

**Peace River Water Use Plan**

**Peace River Baseline TDGP/Temperature**

**GMSWORKS-2**

*Year 12 Monitoring Program - Annual Report*

**January 2020 to December 2020**

**Diversified Environmental Services  
Box 6263,  
Fort St. John, B.C.  
V1J 4H7**

**April 2021**

PEACE RIVER WATER USE PLAN  
IMPLEMENTATION PROGRAM

PEACE RIVER BASELINE TDGP/TEMPERATURE  
GMSWORKS-2  
YEAR 12 MONITORING PROGRAM - ANNUAL REPORT  
January 2020 to December 2020

Prepared for:  
BC HYDRO  
6911 Southpoint Drive, 11<sup>th</sup> Floor  
Burnaby, BC  
V3N 4H8

Prepared by:  
Diversified Environmental Services  
Box 6263  
Fort St. John, BC  
V1J 4H7

April 2021

## **EXECUTIVE SUMMARY**

Long-term monitoring of baseline water temperature and total dissolved gas pressure (TDGP) in the vicinity of the WAC Bennett and Peace Canyon dams is an essential component of the Peace Spill Protocol and the Peace River Flood Pulse Plan as set out by the Peace Water Use Plan Committee and the Peace Water Use Plan (WUP; BC Hydro 2010).

An objective of this program (GMSWORKS-2) was to collect data on spatial and temporal variations in water temperature between the WAC Bennett Dam forebay (Williston Reservoir) and a point 6.5 km downstream of the Pine River confluence for up to 10 years. Beginning in September 2008, 21 Tidbit v2 Model #UTBI-001 temperature sensor/logger units (Onset Corp., Bourne, MA) have been maintained at 18 locations.

During Year 8 (2016), six temperature loggers were added at 3 additional locations of specific interest to BC Hydro's Site C project, extending the project area downstream to the mouth of the Pouce Coupe River in Alberta. The additional sites were maintained by the GMSWORKS-2 program through a co-funding arrangement with the Site C project.

In 2020 (Year 12), responsibility for all monitoring sites within and downstream of the proposed Site C inundation area reverted from the Peace WUP to the Site C project. These included the additional Site C stations plus all original stations located downstream of the Peace Canyon Dam tailrace. The GMSWORK-2 program retained responsibility for monitoring stations in the WAC Bennett and Peace Canyon dam forebays and tailraces only.

This annual summary report describes data collection activities for downstream stations up until the time of their transfer to the Site C project. For upstream stations where a full 12 months of hourly water temperature data was recovered by the GMSWORK-2 program, quarterly data collection activities are described and 2020 results are discussed.

Six stations associated with the WAC Bennett and Peace Canyon dams were monitored by the GMSWORKS-2 program for the entire Year 12. These included 2 stations in the Bennett Dam forebay (gmsUP1 – 1 m depth and gmsUP2 – 10 m depth), 2 stations in the Bennett Dam tailrace (gmsDN1 – south bank and gmsDN2 – north bank), one station in the Peace Canyon Dam forebay (pcnUP1), and one station in the Peace Canyon Dam tailrace (pcnDN2).

Continuous hourly temperature data for Year 12 was recovered from all stations except the Bennett Dam tailrace south bank (gmsDN1), where data from January 1 to February 23 was lost due to a severed tether cable.

*In situ* reference temperatures were recorded at the time of each field download event using a YSI® multi-parameter meter, for comparison to the corresponding hourly logger readings. Mean calibration errors for all temperature loggers were  $\leq 0.3^{\circ}\text{C}$ .

In addition to the collection of baseline water temperature data, the GMSWORK-2 program includes the maintenance of TDGP meters in a field-ready state for immediate deployment in the event of a spill at either Bennett or Peace Canyon dams. Early in 2020, the six aging TDGP meters attached to the program were declared obsolete and too unreliable for field deployment. BC Hydro procured rental units for the monitoring of a planned spill in July and August 2020. Results of 2020 spill monitoring have been reported under separate cover through the GSMON-11 program.

