## Appendix F: Curling System Brine Analysis Reports

ROCHESTER MIDLAND CANADA CORP 143 Mills Road, Ajax, ON L1S 2H2 Tel: 905-619-6738 Fax: 905-619-8693 www.rochestermidland.com         CUSTOMER:       CMCO-Calgary LOCATION ID:       SALES REP: Id: oromont.com Id: toromont.com Id: toromont.com	RUSH 🗌 YES 🗍 NO					
LOCATION ID:       \$7180       CC:       @toromont.com         LOG #:       L1712651       PO #:       4500838958         PRODUCT USED:       Brinehib       JOB #:         SAMPLE LABELED:       Femie Curing Club       BRINE         96116 <sup>6</sup> Ave Femie, BC       COLD BRINE       BRINE ANALYSIS         DATE SAMPLED:       Aug 4. 2017       RECOMMENDED         COLD BRINE       OLT SINE       CONTROL RANGES         TOTAL IRON as Fe       ppm       61.5       <10 ppm	Rochester Midland Corporation	I	ROCHESTER MIDLAND CANADA CORP 143 Mills Road, Ajax, ON L1S 2H2 Tel: 905-619-6738 Fax: 905-619-8693			
LOG #:       L1712651       PO #:       4500838958         PRODUCT USED:       Brinehib       JOB #:         SAMPLE LABELED:       Femie Curing Club       RNIL         96116 <sup>th</sup> Ave Femie, BC       COLD BRINE       BRINE ANALYSIS         DATE SAMPLED:       Aug 4, 2017       Recommendation         ANALYSIS       TEST RESULTS       RECOMMENDED CONTROL RANGES         TOTAL IRON as Fe       ppm       61.5       <10 ppm         TOTAL SUSPENDED SOLIDS       166       <1000 ppm         SPECIFIC GRAVITY @ 20°C       1.191       1.20 – 1.22         FREEZING POINT<*F       -5.8       -5.5°F to -11.6F°         CALCIUM CHLORIDE       %       21.6       21.5% to 23.3%         pH       10.02       9.0 – 1.0.0 Brinehib       8.5 – 9.5 Chromate         COLOUR/CLARITY       AMBER       Clear       AMMONIA as NH <sub>3</sub> ppm         315       4,000 – 5,000 ppm       Nil       BRINEHIB       ppm       315       4,000 – 5,000 ppm         COMMENTS and RECOMMENDATION - Very similar results to the June report.       Srinehib per 1000 gallons of system capacity. Please ensure good filtration on this system as iron readings are very high.       Please check for possible refrigerant leakage.				@toromont.com		
SAMPLE LABELED:       Femie Curling Chub       RNIL         961 16 <sup>th</sup> Ave Femie, BC       COLD BRINE         DATE SAMPLED:       COLD BRINE         DATE SAMPLED:       Aug 4.2017         TEST RESULTS       RECOMMENDED CONTROL RANGES         TOTAL IRON as Fe       ppm       61.5          TOTAL SUSPENDED SOLIDS       166          SPECIFIC GRAVITY @ 20°C       1.191       1.20 – 1.22         FREEZING POINT °F       - 5.8       - 5.5°F to -11.6F°         CALCIUM CHLORIDE %       21.6       21.5% to 23.3%         PH       10.02       9.0 – 10.0 Brinehib         BINEHIB       pm       315       4,000 – 5,000 ppm         COLOUR/CLARITY       AMBER       Clear         AMMONIA as NH3       pm       315       4,000 – 5,000 ppm         COLOUR/CLARITY       AMBER       Clear         AMMONIA as NH3 <th <="" colspan="2" td=""><td>LOG #: L1712</td><td>651</td><td>PO #:</td><td></td></th>	<td>LOG #: L1712</td> <td>651</td> <td>PO #:</td> <td></td>		LOG #: L1712	651	PO #:	
P61 16 <sup>h</sup> Ave Femie, BC       COLD BRINE         DATE SAMPLED:       Aug 4. 2017         ANALYSIS       TEST RESULTS         ANALYSIS       TEST RESULTS         COTAL IRON as Fe       ppm         61.5       <10 ppm	PRODUCT USED: Brinel	<u>uib</u>	JOB #:			
