARY GRINDING  
CRANE No.3  
50/10t  
75.0kW  
E15-CRN-008

BALL MILL  
LUBE UNIT No.3 & No.4  
2 @ 110.0kW  
E15-LUB-033 & 034

BALL MILL  
CRADLE No.3 & No.4  
E15-EQP-185 & 186

HPGR  
SCREEN No.4  
4000 W x 8000 L  
75.0kW  
E15-SCN-613

HPGR  
SCREEN No.3  
4000 W x 8000 L  
75.0kW  
E15-SCN-612

HPGR SCREEN OVERSIZE  
CONVEYOR No.2  
1372 W x 25000 L  
30.0kW  
E15-CNV-616

HPGR SCREEN OVERSIZE  
CONVEYOR No.3  
1372 W x 163000 L  
235.0kW  
E15-CNV-617

HPGR SCREEN OVERSIZE  
SPLITTER CHUTE  
A00-09-606

1440.6	2.8	514.5
1060.0	57.6	1060.0
2500.6	1.6	1574.5

1440.6	2.8	514.5
1060.0	57.6	1060.0
2500.6	1.6	1574.5

1152.5	2.8	411.6
128.1	90.0	128.1
1280.5	2.4	539.7

PRIMARY GRINDING  
CYCLONE CLUSTER No.3  
(11 OPERATING / 1 STANDBY)  
12 x 710  
E15-CYC-022

CYCLONE CLUSTER  
OVERFLOW No.3  
SAMPLER  
2.0kW  
E15-SMP-062

1441.3	2.8	514.5
2454.1	37.0	2454.1
3895.5	1.3	2968.6

ROUGHER FLOTATION  
CIRCUIT No.2  
A00-09-609

LIME  
A00-09-623

3418A  
A00-09-623

A208  
A00-09-624

PROCESS WATER  
A00-09-621

BALL MILL No.3  
7600 D x 11900 L  
14000.0kW  
E15-MIL-027

5042.8	2.8	1801.0
3851.3	56.7	3851.3
8894.1	1.6	5652.3

PRIMARY CYCLONE  
CLUSTER No.3  
FEED PUMP (VFD)  
700 x 650  
1650.0kW  
E15-PSL-047

PRIMARY GRINDING  
CYCLONE CLUSTER No.4  
(11 OPERATING / 1 STANDBY)  
12 x 710  
E15-CYC-023

CYCLONE CLUSTER  
OVERFLOW No.4  
SAMPLER  
2.0kW  
E15-SMP-063

1441.3	2.8	514.5
2454.1	37.0	2454.1
3895.5	1.3	2968.6

ROUGHER FLOTATION  
CIRCUIT No.2  
A00-09-609

COOLING WATER  
FILTER  
E15-FIL-197

FRESH WATER  
A00-09-621

BALL MILL  
LUBE UNIT No.1 & No.2  
2 @ 110.0kW  
E15-LUB-031 & 032

BALL MILL  
LUBE UNIT No.3 & No.4  
2 @ 110.0kW  
E15-LUB-033 & 034

MILL  
COOLING SYSTEM  
350.0kW  
E15-SYS-511

GRINDING AREA  
SUMP PUMP No.2  
E15-PSU-068

CYCLONE CLUSTER FEED  
PUMPBOX No.4  
E15-PBX-055

PRIMARY CYCLONE  
CLUSTER No.4  
FEED PUMP (VFD)  
700 x 650  
1650.0kW  
E15-PSL-048

5042.8	2.8	1801.0
3851.3	56.7	3851.3
8894.1	1.6	5652.3

PRIMARY CYCLONE  
CLUSTER No.3 & 4  
FEED PUMP (VFD) (BACK-UP)  
700 x 650  
1650.0kW  
E15-PSL-050

WATER SOLUTIONS		LEGEND	
t/HR-m <sup>3</sup> /HR		t/HR solids	S.G. solids
t/HR water	% solids	m <sup>3</sup> /HR solids	
t/HR pulp	S.G. pulp	m <sup>3</sup> /HR pulp	

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DWG. NO. REFERENCE DRAWINGS

CLIENT	PROJAN	DESIGN	PROCESS	ELECTR.	INSTR.	PIPING	MECH.	STRUCT.	SPRINKS	ARCH.	LAYOUT	REV.	ISSUE	No.
												A	1	

ISSUED FOR REPORT

DESCRIPTION

DATE

BY

SECTION: PROCESS

SCALE: NONE

DATE

DESIGN. BY: JH

15MAR12

DRAWN BY: AO

15MAR12

CHECK. BY:

APP. BY:

CLIENT:

SEABRIDGE GOLD

BRITISH COLUMBIA, CANADA



TITLE  
KERR-SULPHURETS-MITCHELL PROJECT  
(PFS UPDATE - 2012)  
PROCESS FLOW DIAGRAM No.08  
PRIMARY GRINDING (TREATY SITE)  
SHEET 2 OF 2

FILENAME	PROJECT NUMBER	DRAWING NUMBER	REV.
A0009608.DWG	12528801.00	A00-09-608	A

PRIMARY REGRINDING  
CYCLOPAC No.4 OVERFLOW  
A00-09-608

3418A  
A00-09-623  
A208  
A00-09-624  
MIBC  
A00-09-623  
PROCESS WATER  
A00-09-621  
PRIMARY REGRINDING  
CYCLOPAC No.3 OVERFLOW  
A00-09-608

PRIMARY REGRINDING  
CYCLOPAC No.2 OVERFLOW  
A00-09-607  
PRIMARY REGRINDING  
CYCLOPAC No.1 OVERFLOW  
A00-09-607

BLOWER AIR  
A00-09-626  
GLAND WATER  
A00-09-621

Cu/Mo BULK CONCENTRATE  
THICKENER OVERFLOW  
A00-09-611  
LIME  
A00-09-623  
COPPER CONCENTRATE FROM  
COPPER/PYRITE  
FLOTATION CELLS  
A00-09-616

REGRIND AREA  
SUMP PUMP  
100  
30.0kW  
E20-PSU-035

1441.3	2.8	514.8
2454.1	37.0	2454.1
3895.5	1.3	2968.9

1441.3	2.8	514.8
2454.1	37.0	2454.1
3895.5	1.3	2968.9

1441.3	2.8	514.8
2454.1	37.0	2454.1
3895.5	1.3	2968.9

173.0	3.1	55.8
407.7	29.8	407.7
580.6	1.3	463.5

173.0	3.1	55.8
407.7	29.8	407.7
580.6	1.3	463.5

518.9	3.2	162.1
279.4	65.0	279.4
798.3	1.8	441.5

864.8	3.2	274.5
1651.8	34.4	1651.8
2516.6	1.3	1926.3

1441.3	2.8	514.8
2454.1	37.0	2454.1
3895.5	1.3	2968.9

1354.8	2.8	492.7
2296.0	37.1	2296.0
3650.9	1.3	2788.7

345.9	3.1	111.6
1372.4	20.1	1372.4
1718.3	1.2	1483.9

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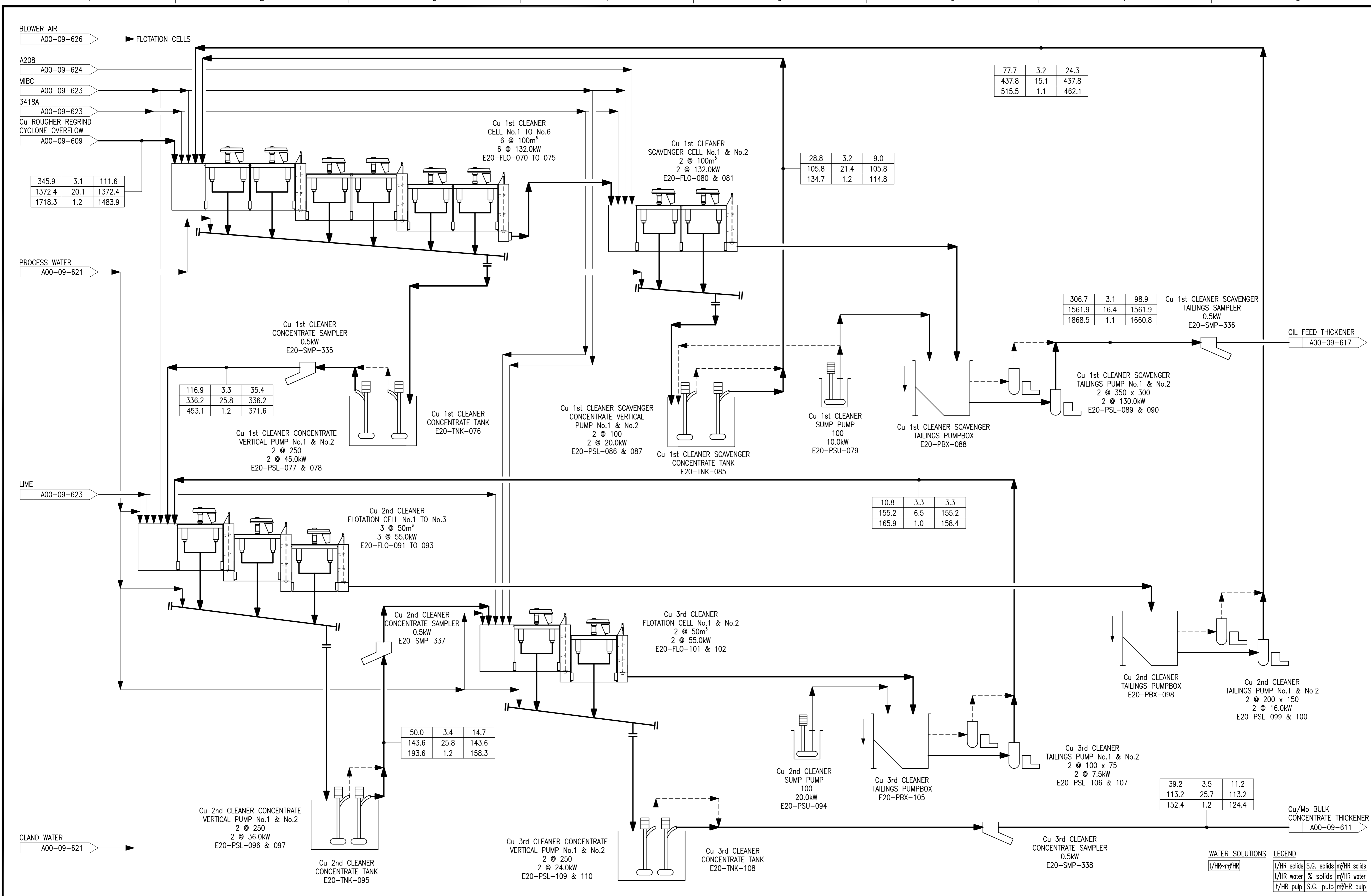
DWG. NO. REFERENCE DRAWINGS

CLIENT	PROJ.MAN	PROJ.ENG	PROCESS	ELECTR.	INSTR.	PIPING	MECH.	STRUCT.	SPRINKS	ARCH.	LAYOUT	REV. No.	ISSUE No.	DESCRIPTION	DATE	BY
												A	1	ISSUED FOR REPORT	12JUL12	AO

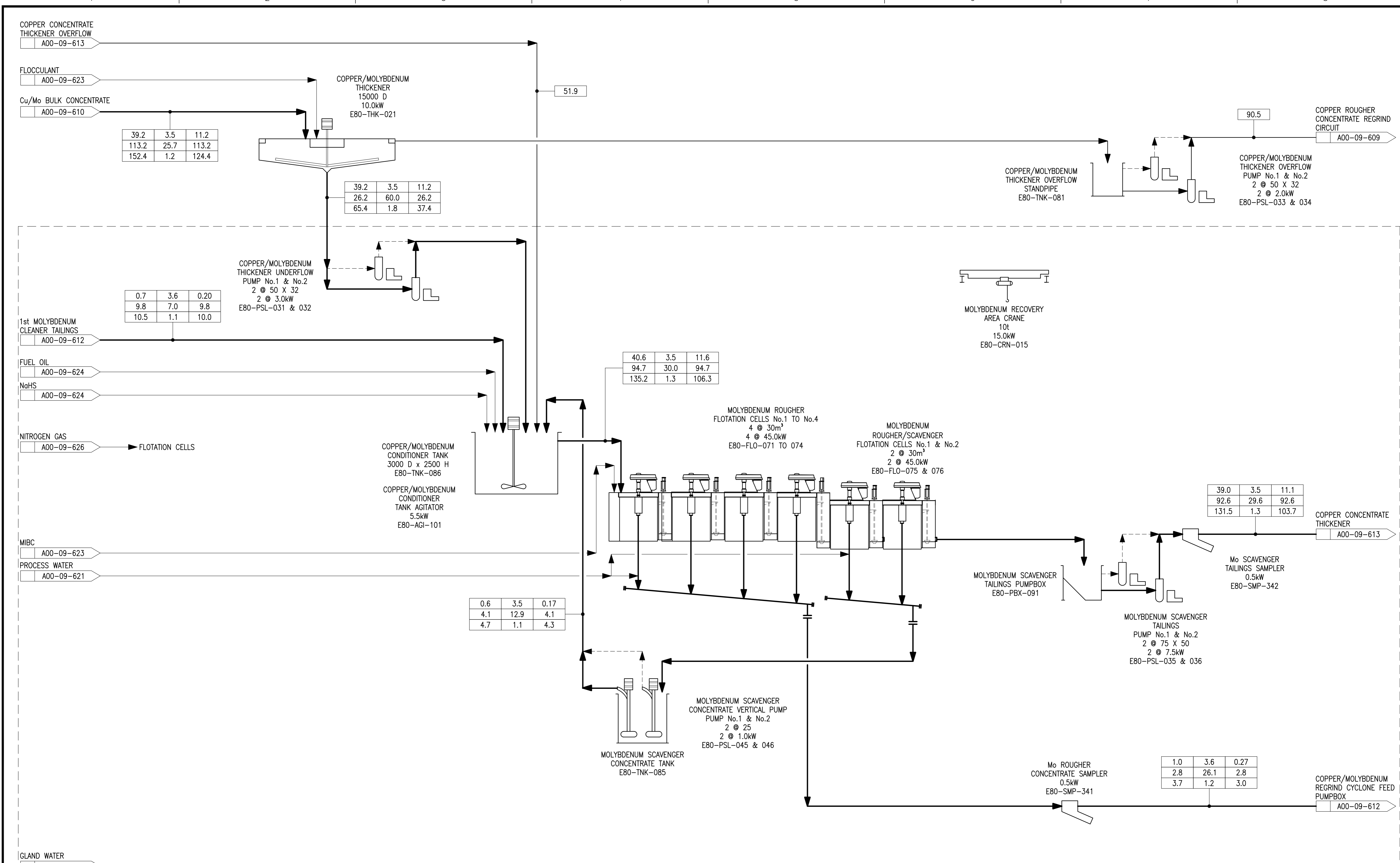
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SCALE: NONE  
DESIGN. BY: JH  
DRAWN BY: AO  
CHECK. BY:  
APP. BY:

CLIENT: SEABRIDGE GOLD  
BRITISH COLUMBIA, CANADA  
TETRA TECH  
WARDROP

TITLE: KERR-SULPHURETS-MITCHELL PROJECT  
(PFS UPDATE - 2012)  
PROCESS FLOW DIAGRAM No.09  
COPPER ROUGHER  
FLOTATION AND REGRIND  
FILENAME: A0009609.DWG  
PROJECT NUMBER: 12528801.00  
DRAWING NUMBER: A00-09-609  
REV. A

