

**Document Front Sheet**



<b>NE-LCP Contractor/Supplier</b>	Contract or Purchase Number and Description: CH0031		Contractor/Supplier Name: Cahill-Ganotec Partnership		
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	Approver's Signature: <i>E. Percy</i>		Date (dd-mmm-yyyy): 06-Oct-2017		Review Class:
<u>Comments:</u>				Equipment Tag or Model Number: N/A	

<b>NE-LCP</b>	REVIEW DOES NOT CONSTITUTE APPROVAL OF DESIGN DETAILS, CALCULATIONS, TEST METHODS OR MATERIAL DEVELOPED AND/OR SELECTED BY THE CONTRACTOR, NOR DOES IT RELIEVE THE CONTRACTOR FROM FULL COMPLIANCE WITH CONTRACTUAL OR OTHER OBLIGATIONS. <input type="checkbox"/> 01 – REVIEWED AND ACCEPTED – NO COMMENTS <input type="checkbox"/> 02 – REVIEWED – INCORPORATE COMMENTS, REVISE AND RESUBMIT <input type="checkbox"/> 03 – REVIEWED - NOT ACCEPTED <input checked="" type="checkbox"/> 04 – INFORMATION ONLY <input type="checkbox"/> 05 – NOT REVIEWED				
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	NE-LCP Management:		Date (dd-mmm-yyyy):		
<u>General Comments:</u>					



# Monthly Progress Report (September 2017)

## MFA-CG-SD-3440-PM-A06-0003-01

### A06

Client Reference:

**CH0031-001**

**Supply and Install Mechanical & Electrical Auxiliaries MF**

Project Reference:

**TC006**

A1	06-Oct-17	Review	Flavie Audet-Gagnon, P.Eng  Project Controls	Elizabeth Percy, P.Eng  Project Engineer	Tim Harrington, P.Eng  Project Manager
Rev.	Date	Issued for	Revised by	Checked by	Approval by



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## 1. Executive Summary

September 2017 has been a progressive period for Contractor as final strides are being made leading to the start of permanent construction in October. Contractor continues to establish its presence at the work site with set-up of its facility infrastructure, delivery of construction equipment, and deployment of staff / union personnel. Design is complete for cable tray supports needed to install raceway systems in the early planned work areas. Contractor has confirmed expedited delivery of first material shipments to allow timely start of construction aligned with committed handover dates.

Great headway has been made relating to project documentation and coordination procedure development. Contractor has achieved approval of several "A" series documents, including all the ones required to mobilise on site on October 3rd, and various others are progressing through the project review / approval process.

Challenges remain relating to Contractor's lunch trailer location near the station powerhouse as the majority of the area is occupied by Company's Other Contractors. Readiness of the work areas has potential to cause schedule delays and is being discussed with Company. The lack of closure of the powerhouse building by others in advance of the winter weather is an active concern of Contractor and formal queries have been issued to Company for clarification regarding maintaining the building temperature. Refer to Section 14 and the risk register for more details.

The content of this document outlines the achievements, activities, and challenges experienced during this reporting period.

## 2. Significant Accomplishments

Contractor's noteworthy accomplishments achieved during this reporting period have been provided below for reference:

- Continuation of project team assignments including;
  - Site mobilization of Site Superintendents, HSE Lead, Deputy HSE Lead, Quantity Surveyor, Material Control
  - Head office mobilization of Deputy Completions Lead, Purchasing personnel, Package Engineers, Quality Lead, Deputy Quality Lead
- Contractor admin complex delivered to site, placed and assembled with permits approved.
- First union workers assigned to site for infrastructure mobilization.
- Pre-planning Completions workshop completed with LCP onsite management team.
- Purchase agreements issued for early work activities including cable tray, support hardware, architectural drywalls / studs, and masonry blocks. Material deliveries confirmed for construction start-up.
- Construction equipment and tooling delivered to site including pick-up trucks, telehandlers, generators, stackable lunch trailer complexes, tool cribs, storage containers, etc.



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- Agreement reached with Company’s Other Contractor for transfer of existing site warehouse facility to Contractor.
- Cable tray support design for early work areas completed.
- Construction power design approved for admin complex. Re-design for trailer facilities now required due to relocation of assigned areas by Company.
- Contractor Control Schedule has been issued to Company for review and comment.
- Approval of key A-series documents including;
  - Risk Management Plan and Risk Register
  - Health and Safety Plan
  - Project Execution Plan
  - Contract Specific Environment Protection Plan
  - Quality Plan
  - Schedule Development and Control Plan
  - Interface Management Plan & Interface Register
  - Labour Productivity Plan
- Proposals received for key procurement packages including Distribution, Transformers, HVAC Fans, HVAC Dampers, Pumps, Fire Protection system, etc.
- Play-of-the Day timekeeping system activated and rolled out

### 3. Challenges, Delays and Mitigative Measures

A summary of project challenges and delays identified and updated for this period has been provided below:

#	CHALLENGE / DELAY	MITIGATION MEASURE	UPDATE / RESOLUTION
1.	Contractor’s Work Area adjacent to the powerhouse is partially obstructed by other contractor facilities / equipment occupying the area. Area will need to be cleared prior to Contractor’s mobilization effort.	Issue has been communicated to Company.	Issued has been re-opened this month as submitted land-use permit was denied for area previously assigned by Company.
2.	Invoicing for staff labour rejected by LCP. CGP and LCP have contrasting interpretations of Schedule of Values T/C’s; document approval still pending.	Comprehensive Schedule of Values document has been developed and submitted to LCP.  Meeting held with Company to address remaining comments.	Closed: Schedule of Values has been approved Code 2.



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3.	"A" Series document approvals potential to impact mobilization. Need to confirm minimum requirements for mob.	C-G working with LCP to define key documents required for mobilization.	"A" Documents required per the Agreement have been approved; HSE Plan, C-SEPP, Labour Productivity Plan
4.	South Service Bay is currently fully occupied by Company Other Contractor which could prevent/delay Contractor materials movement and installation scope of work.	Issue has been communicated to Company.	
5.	Powerhouse is not yet fully enclosed and heated by Company Another Contractor. Contractor activities and material are requiring the work areas to be heated.	Issue has been communicated to Company.  Clarification required if pricing option for temporary heating to be explored.	
6.	DC drawings on hold from engineering.	Contractor engineering actively communicating with Company counterparts.	
7.	ECN-0004 includes changes to electrical equipment and distribution. Will result in revisions necessary to supplier proposals and delay procurement.	Contractor reviewing changes within the package and will advise Company.	
8.	Readiness of area handover for early work areas per Exhibit 9	Issue has been communicated to Company.	





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## 4. Health and Safety

### 4.1 Safety Statistic

<b>BUSINESS UNIT/PROJECT:</b> Lower Churchill Project			<b>WEEK ENDING:</b> September 2017
<b>LOCATION:</b> Muskrat Falls (Not on site) / St. John's Office			<b>CONTRACTOR:</b> Cahill Ganotec
<b>MANHOURS</b>	<b>WEEKLY</b>	<b>YEAR TO DATE</b>	<b>PROJECT TO DATE</b>
	130	302	302
<b>LEADING INDICATORS</b>	<b>WEEKLY</b>	<b>YEAR TO DATE</b>	<b>PROJECT TO DATE</b>
High Potential Near Miss*	0	0	0
Near Miss Incidents	0	0	0
Orientations Completed	5	5	5
FLRA's Completed	0	0	0
TSAs Completed	2	2	2
Worksite Inspections	0	0	0



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LAGGING INDICATORS	WEEKLY	YEAR TO DATE	PROJECT TO DATE
First Aid Cases	0	0	0
Medical Aid Cases *	0	0	0
Modified Work Injury Cases *	0	0	0
Lost Time Incidents (LTI) *	0	0	0
Fatalities *	0	0	0
Modified Work Days	0	0	0
Lost Time Days	0	0	0
Medical Aid Frequency	0.00	0.00	0.00
Modified Work Injury Frequency	0.00	0.00	0.00
LTI Frequency	0.00	0.00	0.00
*Recordable Incident Frequency	0	0	0
Property/Equipment Damage	0	0	0
Vehicle Incidents	0	0	0
Safety Absolute Incidents	0	0	0
Security Incidents	0	0	0
Hours since LTI	0		

## 5. Project Progress and Schedule

### 5.1 Progress Update

- Schedule Development & Control Plan, Control Schedule and control schedule baseline document were formally submitted to Company on September 8. Contractor currently working on Code 2 comments of the Schedule Development & Control Plan to reissue to company.
- A 3 week look ahead has been added to weekly report to show near term scope approaching in the current control schedule.
- Contractor is working on A Series documents. The table below list the A series document with document owner and expected submission dates.

Exhibit P-02345 Page11  
Has been fully redacted and replaced  
with this page.



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**5.4 Commodity Reporting**

See Attachment 3

**5.5 Performance Reporting**

To come when direct work starts in the field.

**5.6 Critical Path / Longest Path Analysis**

See Attachment 4

**5.7 P6 Control Schedule**

See Attachment 5

**6. Quality Statistics**

**6.1 Quality Assurance / Quality Control Update**

Key activities in progress for this period include:

- Project Quality Plan submitted and returned Code 02
- Project Quality Lead accepted by Client
- On-Site Piping ITP (MFA-CG-SD-3440-QA-Q04-0003-01) submitted for review

Upcoming activities planned for next period include:

- Resubmission of Project Quality Plan
- ITP submissions for off-site fabrication
- Develop Quality Surveillance Levels for off-site fabrication

**6.2 Quality Statistics**

The following table shows the Non-Conformity Reports summary for the project.

This Period				To Date			
Total	Open	Closed	Void	Total	Open	Closed	Void
0	0	0	0	0	0	0	0

**6.3 Testing and Hold Points**

No testing or hold points during the period.



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## 7. Engineering

### 7.1 Engineering Update

Engineering design is ongoing for temporary construction and power tray supports. Engineering has commenced for the control panels, EMCS and ATS. The remaining engineering design packages are in the RFP stage and will be awarded in the next period.