TOTAL IRON as Feppm61.5CONTROL RANGESTOTAL SUSPENDED SOLIDS ppm166<100 ppm	961 16 <sup>th</sup> Ave Femie, BC COLD BRINE					
TOTAL IRON as Feppm61.5< 10 ppmTOTAL SUSPENDED SOLIDS ppm166< 1000 ppm	ANALYSIS	TEST RESULTS				
TOTAL SUSPENDED SOLIDS ppm       166       <1000 ppm         SPECIFIC GRAVITY @ 20°C       1.191       1.20 – 1.22         FREEZING POINT       °F       -5.8       -5.5°F to -11.6F°         CALCIUM CHLORIDE       %       21.6       21.5% to 23.3%         pH       10.02       9.0 – 10.0 Brinehib         8.5 – 9.5 Chromate       0.0       8.5 – 9.5 Chromate         COLOUR/CLARITY       AMBER       Clear         AMMONIA as NH3       ppm       *1830       Nil         BRINEHIB       ppm       315       4,000 – 5,000 ppm         CHROMATE as CrO4       ppm       NIL       1600 ppm Chromate         COMMENTS and RECOMMENDATION - Very similar results to the June report.       Brinehib reading is low. Please add 2 PAILS of Brinehib per 1000 gallons of system capacity. Please ensure good filtration on this system as iron readings are very high.       **A significant amount of ammonia was detected in this sample. Please check for possible refrigerant leakage.	TOTAL IRON as Fe nom	61.5				
SPECIFIC GRAVITY @ 20°C       1.191       1.20 - 1.22         FREEZING POINT       °F       -5.8       -5.5°F to -11.6F°         CALCIUM CHLORIDE       %       21.6       21.5% to 23.3%         pH       10.02       9.0 - 10.0 Brinehib         R.5 - 9.5 Chromate       8.5 - 9.5 Chromate         COLOUR/CLARITY       AMBER       Clear         AMMONIA as NH <sub>3</sub> ppm       *1830       Nil         BRINEHIB       ppm       315       4,000 - 5,000 ppm         CHROMATE as CrO <sub>4</sub> ppm       NIL       1600 ppm Chromate         COMMENTS and RECOMMENDATION - Very similar results to the June report.       Brinehib reading is low. Please add 2 PAILS of Brinehib per 1000 gallons of system capacity. Please ensure good filtration on this system as iron readings are very high.       **A significant amount of ammonia was detected in this sample. Please check for possible refrigerant leakage.	TOTAL SUSPENDED SOLIDS	166				
FREEZING POINT°F- 5.8-5.5°F to -11.6F°CALCIUM CHLORIDE%21.621.5% to 23.3%pH10.029.0 - 10.0 Brinehib 8.5 - 9.5 ChromateCOLOUR/CLARITYAMBERClearAMMONIA as NH3ppm*1830BRINEHIBppm3154,000 - 5,000 ppmCHROMATE as CrO4ppmNIL1600 ppm ChromateCOMMENTS and RECOMMENDATION - Very similar results to the June report.Brinehib reading is low. Please add 2 PAILS of Brinehib per 1000 gallons of system capacity. Please ensure good**A significant amount of ammonia was detected in this sample. Please check for possible refrigerant leakage.	••			1.20 - 1.22		
CALCION CHLORIDE       %       10.02       9.0 – 10.0 Brinehib         pH       10.02       9.0 – 10.0 Brinehib         COLOUR/CLARITY       AMBER       Clear         AMMONIA as NH3       ppm       *1830       Nil         BRINEHIB       ppm       315       4,000 – 5,000 ppm         CHROMATE as CrO4       ppm       NIL       1600 ppm Chromate         COMMENTS and RECOMMENDATION - Very similar results to the June report.       Brinehib reading is low. Please add 2 PAILS of Brinehib per 1000 gallons of system capacity. Please ensure good filtration on this system as iron readings are very high.         **A significant amount of ammonia was detected in this sample. Please check for possible refrigerant leakage.	-	- 5.8	-5.5°F to -11.6F°			