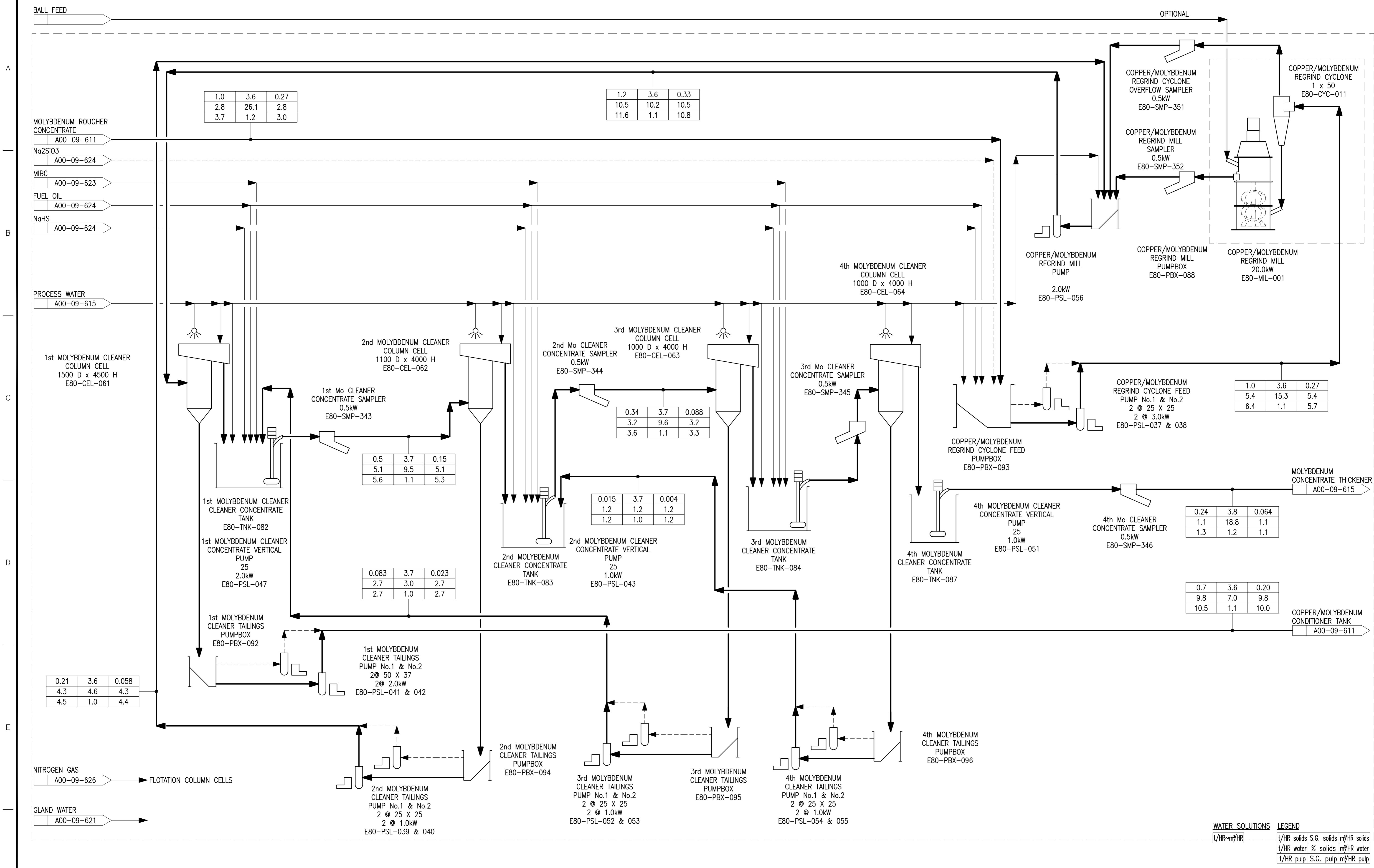


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	CLIENT	PROJ. NO.	PROJ. NAME	PROJ. DATE	PROJ. STATUS	PROJ. LOCATION	PROJ. DESCRIPTION	PROJ. DRAWN BY	PROJ. CHECKED BY	PROJ. DATE	PROJ. REV.	PROJ. ISSUE																											
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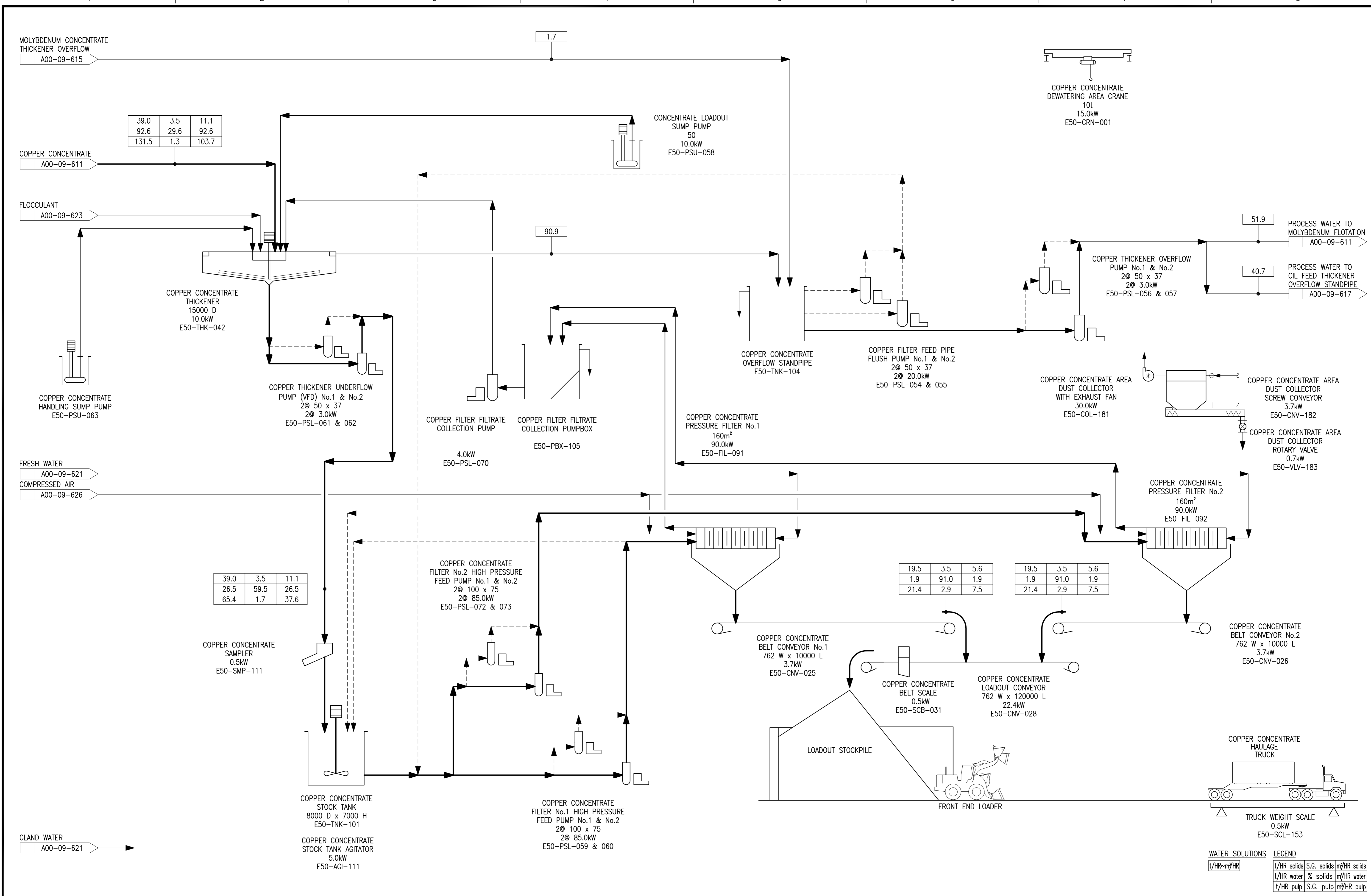


WATER SOLUTIONS		LEGEND	
t/HR-m <sup>3</sup> /HR		t/HR solids	S.G. solids
t/HR water	% solids	m <sup>3</sup> /HR solids	m <sup>3</sup> /HR water
t/HR pulp	S.G. pulp	m <sup>3</sup> /HR pulp	

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	CLIENT	PROJ. NO.	PROCESS	ELECTR.	INSTR.	MECH.	STRUCT.	SPRINGS	ARCH.	LAYOUT	REV. No.	ISSUE No.	DESCRIPTION	DATE	BY																				
											A 1	ISSUED FOR REPORT	12JUL12	AO																					
				SCALE: NONE	DATE: 15MAR12	DESIGN. BY: JH	15MAR12	DRAWN BY: AO	15MAR12	BRITISH COLUMBIA, CANADA	TETRA TECH WARDROP	FILENAME: A0009611.DWG	PROJECT NUMBER: 12528801.00	DRAWING NUMBER: A00-09-611	REV. A																				
			CHECK. BY:	APP. BY:																															



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	CLIENT	PROJAN	PROG	DESIGN	ELECTR	INSTR	MECH	STRUCT	SPRINK	ARCH	LAYOUT	REV. No.	ISSUE No.	DESCRIPTION	DATE	BY																					
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FILENAME	PROJECT NUMBER	DRAWING NUMBER	REV.																																		
A0009612.DWG	12528801.00	A00-09-612	A																																		



39.0	3.5	11.1
92.6	29.6	92.6
131.5	1.3	103.7

39.0	3.5	11.1
26.5	59.5	26.5
65.4	1.7	37.6

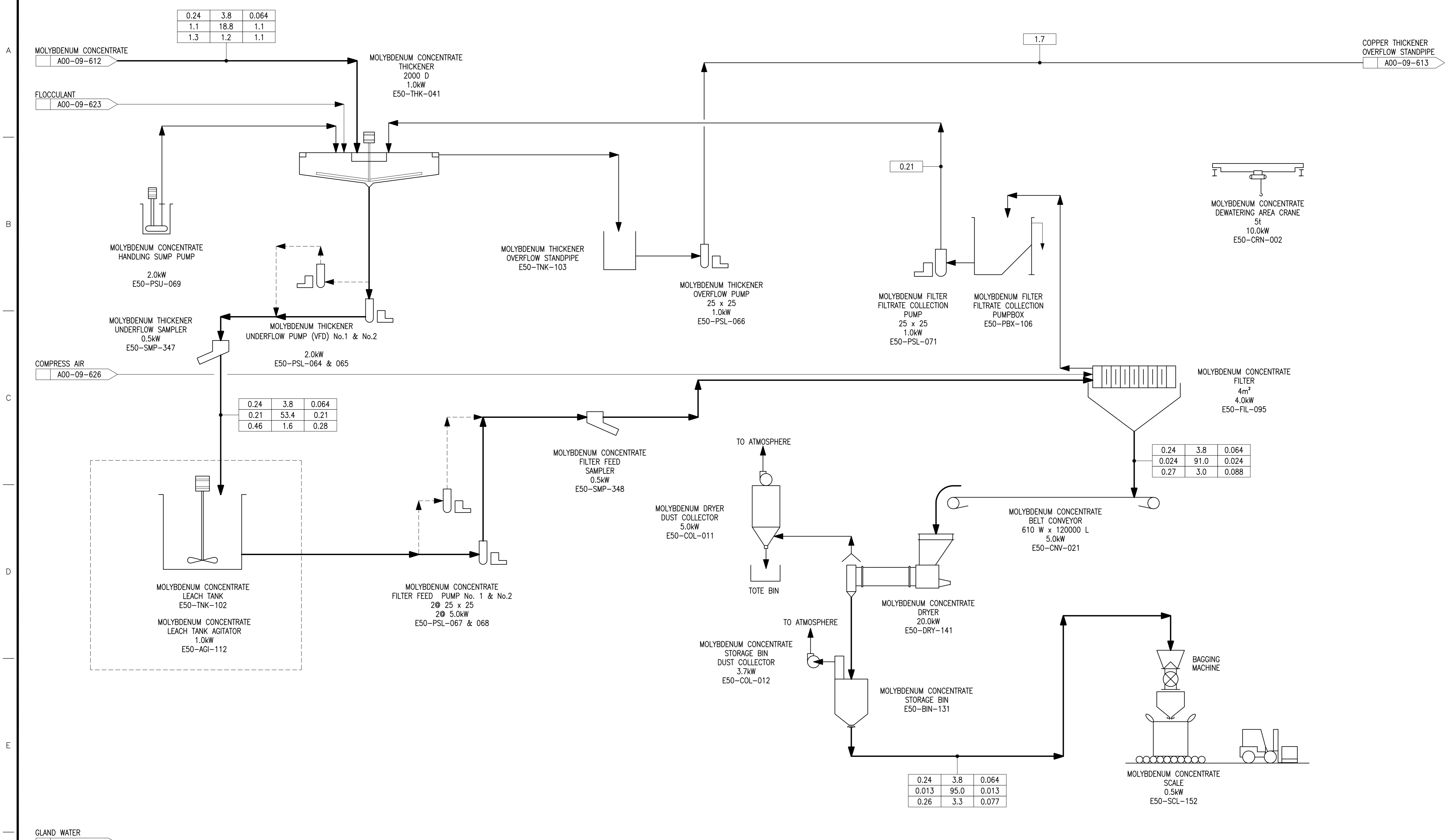
19.5	3.5	5.6
1.9	91.0	1.9
21.4	2.9	7.5

19.5	3.5	5.6
1.9	91.0	1.9
21.4	2.9	7.5

WATER SOLUTIONS		LEGEND	
t/HR-m <sup>3</sup> /HR		t/HR solids	S.G. solids
		my/HR	solids
		t/HR water	% solids
		my/HR	water
		t/HR pulp	S.G. pulp
		my/HR	pulp

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			CLIENT	PROJMAN	PROCESS	ELECTR.	INSTR.	MECH.	STRUCT.	SPRINGS	ARCH.	LAYOUT	REV.	ISSUE															
ISSUED FOR REPORT	DATE: 12JUL12	SCALE: NONE	DATE: 15MAR12	DESIGN BY: JH	DATE: 15MAR12	PROJECT NUMBER: 12528801.00	DRAWING NUMBER: A00-09-613	REV. A																					





0.24	3.8	0.064
1.1	18.8	1.1
1.3	1.2	1.1

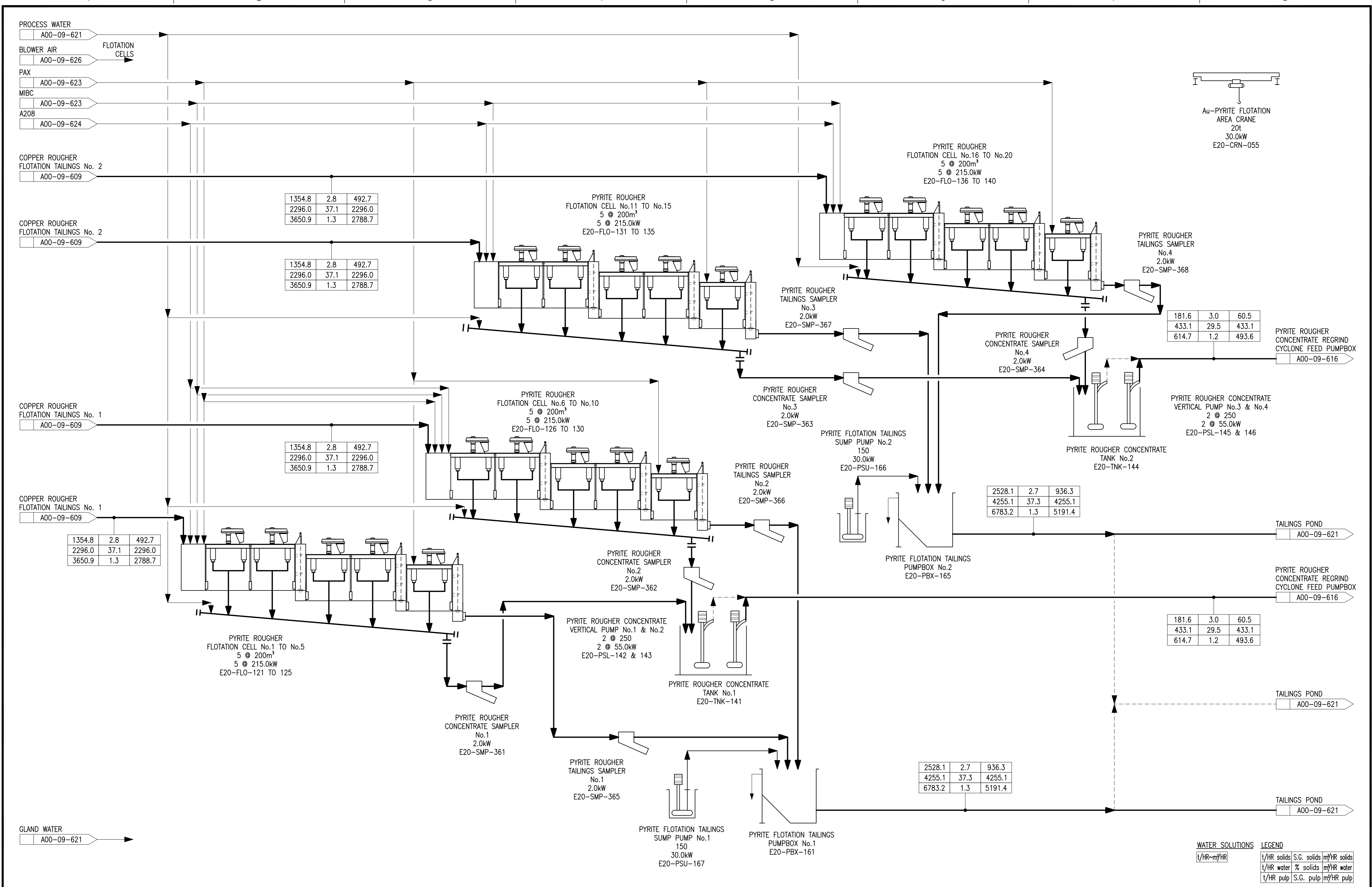
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0.21	53.4	0.21
0.46	1.6	0.28

0.24	3.8	0.064
0.024	91.0	0.024
0.27	3.0	0.088

0.24	3.8	0.064
0.013	95.0	0.013
0.26	3.3	0.077

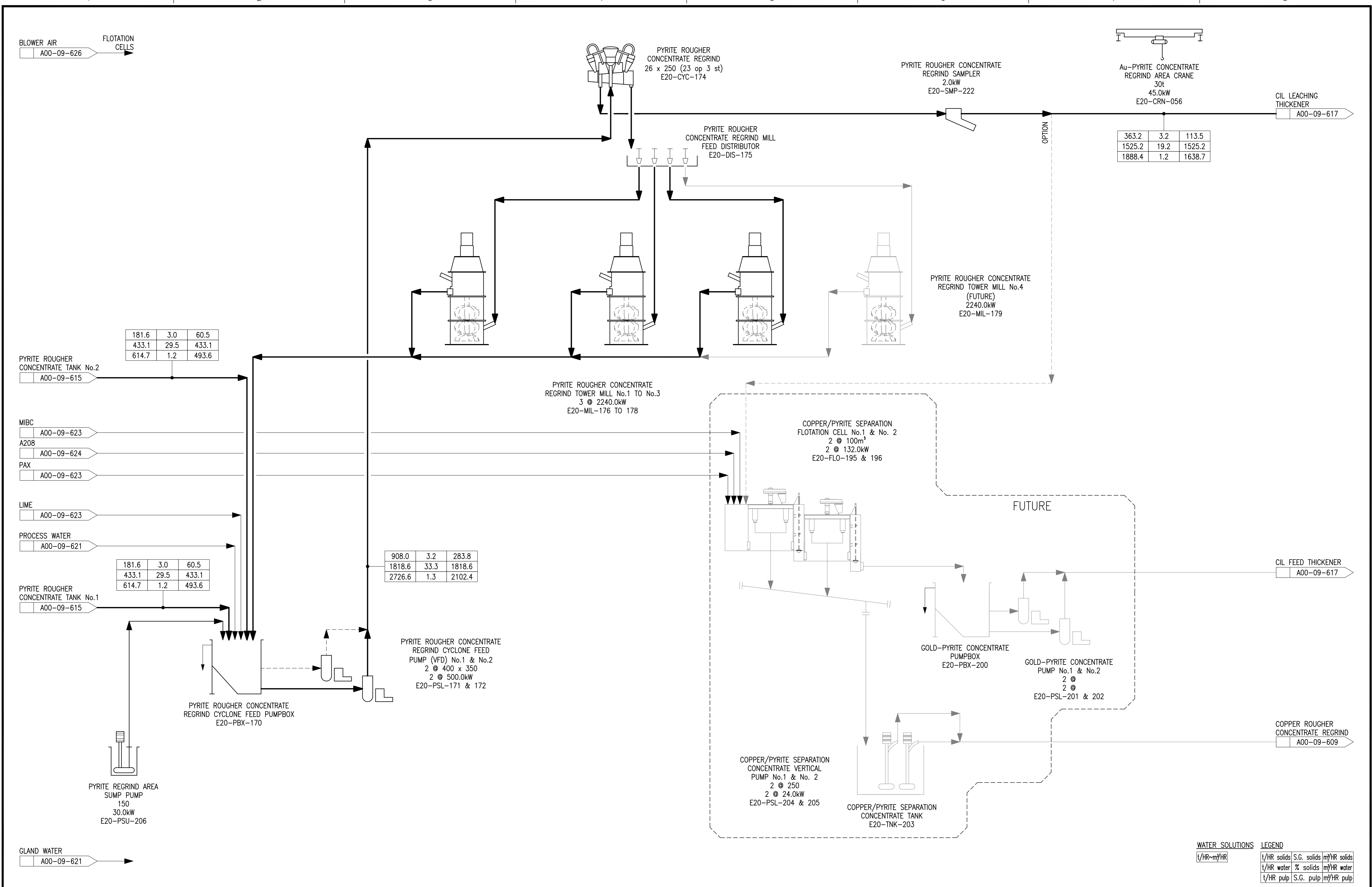
WATER SOLUTIONS		LEGEND	
t/HR	my/HR	t/HR solids	S.G. solids
t/HR water	% solids	my/HR solids	
t/HR pulp	S.G. pulp	my/HR water	

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	CLIENT	PROJMAN	PROCESS	ELECTR.	INSTR.	MECH.	STRUCT.	SPRINKS	ARCH.	LAYOUT	REV. No.	ISSUE No.	DATE	BY																				
											A	1	12JUL12	AO																				
				SCALE: NONE	DATE: 15MAR12	DESIGN. BY: JH	BRITISH COLUMBIA, CANADA	PROCESS FLOW DIAGRAM No.14																										
			DESIGN. BY: JH	DATE: 15MAR12	DRAWN BY: AO		MOLYBDENUM CONCENTRATE DEWATERING																											
			ISSUED FOR REPORT	DATE: 12JUL12	APP. BY:	TETRA TECH WARDROP	FILENAME: A0009614.DWG																											
							PROJECT NUMBER: 12528801.00																											
							DRAWING NUMBER: A00-09-614																											
							REV. A																											



WATER SOLUTIONS		LEGEND	
t/HR-m³/HR		t/HR solids	S.G. solids m³/HR solids
		t/HR water	% solids m³/HR water
		t/HR pulp	S.G. pulp m³/HR pulp

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	CLIENT	PROJ. NO.	PROCESS	ELECTR.	INSTR.	MECH.	STRUCT.	SPRINK.	ARCH.	LAYOUT	REV. No.	ISSUE No.	DATE	BY																				
											A 1	ISSUED FOR REPORT	12JUL12	AO																				
				<table border="1"> <tr> <th>FILENAME</th> <th>PROJECT NUMBER</th> <th>DRAWING NUMBER</th> <th>REV.</th> </tr> <tr> <td>A0009615.DWG</td> <td>12528801.00</td> <td>A00-09-615</td> <td>A</td> </tr> </table>	FILENAME	PROJECT NUMBER	DRAWING NUMBER	REV.	A0009615.DWG	12528801.00	A00-09-615	A																						
FILENAME	PROJECT NUMBER	DRAWING NUMBER	REV.																															
A0009615.DWG	12528801.00	A00-09-615	A																															
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12/07/11																																		