Package	% Complete	Completion Date			
		Plan	Prev. Forecast	Curr. Forecast	Actual
Fire Protection	0%	Mar.1/18	Mar.1/18	Mar.1/18	
Fire Detection	0%	Mar.1/18	Mar.1/18	Mar.1/18	
EMCS (HVAC Control)	3%	Apr. 1/18	Apr. 1/18	Apr. 1/18	
ATS & Load Management	5%	May 1/18	May 1/18	May 1/18	
Lighting Control Panels	6%	Jan. 30/18	Jan. 30/18	Jan. 30/18	
Mechanical Control Panels	6%	Feb. 28/18	Feb. 28/18	Feb. 28/18	
Structural Platforms	0%	Mar. 1/18	Mar. 1/18	Mar. 1/18	
Leak Detection	0%	Mar. 30/18	Mar. 30/18	Mar. 30/18	
Fuel Monitoring	0%	Mar. 30/18	Mar. 30/18	Mar. 30/18	
Housekeeping Pads	0%	Jan. 20/18	Jan. 20/18	Jan. 20/18	
Temp Power	80%	Sept. 25/17	Sept. 25/17	Oct. 2/17	
HVAC Seismic Control	0%	Feb. 28/18	Feb. 28/18	Feb. 28/18	
Tray Supports	25%	Oct. 15/17	Oct. 15/17	Oct. 15/17	

### 7.2 Interface Management

The interface management plan and interface register have been submitted and Contractor is awaiting comments. The known interfaces have been identified in the register. See below for the interface that has been opened and subsequently closed. There are no open interfaces with Company.

CH0031-001 INTERFACE REGISTER					REQUEST		RESPONSE		
ITEM	INTERFACE NUMBER (TIC-CGP-MFL-###)	INTERFACE DESCRIPTION	INTERFACE TYPE	STATUS	REQUEST DATE	REQUESTING TECHNICAL CONTACT	REQUIRED BY DATE	RESPONSE DATE	RESPONSE CONTRACT PACKAGE
0001	TIC-CGP-MFL-001	HVAC Unit Install-Portion of roof to remain open	Hard Interface	Closed	04-Aug-2017	J. Curlew	18-Aug-2017	14-Aug-2017	A. Mitchelmore



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### 7.3 Site Queries

The table below outlines the status of queries for this period. Query 0007 and 0008 remain unanswered.

CAHILL RFI NO.	Ref Sub Query	NALCOR Site Query #	TRANSMITTAL DATE	DISCIPLINE	Prepared By	DESCRIPTION	REPLY REQUIRED	REPLY DATE
TC-006-RFI-G-0001	1	SQY-CH00310001-0001	7-Aug-17	ARCH	Justin Curlew	Earlier Access to North Service Bay	21-Aug-17	24-Aug-17
TC-006-RFI-G-0002	1	SQY-CH00310001-0002	7-Aug-17	ARCH	Justin Curlew	Laydown and Space availability inside Powerhouse	21-Aug-17	24-Aug-17
TC-006-RFI-G-0003	1	SQY-CH00310001-0003	16-Aug-17	ARCH	Justin Curlew	HVAC unit install-Portion of roof to remain open	28-Aug-17	25-Sep-17
TC-006-RFI-G-0004	1	SQY-CH00310001-0004	16-Aug-17	ELEC	Justin Curlew	Pole Transformer Voltage	20-Aug-17	24-Aug-17
TC-006-RFI-G-0005	1	SQY-CH00310001-0005	16-Aug-17	PIPE	Etienne Fortin	Mechanical Coupling Usage	28-Aug-17	1-Sep-17
TC-006-RFI-G-0006	1	SQY-CH00310001-0006	22-Aug-17	ARCH	Curtis Doyle	Architectural Wall Finish Clarification	28-Aug-17	28-Aug-17
TC-006-RFI-G-0007	1	SQY-CH00310001-0007	24-Aug-17	ARCH	Justin Curlew	SSB earlier completion of block walls	7-Sep-17	
TC-006-RFI-G-0008	1	SQY-CH00310001-0008	1-Sep-17	ELEC	Justin Curlew	Tray Support CAD drawings	7-Sep-17	
TC-006-RFI-G-0009	1	SQY-CH00310001-0009	1-Sep-17	PIPE	Etienne Fortin	Mech coupling usage CB11 old	7-Sep-17	22-Sep-17
TC-006-RFI-G-0009	2	SQY-CH00310001-0009	1-Sep-17	PIPE	Etienne Fortin	Mech coupling usage CB11	7-Sep-17	22-Sep-17
TC-006-RFI-G-0010	1	SQY-CH00310001-0010	5-Sep-17	PIPE	Daniel Parsons	Paint requirements for 3437	14-Sep-17	22-Sep-17
TC-006-RFI-G-0011	1	SQY-CH00310001-0011	5-Sep-17	PIPE	Daniel Parsons	CRN requirement for 3437	14-Sep-17	
TC-006-RFI-G-0012	1	SQY-CH00310001-0012	5-Sep-17	PIPE	Daniel Parsons	RF or FF flanges for cast iron valves	14-Sep-17	20-Sep-17
TC-006-RFI-G-0013	1	SQY-CH00310001-0013	15-Sep-17	PIPE	Daniel Parsons	Replacing a Reducing Lateral with a Latrolet.	28-Sep-17	25-Sep-17
TC-006-RFI-G-0014	1	SQY-CH00310001-0014	19-Sep-17	PIPE	Daniel Parsons	CS or SS Reducer	3-Oct-17	26-Sep-17
TC-006-RFI-G-0015	0	SQY-CH00310001-0015	21-Sep-17	PIPE	Daniel Parsons	Accepted Valve for VBA12. System 3442	5-Oct-17	26-Sep-17
TC-006-RFI-G-0016	0	SQY-CH00310001-0016	27-Sep-17	ARCH	Curtis Doyle	Conflicting Information on DWG's	4-Oct-17	
TC-006-RFI-G-0017	0	SQY-CH00310001-0017	27-Sep-17	ARCH	Curtis Doyle	Securing Stud Track to Floor and Ceiling	4-Oct-17	

### 7.4 ECN

There are two ECN's received for this period:

- ECN-CH0031001-0001 Revised Architectural Technical Specification (Cementitious Fireproofing)
- ECN-CH0031001-0002 Revised Mechanical Technical Specification (Ball Valve VBA10)
- ECN-CH0031001-0003 Revised Isometric Drawing (Addition of Butterfly Valve - VBU01)
- ECN-CH0031001-0004 Revised Electrical Drawing Submissions



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## 8. Cost and Financial Report (Section 6 & 13)

### 8.1 Contract Price

No change order has been approved during this period. Therefore, the actual contract status is as follow:

Original Contract Amount:	\$ 192,843,148.06
Approved Change Orders:	\$ 0.00
<b>Total Contract Amount:</b>	<b>\$ 192,843,148.06</b>

### 8.2 Contract Changes

Contractor to submit CHR-CH-003101-0002 estimate to Company September 8<sup>th</sup>.

See appendix 6 – Change order log

Previous Period	Current Period	Variance
\$192,843,148.06	\$192,843,148.06	\$0.00



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### 8.3 Contract Incurred Cost Flow

The table below represent the incurred cost flow amount for the period and the remaining cost to be incurred until end of Term.

Description	Original Contract Price	Actual Cost Incurred to Date	Cost to be Incurred to Remainder of Term	Total Cost
Mobilization (Price Item 1)	\$1,083,805.37	\$ 303,465.50	\$ 780,339.87	\$ 1,083,805.37
Mobilization - LABOUR (Price Item 1)	\$833,302.62	\$ 30,852.32	\$ 802,450.30	\$ 833,302.62
Site Installation (Price Item 2)	\$4,091,564.88	\$ -	\$ 4,091,564.88	\$ 4,091,564.88
Demobilization (Price Item 3)	\$384,818.37	\$ -	\$ 384,818.37	\$ 384,818.37
Demobilization - LABOUR (Price Item 3)	\$505,201.37	\$ -	\$ 505,201.37	\$ 505,201.37
Staff Labour (Price Item PM)	\$34,202,483.60	\$ 3,297,803.47	\$ 30,904,680.13	\$ 34,202,483.60
Estimate of Travel Cost for Trades Labour (Price Item 4)	\$4,975,871.23	\$ 2,000.00	\$ 4,973,871.23	\$ 4,975,871.23
Letter of Credit - (Price Item 4c & 4d)	\$3,549,260.39	\$ 2,697,437.90	\$ 851,822.49	\$ 3,549,260.39
PIPING/MECHANICAL (Price Items 5-1258b, 1659 - 1673)	\$22,179,026.56	\$ -	\$ 22,179,026.56	\$ 22,179,026.56
PIPING/MECHANICAL - LABOUR (Price Items 5-1258b, 1659 - 1673)	\$18,111,388.51	\$ -	\$ 18,111,388.51	\$ 18,111,388.51
HVAC SYSTEM (Price Items 1259-1286.5, 1674 - 1701.4)	\$14,386,754.65	\$ -	\$ 14,386,754.65	\$ 14,386,754.65
HVAC SYSTEM - LABOUR (Price Items 1259-1286.5, 1674 - 1701.4)	\$9,335,770.40	\$ -	\$ 9,335,770.40	\$ 9,335,770.40
ELECTRICAL (Price Items 1287-1587a, 1702 - 1725)	\$29,988,173.53	\$ -	\$ 29,988,173.53	\$ 29,988,173.53
ELECTRICAL - LABOUR (Price Items 1287-1587a, 1702 - 1725)	\$27,608,104.34	\$ -	\$ 27,608,104.34	\$ 27,608,104.34
ARCHITECTURAL (Price Items 1588- 1656)	\$4,986,924.86	\$ -	\$ 4,986,924.86	\$ 4,986,924.86
ARCHITECTURAL - LABOUR (Price Items 1588- 1656)	\$15,597,627.44	\$ -	\$ 15,597,627.44	\$ 15,597,627.44
DIESEL GENERATOR SYSTEM (Price Items 1657 - 1658, 1726 )	\$784,070.16	\$ -	\$ 784,070.16	\$ 784,070.16
DIESEL GENERATOR SYSTEM - LABOUR (Price Items 1657 - 1658, 1726 )	\$238,999.78	\$ -	\$ 238,999.78	\$ 238,999.78
<b>Total</b>	<b>\$ 192,843,148.06</b>	<b>\$ 6,331,559.19</b>	<b>\$ 186,511,588.87</b>	<b>\$ 192,843,148.06</b>

Figure 1 - Incurred Cash flow





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### 8.4 Invoice and Payment Status

#### 8.4.1 Payment Certificate

Payment certificates sent during the period:

Item	Payment Certificate Description	Amount (\$)	Issue Date	Status	Approval/Rejection Date
1	LOC-Work	\$3,796,705.72	25-Jul-2017	Approved	2-Aug-2017
2	Neutral Funding - Sept/17	\$225,161.64	27-Jul-2017	Approved	2-Aug-2017
3	Neutral Funding - Oct/17	\$1,679,612.56	22-Aug-2017	Approved	24-Aug-2017
4	Staff Labour - Jul/Aug17	\$2,198,535.65	25-Aug-2017	Rejected	13-Sep-2017
5	Mob - A Series Doc's	\$162,570.75	15-Sep-2017	Pending - Client	
6	Neutral Funding - Nov/17	\$1,421,617.70	22-Sep-2017	Pending - Client	
7	Monthly Progress - Sept/17	\$3,083,293.48	25-Sep-2017	Pending - Client	
<b>Total</b>		<b>\$ 12,567,497.50</b>			

#### 8.4.2 Invoice and Payment Status

Contractor has not issued an invoice to Company during this period. No payment was dispensed by Company to Contractor to date.