PIT       8.5 – 9.5 Chromate         COLOUR/CLARITY       AMBER       Clear         AMMONIA as NH3       ppm       *1830       Nil         BRINEHIB       ppm       315       4,000 – 5,000 ppm         CHROMATE as CrO4       ppm       NIL       1600 ppm Chromate         COMMENTS and RECOMMENDATION - Very similar results to the June report.       Brinehib reading is low. Please add 2 PAILS of Brinehib per 1000 gallons of system capacity. Please ensure good filtration on this system as iron readings are very high.         **A significant amount of ammonia was detected in this sample. Please check for possible refrigerant leakage.	CALCIUM CHLORIDE %	21.6	21.5% to 23.3%			
COLOOR/CLARTY       Interference         AMMONIA as NH3       ppm       *1830       Nil         BRINEHIB       ppm       315       4,000 – 5,000 ppm         CHROMATE as CrO4       ppm       NIL       1600 ppm Chromate         COMMENTS and RECOMMENDATION - Very similar results to the June report.       Brinehib reading is low. Please add 2 PAILS of Brinehib per 1000 gallons of system capacity. Please ensure good filtration on this system as iron readings are very high.         **A significant amount of ammonia was detected in this sample. Please check for possible refrigerant leakage.	pH 10.02					
AMMONIA as NH3       ppm       315       4,000 – 5,000 ppm         BRINEHIB       ppm       NIL       1600 ppm Chromate         CHROMATE as CrO4       ppm       NIL       1600 ppm Chromate         COMMENTS and RECOMMENDATION - Very similar results to the June report.       Brinehib reading is low. Please add 2 PAILS of Brinehib per 1000 gallons of system capacity. Please ensure good filtration on this system as iron readings are very high.         **A significant amount of ammonia was detected in this sample. Please check for possible refrigerant leakage.	COLOUR/CLARITY	AMBER	Clear			
CHROMATE as CrO4         ppm         NIL         1600 ppm Chromate           COMMENTS and RECOMMENDATION - Very similar results to the June report.         Brinehib reading is low. Please add 2 PAILS of Brinehib per 1000 gallons of system capacity. Please ensure good filtration on this system as iron readings are very high.           **A significant amount of ammonia was detected in this sample. Please check for possible refrigerant leakage.	AMMONIA as NH3 ppm	*1830		Nil		
COMMENTS and RECOMMENDATION - Very similar results to the June report. Brinehib reading is low. Please add 2 PAILS of Brinehib per 1000 gallons of system capacity. Please ensure good filtration on this system as iron readings are very high. **A significant amount of ammonia was detected in this sample. Please check for possible refrigerant leakage.	BRINEHIB ppm	315	4	4,000 – 5,000 ppm		
COMMENTS and RECOMMENDATION - Very similar results to the June report. Brinehib reading is low. Please add 2 PAILS of Brinehib per 1000 gallons of system capacity. Please ensure good filtration on this system as iron readings are very high. **A significant amount of ammonia was detected in this sample. Please check for possible refrigerant leakage.	CHROMATE as CrO4 ppm	NIL	1600 ppm Chromate			
	Brinehib reading is low. Please add filtration on this system as iron read **A significant amount of ammonia	2 PAILS of Brinehib pe ings are very high.	r 1000 gallons of sys	tem capacity. Please ensure good		
DATE: August 29, 2017 ANALYZED BY:	DATE: August 29 2017		ANALYZED BY			