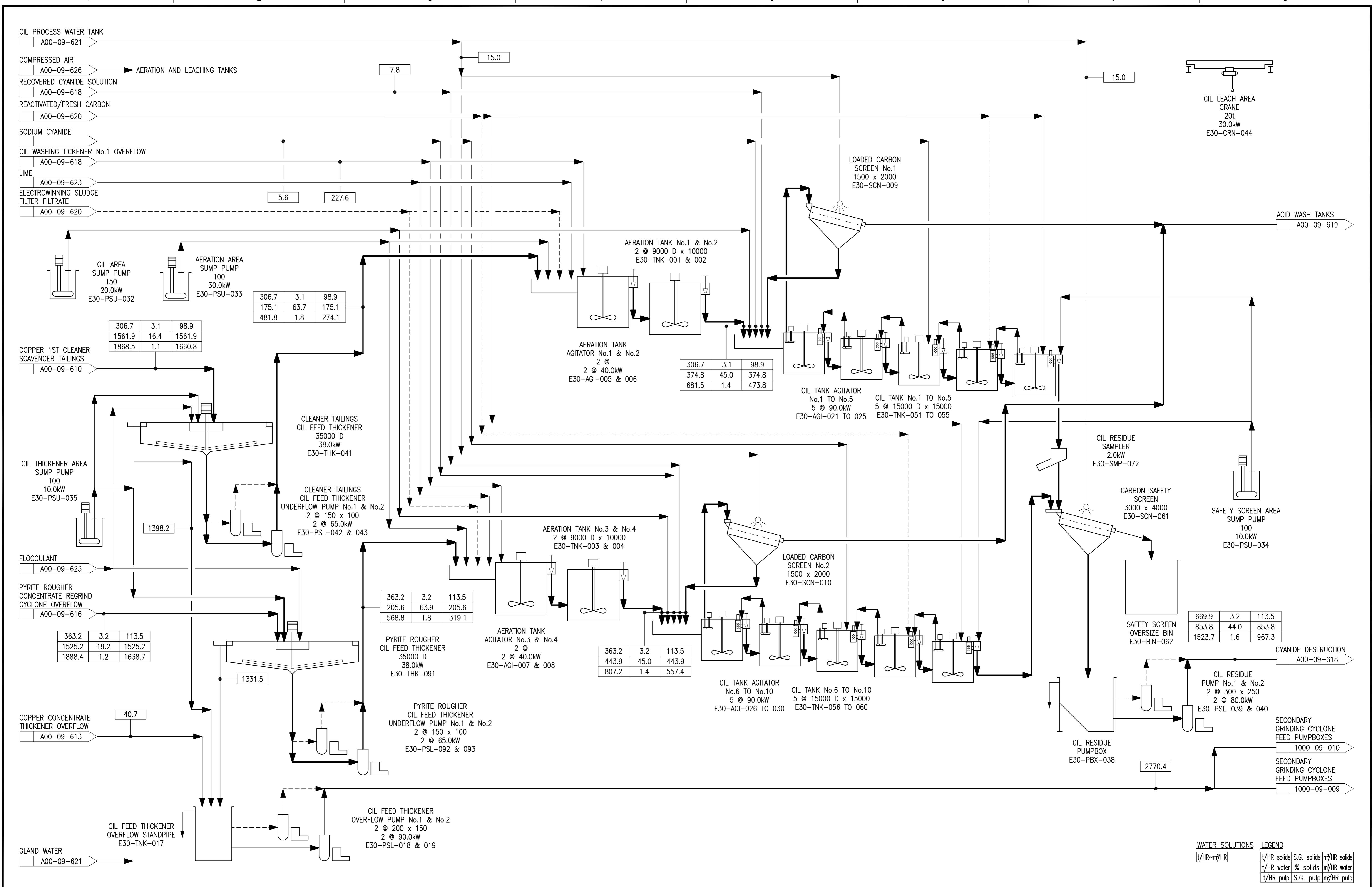
**WATER SOLUTIONS**

t/HR-m <sup>3</sup> /HR
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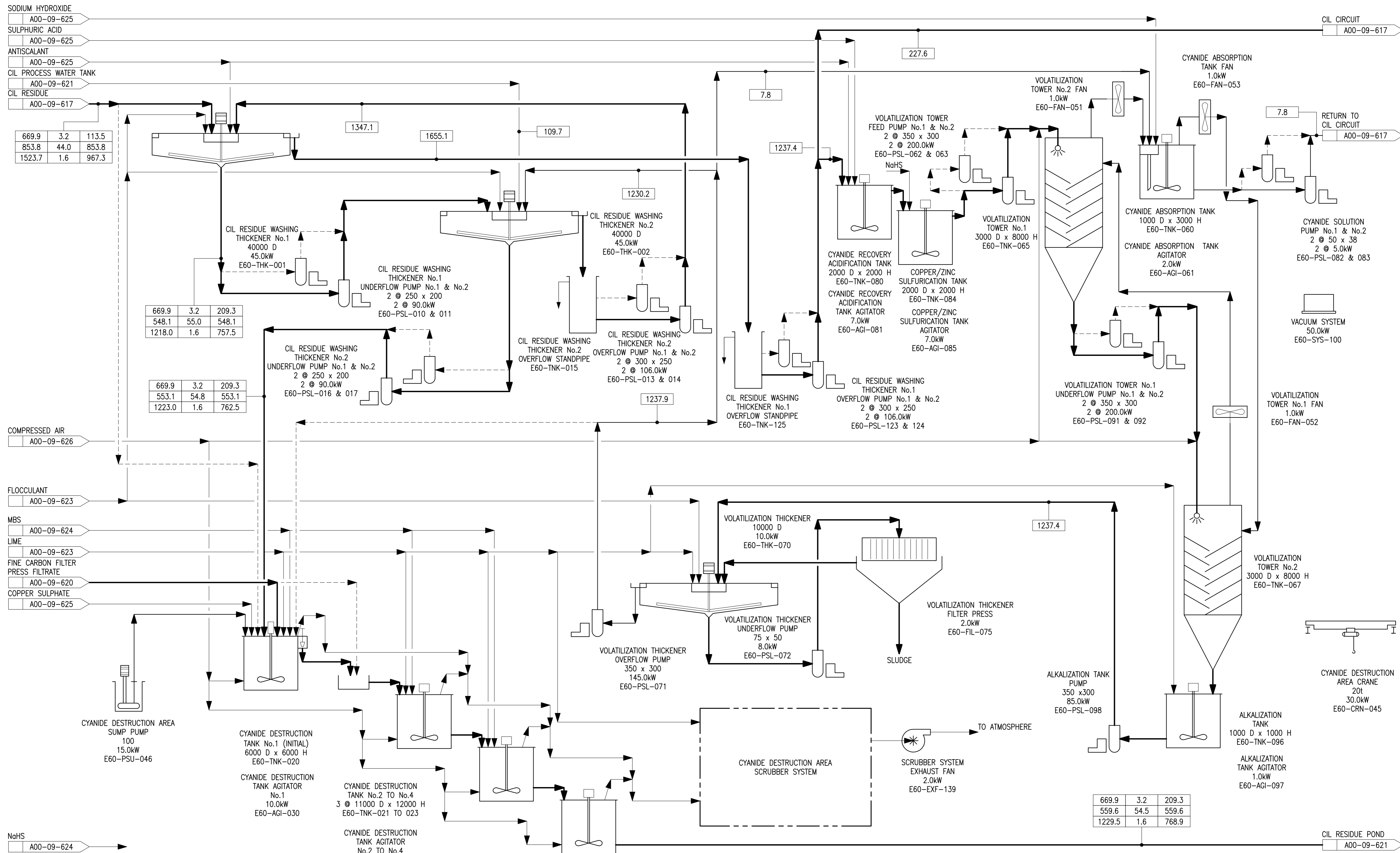
**LEGEND**

t/HR solids	S.G. solids	m <sup>3</sup> /HR solids
t/HR water	% solids	m <sup>3</sup> /HR water
t/HR pulp	S.G. pulp	m <sup>3</sup> /HR pulp

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	CLIENT	PROJ.MAN	PROG.MAN	PROCESS	ELECTR.	INSTR.	MECH.	STRUCT.	SPRINKS	ARCH.	LAYOUT	REV. No.	ISSUE No.	DATE	BY																					
												A 1	ISSUED FOR REPORT	12JUL12	AO																					



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	CLIENT	PROJ. NO.	PROJ. NAME	PROJ. PURPOSE	DESIGNER	DATE	BY													
				A 1 ISSUED FOR REPORT 12JUL12 AO DATE BY																
			DESCRIPTION																	
			FILENAME: A0009617.DWG PROJECT NUMBER: 12528801.00 DRAWING NUMBER: A00-09-617 REV. A																	



- SODIUM HYDROXIDE  
A00-09-625
- SULPHURIC ACID  
A00-09-625
- ANTISCALANT  
A00-09-625
- CIL PROCESS WATER TANK  
A00-09-621
- CIL RESIDUE  
A00-09-617
- COMPRESSED AIR  
A00-09-626
- FLOCCULANT  
A00-09-623
- MBS  
A00-09-624
- LIME  
A00-09-623
- FINE CARBON FILTER PRESS FILTRATE  
A00-09-620
- COPPER SULPHATE  
A00-09-625
- NaHS  
A00-09-624
- GLAND WATER  
A00-09-621

669.9	3.2	113.5
853.8	44.0	853.8
1523.7	1.6	967.3

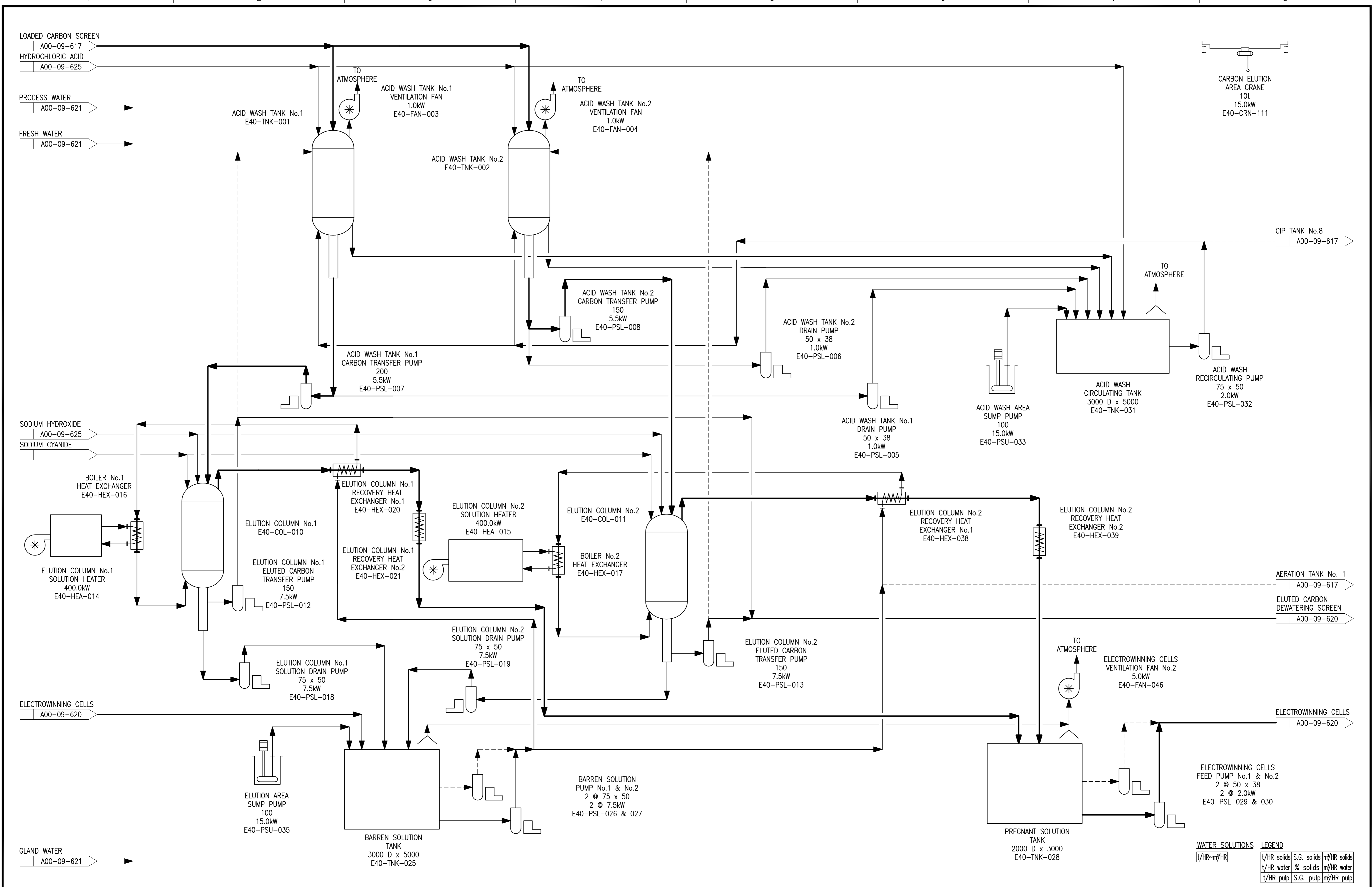
669.9	3.2	209.3
548.1	55.0	548.1
1218.0	1.6	757.5

669.9	3.2	209.3
553.1	54.8	553.1
1223.0	1.6	762.5

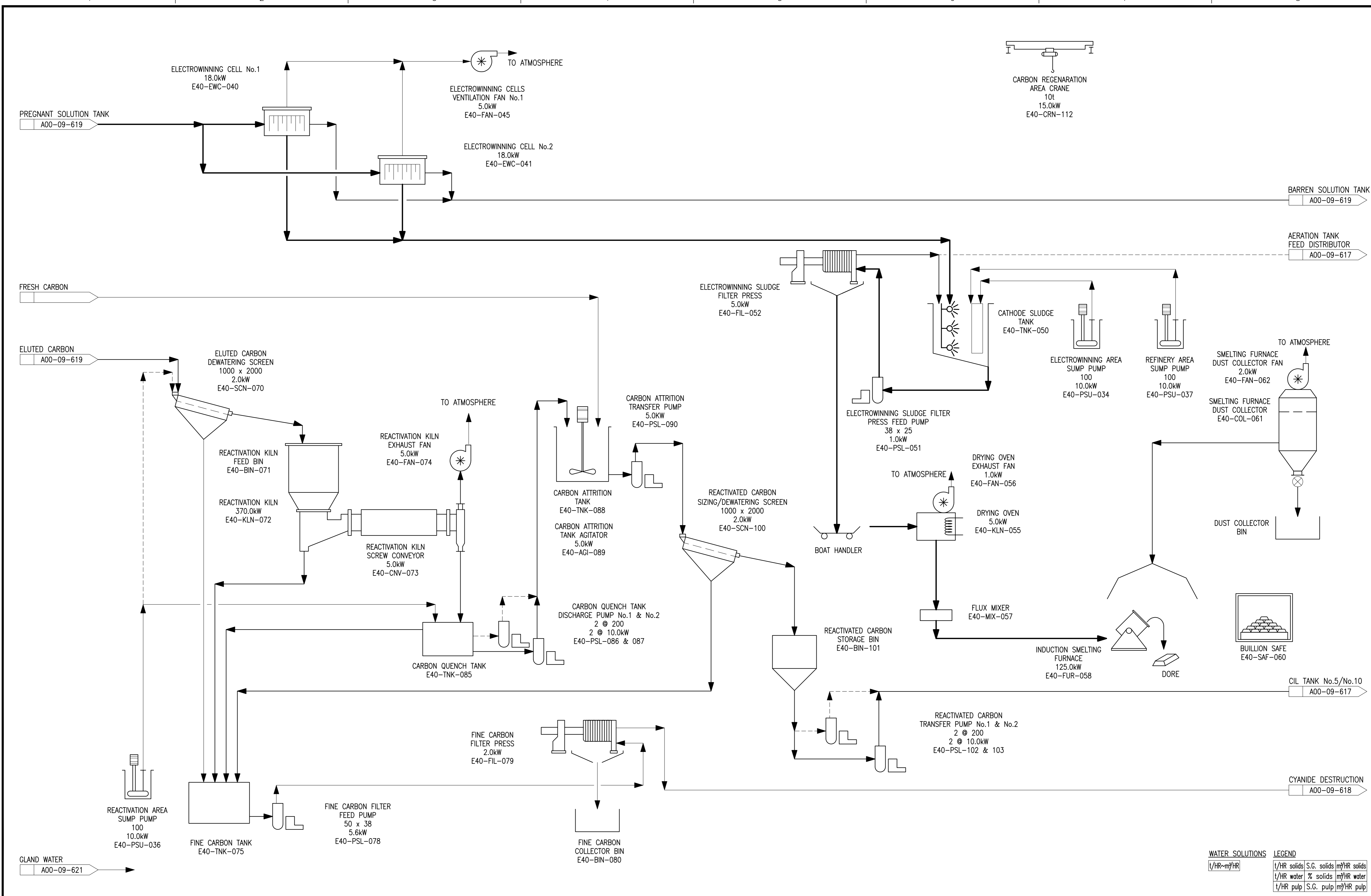
669.9	3.2	209.3
559.6	54.5	559.6
1229.5	1.6	768.9

WATER SOLUTIONS		LEGEND	
t/HR	m <sup>3</sup> /HR	t/HR	S.G. solids m <sup>3</sup> /HR solids
t/HR	water	% solids	m <sup>3</sup> /HR water
t/HR	pulp	S.G. pulp	m <sup>3</sup> /HR pulp

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CLIENT	PROJAN	PROGESS	ELECTR.	INSTR.	MECH.	STRUCT.	SPRINGS	ARCH.	LAYOUT	REV. No.	ISSUE No.	DESCRIPTION	DATE	BY																					
										A	1	ISSUED FOR REPORT	12JUL12	AO																					
												FILENAME: A0009618.DWG      PROJECT NUMBER: 12528801.00      DRAWING NUMBER: A00-09-618      REV. A																							



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													A	1	ISSUED FOR REPORT	12JUL12	AO																																
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WATER SOLUTIONS		LEGEND	
t/HR-m <sup>3</sup> /HR		t/HR solids	S.G. solids
t/HR water	% solids	m <sup>3</sup> /HR water	
t/HR pulp	S.G. pulp	m <sup>3</sup> /HR pulp	