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## **1.0 INTRODUCTION**

Long-term monitoring of baseline water temperature and total dissolved gas pressure (TDGP) in the vicinity of the WAC Bennett and Peace Canyon dams has been identified as an essential component of the Peace Spill Protocol (PSP) and the Peace River Flood Pulse Plan as set out by the Peace Water Use Plan Committee and the Peace Water Use Plan (WUP; BC Hydro 2010). Data collected through the monitoring of these parameters will be used to help assess and quantify the environmental effects of spills, as well as to provide information on the temperature regime of the Peace River under normal operating conditions and the influence of reservoir operations on downstream temperature. Long-term baseline temperature data will also be available for use by other projects and monitoring programs within and outside the Peace WUP.

The objectives of this program are to collect data on spatial and temporal variations in water temperature between the WAC Bennett Dam forebay (Williston Reservoir) and a point 6.5 km downstream of the Pine River confluence for up to 10 years, and to maintain TDGP data loggers and related equipment for immediate deployment in the event of a spill at either the Gordon M. Shrum (GMS) or Peace Canyon (PCN) generating stations that is likely to meet PSP thresholds.

This report summarizes water temperature data collection activities completed during Year 12 of the monitoring program (2020).

## **2.0 METHODS**

Temperature data presented in this summary report were recorded between January 01, 2020 and December 31, 2020.

### **2.1 Temperature Monitoring**

Upon commencement of the Peace River baseline temperature monitoring program in September 2008 (Year 1), 20 Tidbit v2 Model #UTBI-001 temperature sensor/logger units (0.2°C accuracy over 0°C to 50°C; 0.02°C resolution @ 25°C; Onset Corp., Bourne, MA) were deployed at 18 locations between the WAC Bennett Dam forebay and a site approximately 6.5 km downstream of the confluence of the Pine and Peace rivers (Fig. 1). During Years 2 and 3, revisions were made to monitoring site positioning and configuration to account for changes in bank conditions, to reduce the potential for logger stranding due to debris and flow level extremes, to increase redundancy in case of logger failure or loss, and to improve accessibility during high flow stage.

