



July 23, 2020

Mr. Fenwick Jeffery, Site Projects Manager  
Irving Forest Services  
408 Mill Street  
PO Box 5777  
Saint John, NB E2L 4M3  
[www.jdirving.com](http://www.jdirving.com)

Dear Mr. Jeffrey:

*RE: Temperature Monitoring Program – Irving Pulp & Paper Limited, Mill Cove, Saint John, New Brunswick (Rev 1)*

CBCL Limited (CBCL) is pleased to provide the following letter report for the Temperature Monitoring Program for the month of July in Mill Cove in support of the cooling system design project for Irving Pulp & Paper Limited in Saint John, New Brunswick.

## Introduction

CBCL Limited (CBCL) was engaged by Irving Pulp & Paper Limited to complete a Temperature Monitoring Program in support of the cooling system design project for Irving Pulp & Paper Limited in Saint John, New Brunswick.

## Scope

The Temperature Monitoring Program includes the following:

- ▶ Prepare a Site Specific Health and Safety Plan to support temperature monitoring activities;
- ▶ Complete temperature monitoring activities as follows:
  - A total of three (3) monitoring events will occur in Mill Cove (in the area previously identified by IPP) (one in July, August and September);
  - Subsea Global Solutions will provide a boat and operator to transport CBCL personnel to the designated sampling location; In-situ water temperature measurements will be recorded by CBCL personnel from the boat using a YSI 600XL Water Quality Meter;
  - Water temperatures will be measured at 10-foot increments to approximately 60 feet below surface at low tide, mid tide, 2.5 hours before high tide and high tide;

Mr. Fenwick Jeffery

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- Relevant site data will be collected during each sampling event including sample date/time, GPS locations, depths, weather and site photographs;
- Following each monitoring event, CBCL will prepare a letter report for IPP presenting the site findings.

## Findings

The Temperature Monitoring Program for the month of July was completed on July 22<sup>nd</sup>, 2020 by CBCL personnel. The temperature findings along with relevant site data for the July monitoring event are presented in Table 1 (Attachment A). Temperature measurements ranged from 12.38°C (high tide at 50 ft and 60 ft depth from surface) to 16.96°C (2.5 hours before high tide at 50 ft depth from surface). Site photographs are presented in Attachment B.

Yours very truly,

CBCL Limited



Prepared by:  
Megan Thorpe, B.Sc., TGIT  
Environmental Scientist  
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Reviewed by:  
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Project Manager  
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Phone: 506-633-6650

Attachments: A      Table 1 – Temperature Results  
                  B      Site Photographs

Project No: 202893.00

# Attachment A

## Table 1: Temperature Results

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**TABLE 1:**  
**CLIENT:**  
**CBCL PROJECT NO.:**