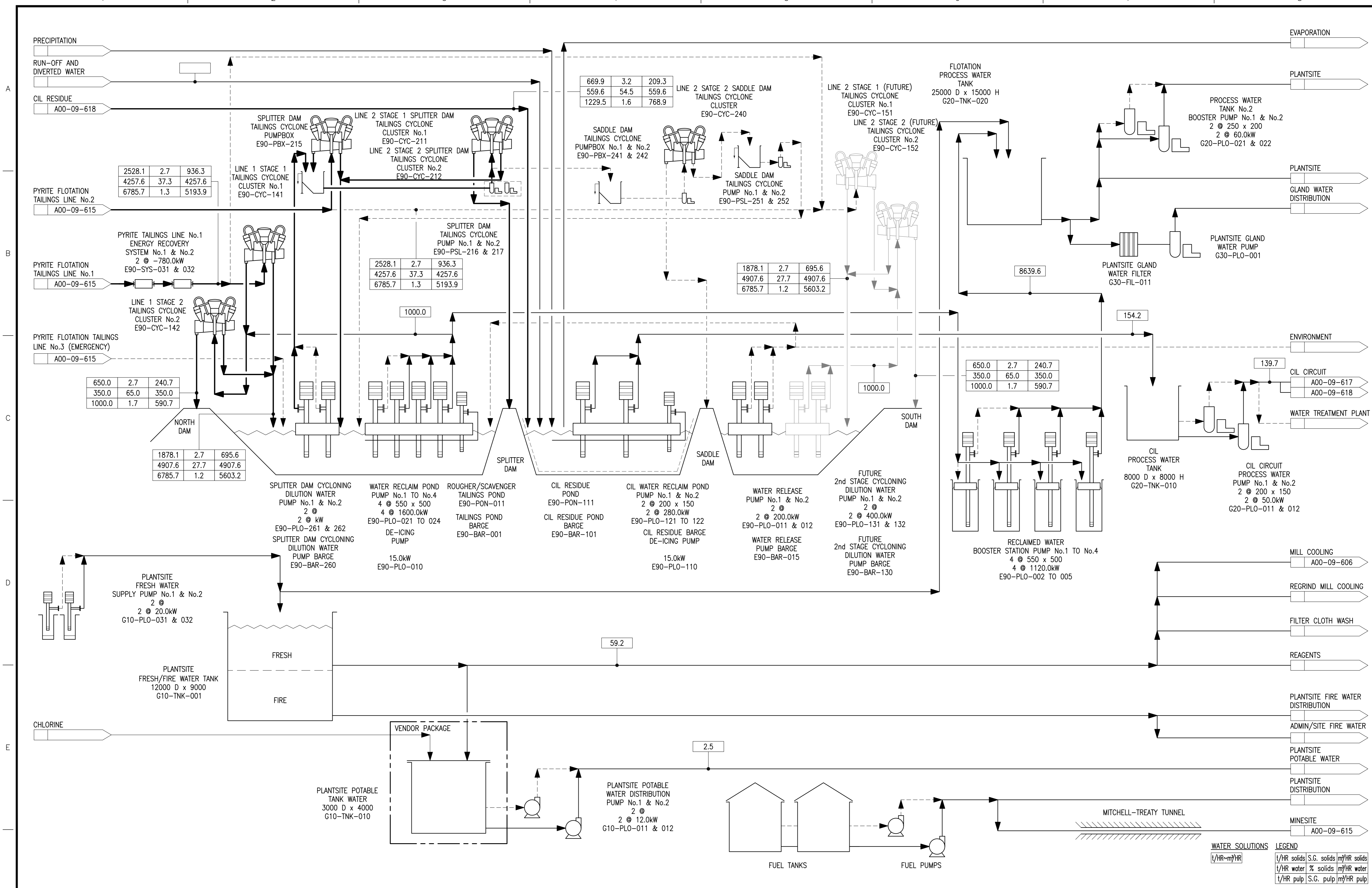
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DWG. NO.	REFERENCE DRAWINGS
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CLIENT	PROJ. NO.	PROJ. NAME	PROJ. PURPOSE	PROJ. DATE	PROJ. STATUS	PROJ. LOCATION	PROJ. SCALE	PROJ. SHEETS	PROJ. SHEET NO.	PROJ. SHEET DATE	PROJ. SHEET REV.	PROJ. SHEET DESCRIPTION	PROJ. SHEET BY	PROJ. SHEET DATE	PROJ. SHEET REV.	PROJ. SHEET DESCRIPTION
SEABRIDGE GOLD																

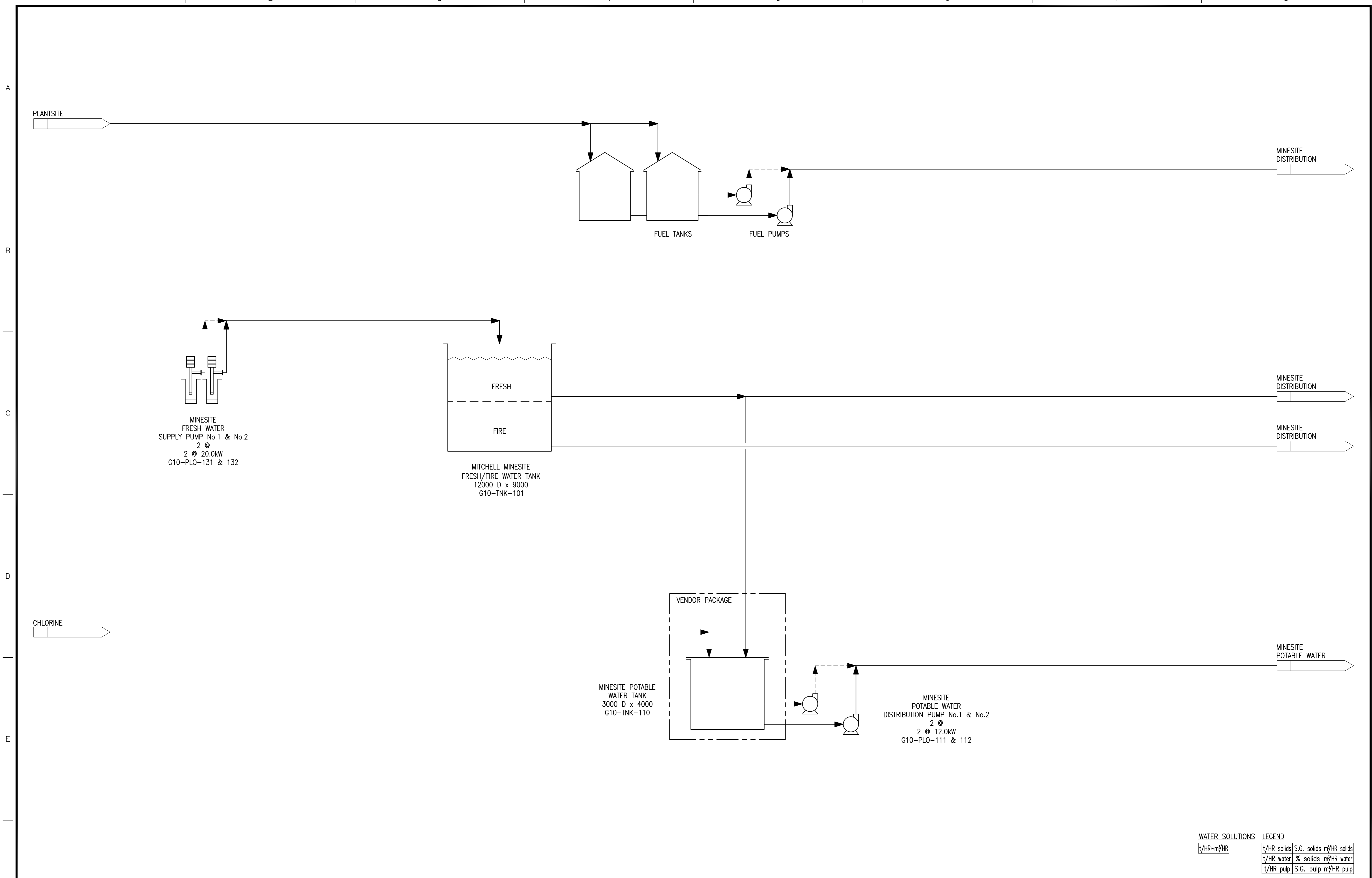
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 BRITISH COLUMBIA, CANADA  
 TETRA TECH WARDROP

TITLE	KERR-SULPHURETS-MITCHELL PROJECT (PFS UPDATE - 2012)
TITLE	PROCESS FLOW DIAGRAM No.20 CARBON REGENERATION AND GOLD RECOVERY
FILENAME	A0009620.DWG
PROJECT NUMBER	12528801.00
DRAWING NUMBER	A00-09-620
REV.	A



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	CLIENT	PROJ. NO.	PROJ. PURPOSE	ELECTR.	PIPING	MECH.	STRUCT.	SPRINKS	ARCH.	LAYOUT	REV. No.	ISSUE No.	DESCRIPTION	DATE	BY																				
											A 1	ISSUED FOR REPORT	12JUL12	AO																					





WATER SOLUTIONS		LEGEND	
t/HR-m <sup>3</sup> /HR	t/HR solids	S.G. solids	m <sup>3</sup> /HR solids
t/HR water	% solids	m <sup>3</sup> /HR water	
t/HR pulp	S.G. pulp	m <sup>3</sup> /HR pulp	