CH0031-001 - Supply & Install Mechanical & Electrical Auxiliaries												
Invoicing Summary - (CAD)												
Invoice #	Payment Certificate	Invoice Description	Invoice Date	Forecasted Payment Date	Contract Price	Subtotal	Holdback	Net	Tax	Invoice Total (including holdback & taxes)	Date Paid	Amount Paid
9000085099	CH0031001-0001	LOC-Work	4-Aug-17	3-Sep-17	\$ 2,697,437.90	\$ 2,697,437.90	\$ -	\$ 2,697,437.90	\$ 404,615.69	\$ 3,102,053.59	5-Sep-2017	\$ 3,102,053.59
9000085106	CH0031001-0002	Neutral Funding - Sept/17	4-Aug-17	3-Sep-17	\$ 72,230,394.46	\$ 225,160.64	\$ 22,516.06	\$ 202,644.58	\$ 30,996.69	\$ 233,041.26	5-Sep-2017	\$ 233,041.26
9000086263	CH0031001-0003	Neutral Funding - Oct/17	25-Aug-17	24-Sep-17	\$ 72,230,394.46	\$ 1,679,612.56	\$ 167,961.26	\$ 1,511,651.30	\$ 226,747.70	\$ 1,738,399.00		
<b>Total</b>					<b>\$ 4,602,211.10</b>	<b>\$ 190,477.32</b>	<b>\$ 4,411,733.78</b>	<b>\$ 661,760.07</b>	<b>\$ 5,073,493.85</b>			<b>\$ 3,335,094.85</b>

Figure 2 - Invoicing Summary Template



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**8.5 Cash flow Forecast**

The table below represent the cash forecast report for the next three (3) months of the project. A complete cash flow forecast is available as Attachment 1 –Cash flow Forecast.

17-Sep MONTH	17-Oct 4	17-Nov 5	17-Dec 6
Mobilization (Price Item 1)	\$ 509,388	\$-	\$-
Mobilization - LABOUR (Price Item 1)	\$ 336,598	\$ 294,999	\$ 170,852
Site Installation (Price Item 2)	\$ 113,655	\$ 113,655	\$ 113,655
Demobilization (Price Item 3)	\$-	\$-	\$-
Demobilization - LABOUR (Price Item 3)	\$ -	\$ -	\$ -
Staff Labour (Price Item PM)	\$ 1,099,268	\$ 1,099,268	\$ 1,099,268
Estimate of Travel Cost for Trades Labour (Price Item 4)	\$ 15,388	\$ 98,840	\$ 184,251
Letter of Credit - (Price Item 4c & 4d)			
PIPING/MECHANICAL (Price Items 5-1258b, 1659 - 1673)	\$ 651,698	\$ 899,032	\$ 243,233
PIPING/MECHANICAL - LABOUR (Price Items 5-1258b, 1659 - 1673)	\$ -	\$ 36,678	\$ 135,461
HVAC SYSTEM (Price Items 1259-1286.5, 1674 - 1701.4)	\$ 29,734	\$ 382,599	\$ 557,113
HVAC SYSTEM - LABOUR (Price Items 1259-1286.5, 1674 - 1701.4)	\$ -	\$ 1,805	\$ 311,758
ELECTRICAL (Price Items 1287-1587a, 1702 - 1725)	\$ 1,231,140	\$ 1,376,270	\$ 1,651,879
ELECTRICAL - LABOUR (Price Items 1287-1587a, 1702 - 1725)	\$ 432,411	\$ 675,182	\$ 558,932
ARCHITECTURAL (Price Items 1588- 1656)	\$ 274,312	\$ 128,592	\$ 89,664
ARCHITECTURAL - LABOUR (Price Items 1588-1656)	\$ 551,807	\$ 1,185,021	\$ 927,967
DIESEL GENERATOR SYSTEM (Price Items 1657 - 1658, 1726 )	\$ -	\$ 73,759	-
DIESEL GENERATOR SYSTEM - LABOUR (Price Items 1657 - 1658, 1726 )	\$ -	\$ -	\$ -
<b>INVOICE AMOUNT</b>	<b>\$ 5,245,399</b>	<b>\$ 6,365,700</b>	<b>\$ 6,044,033</b>
<b>Mechanics Lien Holdback</b>	<b>\$ (524,540)</b>	<b>\$ (636,570)</b>	<b>\$ (604,403)</b>
<b>Repayment - Upfront Neutral Funding Payment</b>			
<b>Letter of Credit - Work - Agreement Article 7.1(a)</b>			
<b>Letter of Credit - Warranty Period - Agreement Article 7.1(b)</b>			
<b>TOTAL INVOICE AMOUNT</b>	<b>\$4,720,859</b>	<b>\$5,729,130</b>	<b>\$5,439,630</b>

Figure 3 - Appendix J Cash Flow Forecast



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## 9. Change Request Status

CHR-CH0031001-0002 – Company and Contractor met on September 20, 2017 to discuss Contractor’s Change Request Response. Company requested additional information on the price breakdown, particularly in regard to staff time, and Contractor is working on compiling this additional information to provide to Company as requested.

CHR-CH0031001-0003 – Contractor submitted its Change Request Response for Company review on September 22, 2017 confirming Company’s estimated credit of \$140,000.

## 10. Procurement Status

### 10.1 Award Status of Subcontractor or Supplies

#### 10.1.1 Current EOI’s

- C5508 Doors and Windows

#### 10.1.2 Current RFP’s

- C5501 Masonry Block Walls – Received. Closed under technical review
- C5502 Drywall, Drop Ceiling and Accessories– Received. Closed under technical review
- C5504 Insulation and Vapor Barrier– Received. Closed under technical review
- M5605 Compressors– Received. Closed under technical review
- C5507 Fire Stop Materials - Open
- SC012 Cementous Fireproofing Subcontract- Open
- E5203 Lighting- Open
- H5302 HVAC Dampers- Open
- H5305 HVAC Condensers- Open
- H5307 Humidifiers- Open
- SC005 Powerhouse Fire Protection System - Open

#### Under Technical Review

- C5501 Masonry Block Walls
- C5502 Drywall, Drop Ceiling and Accessories
- C5504 Insulation and Vapor Barrier
- E5201 Grounding
- E5204 Transformers
- H5301 HVAC Fans



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- H5302 HVAC Dampers
- M5601 Pumps
- M5605 Compressors

**10.1.3 Package Awards**

- E5202 Cable Trays, Unistrut
- SC011 Cable Tray Support Design and Detailing

**11. Environmental and Regulatory**

**11.1 Status**

Environmental plan has been resubmitted on September 13.

**11.2 Environmental Reporting**

	MOE Reportable Spill											
	Total Spills - On Land (Liters)			On Land (Liters)			Total Spills - In Water (Liters)			Total Sediment Spills (Liters)		
	≤ 10	≥ 10	≥ 100	≤ 10	≥ 10	> 100	≤ 10	≥ 10	≥ 100	≤ 10	≥ 10	≥ 100
Period	0	0	-	-	-	0	-	-	-	-	-	-
Cumulative to-date	0	0	-	-	-	0	-	-	-	-	-	-

**11.3 Permits**

**11.3.1 Permit Activities**

Contractor’s construction manager has begun early steps to define and secure early permit requirements required for site mobilization activities.



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### 11.3.2 Key upcoming permit

The permits related to construction power and occupancy for the admin trailer complex are ongoing. Full list of permits outlined in the below table.

SDRL CODE	DOCUMENT TITLE	STATUS
A08	Electrical Permit - Admin Area	Submitted & Received
A08	Electrical Permit - Powerhouse Area	Submitted & Received
A08	GAP Registration – Day tank #1	Not Submitted
A08	GAP Registration – Day tank #2	Not Submitted
A08	GAP Registration - Above Ground Storage Tank	Not Submitted
A08	GAP Registration - Oil Storage Tank #1	Not Submitted
A08	GAP Registration - Oil Storage Tank #2	Not Submitted
A08	Diesel Generator Registration Form	Not Submitted
A08	Design Registration of Pressure Piping System- Low pressure compressed air	Not Submitted
A08	Design Registration of Pressure Piping System- High pressure compressed air	Not Submitted
A08	Building Accessibility Design Registration / Exemption Registration - Temporary Admin Trailer Complex	Submitted
A08	Building Accessibility Design Registration / Exemption Registration - Temporary Lunch Trailer Complex	Submitted
A08	Building Accessibility Design Registration / Exemption Registration - Temporary Office Trailer #1	Not Submitted
A08	Building Accessibility Design Registration / Exemption Registration - Temporary Office Trailer #2	Not Submitted
A08	Building Accessibility Design Registration / Exemption Registration - Temporary Office Trailer #3	Not Submitted
A08	Building Accessibility Design Registration / Exemption Registration - Temporary Office Trailer #4	Not Submitted
A08	Building Accessibility Design Registration / Exemption Registration - Temporary Office Trailer #5	Not Submitted
A08	Septic Systems less than 4,546 L/day flow – Admin Area Trailer Complex	Submitted
A08	Used Oil Storage Tank System Application	Not Submitted

## 12. Provincial Benefits Report (Exhibit 13)

System access issued and training held between Contractor and Company's Industrial Benefits Team September 5<sup>th</sup>, 2017. Contractor is currently developing processes and programming to align with monthly reporting requirements.

## 13. Monthly Risk Report

Risk Management Plan approved.

Update of the Risk Register and internal risk review.