**Temperature Monitoring Program, Saint John, New Brunswick**  
**Irving Pulp & Paper Limited**  
**202893.00**

Tide Cycle	Date Collected	Time Collected	Weather	GPS Location (Decimal Minutes)		Sample Depth from Surface (ft)	Temperature Measurement		Comments
				Latitude	Longitude		Degrees Celsius (°C)	Degrees Farenheit (°F)	
<b>July Monitoring Event</b>									
Low Tide	7/22/2020	7:33 AM	Partly cloudy, 14°C, wind 8kph from the north.	45° 15.635' N	66° 05.403' W	10	14.75	58.55	Lots of mixing. Water was quite choppy.
Low Tide	7/22/2020	7:36 AM	Partly cloudy, 14°C, wind 8kph from the north.	45° 15.635' N	66° 05.403' W	20	14.27	57.69	Lots of mixing. Water was quite choppy.
Low Tide	7/22/2020	7:40 AM	Partly cloudy, 14°C, wind 8kph from the north.	45° 15.635' N	66° 05.403' W	30	14.68	58.42	Lots of mixing. Water was quite choppy.
Low Tide	7/22/2020	7:45 AM	Partly cloudy, 14°C, wind 8kph from the north.	45° 15.635' N	66° 05.403' W	40	14.51	58.12	Lots of mixing. Water was quite choppy.
Mid Tide	7/22/2020	10:40 AM	Overcast, 20°C, wind 7kph from the north.	45° 15.635' N	66° 05.400' W	10	16.75	62.15	
Mid Tide	7/22/2020	10:42 AM	Overcast, 20°C, wind 7kph from the north.	45° 15.635' N	66° 05.400' W	20	16.73	62.11	
Mid Tide	7/22/2020	10:45 AM	Overcast, 20°C, wind 7kph from the north.	45° 15.635' N	66° 05.400' W	30	16.76	62.17	
Mid Tide	7/22/2020	10:47 AM	Overcast, 20°C, wind 7kph from the north.	45° 15.635' N	66° 05.400' W	40	16.76	62.17	
Mid Tide	7/22/2020	10:50 AM	Overcast, 20°C, wind 7kph from the north.	45° 15.635' N	66° 05.400' W	50	16.75	62.15	
2.5 Hours Before High Tide	7/22/2020	11:00 AM	Partly cloudy, 23°C, wind 7kph from the north.	45° 15.635' N	66° 05.398' W	10	16.90	62.42	
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2.5 Hours Before High Tide	7/22/2020	11:10 AM	Partly cloudy, 23°C, wind 7kph from the north.	45° 15.635' N	66° 05.398' W	50	16.96	62.53	
High Tide	7/22/2020	2:20 PM	Partly cloudy, 25°C, wind 6kph from the northwest.	45° 15.607' N	66° 05.370' W	10	12.40	54.32	Current was very strong. Depths are approximate due to horizontal drift. Measurements were taken past predicted high tide due to boat movement.

**TABLE 1:**  
**CLIENT:**  
**CBCL PROJECT NO.:**

**Temperature Monitoring Program, Saint John, New Brunswick**  
**Irving Pulp & Paper Limited**  
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Tide Cycle	Date Collected	Time Collected	Weather	GPS Location (Decimal Minutes)		Sample Depth from Surface (ft)	Temperature Measurement		Comments
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High Tide	7/22/2020	2:22 PM	Partly cloudy, 25°C, wind 6kph from the northwest.	45° 15.607' N	66° 05.370' W	20	12.40	54.32	Current was very strong. Depths are approximate due to horizontal drift. Measurements were taken past predicted high tide due to boat movement.
High Tide	7/22/2020	2:24 PM	Partly cloudy, 25°C, wind 6kph from the northwest.	45° 15.607' N	66° 05.370' W	30	12.39	54.30	Current was very strong. Depths are approximate due to horizontal drift. Measurements were taken past predicted high tide due to boat movement.
High Tide	7/22/2020	2:26 PM	Partly cloudy, 25°C, wind 6kph from the northwest.	45° 15.607' N	66° 05.370' W	40	12.39	54.30	Current was very strong. Depths are approximate due to horizontal drift. Measurements were taken past predicted high tide due to boat movement.
High Tide	7/23/2020	2:28 PM	Partly cloudy, 25°C, wind 6kph from the northwest.	45° 15.607' N	66° 05.370' W	50	12.38	54.28	Current was very strong. Depths are approximate due to horizontal drift. Measurements were taken past predicted high tide due to boat movement.
High Tide	7/22/2020	2:30 PM	Partly cloudy, 25°C, wind 6kph from the northwest.	45° 15.607' N	66° 05.370' W	60	12.38	54.28	Current was very strong. Depths are approximate due to horizontal drift. Measurements were taken past predicted high tide due to boat movement.

# Attachment B

## Site Photographs

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# Site Photographs

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Photo 1: DMK Dockyard.



Photo 2: Disembarking from DMK Dockyard for Mill Cove.



Photo 3: Entering Mill Cove at Slack Tide via Reversing Falls.



Photo 4: Anchored in Mill Cove for Temperature Monitoring.



Photo 5: View of Downstream for Low Tide Temperature Monitoring.



Photo 6: View of Water for Low Tide Temperature Monitoring.

# Site Photographs

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Photo 7: View of Upstream for Low Tide Temperature Monitoring.



Photo 8: View of Downstream for Mid Tide Temperature Monitoring.



Photo 9: View of Water for Mid Tide Temperature Monitoring.



Photo 10: View of Upstream for Mid Tide Temperature Monitoring.



Photo 11: View of Downstream for 2.5 Hour Before High Tide Temperature Monitoring.



Photo 12: View of Water for 2.5 Hour Before High Tide Temperature Monitoring.