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DWG. NO.	REFERENCE DRAWINGS
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CLIENT	PROJ. NO.	PROCESS	ELECTR.	INSTR.	MECH.	STRUCT.	SPRINK.	ARCH.	LAYOUT	REV. No.	ISSUE No.	DESCRIPTION	DATE	BY
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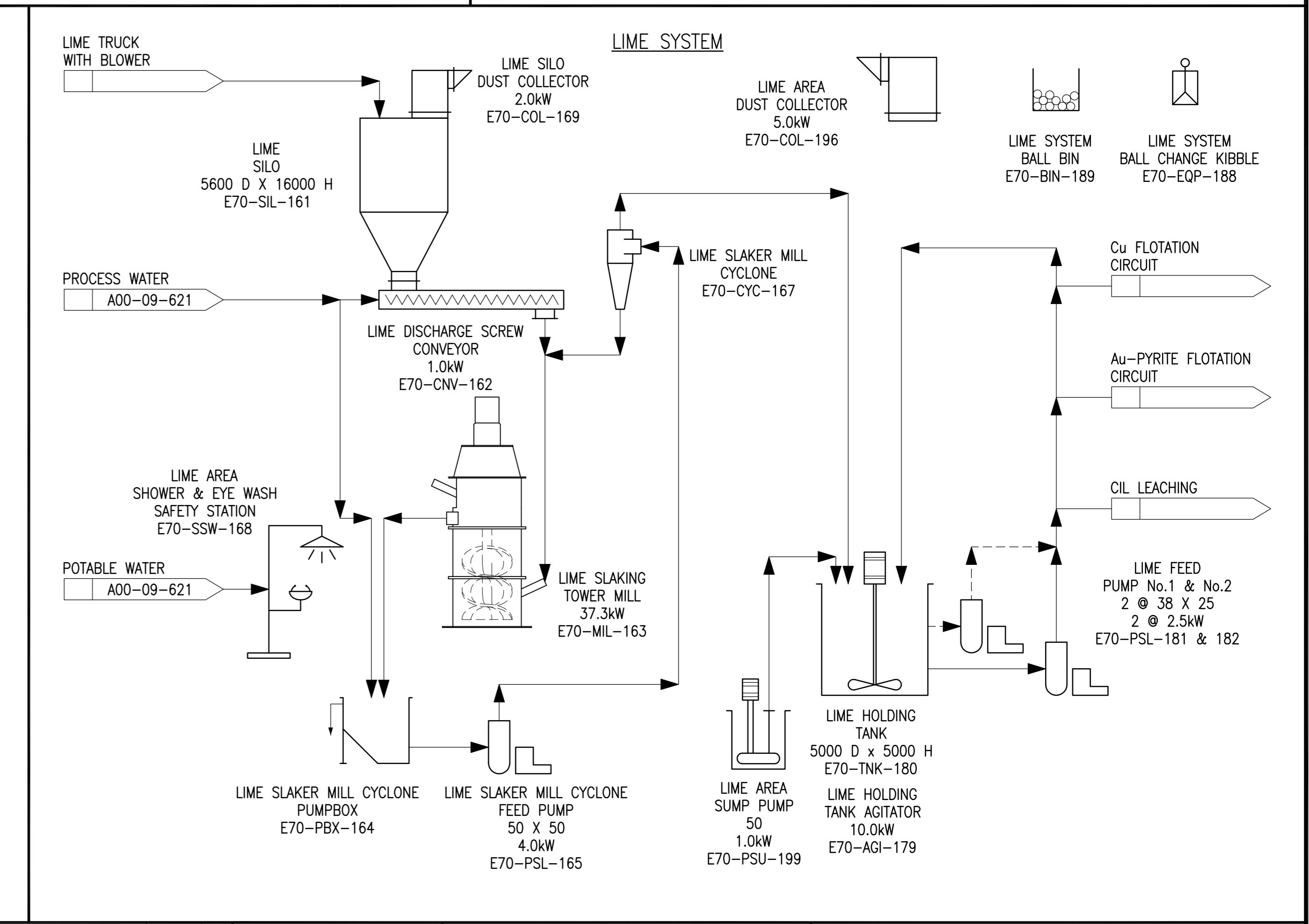
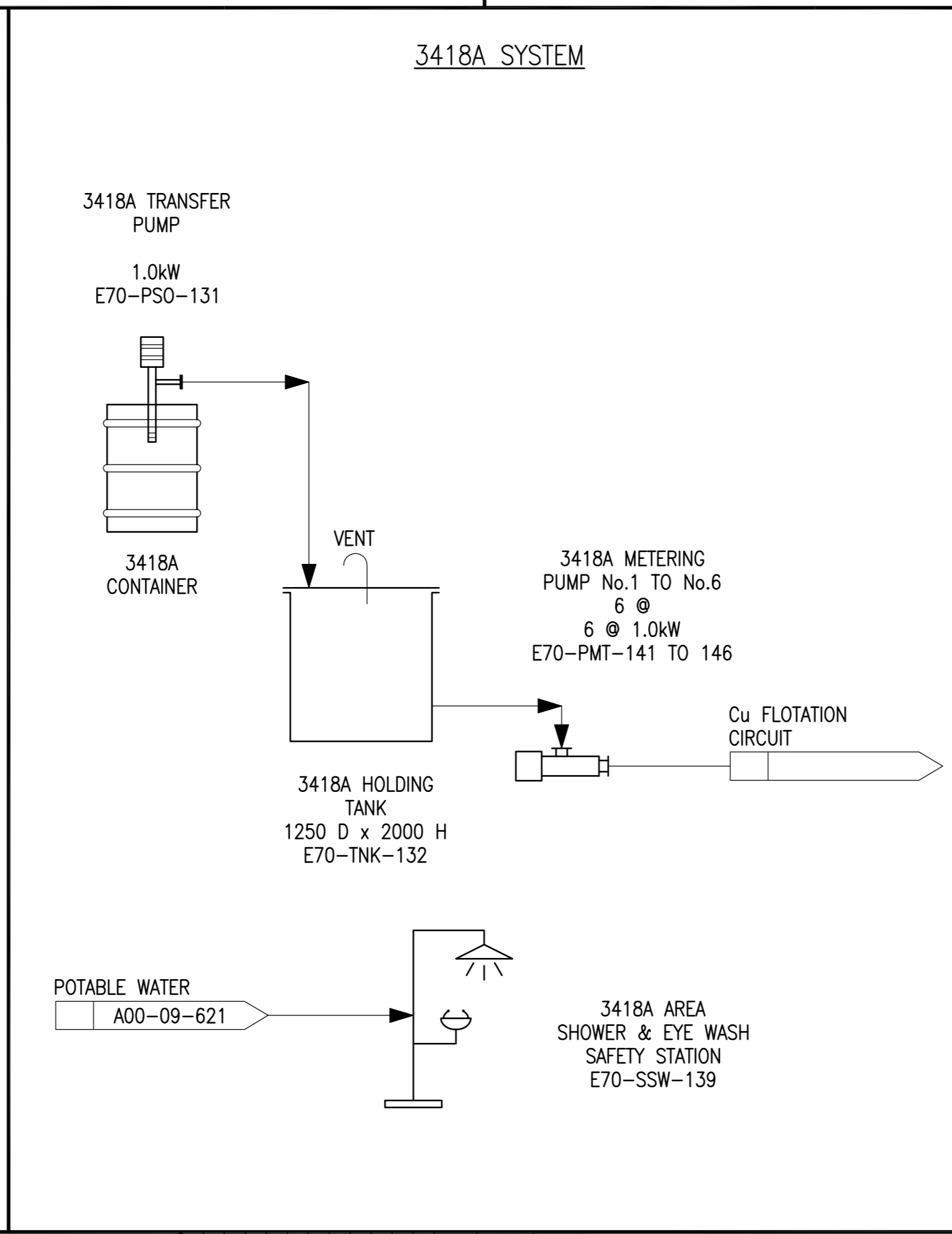
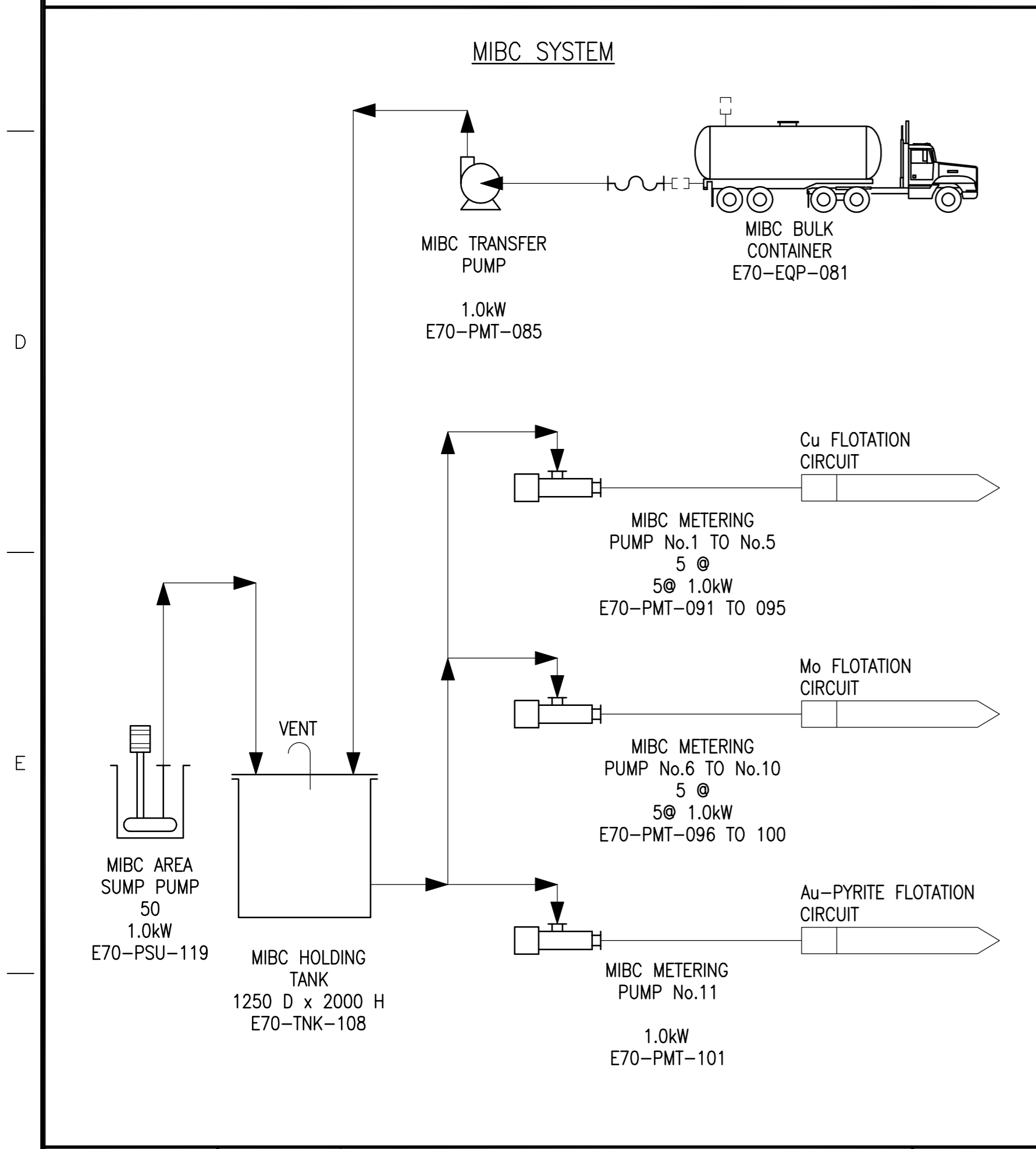
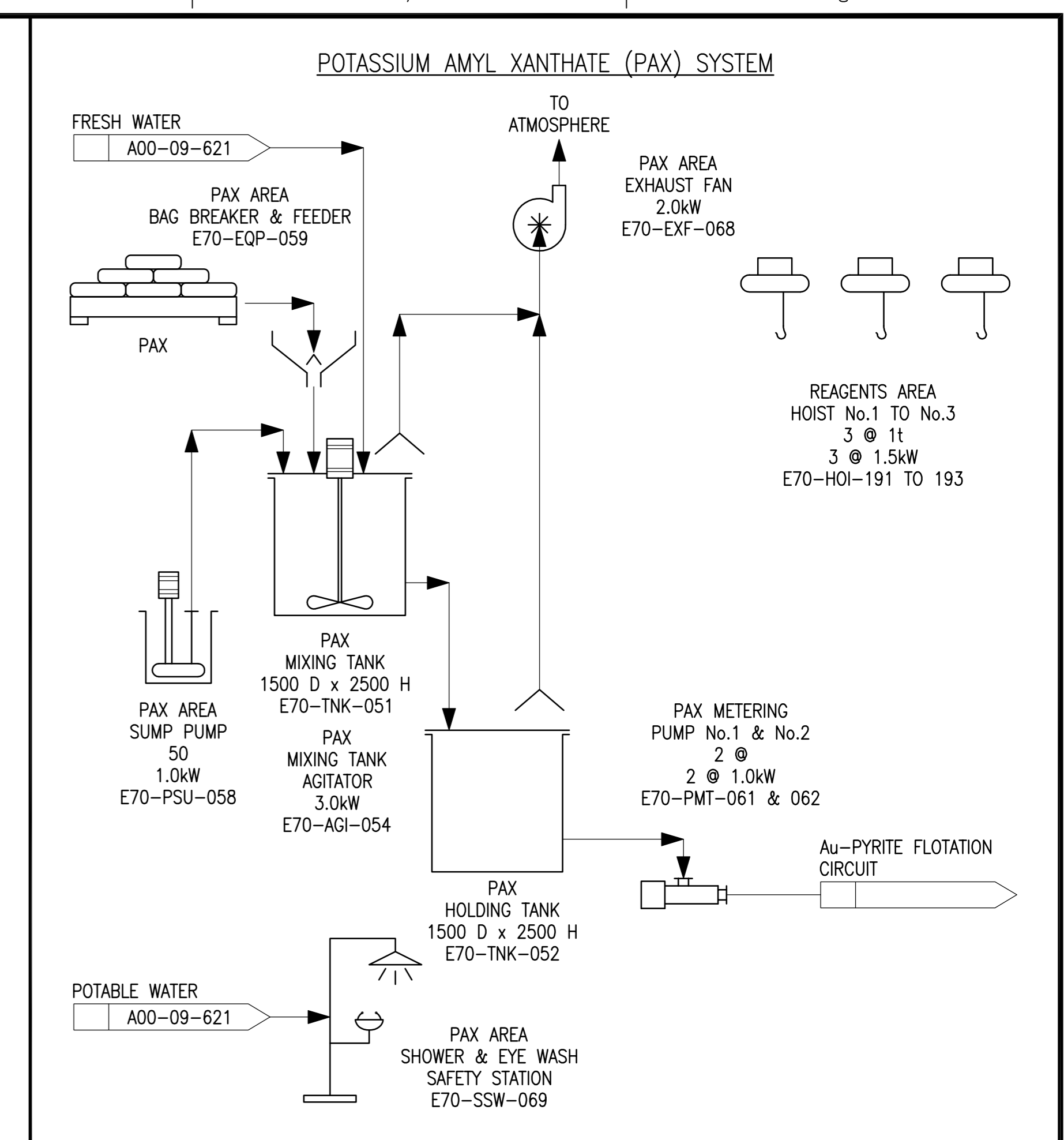
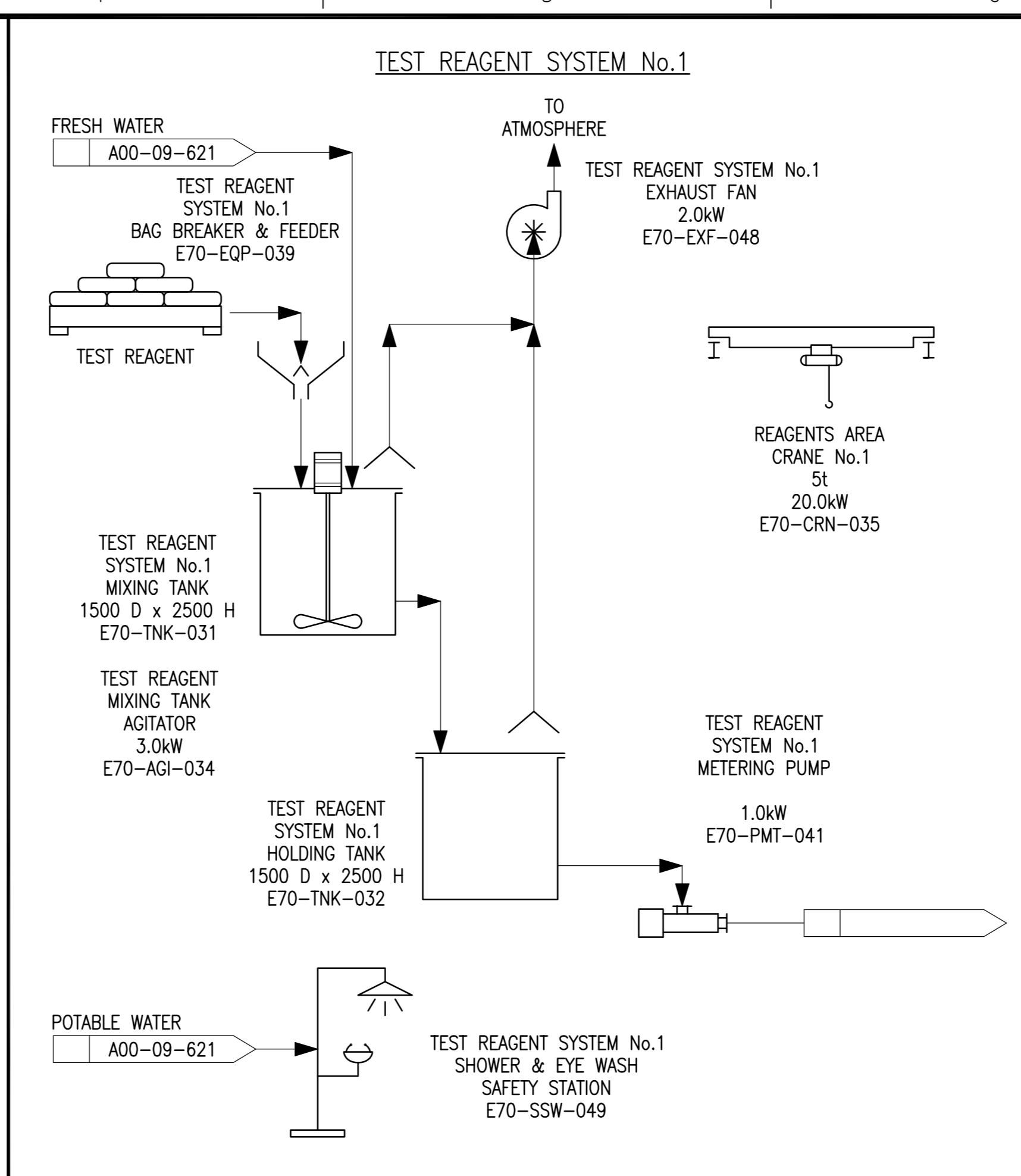
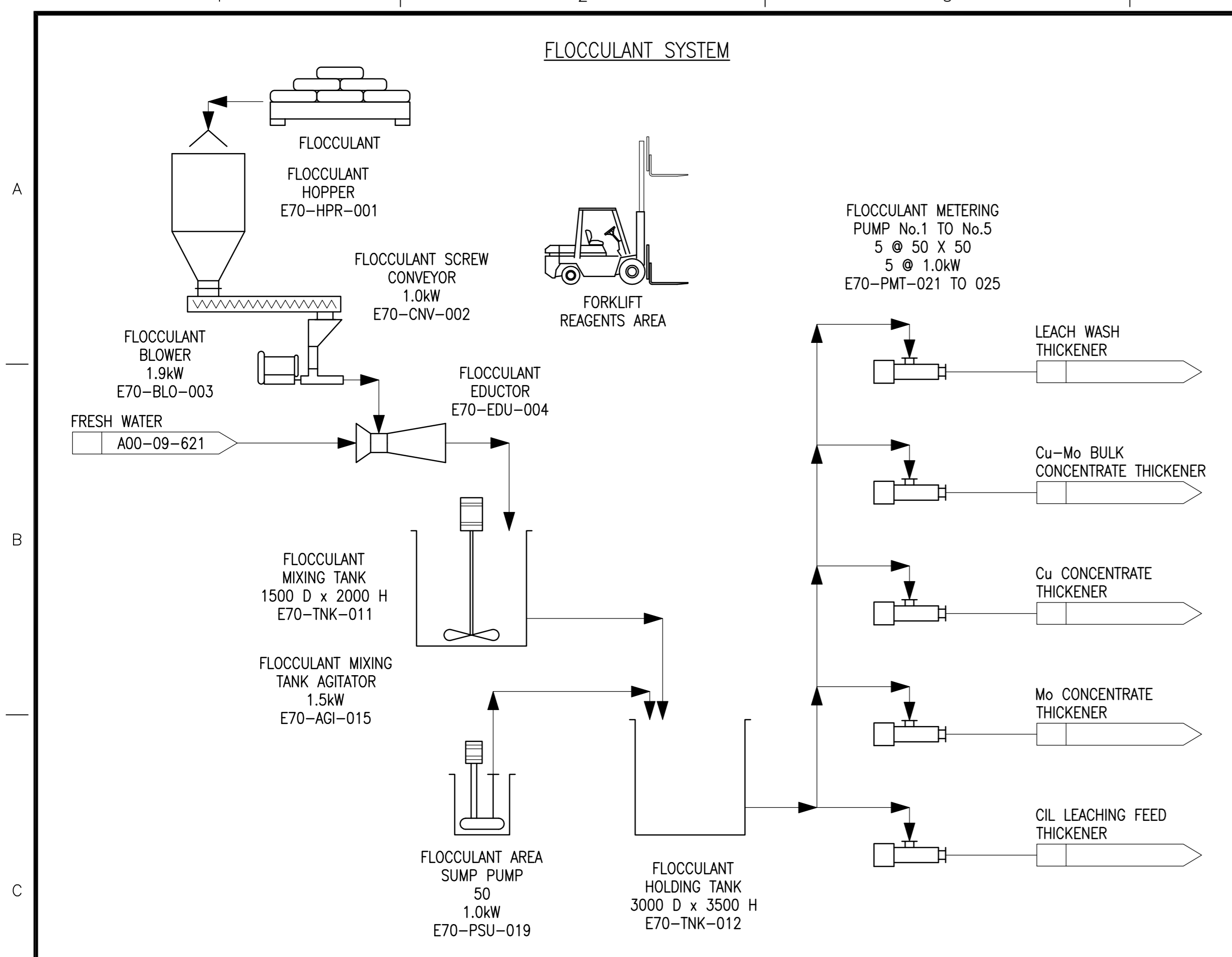
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SCALE:	NONE
DATE:	15MAR12
DESIGN BY:	JH
DRAWN BY:	AO
CHECK BY:	
APP. BY:	

CLIENT:

**SEABRIDGE GOLD**

BRITISH COLUMBIA, CANADA

TITLE			
KERR-SULPHURETS-MITCHELL PROJECT (PFS UPDATE - 2012)			
PROCESS FLOW DIAGRAM No.22			
MITCHELL MINESITE CRUSHING AND MINE SITE WATER SERVICES			
FILENAME	PROJECT NUMBER	DRAWING NUMBER	REV.
A0009622.DWG	12528801.00	A00-09-622	A

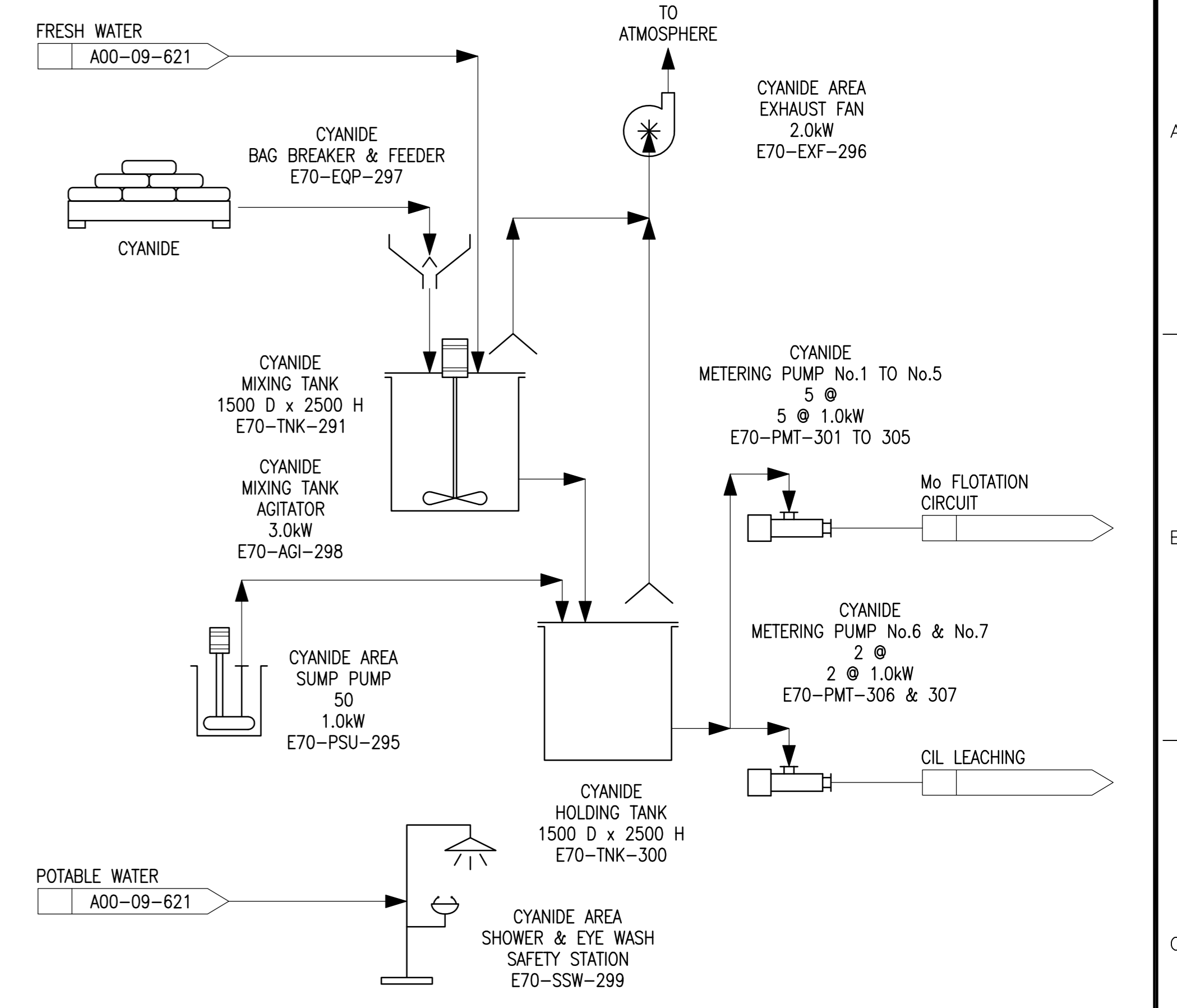
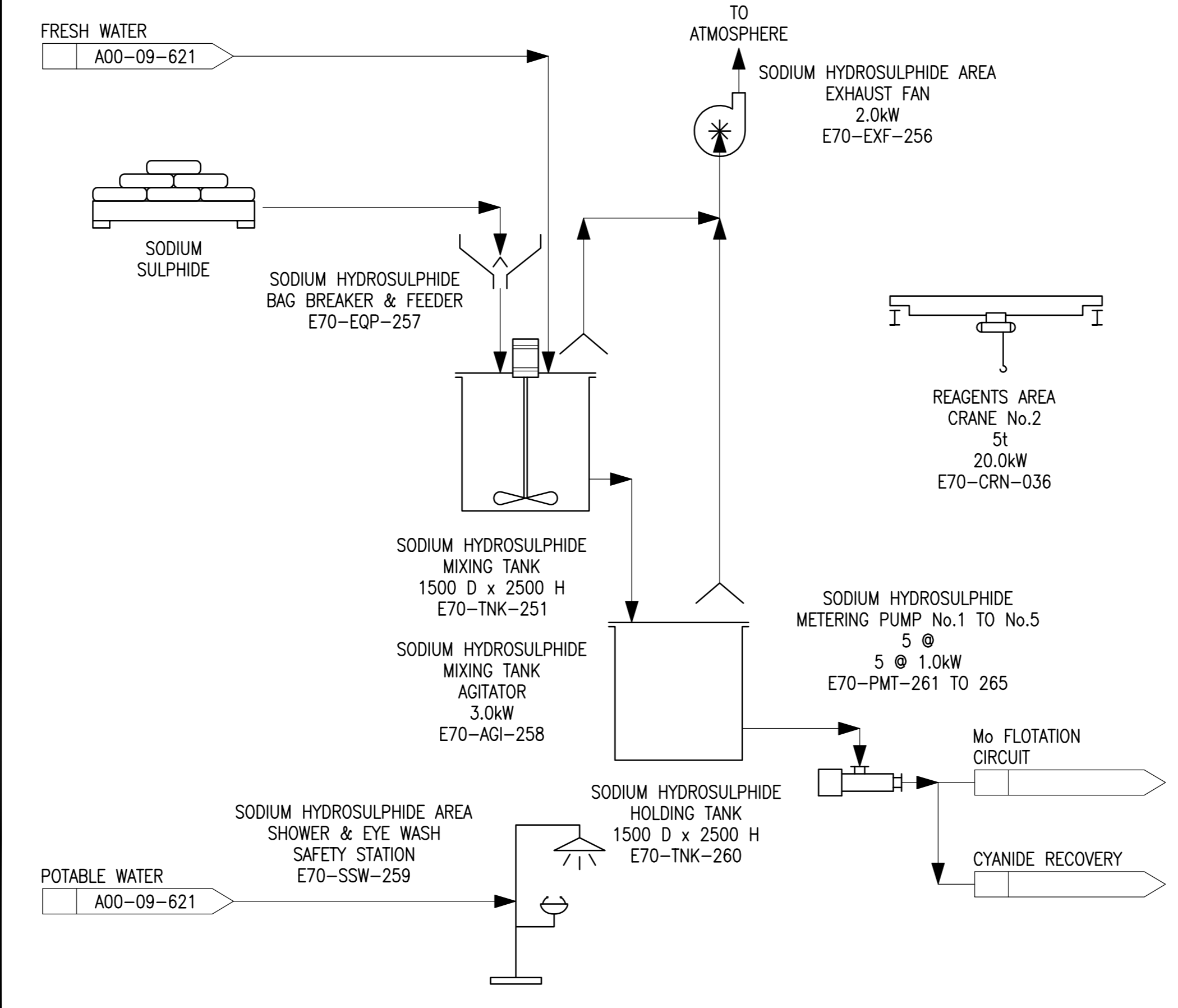
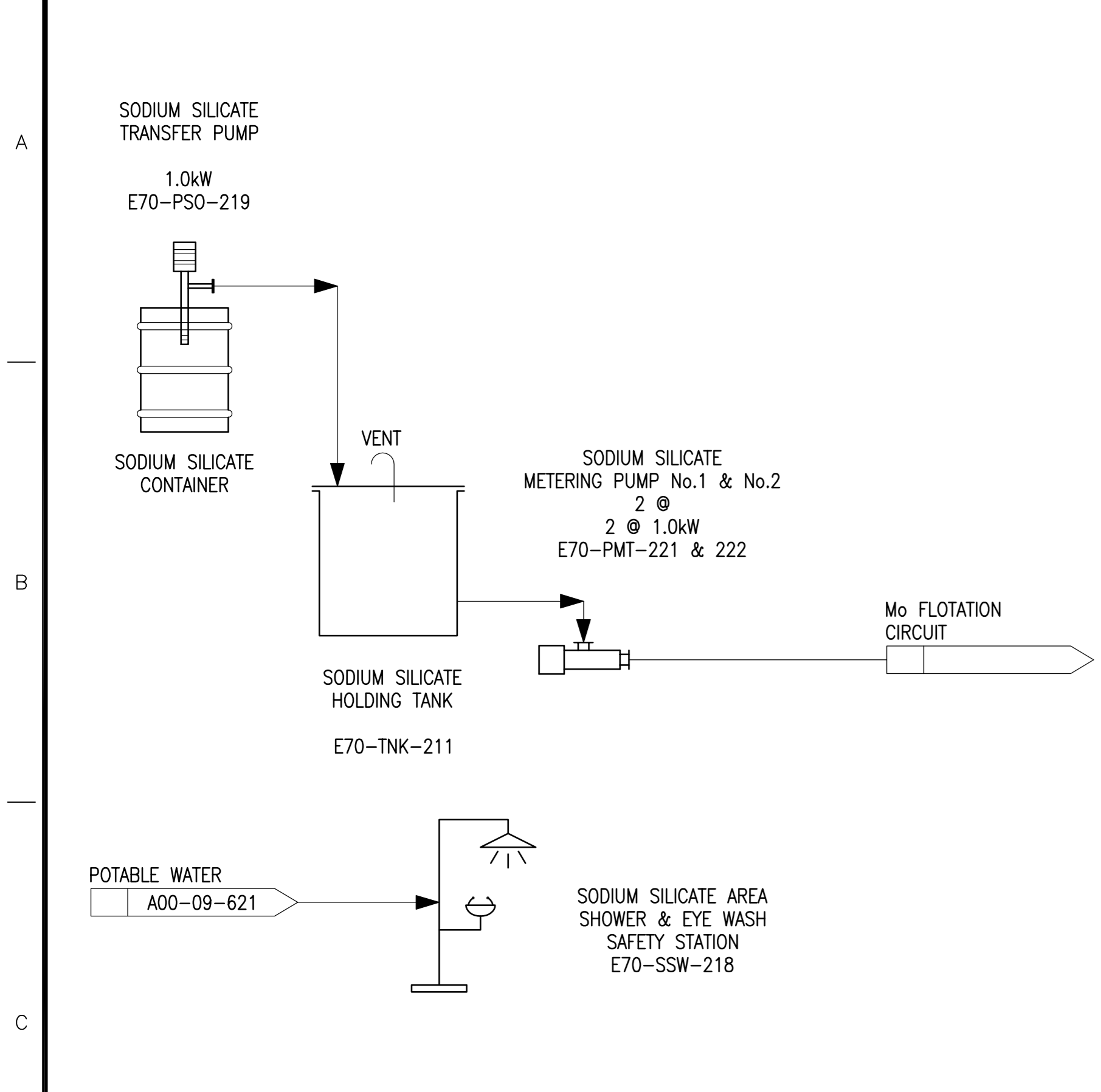