Exhibit P-02345 Pages 22 to 84  
have been fully redacted and  
replaced with this page.



Discipline	POP No.	Description	EOI Posted Date Forecast (Green = Actual)	RFP Release Date Original Forecast	RFP Release Date Current Forecast	RFP Release Date Actual	Purchase Order Issue Date Forecast	Purchase Order Issue Date Planned	Purchase Order Issue Date Actual	Date of 1st Material Received Forecast	Date of 1st Material Received Planned	Date of 1st Material Received Actual
Architectural	C5501	Masonry Block Walls	24-Aug-17	25-Aug-17	31-Aug-17	1-Sep-17	22-Sep-17	22-Sep-17		3-Nov-17	22-Oct-17	
Architectural	C5502	Drywall, Drop Ceiling and Accessories	24-Aug-17	25-Aug-17	31-Aug-17	1-Sep-17	22-Sep-17	22-Sep-17		10-Nov-17	6-Oct-17	
Architectural	C5503	Flooring Materials (Vinyl, Ceramic, etc...)	15-Sep-17	13-Oct-17	13-Oct-17		3-Nov-17	3-Nov-17		23-Feb-18	23-Feb-18	
Architectural	C5504	Insulation and Vapour Barrier	23-Aug-17	6-Sep-17	15-Sep-17	15-Sep-17	6-Oct-17	6-Oct-17		1-Dec-17	22-Nov-17	
Architectural	C5505	Signage	3-Mar-18	17-Mar-18	17-Mar-18		7-Apr-18	7-Apr-18		30-Jun-18	25-Mar-18	
Architectural	C5506	Cabinets	29-Sep-17	13-Oct-17	13-Oct-17		3-Nov-17	3-Nov-17		2-Mar-18	2-Mar-18	
Architectural	C5507	Fire Stop Materials	23-Aug-17	6-Sep-17	22-Sep-17	20-Sep-17	13-Oct-17	13-Oct-17		15-Dec-17	13-Dec-17	
Architectural	C5508	Doors and Windows	7-Sep-17	9-Oct-17	18-Sep-17		9-Oct-17	9-Oct-17		1-Jan-18	22-Jan-18	
Architectural	C5509	Bathroom Accessories and Toilet Partitions	29-Sep-17	30-Oct-17	12-Jan-18		2-Feb-18	2-Feb-18		22-Jun-18	9-Apr-18	
Architectural	C5510	Wall and Corner Guards	29-Sep-17	30-Oct-17	12-Jan-18		2-Feb-18	2-Feb-18		22-Jun-18	9-Apr-18	
Architectural	SC013	Specialty Floor Coatings (Epoxy / Urethane)	23-Aug-17	30-Oct-17	30-Oct-17		20-Nov-17	20-Nov-17		9-Apr-18	9-Apr-18	
Coatings	R5800	Paint	1-Oct-17	30-Oct-17	30-Oct-17		20-Nov-17	20-Nov-17		0-Jan-00	9-Apr-18	
Coatings	SC012	Cementious Fireproofing Subcontract	22-Aug-17	12-Sep-17	15-Sep-17	22-Sep-17	6-Oct-17	6-Oct-17		15-Dec-17	12-Dec-17	
Electrical	E5200	Electrical / Instrumentation / Telecom Cables	16-Aug-17	30-Aug-17	15-Sep-17		6-Oct-17	6-Oct-17		24-Nov-17	13-Dec-17	
Electrical	E5200	POWER CABLE – 25 KV	16-Aug-17	30-Aug-17	15-Sep-17		6-Oct-17	6-Oct-17		8-Dec-17	13-Dec-17	
Electrical	E5200	Category 6 Data Tuff ACIC	16-Aug-17	30-Aug-17	15-Sep-17		6-Oct-17	6-Oct-17		8-Dec-17	13-Dec-17	
Electrical	E5201	Grounding	26-Jul-17	9-Aug-17	21-Aug-17	21-Aug-17	11-Sep-17	11-Sep-17		4-Dec-17	22-Nov-17	
Electrical	E5202	Cable Trays, Unistruts	21-Jul-17	4-Aug-17	11-Aug-17	11-Aug-17	8-Sep-17	8-Sep-17	15-Sep-17	3-Nov-17	6-Oct-17	
Electrical	E5203	Interior Lighting	26-Jul-17	9-Aug-17	15-Sep-17	14-Sep-17	6-Oct-17	6-Oct-17		22-Dec-17	15-Nov-17	
Electrical	E5203	Exterior Lighting	26-Jul-17	9-Aug-17	15-Sep-17	14-Sep-17	6-Oct-17	6-Oct-17		22-Dec-17	15-Nov-17	
Electrical	E5203	Exit Signs	26-Jul-17	9-Aug-17	15-Sep-17	14-Sep-17	6-Oct-17	6-Oct-17		22-Dec-17	15-Nov-17	
Electrical	E5204	Station Service Transformers	1-Aug-17	15-Aug-17	22-Aug-17	23-Aug-17	27-Sep-17	27-Sep-17		8-Aug-18	24-Jul-18	
Electrical	E5204	Medium Voltage Transformers	1-Aug-17	15-Aug-17	22-Aug-17	23-Aug-17	27-Sep-17	27-Sep-17		8-Aug-18	24-Jul-18	
Electrical	E5204	Dry bType Transformers up to 600V Primary	1-Aug-17	15-Aug-17	22-Aug-17	23-Aug-17	27-Sep-17	27-Sep-17		27-Dec-17	12-Dec-17	
Electrical	E5205	Panel Boards	21-Jul-17	4-Aug-17	25-Aug-17	29-Aug-17	3-Oct-17	3-Oct-17		16-Jan-18	15-Dec-17	
Electrical	E5205	Disconnect Switches	21-Jul-17	4-Aug-17	25-Aug-17	29-Aug-17	3-Oct-17	3-Oct-17		19-Dec-17	17-Nov-17	
Electrical	E5205	LowVoltage Switchgear	21-Jul-17	4-Aug-17	25-Aug-17	29-Aug-17	3-Oct-17	3-Oct-17		23-Oct-18	21-Sep-18	
Electrical	E5205	Motor Starters	21-Jul-17	4-Aug-17	25-Aug-17	29-Aug-17	3-Oct-17	3-Oct-17		16-Jan-18	15-Dec-17	
Electrical	E5205	600 V MOTOR CONTROL CENTRES	21-Jul-17	4-Aug-17	25-Aug-17	29-Aug-17	3-Oct-17	3-Oct-17		8-May-18	6-Apr-18	
Electrical	E5205	Enclosed Bus Assemblies	21-Jul-17	4-Aug-17	25-Aug-17	29-Aug-17	3-Oct-17	3-Oct-17		13-Mar-18	9-Feb-18	
Electrical	E5206	UPS Systems	16-Aug-17	10-Oct-17	6-Oct-17		3-Nov-17	3-Nov-17		27-Apr-18	1-May-18	
Electrical	E5206	125VDC Batteries, Battery Racks and Chargers	16-Aug-17	10-Oct-17	6-Oct-17		3-Nov-17	3-Nov-17		27-Apr-18	1-May-18	
Electrical	E5206	48VDC Batteries, Battery Racks and Chargers	16-Aug-17	10-Oct-17	6-Oct-17		3-Nov-17	3-Nov-17		27-Apr-18	1-May-18	
Electrical	E5206	UPS Bypass Static Switch	16-Aug-17	10-Oct-17	6-Oct-17		3-Nov-17	3-Nov-17		27-Apr-18	1-May-18	
Electrical	E5207	Cable Connectors (Glands)	23-Aug-17	6-Sep-17	29-Sep-17		20-Oct-17	20-Oct-17		15-Dec-17	22-Nov-17	
Electrical	E5208	Electrical Junction Boxes and Splitters	24-Aug-17	7-Sep-17	29-Sep-17		20-Oct-17	20-Oct-17		15-Dec-17	23-Nov-17	
Electrical	E5208	Electrical Termination Devices	24-Aug-17	7-Sep-17	15-Sep-17		6-Oct-17	6-Oct-17		1-Dec-17	23-Nov-17	
Electrical	E5210	Electric Heat	16-Aug-17	1-Jan-18	1-Jan-18		29-Jan-18	29-Jan-18		14-May-18	14-May-18	
Electrical	E5211	Lighting Control Panel	Internal	N/A	N/A		#VALUE!	#VALUE!				
Electrical	E5212	Temporary Ground Cables (Operations)	Direct Purchase	N/A	N/A		#VALUE!	#VALUE!				
Electrical	SC001	Temporary construction power supply	Internal	N/A	N/A		#VALUE!	#VALUE!		6-Oct-17	6-Oct-17	
Electrical	SC003	ATS & Load Management System	Internal	N/A	N/A		#VALUE!	#VALUE!				
Electrical	SC007	Custom Built Control Panels (Mech Systems)	Internal	N/A	N/A		#VALUE!	#VALUE!				
HVAC	H5300	FILTER HOUSING	16-Aug-17	30-Aug-17	22-Sep-17		20-Oct-17	20-Oct-17		23-May-18	30-May-18	
HVAC	H5300	AIR CONDITIONING UNIT	16-Aug-17	30-Aug-17	22-Sep-17		20-Oct-17	20-Oct-17		23-May-18	30-May-18	
HVAC	H5300	AIR COOLING UNIT	16-Aug-17	30-Aug-17	22-Sep-17		20-Oct-17	20-Oct-17		23-May-18	30-May-18	
HVAC	H5300	Heating & Ventilation Units	16-Aug-17	30-Aug-17	22-Sep-17		20-Oct-17	20-Oct-17		23-May-18	30-May-18	
HVAC	H5301	HVAC Fans	26-Jul-17	9-Aug-17	25-Aug-17	29-Aug-17	26-Sep-17	26-Sep-17		20-Mar-18	28-Feb-18	
HVAC	H5301	CENTRIFUGAL FANS	26-Jul-17	9-Aug-17	25-Aug-17	29-Aug-17	26-Sep-17	26-Sep-17		20-Mar-18	28-Feb-18	
HVAC	H5301	HIGH PRESSURE BLOWER FANS	26-Jul-17	9-Aug-17	25-Aug-17	29-Aug-17	26-Sep-17	26-Sep-17		20-Mar-18	28-Feb-18	
HVAC	H5301	ELECTROSTATIC MIST COLLECTOR FANS	26-Jul-17	9-Aug-17	25-Aug-17	29-Aug-17	26-Sep-17	26-Sep-17		20-Mar-18	28-Feb-18	
HVAC	H5301	MIXED FLOW INLINE FANS	26-Jul-17	9-Aug-17	25-Aug-17	29-Aug-17	26-Sep-17	26-Sep-17		20-Mar-18	28-Feb-18	