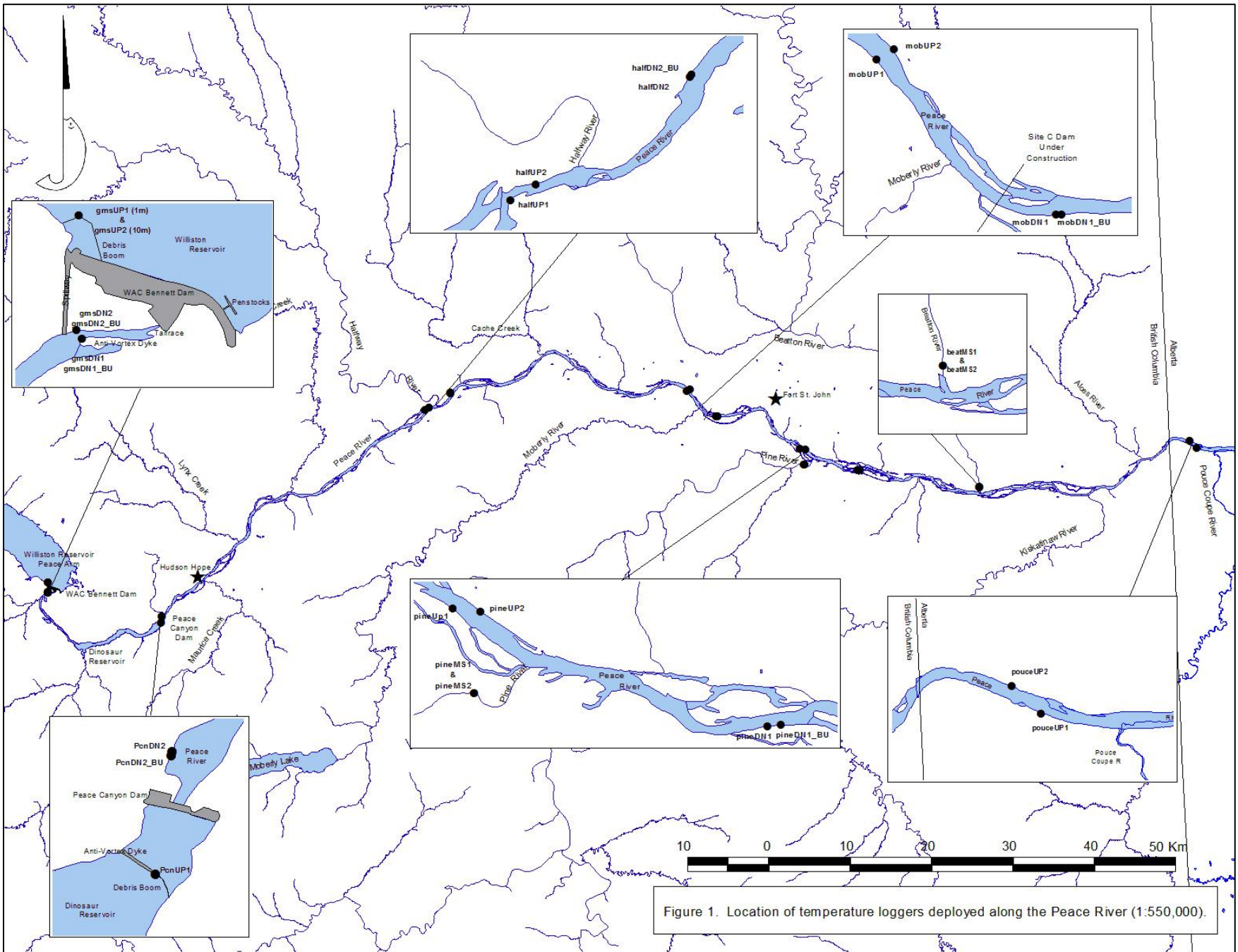


Figure 1. Location of temperature loggers deployed along the Peace River (1:550,000).



Monitoring stations are typically maintained in pairs at each general location in order to minimize the risk of data gaps in the event of logger stranding, failure, or loss. At Peace River locations upstream of major tributaries (Halfway, Moberly, and Pine rivers), monitoring stations are maintained on opposing banks of the river in order to provide redundancy and confirm temperature consistency across the channel. At Peace River locations downstream of major tributaries, paired station configuration was revised in 2011 (Year 3) from opposing banks to common banks in order to provide better redundancy in tributary outflow paths prone to stranding by passing ice and debris.

By late in Year 3, monitoring site configuration had been revised to include 21 data loggers at 18 monitoring sites. This configuration was maintained throughout Years 4 to 12. A summary of temperature monitoring station location information as of the end of Year 12 appears in Appendix I. A description of site configuration changes prior to Year 3 can be found in DES 2013.

During Year 8 (2016), six additional temperature loggers were added at 3 monitoring sites in the project area at the request of BC Hydro's Site C project (Fig. 1). These included 2 loggers on the left downstream bank of the lower Pine River mainstem (pineMS1 and pineMS2), 2 loggers on the left downstream bank of the lower Beatton River mainstem (beatMS1 and beatMS2), and 2 loggers on the left and right downstream banks of the Peace River, approximately 3 km upstream of the confluence with the Pouce Coupe River (pouceUP1 and pouceUP2). In Years 8 through 12, these additional sites were maintained and downloaded by the Peace WUP monitoring program (GMSWORKS-2), through a co-funding arrangement with the Site C project, and results were reported in a separate summary report submitted to the Site C project. For information purposes, monitoring site details for the 6 additional Site C loggers appear in Figure 1 and Appendices I, II and III.

During the current year (Year 12), responsibility for all monitoring sites within and downstream of the proposed Site C inundation area reverted from the Peace WUP to the Site C project. These included the additional Site C stations plus all original stations located downstream of the Peace Canyon Dam tailrace (i.e., those associated with the Pine, Moberly, and Halfway river confluences). In June 2020, maintenance and downloading of these stations was turned over to Site C contractor Golder Associates, and the GMSWORK-2 program retained responsibility for stations in the GMS and PCN forebays and tailraces only. As a result, continuous Year 12 data sets for stations downstream of the Peace Canyon Dam tailrace do not appear in this summary report.