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														SCALE: NONE	DATE: 15MAR12	DESIGN. BY: JH	DRAWN BY: AO	BRITISH COLUMBIA, CANADA	FILENAME: A0009623.DWG	PROJECT NUMBER: 12528801.00	DRAWING NUMBER: A00-09-623	REV. A
														DESIGN. BY: JH	DATE: 15MAR12	DRAWN BY: AO	DATE: 12JUL12	BY: AO				
														ISSUED FOR REPORT	DATE: 12JUL12	BY: AO						

SODIUM SILICATE (Na<sub>2</sub>SiO<sub>3</sub>) SYSTEM

SODIUM HYDROSULPHIDE (NaHS) SYSTEM

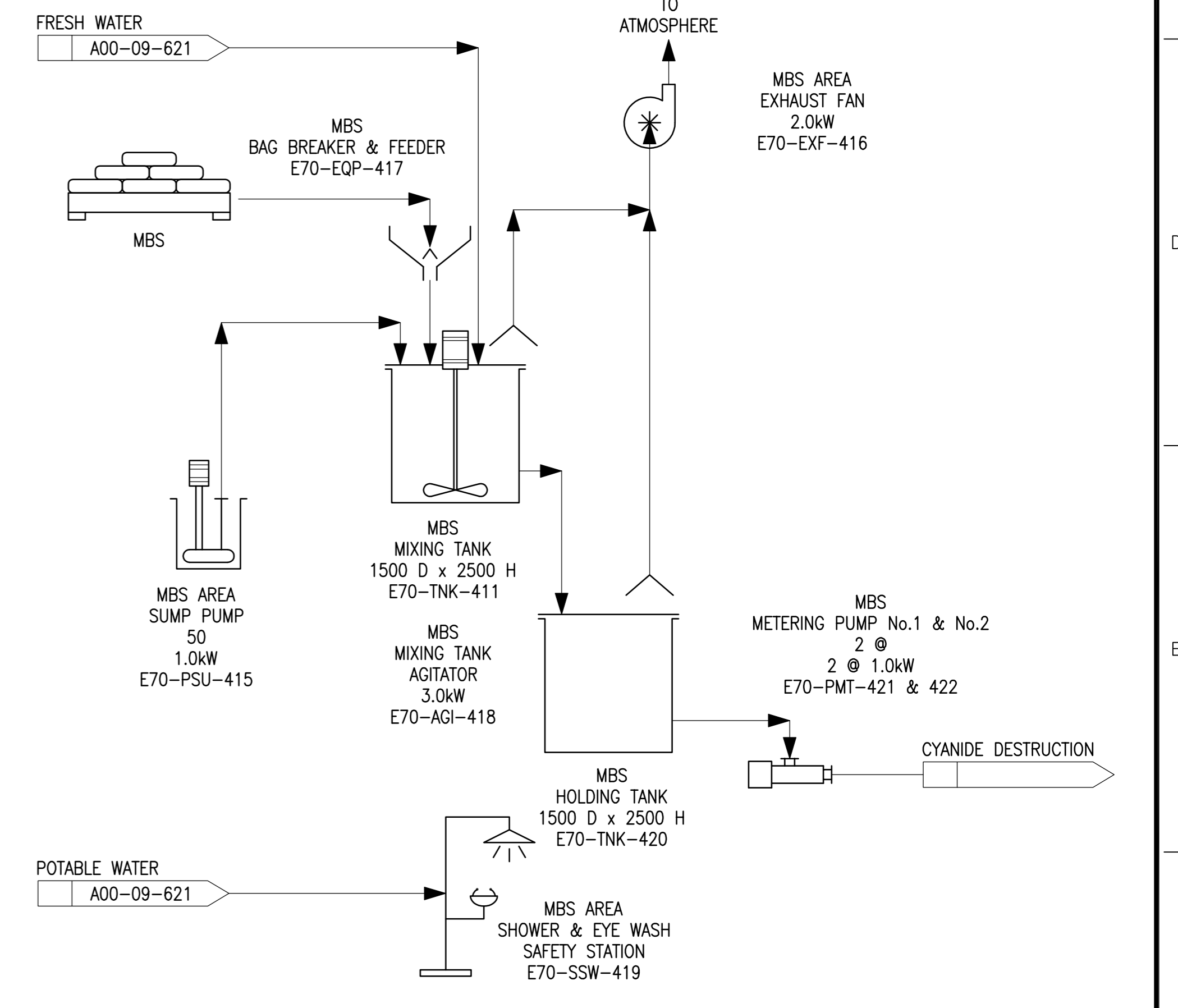
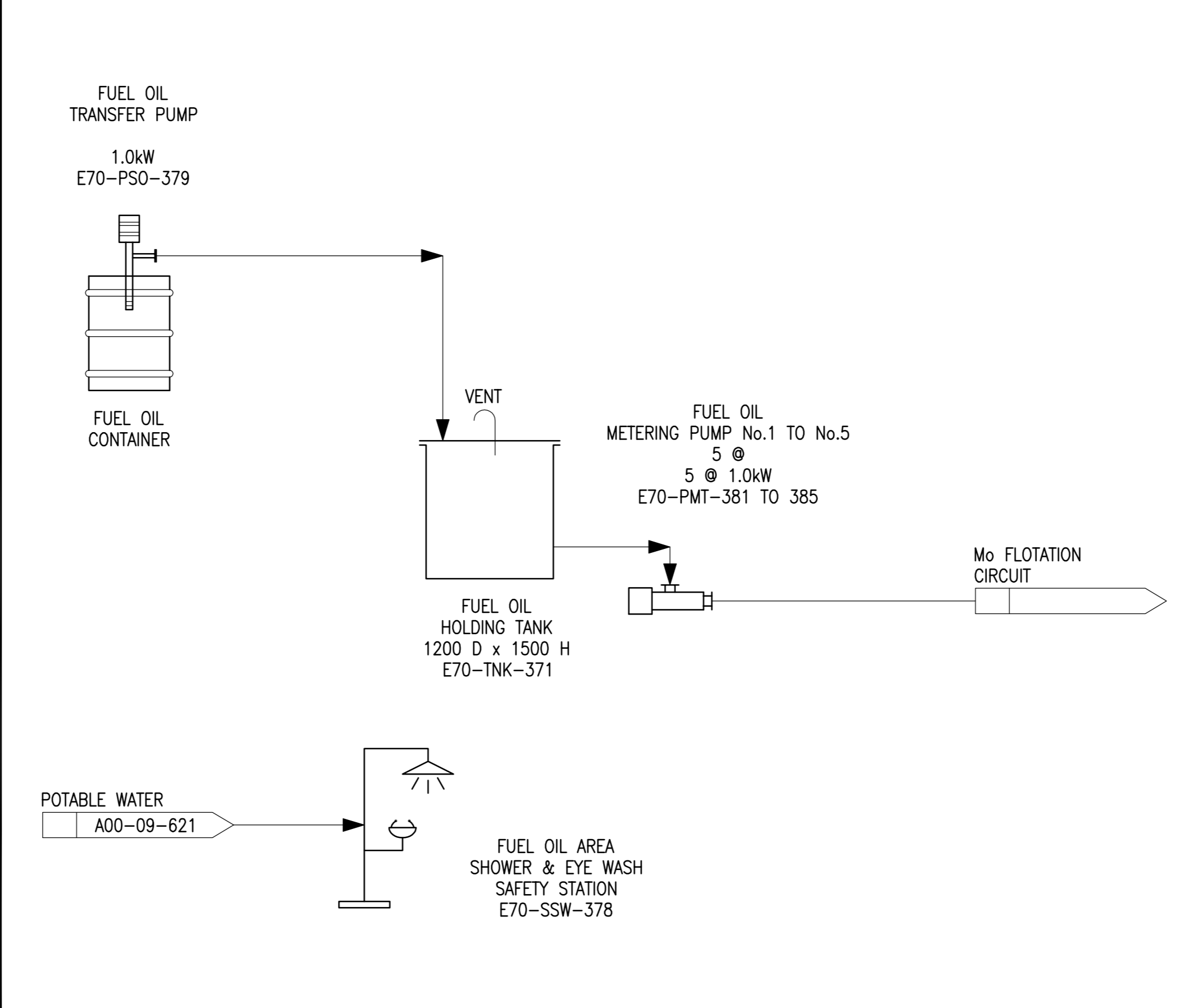
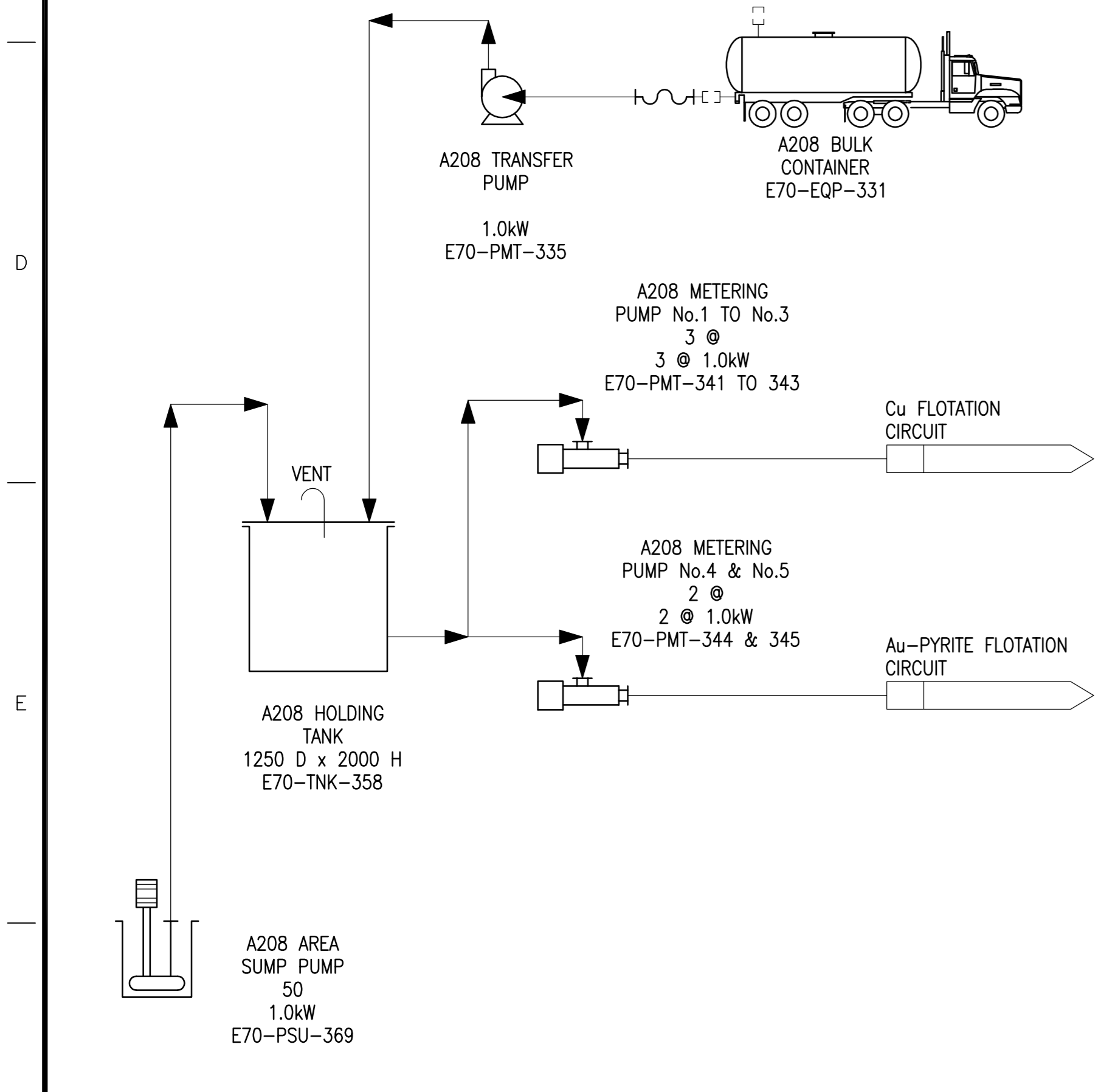
CYANIDE (NaCN) SYSTEM



A208 SYSTEM

FUEL OIL SYSTEM

SODIUM METABISULPHIDE (MBS) SYSTEM



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DWG. NO.	REFERENCE DRAWINGS
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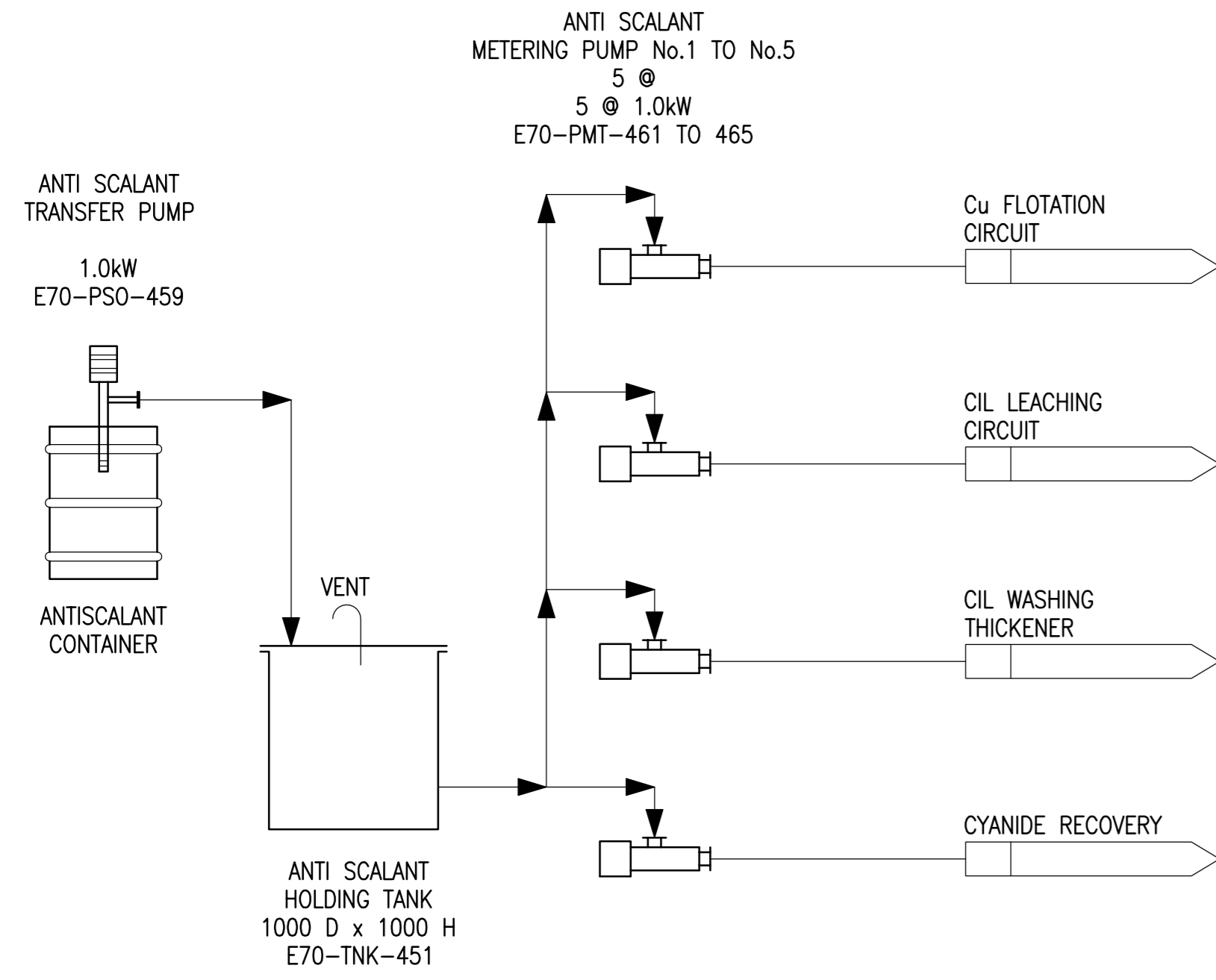
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SECTION:	PROCESS
SCALE:	NONE
DATE:	
DESIGN BY:	JH
DATE:	15MAR12
DRAWN BY:	AO
DATE:	15MAR12
CHECK BY:	
APP. BY:	