Figure F-1: Brine Analysis Report for Curling System, August 29, 2017.

INVESTIGATION REPORT www.technicalsafetybc.ca



	RUSH 🗌 Y	es ∏no	
		ROCHESTER MIDLAND CANADA CORP 143 Mills Road, Ajax, ON L1S 2H2 Tel: 905-619-6738 Fax: 905-619-8693 www.rochestermidland.com	
CUSTOMER: <u>CIM</u> LOCATION ID : S718	<u>CO – Calgary</u> 30	SALES REP: CC:	@toromont.com @toromont.com @toromont.com
LOG #: L171 PRODUCT USED: <u>Brine</u>	1926 <u>hib</u>	926 PO #: 4500820314	
SAMPLE LABELED: Femie Curling Club 961 16 <sup>th</sup> Ave Femie, BC COLD BRINE DATE SAMPLED: <u>May 11, 2017</u>		BR	RMIL RINE ANALYSIS
ANALYSIS TEST RESUL		RECOMMENDED CONTROL RANGES	
TOTAL IRON as Fe ppm	31		< 10 ppm
TOTAL SUSPENDED SOLIDS	384		< 1000 ppm
SPECIFIC GRAVITY @ 20°C	1.195	1.20 - 1.22	
FREEZING POINT °F	- 5.5		-5.5°F to -11.6F°
CALCIUM CHLORIDE %	21.5		21.5% to 23.3%
pH	10.08	-	0.0 – 10.0 Brinehib 8.5 – 9.5 Chromate
COLOUR/CLARITY	AMBER		Clear
AMMONIA as NH3 ppm	*3320		Nil
BRINEHIB ppm	220	4	4,000 – 5,000 ppm
CHROMATE as CrO <sub>4</sub> ppm	NIL	10	600 ppm Chromate
COMMENTS and RECOMMEND Brinehib reading is low. Please add filtration on this system as iron read **A significant amount of ammoni	2 PAILS of Brinehib pe tings are very high.		
Thank you			
DATE: June 6, 2017		ANALYZED BY:	

Figure F-2: Brine Analysis Report for Curling System, June 6, 2017



RUSH TYES NO						
Rochester Midland Corporation		ROCHESTER MIDLAND LIMITED 143 Mills Road, Ajax, ON L1S 2H2 Tel: 905-619-6738 Fax: 905-619-8693 www.rochestermidland.com				
CUSTOMER: <u>CIMC</u> LOCATION ID : S7180	<u>O – Calgary</u> )	SALES REP: CC:	@toromont.com @toromont.com @toromont.com @toromont.com			
			4500735683			
SAMPLE LABELED: Femie Curling Club 961 16th Ave Femie, BC COLD BRINE DATE SAMPLED: Jan 18, 2016		BF	RML RINE ANALYSIS			
ANALYSIS	TEST RESULTS		RECOMMENDED ONTROL RANGES			
TOTAL IRON as Fe ppm	108		< 10 ppm			
TOTAL SUSPENDED SOLIDS ppm	588		< 1000 ppm			
SPECIFIC GRAVITY @ 20°C	1.193	1.20 - 1.22				
FREEZING POINT °F			-5.5°F to -11.6F°			
CALCIUM CHLORIDE %	21.5		21.5% to 23.3%			
pН	8.68	-	9.0 – 10.0 Brinehib 3.5 – 9.5 Chromate			
COLOUR/CLARITY	AMBER		Clear			
AMMONIA as NH3 ppm	NIL		Nil			
BRINEHIB ppm	298	4	4,000 – 5,000 ppm			
CHROMATE as CrO <sub>4</sub> ppm	NIL	1	600 ppm Chromate			
COMMENTS and RECOMMENDA Brinehib reading is low. Please add filtration on this system as iron read All other readings are acceptable at Thank you	2 PAILS of Brinehib pe ings are very high.	er 1000 gallons of sys	tem capacity. Please ensure good			
DATE: Feb. 16, 2016		ANALYZED BY:				

Figure F-3: Brine Analysis Report for Curling System, February 16, 2016.