Temperature loggers were programmed to record water temperature (°C) at 1 hour intervals throughout Year 12. Loggers continued to be housed in 38 mm x 100 mm steel nipples with threaded steel end caps, weighted with 5 kg steel anchors, and tethered to rooted trees or large bedrock fragments using 3.18 mm stainless steel cable or 3.5 mm (7/32") steel chain.

Temperature data recorded and stored on each logger during 2020 were downloaded at approximately 3 month intervals by field transfer to a Model U-DTW-1 Hobo® waterproof shuttle (Onset Corp., Bourne, MA). Data from the shuttle were then downloaded to a desktop computer after each field session. Logger sites at the WAC Bennett Dam and Peace Canyon Dam forebay and tailrace locations were accessed by vehicle, while all Peace River mainstem sites were accessed by riverboat. Conditions and observations at the time of each download event were documented in the field on hardcopy Download Information Forms and subsequently entered into digital format. *In situ* reference temperatures were recorded at the time of each field download event using a YSI® Professional Plus handheld multi-parameter instrument (Model No. E-528-ProPlus) for comparison to the corresponding hourly logger readings (within 30 minutes of reference temperature).

Data files were exported as .csv files using Onset® Hoboware Pro software (Ver. 3.7.16), amalgamated into single Excel worksheets for each data logger, and plotted relative to time. Readings representing air temperature during periods of logger stranding above the waterline have been removed from data displayed graphically in this summary report.

### **2.1.1 Year 12 Site Logistics**

Occasional stranding of loggers above the waterline during Year 12 was largely associated with ice flows originating from the break-up of the Halfway and Pine rivers and the accumulation of debris on tether cables during tributary freshet. To partially alleviate this issue, the remaining stainless steel cable tethers of loggers immediately downstream of these tributaries was replaced with 3.5 mm steel chain in 2020.

## **2.2 Total Dissolved Gas Pressure (TDGP)**

The six Model TBO-DL6(F) TDGP meters (Common Sensing Inc., Clark Fork, ID) dedicated to the Peace monitoring program were stored at the office of Diversified Environmental Services (DES) in a field-ready state in Years 1 through 11. In April 2020 (Year 12) these meters were declared unreliable and

obsolete due to discontinuation of calibration support for the original manufacturer and the dependence of the field communications software on an obsolete operating system (Windows 98).

As a replacement, Point Four Systems Inc. Model PT4 TGP and HydroLab Model MS5 TGP meters were rented by BC Hydro for the duration of a July/August 2020 spill at GMS and PCN (DES 2021).

## **3.0 RESULTS AND DISCUSSION**

### **3.1 Temperature Monitoring**

Reference temperatures recorded during download events are presented in Appendix II along with corresponding logger temperatures and indicated error values. None of the loggers in use in 2020 exhibited a correctable zero error greater than 0.3°C (mean error 0.12°C; Appendix II).

Several loggers were replaced in Year 12, as they were approaching the end of their predicted lifespan of six years or were recording low voltage readings. Logger serial numbers listed in Appendix I correspond to the units in use at the time of the last quarterly downloads completed in January 2021.

A summary of temperature data collection results and related conditions and limitations are discussed in the following 6 sections, which correspond to the 6 major generating station and tributary features. Download Information Forms completed during each download are provided in Appendix III.

#### **3.1.1 WAC Bennett Dam Forebay and Tailrace**

The WAC Bennett Dam forebay temperature monitoring station is located at the GMS spillway log boom and consists of a vertical cable suspended from the northernmost log boom steel buoy. Temperature is recorded with 2 loggers, the first located at 1 m depth (gmsUP1) and the second at a depth of 10 m (gmsUP2). Both devices were retired and replaced with new units during the November 18 download. Seamless water temperature data was recovered from both stations throughout Year 12 (Fig. 2). Although seasonal thermal stratification of Williston Reservoir is evident, the relatively small temperature differential between the 2 station depths suggests the primary thermocline lies deeper than 10 m. Maximum temperature differentials up to 7.2°C were recorded on July 31 during a period of high ambient air temperatures and rapid surface warming. Temperature profiles recorded further up the Peace Reach during unrelated work in 2017 and 2018 found the primary seasonal thermocline to be deeper than 20 m (B. Culling, pers. obs.).