# Site Photographs

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Photo 13: View of Upstream for 2.5 Hour Before High Tide Temperature Monitoring.



Photo 14: View of Downstream for High Tide Temperature Monitoring.



Photo 15: View of Water for High Tide Temperature Monitoring.



Photo 16: View of Upstream for High Tide Temperature Monitoring.



Photo 17: Exiting Mill Cove at Slack Tide via Reversing Falls.



Photo 18: Returning to DMK Dockyard.



August 21, 2020

Mr. Fenwick Jeffery, Site Projects Manager  
Irving Forest Services  
408 Mill Street  
PO Box 5777  
Saint John, NB E2L 4M3  
[www.jdirving.com](http://www.jdirving.com)

Dear Mr. Jeffrey:

*RE: Temperature Monitoring Program - August, 2020 Event  
Irving Pulp & Paper Limited, Mill Cove, Saint John, New Brunswick*

CBCL Limited (CBCL) is pleased to provide the following letter report for the Mill Cove Temperature Monitoring Program for the month of August, 2020. Temperature monitoring has been requested for three months (July, August, and September) in support of the cooling system design project for Irving Pulp & Paper Limited in Saint John, New Brunswick. The current letter report presents the findings of the August, 2020 monitoring event which took place on August 20, 2020.

## Scope

The Mill Cove Temperature Monitoring Program includes the following:

- ▶ Prepare a Site Specific Health and Safety Plan to support temperature monitoring activities;
- ▶ Complete temperature monitoring activities as follows:
  - A total of three (3) monitoring events will occur in Mill Cove (in the area previously identified by IPP) (one in July, August and September, 2020);
  - Subsea Global Solutions will provide a boat and operator to transport CBCL personnel to the designated sampling location; In-situ water temperature measurements will be recorded by CBCL personnel from the boat using a YSI 600XL Water Quality Meter;
  - Water temperatures will be measured at 10-foot increments to approximately 60 feet below surface at low tide, mid tide, 2.5 hours before high tide and high tide;
  - Relevant site data will be collected during each sampling event including sample date/time, GPS locations, depths, weather and site photographs;
  - Following each monitoring event, CBCL will prepare a letter report for IPP presenting the site findings.

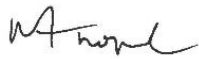
## Findings

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The Temperature Monitoring Program for the month of August was completed on August 20, 2020 by CBCL personnel. The temperature findings along with relevant site data for the August monitoring event as well as the previous July monitoring event are presented in Table 1 (Attachment A). Temperature measurements for the August monitoring event ranged from 14.57°C/58.23°F (high tide at 50 ft depth from surface) to 16.78°C/62.20°F (2.5 hours before high tide at 10 ft depth from surface). Site photographs are presented in Attachment B.

Yours very truly,

CBCL Limited



Prepared by:  
Megan Thorpe, B.Sc., TGIT  
Environmental Scientist  
Email: [mthorpe@cbcl.ca](mailto:mthorpe@cbcl.ca)  
Phone: 506-633-6650



Reviewed by:  
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Project Manager  
Email: [skilfoil@cbcl.ca](mailto:skilfoil@cbcl.ca)  
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Attachments: A     Table 1 – Temperature Results  
                  B     Site Photographs

Project No: 202893.00

# Attachment A

## Table 1: Temperature Results

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**TABLE 1: Temperature Monitoring Program, Saint John, New Brunswick**  
**CLIENT: Irving Pulp & Paper Limited**  
**CBCL PROJECT NO.: 202893.00**