Discipline	POP No.	Description	EOI Posted Date Forecast (Green = Actual)	RFP Release Date Original Forecast	RFP Release Date Current Forecast	RFP Release Date Actual	Purchase Order Issue Date Forecast	Purchase Order Issue Date Planned	Purchase Order Issue Date Actual	Date of 1st Material Received Forecast	Date of 1st Material Received Planned	Date of 1st Material Received Actual
HVAC	H5301	INLINE BIFURCATED FIBREGLASS CENTRIFUGAL BLOWERS	26-Jul-17	9-Aug-17	25-Aug-17	29-Aug-17	26-Sep-17	26-Sep-17		20-Mar-18	28-Feb-18	
HVAC	H5301	CENTRIFUGAL INLINE FANS	26-Jul-17	9-Aug-17	25-Aug-17	29-Aug-17	26-Sep-17	26-Sep-17		20-Mar-18	28-Feb-18	
HVAC	H5301	CENTRIFUGAL EXHAUST FANS	26-Jul-17	9-Aug-17	25-Aug-17	29-Aug-17	26-Sep-17	26-Sep-17		20-Mar-18	28-Feb-18	
HVAC	H5301	EMERGENCY GENERATOR ENGINE EXHAUST SYSTEM FANS	26-Jul-17	9-Aug-17	25-Aug-17	29-Aug-17	26-Sep-17	26-Sep-17		20-Mar-18	28-Feb-18	
HVAC	H5302	Dampers	26-Jul-17	9-Aug-17	25-Aug-17	1-Sep-17	29-Sep-17	29-Sep-17		15-Dec-17	22-Nov-17	
HVAC	H5302	OPERATING DAMPERS	26-Jul-17	9-Aug-17	25-Aug-17	1-Sep-17	29-Sep-17	29-Sep-17		15-Dec-17	22-Nov-17	
HVAC	H5302	HEAVY DUTY BI-DIRECTIONAL DAMPERS	26-Jul-17	9-Aug-17	25-Aug-17	1-Sep-17	29-Sep-17	29-Sep-17		15-Dec-17	22-Nov-17	
HVAC	H5302	FIRE DAMPERS	26-Jul-17	9-Aug-17	25-Aug-17	1-Sep-17	29-Sep-17	29-Sep-17		15-Dec-17	22-Nov-17	
HVAC	H5304	HVAC Terminal Units	23-Aug-17	6-Sep-17	23-Sep-17		21-Oct-17	21-Oct-17		20-Jan-18	3-Jan-18	
HVAC	H5304	Duct Heaters	23-Aug-17	6-Sep-17	23-Sep-17		21-Oct-17	21-Oct-17		20-Jan-18	3-Jan-18	
HVAC	H5305	HVAC Condensers	23-Aug-17	6-Sep-17	15-Sep-17	20-Sep-17	13-Oct-17	13-Oct-17		2-Mar-18	21-Feb-18	
HVAC	H5307	Humidifiers	23-Aug-17	6-Sep-17	15-Sep-17	20-Sep-17	13-Oct-17	13-Oct-17		2-Mar-18	21-Feb-18	
HVAC	H5309	Duct Insulation	23-Aug-17	6-Sep-17	13-Oct-17	15-Sep-17	3-Nov-17	3-Nov-17		29-Dec-17	15-Dec-17	
HVAC	H5310	Grilles, Registers and Diffusers	29-Sep-17	13-Oct-17	4-Nov-17		25-Nov-17	25-Nov-17		3-Feb-18	12-Jan-18	
HVAC	SC009	EMCS HVAC CONTROL SYSTEM	Internal	N/A	N/A		#VALUE!	#VALUE!			#VALUE!	
HVAC	SC010	Silencers	Internal	N/A	N/A		#VALUE!	#VALUE!			#VALUE!	
HVAC	SC010	ROOF MOUNTED EXHAUST HOOD	Internal	N/A	N/A		#VALUE!	#VALUE!			#VALUE!	
HVAC	SC010	REMOVABLE INSECT SCREEN	Internal	N/A	N/A		#VALUE!	#VALUE!			#VALUE!	
HVAC	SC010	Ducting	Internal	N/A	N/A		#VALUE!	#VALUE!			#VALUE!	
Instrumentation	J5600	Tubing, Fittings and Manifolds	29-Sep-17	13-Oct-17	13-Oct-17		3-Nov-17	3-Nov-17		29-Dec-17	29-Dec-17	
Instrumentation	J5601	Tagged Field Instruments	6-Oct-17	1-Dec-17	1-Dec-17		29-Dec-17	29-Dec-17		18-May-18	18-May-18	
Instrumentation	J5601	TEMPERATURE TRANSMITTER	6-Oct-17	1-Dec-17	1-Dec-17		29-Dec-17	29-Dec-17		18-May-18	18-May-18	
Instrumentation	J5601	DIFFERENTIAL PRESSURE SWITCH	6-Oct-17	1-Dec-17	1-Dec-17		29-Dec-17	29-Dec-17		18-May-18	18-May-18	
Instrumentation	J5601	LEVEL SWITCH	6-Oct-17	1-Dec-17	1-Dec-17		29-Dec-17	29-Dec-17		18-May-18	18-May-18	
Instrumentation	J5601	PRESSURE SWITCH	6-Oct-17	1-Dec-17	1-Dec-17		29-Dec-17	29-Dec-17		18-May-18	18-May-18	
Instrumentation	J5601	CURRENT TRANSMITTER	6-Oct-17	1-Dec-17	1-Dec-17		29-Dec-17	29-Dec-17		18-May-18	18-May-18	
Instrumentation	J5601	LEVEL TRANSMITTER	6-Oct-17	1-Dec-17	1-Dec-17		29-Dec-17	29-Dec-17		18-May-18	18-May-18	
Instrumentation	J5601	LEVEL Switch	6-Oct-17	1-Dec-17	1-Dec-17		29-Dec-17	29-Dec-17		18-May-18	18-May-18	
Instrumentation	J5601	SWITCH	6-Oct-17	1-Dec-17	1-Dec-17		29-Dec-17	29-Dec-17		18-May-18	18-May-18	
Instrumentation	J5601	PRESSURE TRANSMITT ER	6-Oct-17	1-Dec-17	1-Dec-17		29-Dec-17	29-Dec-17		18-May-18	18-May-18	
Instrumentation	J5601	OVERFILL ALARM ACKNOWLEDGEMENT SWITCH	6-Oct-17	1-Dec-17	1-Dec-17		29-Dec-17	29-Dec-17		18-May-18	18-May-18	
Instrumentation	J5602	PRESSURE GAUGES	13-Oct-17	1-Dec-17	8-Dec-17		5-Jan-18	5-Jan-18		25-May-18	18-May-18	
Instrumentation	J5603	Instrumentation Junction Boxes	Internal	N/A	N/A		#VALUE!	#VALUE!		18-May-18	18-May-18	
Instrumentation	J5605	Generator Room Leak Detection System	1-Oct-17	15-Oct-17	15-Oct-17		13-Nov-17	13-Nov-17		4-Jun-18	3-Jun-18	
Instrumentation	J5606	Fuel Storage Tank Electrical Monitoring System	25-Sep-17	9-Oct-17	22-Oct-17		19-Nov-17	19-Nov-17		10-Jun-18	28-May-18	
Mechanical	M5600	DOUBLE WALL DAY TANK	25-Sep-17	9-Oct-17	22-Oct-17		19-Nov-17	19-Nov-17		15-Jul-18	2-Jul-18	
Mechanical	M5600	Diesel Electric Generating Unit	25-Sep-17	9-Oct-17	25-Nov-17		23-Dec-17	23-Dec-17		28-Apr-18	12-Mar-18	
Mechanical	M5600	CONCRETE ENCASED STEEL ABOVE GROUND TANK	25-Sep-17	9-Oct-17	18-Nov-17		16-Dec-17	16-Dec-17		11-Aug-18	2-Jul-18	
Mechanical	M5601	DEWATERING PUMP	31-Jul-17	14-Aug-17	23-Aug-17	24-Aug-17	28-Sep-17	28-Sep-17		3-May-18	16-Apr-18	
Mechanical	M5601	SERVICE WATER PUMP	31-Jul-17	14-Aug-17	23-Aug-17	24-Aug-17	28-Sep-17	28-Sep-17		3-May-18	16-Apr-18	
Mechanical	M5601	LUBRICATION Water Pump	31-Jul-17	14-Aug-17	23-Aug-17	24-Aug-17	28-Sep-17	28-Sep-17		3-May-18	16-Apr-18	
Mechanical	M5601	SUBMERSIBLE PUMP	31-Jul-17	14-Aug-17	23-Aug-17	24-Aug-17	28-Sep-17	28-Sep-17		16-Nov-17	30-Oct-17	
Mechanical	M5601	PUMP (3352-P- 6000/6001)	31-Jul-17	14-Aug-17	23-Aug-17	24-Aug-17	28-Sep-17	28-Sep-17		3-May-18	16-Apr-18	
Mechanical	M5601	PUMP (3353-P- 5000/5001)	31-Jul-17	14-Aug-17	23-Aug-17	24-Aug-17	28-Sep-17	28-Sep-17		3-May-18	16-Apr-18	
Mechanical	M5602	SELF CLEANING STRAINER	1-Oct-17	15-Oct-17	15-Oct-17		13-Nov-17	13-Nov-17		4-Jun-18	3-Jun-18	
Mechanical	M5602	STRAINER	1-Oct-17	15-Oct-17	15-Oct-17		13-Nov-17	13-Nov-17		4-Jun-18	3-Jun-18	
Mechanical	M5602	Y-STRAINER	1-Oct-17	15-Oct-17	15-Oct-17		13-Nov-17	13-Nov-17		4-Jun-18	3-Jun-18	
Mechanical	M5602	Filters	1-Oct-17	15-Oct-17	15-Oct-17		13-Nov-17	13-Nov-17		4-Jun-18	3-Jun-18	
Mechanical	M5602	SAND FILTER	1-Oct-17	15-Oct-17	15-Oct-17		13-Nov-17	13-Nov-17		4-Jun-18	3-Jun-18	
Mechanical	M5602	FUEL OIL STRAINER	1-Oct-17	15-Oct-17	15-Oct-17		13-Nov-17	13-Nov-17		4-Jun-18	3-Jun-18	
Mechanical	M5603	CONTROL ROOM WATER HEATER	1-Oct-17	15-Oct-17	15-Oct-17		13-Nov-17	13-Nov-17		21-May-18	20-May-18	
Mechanical	M5603	MAIN WATER HEATER	1-Oct-17	15-Oct-17	15-Oct-17		13-Nov-17	13-Nov-17		21-May-18	20-May-18	