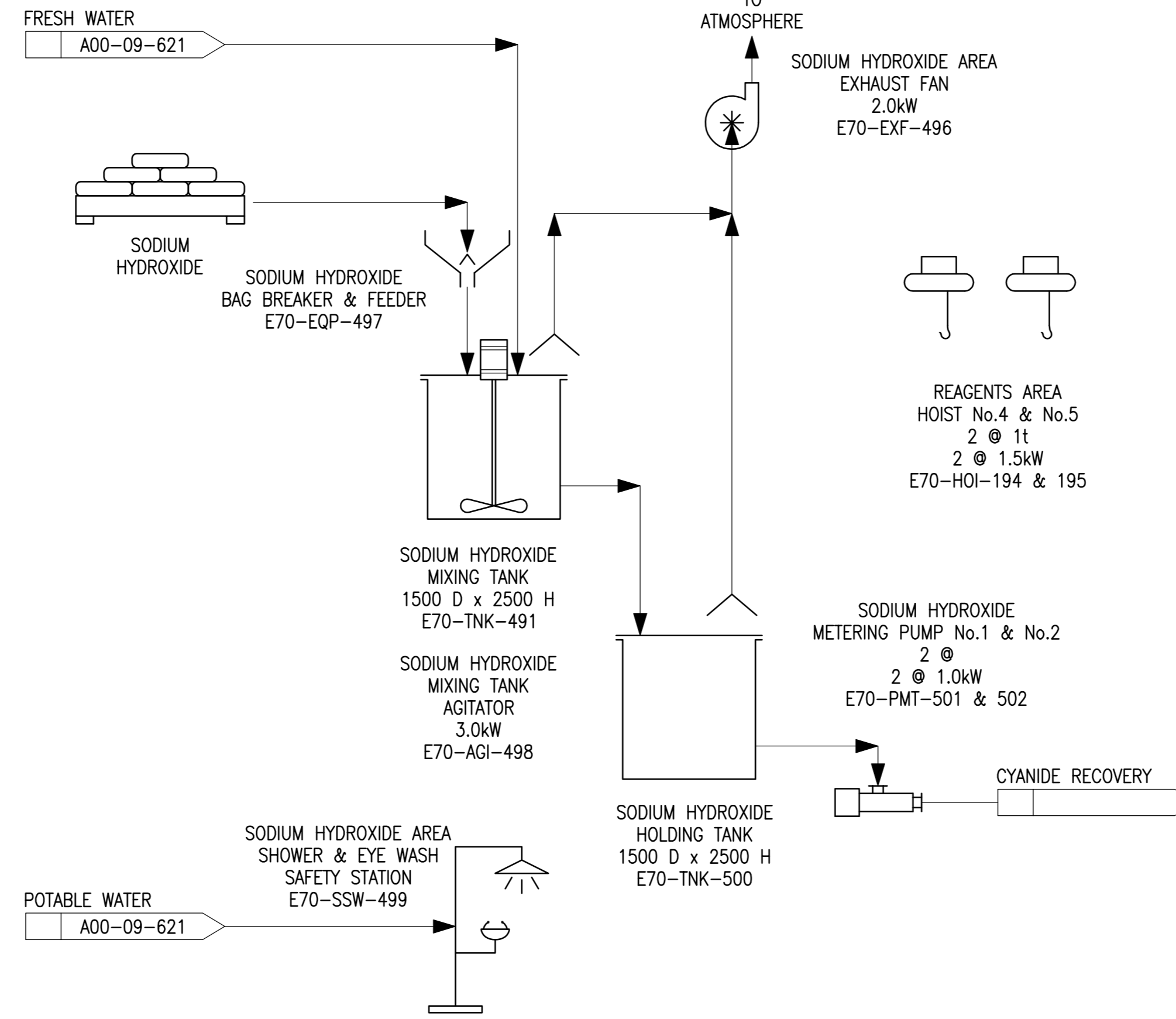
CLIENT: **SEABRIDGE GOLD**  
BRITISH COLUMBIA, CANADA

TITLE	KERR-SULPHURETS-MITCHELL PROJECT (PFS UPDATE - 2012)		
	PROCESS FLOW DIAGRAM No.24		
	PLANTSITE REAGENTS		
	SHEET 2 OF 3		
FILENAME	PROJECT NUMBER	DRAWING NUMBER	REV.
A0009624.DWG	12528801.00	A00-09-624	A

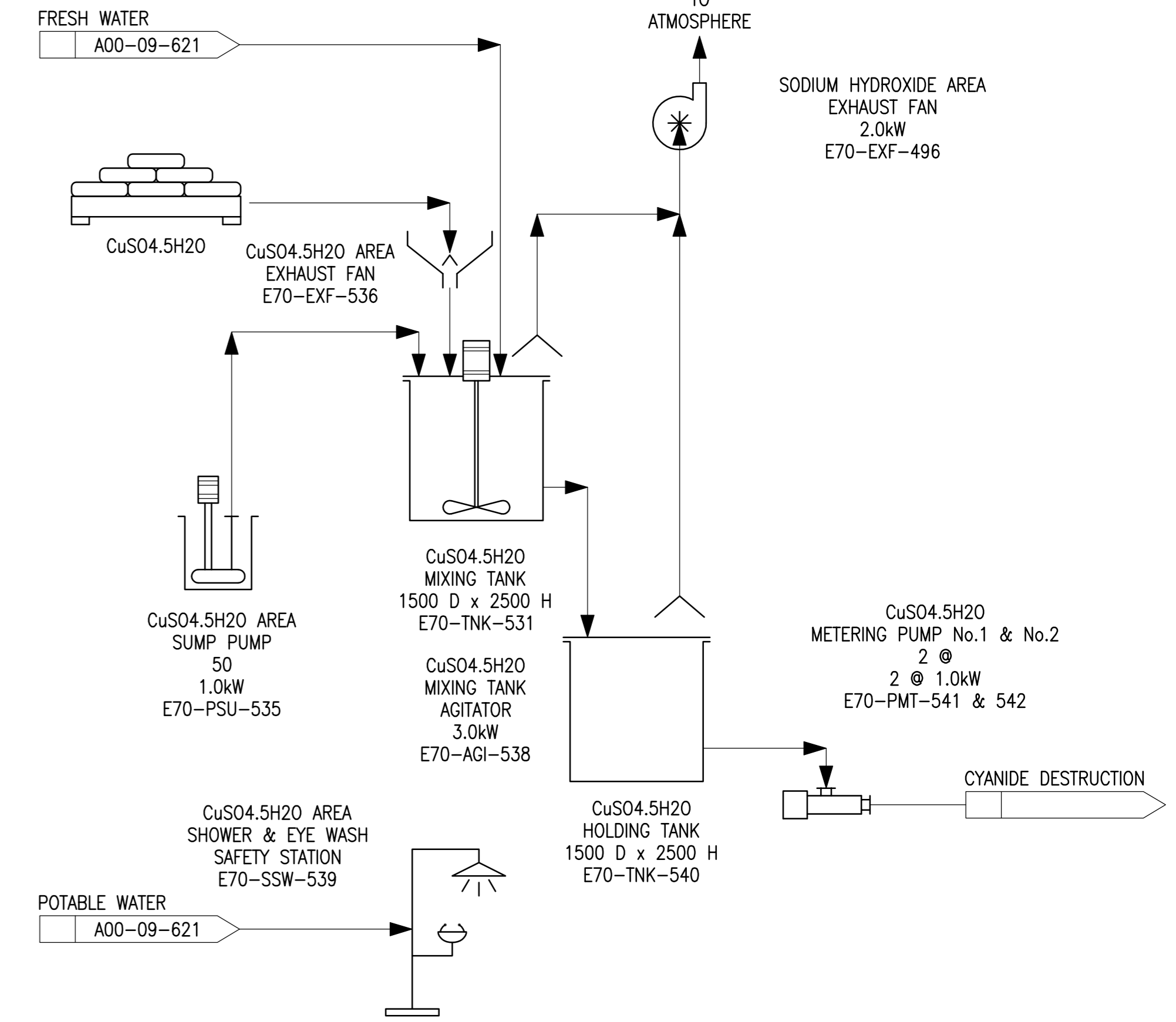
ANTISCALANT SYSTEM



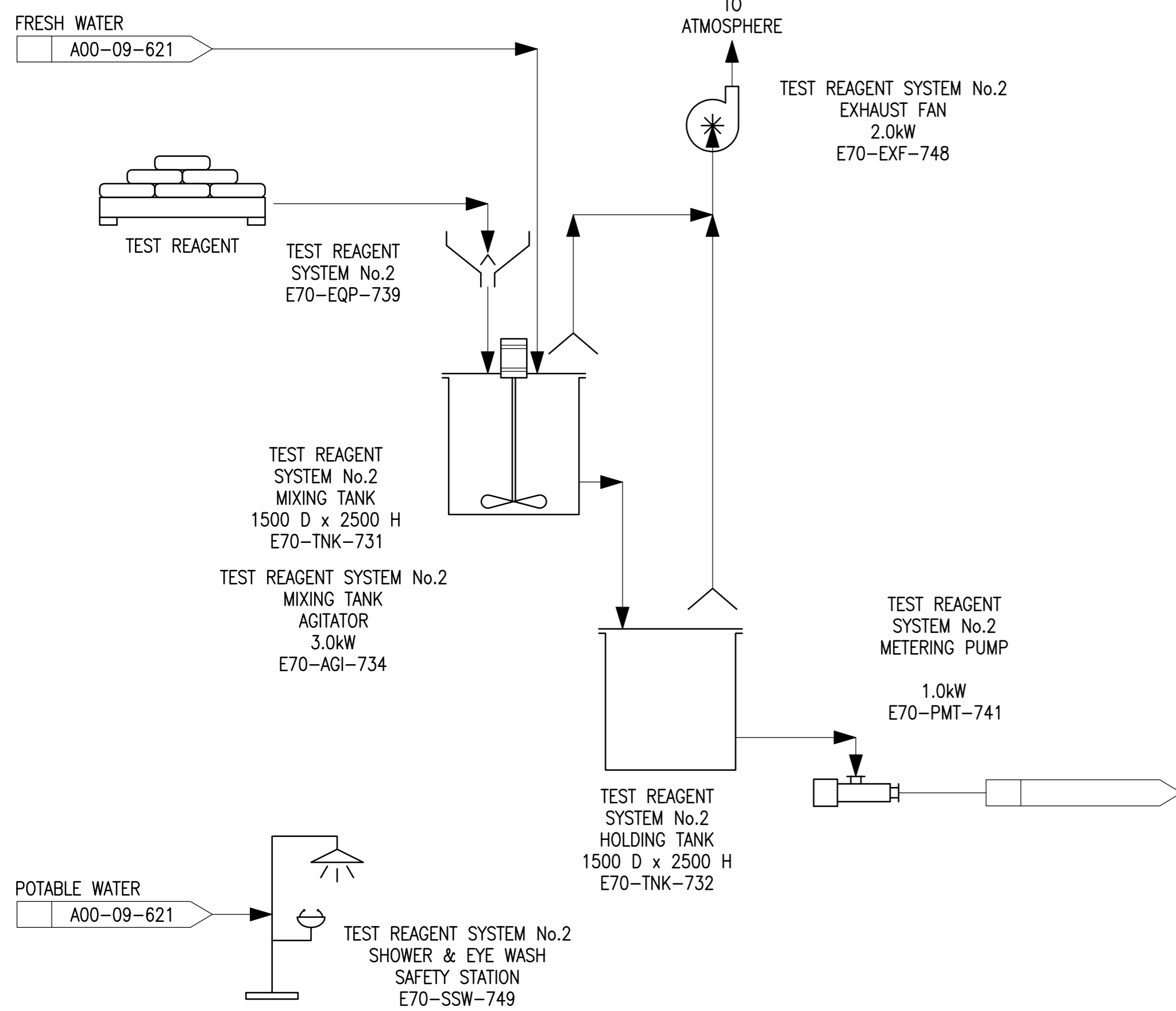
SODIUM HYDROXIDE (NaOH) SYSTEM



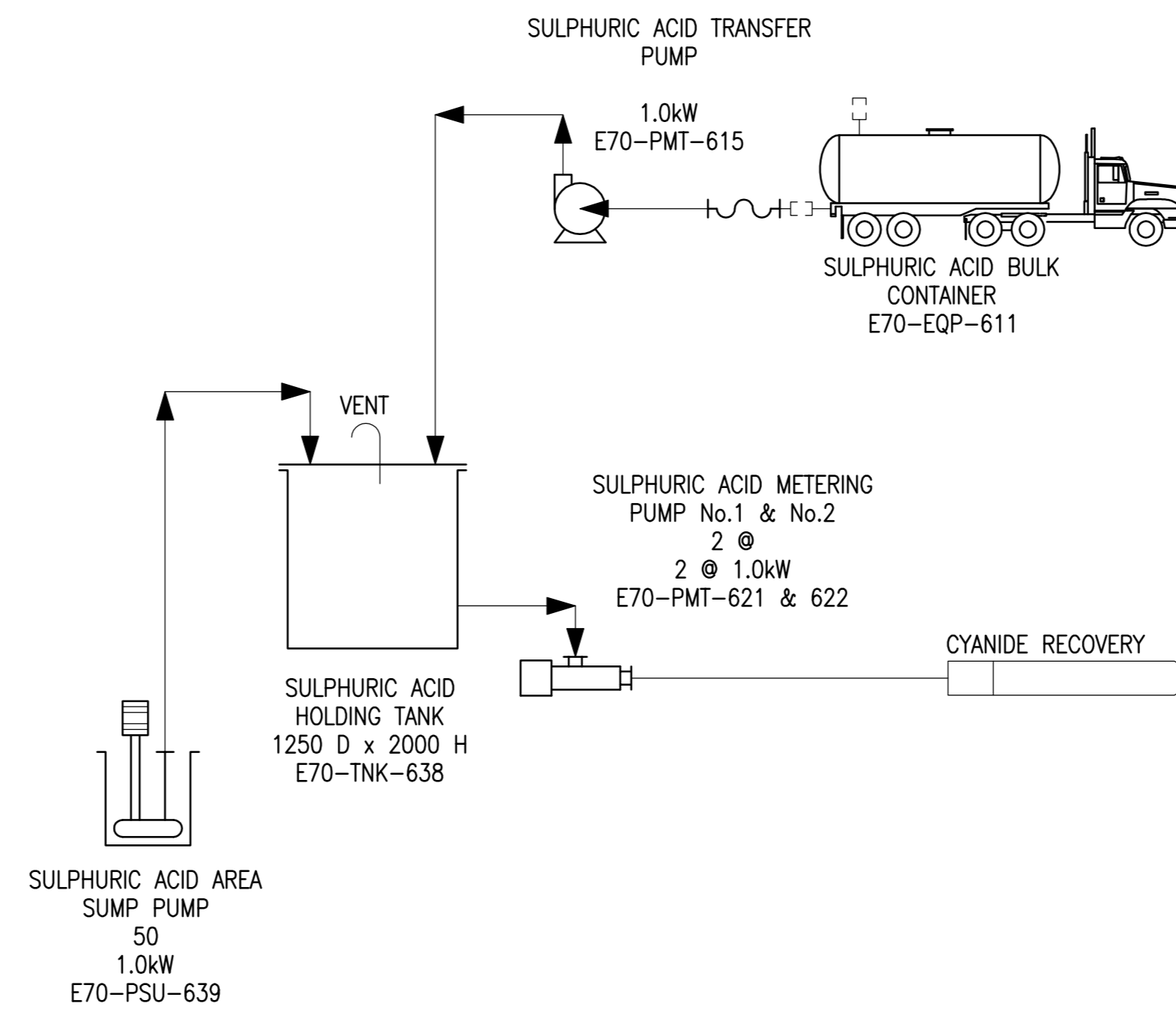
COPPER SULPHATE PENTAHYDRATE (CuSO4.5H2O) SYSTEM