Tide Cycle	Date Collected	Time Collected	Weather	GPS Location (Decimal Minutes)		Sample Depth from Surface (ft)	Temperature Measurement		Comments
				Latitude	Longitude		Degrees Celsius (°C)	Degrees Fahrenheit (°F)	
<b>August Monitoring Event</b>									
Low Tide	8/20/2020	7:20 AM	Clear 10°C, wind 6kph from the west	45° 15.653' N	66° 05.411'W	10	15.58	60.04	Lots of mixing.
Low Tide	8/20/2020	7:24 AM	Clear 10°C, wind 6kph from the west	45° 15.653' N	66° 05.411'W	20	15.59	60.06	Lots of mixing.
Low Tide	8/20/2020	7:26 AM	Clear 10°C, wind 6kph from the west	45° 15.653' N	66° 05.411'W	30	15.52	59.94	Lots of mixing.
Low Tide	8/20/2020	7:30 AM	Clear 10°C, wind 6kph from the west	45° 15.653' N	66° 05.411'W	40	15.52	59.94	Lots of mixing.
Mid Tide	8/20/2020	10:18 AM	Few clouds, 17°C, wind 11 kph from the west	45° 15.652' N	66° 05.406'W	10	16.48	61.66	Current was strong.
Mid Tide	8/20/2020	10:20 AM	Few clouds, 17°C, wind 11 kph from the west	45° 15.652' N	66° 05.406'W	20	16.41	61.54	Current was strong.
Mid Tide	8/20/2020	10:24 AM	Few clouds, 17°C, wind 11 kph from the west	45° 15.652' N	66° 05.406'W	30	16.39	61.50	Current was strong.
Mid Tide	8/20/2020	10:28 AM	Few clouds, 17°C, wind 11 kph from the west	45° 15.652' N	66° 05.406'W	40	16.41	61.54	Current was strong.
Mid Tide	8/20/2020	10:30 AM	Few clouds, 17°C, wind 11 kph from the west	45° 15.652' N	66° 05.406'W	50	16.51	61.72	Current was strong.
2.5 Hours Before High Tide	8/20/2020	10:48 AM	Few clouds, 17°C, wind 11 kph from the west	45° 15.645' N	66° 05.411'W	10	16.78	62.20	Current was strong.
2.5 Hours Before High Tide	8/20/2020	10:50 AM	Few clouds, 17°C, wind 11 kph from the west	45° 15.645' N	66° 05.411'W	20	16.72	62.10	Current was strong.
2.5 Hours Before High Tide	8/20/2020	10:52 AM	Few clouds, 17°C, wind 11 kph from the west	45° 15.645' N	66° 05.411'W	30	16.72	62.10	Current was strong.
2.5 Hours Before High Tide	8/20/2020	10:54 AM	Few clouds, 17°C, wind 11 kph from the west	45° 15.645' N	66° 05.411'W	40	16.61	61.90	Current was strong.
2.5 Hours Before High Tide	8/20/2020	10:56 AM	Few clouds, 17°C, wind 11 kph from the west	45° 15.645' N	66° 05.411'W	50	16.64	61.95	Current was strong.
2.5 Hours Before High Tide	8/20/2020	11:00 AM	Few clouds, 17°C, wind 11 kph from the west	45° 15.645' N	66° 05.411'W	60	16.59	61.86	Current was strong.
High Tide	8/20/2020	1:30 PM	Few clouds, 21°C, wind 17 kph from the northwest	45° 15.631' N	66° 05.402'W	10	14.63	58.33	Current was very strong. The greatest depth that could be achieved was 50 feet due to tension in the cable as result of the current.
High Tide	8/20/2020	1:35 PM	Few clouds, 21°C, wind 17 kph from the northwest	45° 15.631' N	66° 05.402'W	20	14.61	58.30	Current was very strong. The greatest depth that could be achieved was 50 feet due to tension in the cable as result of the current.
High Tide	8/20/2020	1:40 PM	Few clouds, 21°C, wind 17 kph from the northwest	45° 15.631' N	66° 05.402'W	30	14.61	58.30	Current was very strong. The greatest depth that could be achieved was 50 feet due to tension in the cable as result of the current.
High Tide	8/20/2020	1:45 PM	Few clouds, 21°C, wind 17 kph from the northwest	45° 15.631' N	66° 05.402'W	40	14.58	58.24	Current was very strong. The greatest depth that could be achieved was 50 feet due to tension in the cable as result of the current.

**TABLE 1: Temperature Monitoring Program, Saint John, New Brunswick**  
**CLIENT: Irving Pulp & Paper Limited**  
**CBCL PROJECT NO.: 202893.00**

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**CLIENT:**  
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**Temperature Monitoring Program, Saint John, New Brunswick**  
**Irving Pulp & Paper Limited**  
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# Attachment B

## Site Photographs

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# Site Photographs – August, 2020

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Photo 1: DMK Dockyard.