Discipline	POP No.	Description	EOI Posted Date Forecast (Green = Actual)	RFP Release Date Original Forecast	RFP Release Date Current Forecast	RFP Release Date Actual	Purchase Order Issue Date Forecast	Purchase Order Issue Date Planned	Purchase Order Issue Date Actual	Date of 1st Material Received Forecast	Date of 1st Material Received Planned	Date of 1st Material Received Actual
Mechanical	M5604	EYEWASH SYSTEM and HEATERS	1-Oct-17	15-Oct-17	4-Nov-17		2-Dec-17	2-Dec-17		26-May-18	6-May-18	
Mechanical	M5605	LOWPRESSURE COMPRESSOR	31-Jul-17	14-Aug-17	25-Aug-17	5-Sep-17	10-Oct-17	10-Oct-17		12-Jun-18	14-May-18	
Mechanical	M5605	HIGH PRESSURE COMPRESS OR	31-Jul-17	14-Aug-17	25-Aug-17	5-Sep-17	10-Oct-17	10-Oct-17		12-Jun-18	14-May-18	
Mechanical	M5606	DOMESTIC WATER TREATMENT PLANT	25-Sep-17	9-Oct-17	6-Oct-17		3-Nov-17	3-Nov-17		14-Sep-18	16-Sep-18	
Mechanical	M5607	Waste Water Treatment	8-Oct-17	22-Oct-17	18-Nov-17		16-Dec-17	16-Dec-17		26-May-18	27-May-18	
Mechanical	M5608	Diesel Fuel Oil System	8-Oct-17	22-Oct-17	22-Oct-17		19-Nov-17	19-Nov-17		27-May-18	27-May-18	
Mechanical	M5609	Hoist in Dewatering Gallery	8-Oct-17	22-Oct-17	10-Nov-17		8-Dec-17	8-Dec-17		1-Jun-18	13-May-18	
Mechanical	M5610	MOBILE PUMP-FILTERING UNIT	1-Oct-17	15-Oct-17	4-Nov-17		2-Dec-17	4-Nov-17		26-May-18	6-May-18	
Piping	L5100	Piping and Fittings	N/A	N/A	N/A		#VALUE!	#VALUE!			28-Jan-00	
Piping	L5101	BALL VALVES	31-Aug-17	14-Sep-17	29-Sep-17		27-Oct-17	27-Oct-17		9-Feb-18	30-Jan-18	
Piping	L5101	AUTOMATIC CLOSING BALL VALVE	31-Aug-17	14-Sep-17	29-Sep-17		27-Oct-17	27-Oct-17		9-Feb-18	30-Jan-18	
Piping	L5101	FOOT VALVES	31-Aug-17	14-Sep-17	29-Sep-17		27-Oct-17	27-Oct-17		9-Feb-18	30-Jan-18	
Piping	L5101	SOLENOID VALVES	31-Aug-17	14-Sep-17	29-Sep-17		27-Oct-17	27-Oct-17		9-Feb-18	30-Jan-18	
Piping	L5101	CHECK VALVES	31-Aug-17	14-Sep-17	29-Sep-17		27-Oct-17	27-Oct-17		9-Feb-18	30-Jan-18	
Piping	L5101	ANTI-SYPHON VALVES	31-Aug-17	14-Sep-17	29-Sep-17		27-Oct-17	27-Oct-17		9-Feb-18	30-Jan-18	
Piping	L5101	BACKFLOW PREVENTER	31-Aug-17	14-Sep-17	29-Sep-17		27-Oct-17	27-Oct-17		9-Feb-18	30-Jan-18	
Piping	L5103	Oil Storage Tanks	31-Jul-17	1-Dec-17	25-Nov-17		23-Dec-17	23-Dec-17		28-Jul-18	3-Aug-18	
Piping	L5105	Pipe Insulation	23-Aug-17	6-Sep-17	13-Oct-17	15-Sep-17	3-Nov-17	3-Nov-17		9-Feb-18	26-Jan-18	
Piping	L5110	FLEXIBLE BRAIDED HOSES	29-Sep-17	13-Oct-17	13-Oct-17		3-Nov-17	3-Nov-17		9-Feb-18	9-Feb-18	
Piping	L5110	Misc Piping Materials And Accessories	29-Sep-17	13-Oct-17	13-Oct-17		3-Nov-17	3-Nov-17		9-Feb-18	9-Feb-18	
Piping	SC006	Service Water System	Internal	N/A	N/A		#VALUE!	#VALUE!				
Piping	SC006	Shaft Seal Water System	Internal	N/A	N/A		#VALUE!	#VALUE!				
Piping	SC006	Dewatering System	Internal	N/A	N/A		#VALUE!	#VALUE!				
Piping	SC006	Drainage System	Internal	N/A	N/A		#VALUE!	#VALUE!				
Piping	SC006	Oil Water Drainage	Internal	N/A	N/A		#VALUE!	#VALUE!				
Piping	SC006	Domestic Water System	Internal	N/A	N/A		#VALUE!	#VALUE!				
Piping	SC006	Wastewater System	Internal	N/A	N/A		#VALUE!	#VALUE!				
Piping	SC006	Lubricating/Hydraulic Oil System	Internal	N/A	N/A		#VALUE!	#VALUE!				
Piping	SC006	Low Pressure Compressed Air System	Internal	N/A	N/A		#VALUE!	#VALUE!				
Piping	SC006	Hi Pressure Compressed Air System	Internal	N/A	N/A		#VALUE!	#VALUE!				
Piping	SC006	Raw and Cooling Water Systems	Internal	N/A	N/A		#VALUE!	#VALUE!				
Risk and Loss	SC004	Powerhouse Fire Detection System –including the design, fabrication, supply, installation (where specialists are required), programming, testing, warranty and performance guarantee of the fire detection system.	11-Aug-17	25-Aug-17	30-Sep-17		28-Oct-17	28-Oct-17		5-May-18	13-Apr-18	
Risk and Loss	SC005	FLOW METER	11-Aug-17	25-Aug-17	15-Sep-17	15-Sep-17	13-Oct-17	13-Oct-17		9-Mar-18	16-Feb-18	
Risk and Loss	SC005	FIRE PUMP	11-Aug-17	25-Aug-17	15-Sep-17	15-Sep-17	13-Oct-17	13-Oct-17		18-May-18	27-Apr-18	
Risk and Loss	SC005	JOCKEY PUMP	11-Aug-17	25-Aug-17	15-Sep-17	15-Sep-17	13-Oct-17	13-Oct-17		9-Mar-18	16-Feb-18	
Risk and Loss	SC005	JOCKEY PUMP CONTROLLER	11-Aug-17	25-Aug-17	15-Sep-17	15-Sep-17	13-Oct-17	13-Oct-17		9-Mar-18	16-Feb-18	
Risk and Loss	SC005	Hydropneumatic Tank	11-Aug-17	25-Aug-17	15-Sep-17	15-Sep-17	13-Oct-17	13-Oct-17		9-Mar-18	16-Feb-18	
Risk and Loss	SC005	Powerhouse Fire Protection System – The work of this contract includes the design, fabrication, supply, installation (where specialists are required), programming, testing, warranty and performance guarantee of the fire protection system.	11-Aug-17	25-Aug-17	15-Sep-17	15-Sep-17	13-Oct-17	13-Oct-17		9-Mar-18	16-Feb-18	
Risk and Loss	SC005	INERGEN SYSTEM	11-Aug-17	25-Aug-17	15-Sep-17	15-Sep-17	13-Oct-17	13-Oct-17		9-Mar-18	16-Feb-18	
Risk and Loss	SC005	DELUGE VALVE CABINET	11-Aug-17	25-Aug-17	15-Sep-17	15-Sep-17	13-Oct-17	13-Oct-17		9-Mar-18	16-Feb-18	
Structural	SC011	Vibration and Seismic Control	26-Jul-17	9-Aug-17	11-Aug-17	11-Aug-17	31-Aug-17	31-Aug-17	1-Sep-17	13-Oct-17	5-Oct-17	
Structural	SC011	Cable Tray and Pipe Systems Structural supports	26-Jul-17	9-Aug-17	11-Aug-17	11-Aug-17	31-Aug-17	31-Aug-17	1-Sep-17	27-Oct-17	26-Oct-17	
Structural	SC011	Maintenance Access Electrical Shaft Platforms	26-Jul-17	9-Aug-17	11-Aug-17	11-Aug-17	8-Sep-17	8-Sep-17	1-Sep-17			
Structural	SC011	Maintenance Access Mechanical Shaft Platforms	26-Jul-17	9-Aug-17	11-Aug-17	11-Aug-17	8-Sep-17	8-Sep-17	1-Sep-17			
Telecoms	T5250	Telecoms Panels	Internal	N/A	N/A							





Project Risk Management Register	
Risk Register	MFA-CG-SD-3440-RI-A04-0002-01
Date:	03-Oct-2017
Client:	Muskrat Falls Corporation ("Company")
Project Name:	Supply and Install Mechanical & Electrical Auxiliaries MF
Contract Number / Project Ref	CH0031-001 / TC0006
Project Manager / Deputy:	Tim Harrington, P.Eng / Charles Lavigne
Project Sponsors:	Cahill - John J Henley, Ganotec - Mike Buckle
Risk Management Team:	Laurie Hildebrand

Category Legend	
ENG	Engineering
PRO	Procurement
HSE	Health, Safety & Environment
QUA	Quality
SCH	Schedule
CON	Construction
MC&C	Mechanical Completion & Commissioning
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		Consequences			
		Very Low	Low	Moderate	High
Likelihood	Highly Unlikely	Level 1	Level 2	Level 3	Level 4
	Unlikely	Level 2	Level 3	Level 4	Level 5
	Likely	Level 3	Level 4	Level 5	Level 6
	Highly Likely	Level 4	Level 5	Level 6	Level 7