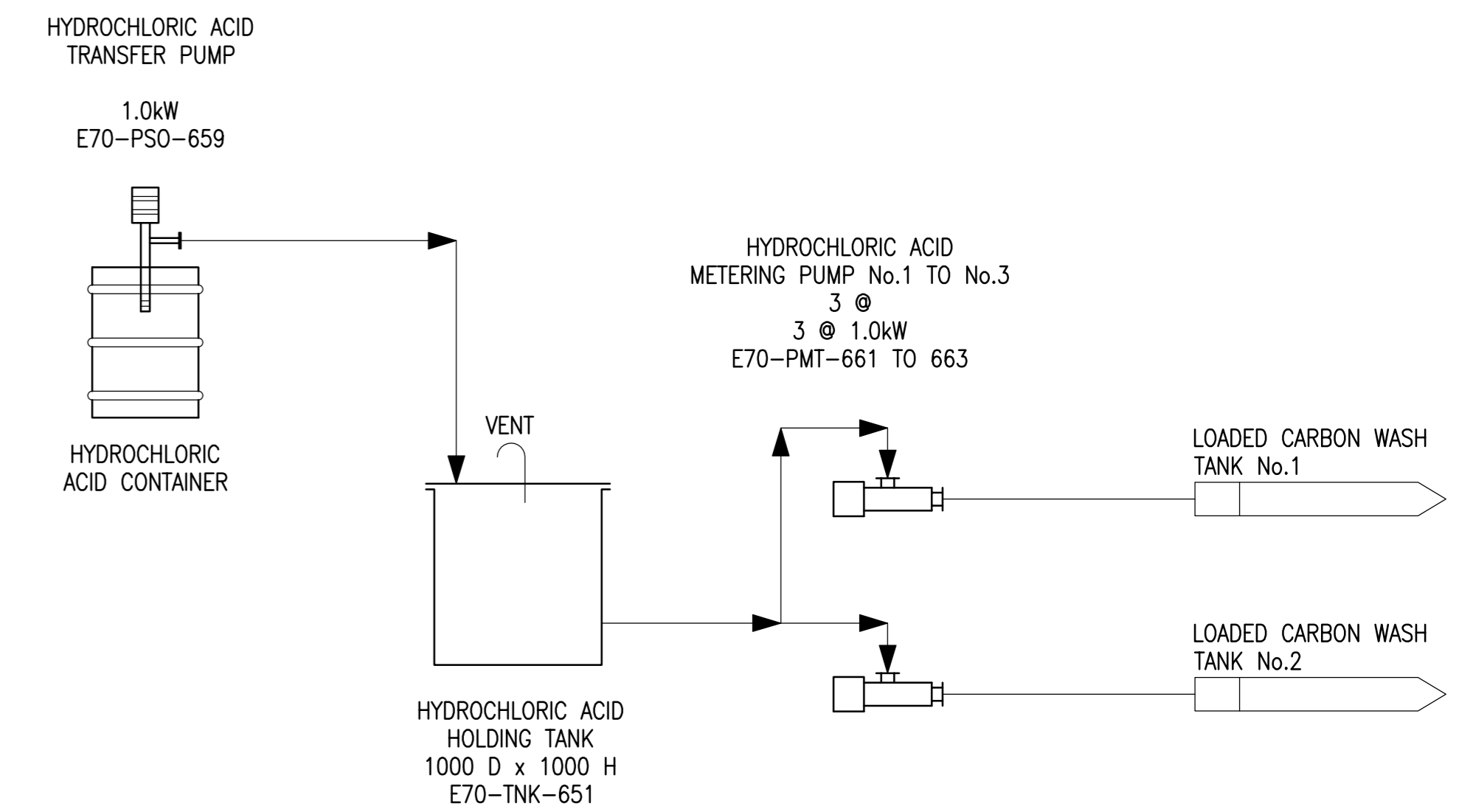
TEST REAGENT SYSTEM No.2



SULPHURIC ACID (H2SO4) SYSTEM



HYDROCHLORIC ACID (HCl) SYSTEM



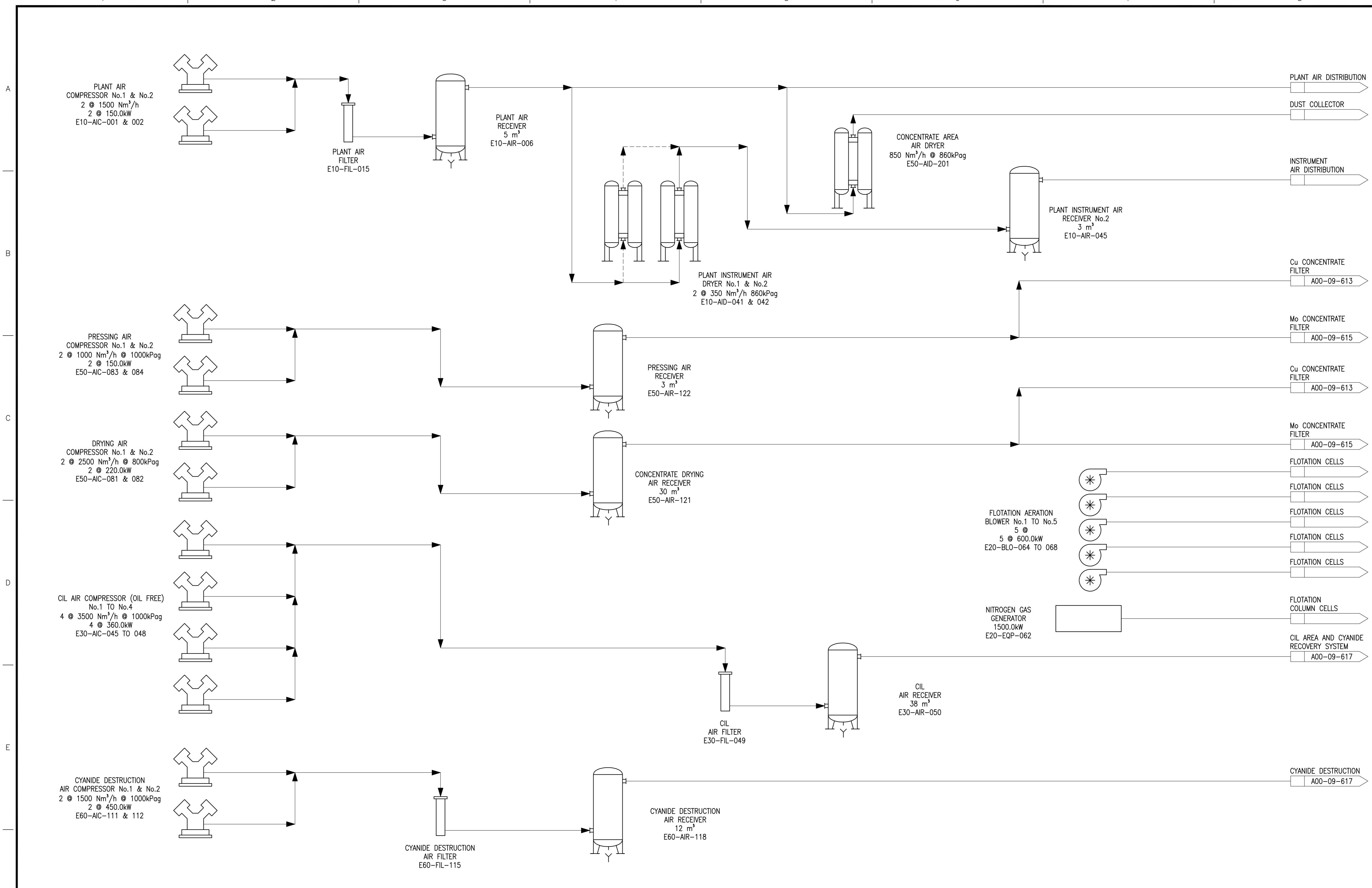
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CLIENT	PROJMAN	PROJENG	PROCESS	ELECTR.	INSTR.	MECH.	STRUCT.	SPRINKS	ARCH.	LAYOUT	REV. No.	ISSUE No.	DESCRIPTION	DATE	BY
											A 1	ISSUED FOR REPORT	12JUL12	AO	

SECTION:	PROCESS
SCALE:	NONE
DATE:	15MAR12
DESIGN. BY:	JH
DRAWN BY:	AO
CHECK. BY:	
APP. BY:	

CLIENT: **SEABRIDGE GOLD**  
BRITISH COLUMBIA, CANADA

TITLE	KERR-SULPHURETS-MITCHELL PROJECT (PFS UPDATE - 2012) PROCESS FLOW DIAGRAM No.25 PLANTSITE REAGENTS SHEET 3 OF 3		
FILENAME	PROJECT NUMBER	DRAWING NUMBER	REV.
A0009625.DWG	12528801.00	A00-09-625	A



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DWG. NO.	REFERENCE DRAWINGS
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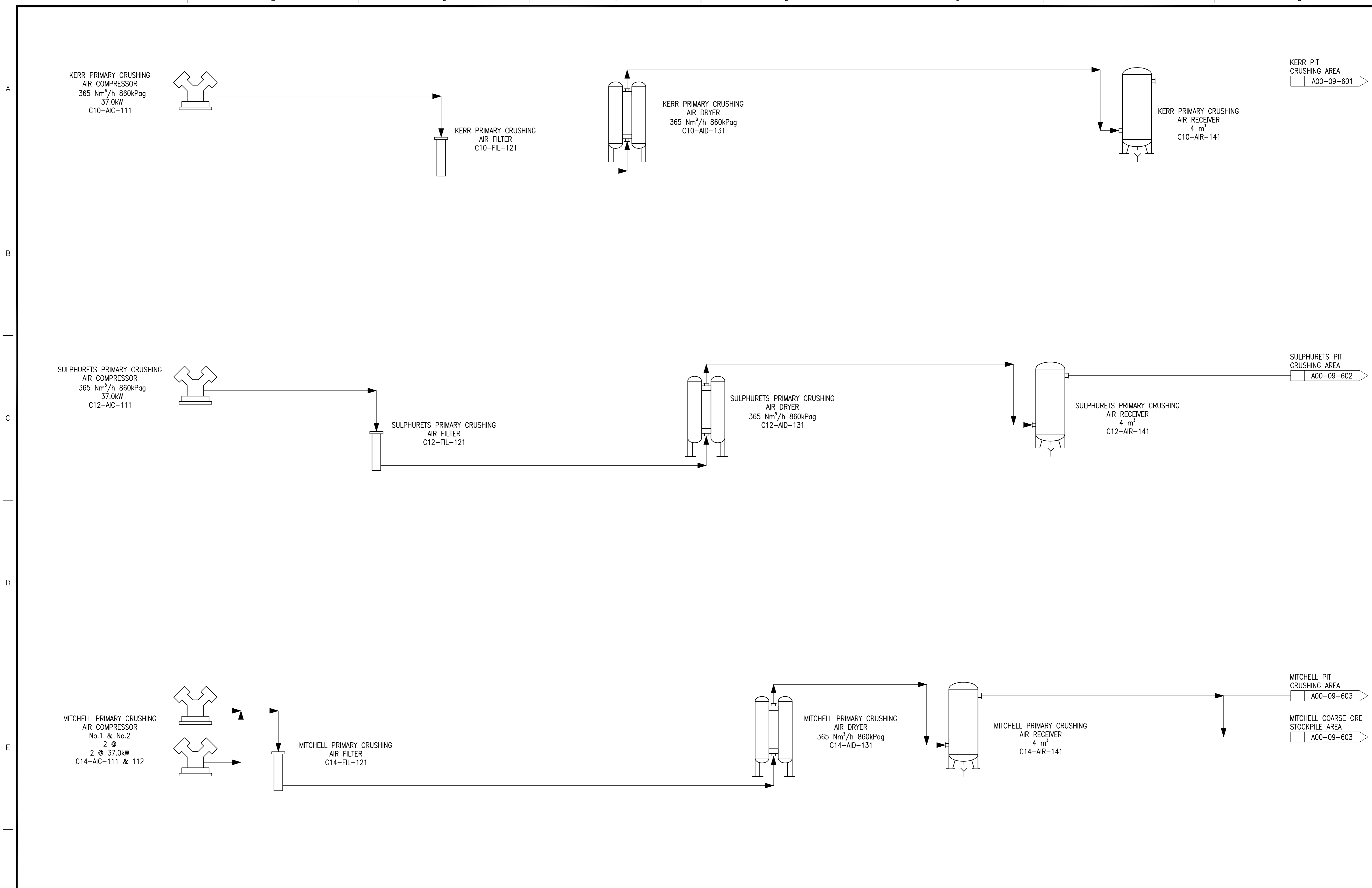
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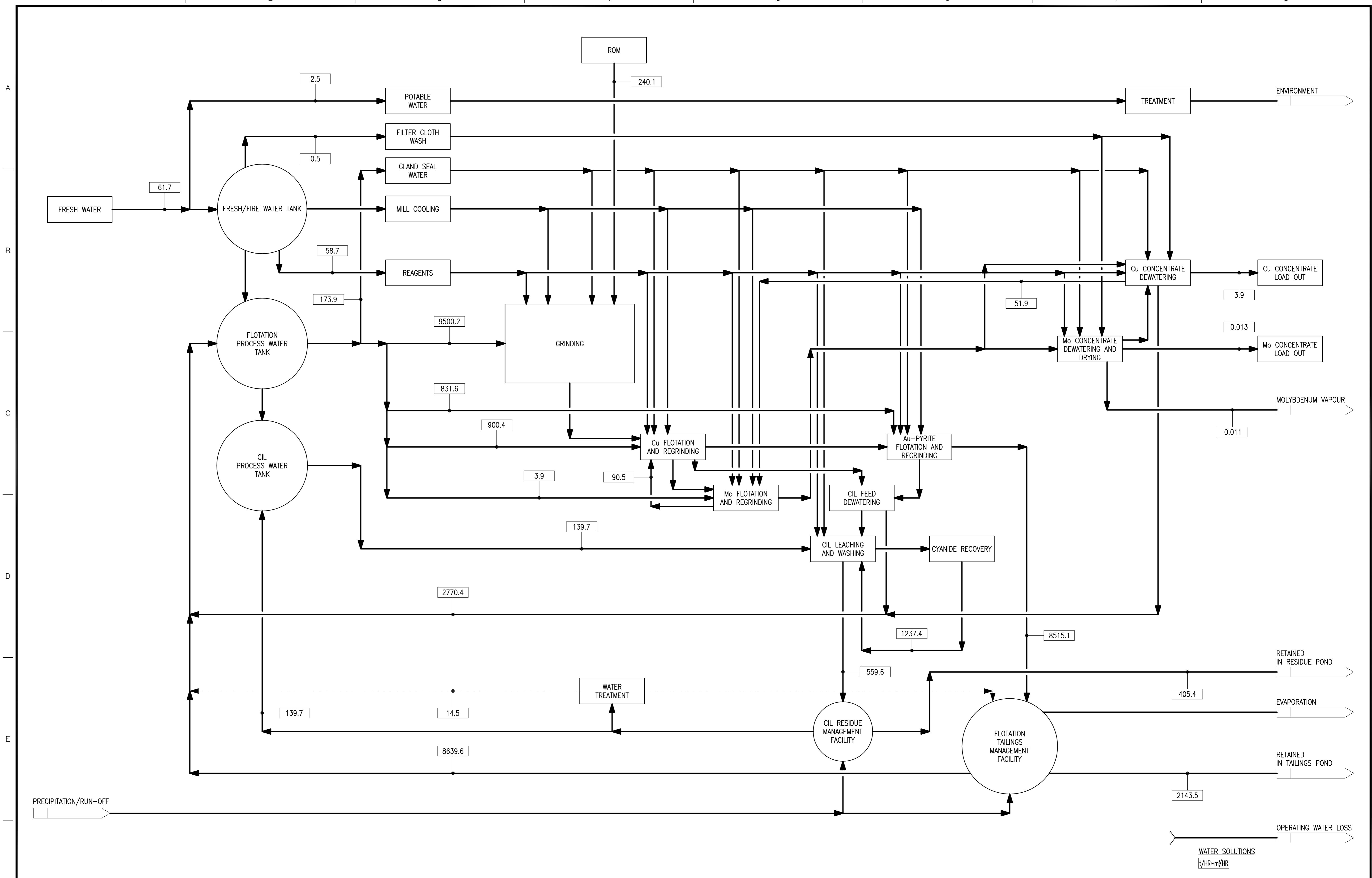
REV. No.	ISSUE No.	DESCRIPTION	DATE	BY
A	1	ISSUED FOR REPORT	12JUL12	AO

SECTION:	PROCESS
SCALE:	NONE
DATE:	15MAR12
DESIGN. BY:	JH
DRAWN BY:	AO
CHECK. BY:	
APP. BY:	

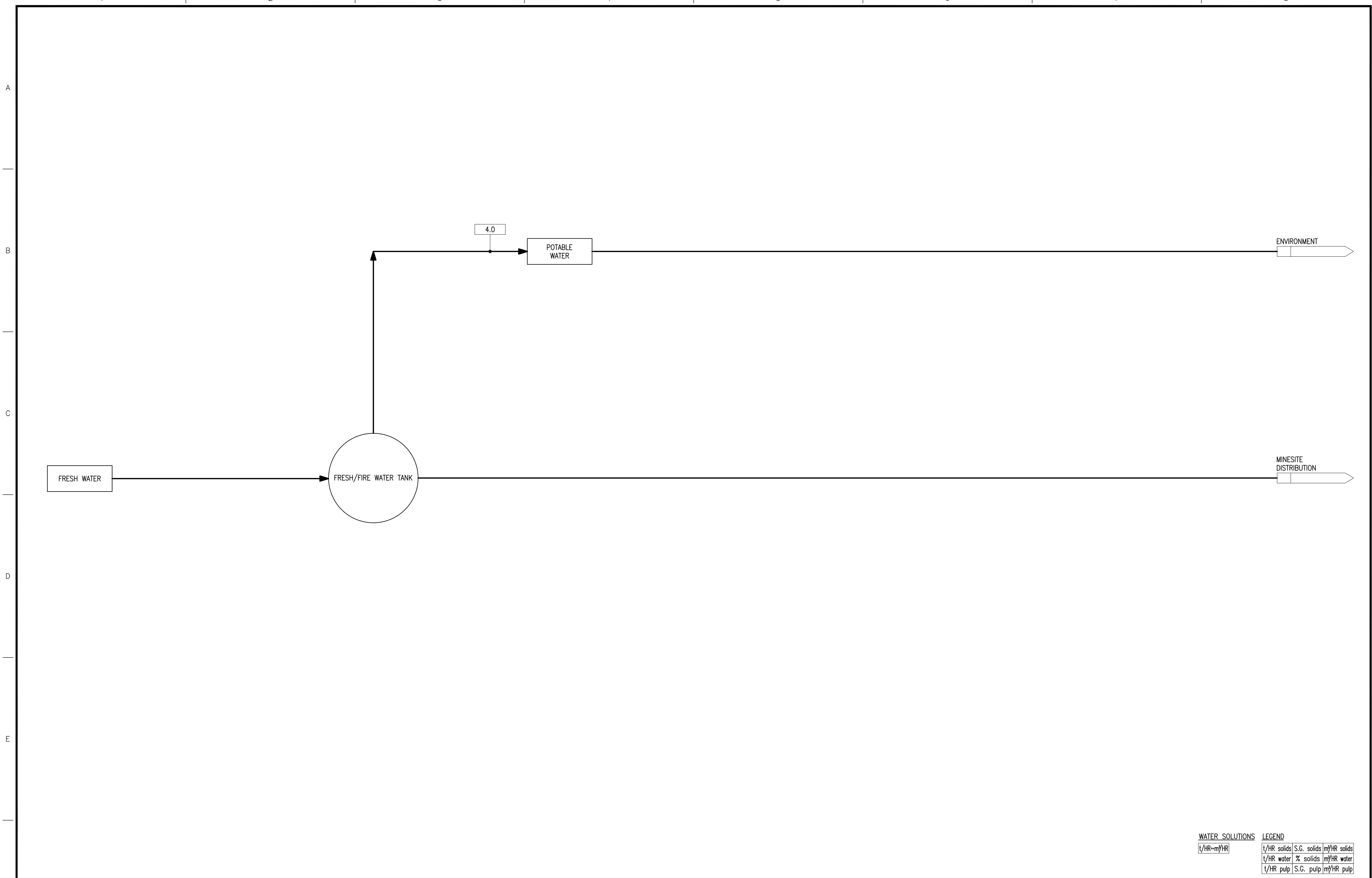
CLIENT:	SEABRIDGE GOLD	TITLE:	KERR-SULPHURETS-MITCHELL PROJECT (PFS UPDATE - 2012) PROCESS FLOW DIAGRAM No.26 PLANTSITE AIR SERVICES
BRITISH COLUMBIA, CANADA		FILENAME:	A0009626.DWG
		PROJECT NUMBER:	12528801.00
		DRAWING NUMBER:	A00-09-626
		REV.:	A



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													SCALE: NONE	DATE	<b>SEABRIDGE GOLD</b> BRITISH COLUMBIA, CANADA 	KERR-SULPHURETS-MITCHELL PROJECT (PFS UPDATE - 2012) PROCESS FLOW DIAGRAM No.27 MINESITE AIR SERVICES			
														DESIGN. BY: JH			15MAR12	FILENAME	PROJECT NUMBER
																A0009627.DWG	12528801.00	A00-09-627	A



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	CLIENT	PROJ/MAN	PROJ/ENG	PROCESS	ELECTR.	INSTR.	MECH.	STRUCT.	SPRINKS	ARCH.	LAYOUT	REV. No.	ISSUE No.	DESCRIPTION	DATE	BY																														
												A 1	ISSUED FOR REPORT	12JUL12	AO																															
																	SCALE: NONE	DATE: 15MAR12	DESIGN. BY: JH	15MAR12	BRITISH COLUMBIA, CANADA	TITLE: PROCESS FLOW DIAGRAM No.28 PLANTSITE WATER BALANCE																								
																DRAWN BY: AO	15MAR12	CHECK. BY:		TETRA TECH WARDROP	FILENAME: A0009628.DWG	PROJECT NUMBER: 12528801.00	DRAWING NUMBER: A00-09-628	REV. A																						



WATER SOLUTIONS		LEGEND	
t/HR-m <sup>3</sup> /HR		t/HR solids	S.G. solids
t/HR water	% solids	m <sup>3</sup> /HR solids	
t/HR pulp	S.G. pulp	m <sup>3</sup> /HR water	

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DWG. NO.	REFERENCE DRAWINGS
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CLIENT	PROGRAM	PROCESS	ELECTR.	INSTR.	PIPING	MECH.	STRUCT.	SPRINKS	ARCH.	LAYOUT	REV. No.	ISSUE No.	DESCRIPTION	DATE	BY
											A	1	ISSUED FOR REPORT	12JUL12	AO

SECTION:	PROCESS
SCALE:	NONE
DATE:	
DESIGN. BY:	JH
DATE:	15MAR12
DRAWN BY:	AO
DATE:	15MAR12
CHECK. BY:	
APP. BY:	

CLIENT:  
**SEABRIDGE GOLD**  
 BRITISH COLUMBIA, CANADA

TITLE KERR-SULPHURETS-MITCHELL PROJECT (PFS UPDATE - 2012) PROCESS FLOW DIAGRAM No.29 MINESITE WATER BALANCE			
FILENAME	PROJECT NUMBER	DRAWING NUMBER	REV.
A0009629.DWG	12528801.00	A00-09-629	A