Photo 2: Disembarking from DMK Dockyard for Mill Cove.



Photo 3: Entering Mill Cove at Slack Tide via Reversing Falls.



Photo 4: Anchored in Mill Cove for Temperature Monitoring.



Photo 5: View of Downstream for Low Tide Temperature Monitoring.

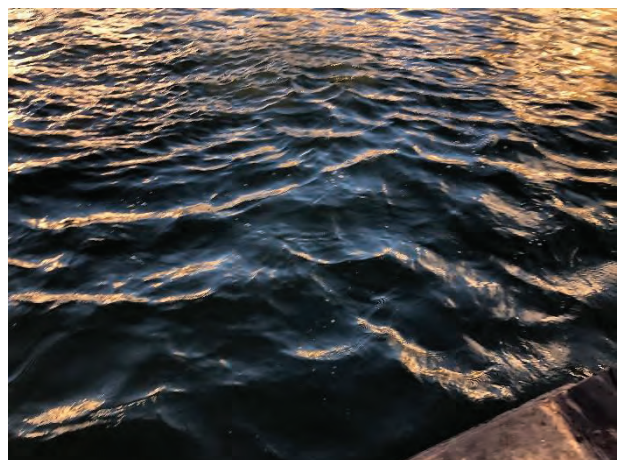


Photo 6: View of Water for Low Tide Temperature Monitoring.

# Site Photographs – August, 2020

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Photo 7: View of Upstream for Low Tide Temperature Monitoring.



Photo 8: View of Downstream for Mid Tide Temperature Monitoring.

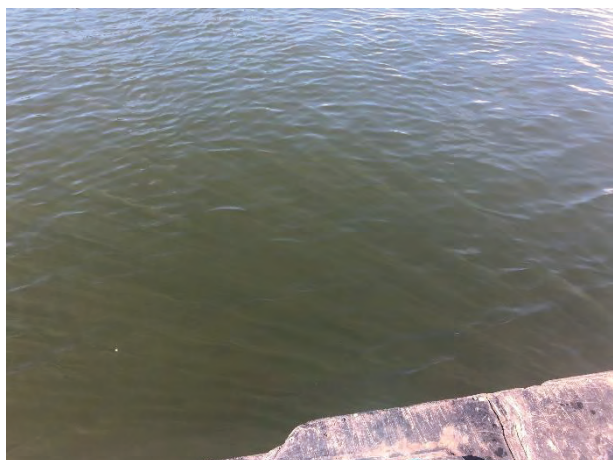


Photo 9: View of Water for Mid Tide Temperature Monitoring.



Photo 10: View of Upstream for Mid Tide Temperature Monitoring.



Photo 11: View of Downstream for 2.5 Hour Before High Tide Temperature Monitoring.



Photo 12: View of Water for 2.5 Hour Before High Tide Temperature Monitoring.

# Site Photographs – August, 2020

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Photo 13: View of Upstream for 2.5 Hour Before High Tide Temperature Monitoring.



Photo 14: View of Downstream for High Tide Temperature Monitoring.

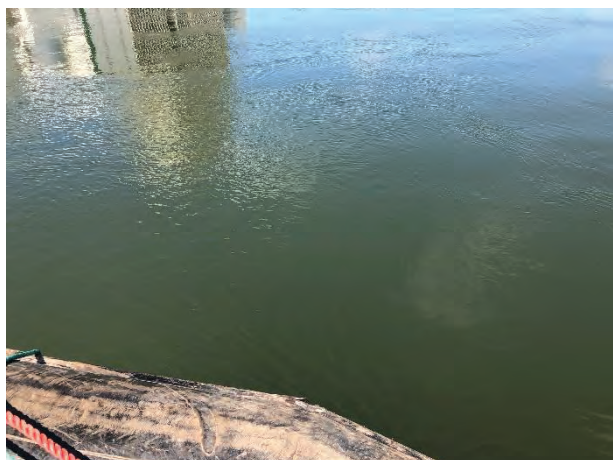


Photo 15: View of Water for High Tide Temperature Monitoring.



Photo 16: View of Upstream for High Tide Temperature Monitoring.



Photo 17: Exiting Mill Cove at Slack Tide via Reversing Falls.



Photo 18: Returning to DMK Dockyard.