Legend	
Requires Input Information	
Automatically Formulated	

#	Cat.	Risk Definition	Description of Consequences	Initial Assessment				Mitigation/Safeguard	Comments	Status	Date Resolved	Revised Assessment				Residual Action		
				Likelihood	Consequence	Risk Level	Response					Likelihood	Consequence	Risk Level	Response	Risk Owner	Action Plan	Date Action Req'd
1	COM	Neutral Funding - Forecast Accuracy	Contractor would be Cash Negative.	Unlikely	Low	Level 3	Monitor	Progress will be managed on a weekly basis with input from ops. Schedule accuracy, manage actual percentage progress to get an accurate forecast for the upcoming month. Regularly reassess area accessibility and upcoming work fronts.								Tim Harrington		
2	COM	Quantity variation tracking	Not being paid for the quantity installed.	Unlikely	Moderate	Level 4	Plan for action	Proper quantity tracking, train staff and craft on systems at time of mobilization and regularly through the project. Contractor will perform a full take off and track revised take off quantities in ops. Quantities will be tracked at time of material purchase. Full time quantity surveyor will be at Site.								Julie Canuel		
3	COM	Protest Delay - Site Shutdown	Productivity loss and schedule delay.	Likely	Low	Level 4	Plan for action	Notify the Company of delays. Work with Company and follow security plans in the event of an incident.								Tim Harrington		
4	CON	Lift plans	Unable to install equipment. Delay in schedule	Likely	Low	Level 4	Plan for action	Ensure all lift plans are in place before equipment arrives. Ensure all gear and certifications are in place prior to lift.								Robert Mercer		
5	CON	Routing of small bore and PVC piping	Not all small bore piping have isometrics may lead to clashes in the field. PVC is also field run.	Likely	Low	Level 3	Monitor	Validate isometrics that are developed. Utilize 3D model for reference purposes.								Robert Mercer		
6	CON	Labour shortage	Cost, schedule and productivity impacts.	Unlikely	Moderate	Level 5	Plan for action	Follow labour collective agreement and explore outside labour if required. Measure the impact on the project and notify Company to minimize potential impacts.								Robert Mercer		
7	CON	Coordination of the Overhead Crane for Critical lifts	Delays.	Unlikely	High	Level 5	Plan for action	Contractor will define critical lifts in execution plan. Company to coordinate with other contractors to ensure crane availability when needed.								Robert Mercer		
8	CON	Congested Area - Interface with other Company contractors	Delays, reduced productivity.	Likely	High	Level 5	Plan for action	Company to coordinate between Contractor and other Company contractors to ensure maximum efficiency. Contractor to attend coordination meetings.								Robert Mercer		
9	CON	Installation of HVAC unit via south service bay.	Increased installation costs. Potential interruption for other contractors.	Unlikely	High	Level 5	Plan for action	Contractor requested Company to provide another solution as access through the roof was denied.								Robert Mercer		
10	CON	Masonry wall early installation	Safety risk for performing wall erection due to interface with live cables. Increase installation costs. Potential damage to cables. Safety risk for workers as working around live cables. Productivity impacts.	Unlikely	Moderate	Level 4	Plan for action	Contractor requested Company allow for early erection of masonry wall. If early erection refused, Contractor to install mechanical protection around cable trays and wire.								Robert Mercer		



Project Risk Management Register	
Risk Register	MFA-CG-SD-3440-RI-A04-0002-01
Date:	03-Oct-2017
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Project Name:	Supply and Install Mechanical & Electrical Auxiliaries MF
Contract Number / Project Ref	CH0031-001 / TC0006
Project Manager / Deputy:	Tim Harrington, P.Eng / Charles Lavigne
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		Consequences			
		Very Low	Low	Moderate	High
Likelihood	Highly Unlikely	Level 1	Level 2	Level 3	Level 4
	Unlikely	Level 2	Level 3	Level 4	Level 5
	Likely	Level 3	Level 4	Level 5	Level 6
	Highly Likely	Level 4	Level 5	Level 6	Level 7

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#	Cat.	Risk Definition	Description of Consequences	Initial Assessment				Mitigation/Safeguard	Comments	Status	Date Resolved	Revised Assessment				Residual Action		
				Likelihood	Consequence	Risk Level	Response					Likelihood	Consequence	Risk Level	Response	Risk Owner	Action Plan	Date Action Req'd
11	CON	Oil tanks late placement	Increased installation costs. Potential interruption for other contractors.	Unlikely	Low	Level 5	Plan for action	Contractor requested Company allow for early installation. Company stated tanks are not required for commissioning of Unit 1.								Robert Mercer		
12	CON	Staging materials near the power house and lack of lay down space near the power house.	Additional transportation from Company lay down to the power house.	Likely	Low	Level 4	Plan for action	Contractor to plan delivery of materials when required for installation to minimize lay down space required and use available space in the warehouse. Store at vendor locations where possible.								Robert Mercer		
13	CON	Limited lay down for Contractor storage.	Insufficient space to store material.	Likely	Low	Level 4	Plan for action	Contractor to plan delivery of materials when required for installation to minimize lay down space required. Contractor is investigating other space available with other contractors.								Robert Mercer		
14	CON	Lunch facility not in place in close proximity to the Power House	Reduced productivity	Highly Likely	Low	Level 6	Immediate action	Contractor to provide temporary lunch facility at Contractor Administration Complex. Teamster to drive craft labour between work area and lunch trailer. Contractor exploring other options with Company Other Contractors for temporary lunch room facilities closer to the Power House.	Travel time has increased from approximately 2 minute walk to a 5 minute drive. Contractor plans to have lunch facility in place at Power House as soon as possible (anticipated facility start-up by 09-Oct-2017).									
15	CON	Delayed construction start date due to late turnover of areas.	Schedule impact, cost impacts, reduced productivity	Highly Likely	Moderate	Level 5	Plan for action	Contractor to Notify Company. Contractor to work with Company on Control Schedule and revise Milestones. Contractor to propose options to allow start of Work on early scope with minimal risk where possible.										
16	ENG	Document Review cycle from Company	Unable to deliver docs in time to ensure equipment delivery and schedule is met.	Likely	Moderate	Level 4	Plan for action	Where necessary to progress work, try to lower 3 week review cycle. Work with Company to meet reduced requested timeline. Contractor will review documents to ensure quality and compliance with Contract requirements.								Justin Curlew		
17	ENG	Design interface with different packages, especially controls, load transfer pkg and fire protection/detection	Unable to complete packages and deliver on time.	Likely	Moderate	Level 4	Plan for action	Engage suppliers early to ensure they have all of the proper information for timely completion of packages. Ensure documents/drawings are transmitted in line with schedule requirements. Vendor's with design scope will be required to perform clash analysis. Contractor to provide drawings and all required information.								Justin Curlew		



Project Risk Management Register	
<b>Risk Register</b>	<b>MFA-CG-SD-3440-RI-A04-0002-01</b>
	<b>Date: 03-Oct-2017</b>
<b>Client:</b>	Musktrat Falls Corporation ("Company")
<b>Project Name:</b>	Supply and Install Mechanical & Electrical Auxiliaries MF
<b>Contract Number / Project Ref</b>	CH0031-001 / TC0006
<b>Project Manager / Deputy:</b>	Tim Harrington, P.Eng / Charles Lavigne
<b>Project Sponsors:</b>	Cahill - John J Henley, Ganotec - Mike Buckle
<b>Risk Management Team:</b>	Laurie Hildebrand

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		Consequences			
		Very Low	Low	Moderate	High
Likelihood	Highly Unlikely	Level 1	Level 2	Level 3	Level 4
	Unlikely	Level 2	Level 3	Level 4	Level 5
	Likely	Level 3	Level 4	Level 5	Level 6
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				Likelihood	Consequence	Risk Level	Response					Likelihood	Consequence	Risk Level	Response	Risk Owner	Action Plan	Date Action Req'd
18	ENG	Redline Procedure	Changes missed or not documented in a timely fashion.	Likely	Low	Level 4	Plan for action	Contractor to implement its redline procedures, to be updated as needed, which will be applied throughout the project. All personnel involved in developing redline drawings will be trained on Contractor's procedure.								Justin Curlew		
19	ENG	Seismic Design	Without design complete will be difficult to install and complete services.	Unlikely	Moderate	Level 5	Plan for action	Contractor started Seismic design early. Seismic design includes where and how to install seismic supports.								Justin Curlew		
20	ENG	Clash checking (all disciplines)	Potential of clash between services. Re-Design & Re-installation would be required.	Likely	Moderate	Level 6	Immediate action	Ensure vendors have all required information and provide appropriate documentation ie to be included in RFP. packages. Revision control of documents and supply to vendors. Vendor's with design scope will be required to perform clash analysis. Fire protection piping will be monitored by procurement and engineering, with regular follow up to ensure the vendor has all layouts for the plant to ensure proper routing.								Justin Curlew		
21	ENG	Unapproved vendor data sheet by Company for early works.	Contractor procuring and installing material at risk without Company approved vendor documents. Potential rework.	Highly Likely	Low	Level 5	Plan for action	Contractor to assume risk for off the shelf bulk items to prevent schedule delay.	Contractor requests Company to expedite review of documents.									
22	HSE	Emergency Rescue Plan and Team to be developed	Workers at risk.	Likely	High	Level 6	Immediate action	Emergency response plan developed and communicated to all Site Personnel. Develop and train emergency response team. Hire people with previous experience and training. Separate job specific emergency response plans will be developed for the following: Fall Protection Plan, Working at heights, Confined Space. Site has ERT for fire response/medical.								Chris Kieley		
23	HSE	Confined space work	Workers at risk.	Likely	High	Level 5	Plan for action	Emergency response plan developed and communicated. JHA will be completed and entry permits obtained. Develop and train team so that all employees at Site have been trained on the safety procedure. Hiring people with previous experience and training. Contractor has access to confined space equipment on Site for use if /where required.								Chris Kieley		



Project Risk Management Register	
Risk Register	MFA-CG-SD-3440-RI-A04-0002-01
Date:	03-Oct-2017
Client:	Muskrat Falls Corporation ("Company")
Project Name:	Supply and Install Mechanical & Electrical Auxiliaries MF
Contract Number / Project Ref	CH0031-001 / TC0006
Project Manager / Deputy:	Tim Harrington, P.Eng / Charles Lavigne
Project Sponsors:	Cahill - John J Henley, Ganotec - Mike Buckle
Risk Management Team:	Laurie Hildebrand

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		Consequences			
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Likelihood	Highly Unlikely	Level 1	Level 2	Level 3	Level 4
	Unlikely	Level 2	Level 3	Level 4	Level 5
	Likely	Level 3	Level 4	Level 5	Level 6
	Highly Likely	Level 4	Level 5	Level 6	Level 7

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#	Cat.	Risk Definition	Description of Consequences	Initial Assessment				Mitigation/Safeguard	Comments	Status	Date Resolved	Revised Assessment				Residual Action			
				Likelihood	Consequence	Risk Level	Response					Likelihood	Consequence	Risk Level	Response	Risk Owner	Action Plan	Date Action Req'd	
24	HSE	Permits	Timeline for approval of permit, delays.	Unlikely	Moderate	Level 5	Plan for action	Early establishment of permit projections (A08 document in SDR) to be submitted September 29, 2017. Permit requirements included in the schedule which is reviewed and updated weekly. Assign permit responsibility and communication with regulatory representatives in the specific discipline and Company. Critical permits will be submitted to Company for urgent approval. Permit responsibility assigned to Justin Curlew. Other internal permits will be relayed through HSE for the project including internal isolation permit, confined space permit, and hot work.									Chris Kieley		
25	HSE	Winter Temperature	Site shutdown, low productivity, material preservation	Likely	Low	Level 4	Plan for action	Reassign external work inside when necessary. Ensure workers are equipped with warm weather PPE. Follow SWI for work in inclement weather, cold stress and work execution SWI. Ensure areas provided which required Company heat and light as suitable prior to commencing work.									Chris Kieley		
26	HSE	Spill & Waste Management	Environmental risk. Workers at risk.	Unlikely	Moderate	Level 4	Plan for action	Clearly defined waste management and spill response. Hazardous material storage and training. All employees will receive Environmental Awareness training at orientation session. Equipment for spill and waste management to be available on site. Confirm hazardous waste removal vendor is properly certified.									Chris Kieley		
27	MC&C	Excessive paperwork and requirements	Delays in schedule, reduced productivity.	Likely	Low	Level 3	Monitor	Proper planning and scheduling. Coordinate with Company to gain alignment, ensure plan is communicated early and effectively, avoid duplicate reporting and redundant data. Utilization of electronic check sheets in PCS system if practical.									Jeremie Bertin		
28	MC&C	Using Company completion platform (PCS)	Inefficiency, learning curve	Unlikely	Low	Level 4	Plan for action	Proper training of staff and setting an agreement with Company early to create efficient structure. Company to provide training to Contractor.									Jeremie Bertin		
29	MC&C	Third party experts required for specialized equipment	Third party not available when required resulting in delays.	Likely	Moderate	Level 4	Plan for action	Proper planning and scheduling. Include notification requirements in subcontract related to delay.									Jeremie Bertin		
30	MC&C	Using temporary supply (electrical or water) during commissioning activities.	Temporary supply to be installed, tests to be redone on permanent supply.	Highly Likely	Low	Level 4	Plan for action	Proper training of staff and development of equipment specific energization procedures.											





Project Risk Management Register	
Risk Register	MFA-CG-SD-3440-RI-A04-0002-01
Date:	03-Oct-2017
Client:	Muskrat Falls Corporation ("Company")
Project Name:	Supply and Install Mechanical & Electrical Auxiliaries MF
Contract Number / Project Ref	CH0031-001 / TC0006
Project Manager / Deputy:	Tim Harrington, P.Eng / Charles Lavigne
Project Sponsors:	Cahill - John J Henley, Ganotec - Mike Buckle
Risk Management Team:	Laurie Hildebrand

Category Legend	
ENG	Engineering
PRO	Procurement
HSE	Health, Safety & Environment
QUA	Quality
SCH	Schedule
CON	Construction
MC&C	Mechanical Completion & Commissioning
COM	Commercial

		Consequences			
		Very Low	Low	Moderate	High
Likelihood	Highly Unlikely	Level 1	Level 2	Level 3	Level 4
	Unlikely	Level 2	Level 3	Level 4	Level 5
	Likely	Level 3	Level 4	Level 5	Level 6
	Highly Likely	Level 4	Level 5	Level 6	Level 7

Legend	
Requires Input Information	
Automatically Formulated	

#	Cat.	Risk Definition	Description of Consequences	Initial Assessment				Mitigation/Safeguard	Comments	Status	Date Resolved	Revised Assessment				Residual Action		
				Likelihood	Consequence	Risk Level	Response					Likelihood	Consequence	Risk Level	Response	Risk Owner	Action Plan	Date Action Req'd
31	MC&C	Delay in reception of regulatory approvals (pressure piping, fire protection, diesel tank and piping).	Delays in schedule, impact on major milestones.	Unlikely	High	Level 4	Plan for action	Proper planning, training, and scheduling to ensure documentation and authorization are requested on time. Tracking authorization response time and any delays after submittal.										
32	PRO	Product Loss / Damage in Transit	Project Delay / Additional Cost	Likely	Moderate	Level 5	Plan for action	OSD reports. Inspections will be performed on all materials at delivery to Site. Purchase agreement to include provisions to address shipping risk, including insurance, packaging requirements and timely replacement in the event of damage.								Frank Collins		
33	PRO	Equipment not properly preserved	Potential damage / Additional Cost	Unlikely	Moderate	Level 4	Plan for action	Develop preventative maintenance plan and communicate to responsible personnel. Ensure preservation requirements provided by vendors. Coordinate delivery schedule with Site installation to minimize preservation required at Site. Contractor to use preservation module within Company provided PCS system (ex. notices will be set up in the system for maintenance/preservation inspections).								Frank Collins		
34	PRO	Late Delivery of Critical Equipment	Project Delay / Additional Cost	Likely	Moderate	Level 3	Monitor	Ensure delivery dates are tied to critical defined milestones and monitored in the control schedule with milestones and need dates. Early procurement of critical items.								Frank Collins		
35	PRO	Bulks/Consumables	Off the shelf bulk items not readily available. Will stall work fronts without having proper quantities on-site.	Likely	Low	Level 4	Plan for action	During planning phase form a complete list of all mechanical, electrical and mounting items required. Engage vendors to have items readily available at nearest facility. Set up secure stations for PPE distribution. Inventory management at Site. Leverage existing corporate supplies and asset inventory. Obtain pricing for all potential bulks and consumables which may be needed over the course of the job to ensure quick turnaround for purchasing additional items.								Frank Collins		
36	PRO	Material Delivery and Storage Control	Limitation for on-site storage	Likely	Low	Level 4	Plan for action	Timing material delivery close to installation to minimize Site storage. Negotiate off-site storage with vendors where possible.								Frank Collins		



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Likelihood	Consequences			
	Very Low	Low	Moderate	High
Highly Unlikely	Level 1	Level 2	Level 3	Level 4
Unlikely	Level 2	Level 3	Level 4	Level 5
Likely	Level 3	Level 4	Level 5	Level 6
Highly Likely	Level 4	Level 5	Level 6	Level 7

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37	PRO	Innu Business Group first option for package.	Capability of interested Innu Businesses to perform scope of Work in accordance with Project specifications.	Unlikely	Low	Level 5	Plan for action	Meet with Innu business group up front and outline available packages. Issue EOI early to identify potential Innu businesses that can meet supply requirements.							Frank Collins			
38	QUA	Welding of the IPB & potential rework	Re-work, schedule impact	Unlikely	Moderate	Level 5	Plan for action	Owner to ensure manufacturer representative to be onsite for erection of IPB. IPB manufacturer to provide welding procedures well in advance of work start. Training on IPB prior to installation. Leverage existing qualified welders.							Brad Forsey			
39	QUA	Welding inspection & rework	Re-work, schedule impact	Unlikely	Moderate	Level 5	Plan for action	Ensure qualified workers perform the tasks. Regular monitoring of ongoing work by supervisor and quality group. Prepare documentation, plan, weld map etc. in advance of inspection.							Brad Forsey			
40	QUA	Off-site QA inspection	Not performing the inspection. Receiving non-compliant product.	Unlikely	Moderate	Level 6	Immediate action	Leveraging internal affiliates for fabrication of pipe, HVAC, controls and structural fabrication. Establishing vendor inspection/audit and FAT where appropriate.										
41	SCH	Night Shift work	Loss of productivity, safety	Unlikely	Moderate	Level 6	Immediate action	Proper supervision and turnover from day shift to night shift. Concentrate critical activities during day shift (where possible) where there is additional supervision available. Night shift safety coverage will be required. Appropriate temporary lighting will be provided.							Stefan Lacasse			
42	SCH	Areas not turned over exactly when and where they are supposed to be, or in the condition stated.	Change of plan/sequence, reduced productivity	Likely	High	Level 4	Plan for action	Company to give notice in advance of any change to dates or potential delay. Contractor to notify Company in advance on critical dates and take action accordingly if there is a change.							Stefan Lacasse			
43	SCH	Transfer of area to Contractor	Multiple contractors working in the same area, reduced productivity, potential damage, safety	Likely	Moderate	Level 5	Plan for action	Establish proper transfer of area procedure with Company and other contractors. Attend regular coordination meetings. Company to establish a formal documented handover process for work areas, including walk down of areas.										
44	SCH	Approval of labour productivity management plan, health and safety plan and C-SEPP prior to start of permanent work.	Delayed start date for permanent work.	Unlikely	High	Level 4	Plan for action	Prioritize these documents for submission to Company. Informal submissions recommended by Company for streamlined approvals.							Stefan Lacasse			





Supply and Install Mechanical & Electrical Auxiliaries MF

Client Reference: CH0031-001  
Project Reference: TC006

Project Risk Management Register	
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Contract Number / Project Ref	CH0031-001 / TC0006
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				Likelihood	Consequence	Risk Level	Response					Likelihood	Consequence	Risk Level	Response	Risk Owner	Action Plan	Date Action Req'd
45	SCH	A-Series documents not Approved Code 02 or better prior to start of the Work	Company has instructed Contractor to delay start of Work until all A-Series documents are Approved. Schedule delay and cost impacts.	Highly Likely	Moderate	Level 6	Immediate action	Contractor has submitted all documents. All A-Series documents required to start construction are currently Approved Code 02 or better. Any documents received with comments are being reviewed and updated as required. Contractor discussing streamlined Approval with Company.										