The GMS tailrace monitoring sites are located on opposite banks, approximately 700 m downstream of the turbine outflow manifolds. Logger gmsDN1 records the temperature of water flowing from the south tailrace manifold, which originates from the shallowest penstock depths. Logger gmsDN2 samples water from the north tailrace manifold, which originates from a deeper withdrawal point. The tethered steel capsule at both stations contains a back-up logger in addition to the primary unit (gmsDN1BU and gmsDN2BU). The cable tethering the 2 south manifold loggers (gmsDN1 and gmsDN1BU) was found pulled to shore and cut during the February 2020 download resulting in the loss of 2020 data from January 1 to February 23. Continuous data for the remainder of the year was recovered for gmsDN1 and its backup, with the exception several partial days in April and May when the loggers appear to have been exposed due to low turbine outflow coupled with very low levels in Dinosaur Reservoir. Seamless data for the entire year was recovered from the north bank loggers (gmsDN2 and gmsDN2BU).

As in previous years, water temperatures at gmsDN2 showed the lowest annual variation and are consistently cooler in the summer and warmer in the winter than gmsDN1 flow (Fig. 3), which originates closer to the surface of Williston Reservoir. Temperatures recorded at gmsUP1 (forebay surface) exhibit far greater annual variation than tailrace values (Fig. 3).

### **3.1.2 Peace Canyon Dam Forebay and Tailrace**

The data logger recording temperature at the Peace Canyon Dam forebay (pcnUP1) is attached to the anti-vortex dam log boom, located approximately 450 m upstream of the dam face and records water temperature at 1 m depth. This station recorded seamless data throughout Year 12.

The Peace Canyon Dam tailrace loggers (pcnDN2 and pcnDN2BU) are located on the left downstream bank of the Peace River approximately 200 m downstream of the turbine outflow manifold. The primary and back-up loggers are installed in separate steel capsules on separate tethers anchored to the same bedrock slab. PCN tailrace logger pcnDN2 was lost prior to the February 2020 download due to a corroded-off capsule end cap, resulting in the loss of 2020 temperature data between Jan 1 and February 23. However, its back-up unit pcnDN2BU recorded continuous data throughout 2020.

A comparison of PCN tailrace temperature (pcnDN2BU) and GMS tailrace temperature (mean of gmsDN1 and gmsDN2) indicates a relatively small temperature change through Dinosaur Reservoir during all seasons (Fig. 4), with an annual mean differential in hourly readings of 0.5°C. Differential is lowest in fall through winter when turbine discharge, and thus, reservoir exchange rate, are typically

high. Conversely, temperature differentials across Dinosaur Reservoir were wider in May through July when turbine discharge and reservoir exchange rate are typically lower.

Figure 4 also illustrates some short-term thermal stratification of the Peace Canyon forebay associated with surface warming during periods of high ambient air temperature. A maximum differential between PCN forebay surface temperature and PCN turbine outflow occurred on June 20, one day after June air temperatures peaked at 26°C.

Figure 5 compares daily mean temperature of water entering Dinosaur Reservoir (Bennett Dam tailrace gmsDN2) during 2020 with the average of daily mean water temperature for the past 11 years (2009-2019). Water temperatures recorded in the WAC Bennett Dam tailrace in 2020 show minor deviations from the 11-year average. Most notable was a 0.5°C decrease in water temperature during the winter (Jan-Mar) of 2020. Variability in tailrace temperature is largely due to operational factors at the GMS generating station and may include variations in reservoir elevation and changes in volume contribution from penstock intake depths intervals.

### **3.1.3 Halfway River Confluence**

Peace River water temperature was monitored at points approximately 1 km upstream and 2.5 km downstream of the Halfway River confluence. Halfway upstream stations were maintained on opposing banks (halfUP1 and halfUP2), while both Halfway downstream loggers (halfDN2 and halfDN2BU) were located on the left downstream bank within the influence of Halfway River inputs.

Both Halfway upstream loggers collected seamless temperature data between January 1 and June 3, when the stations were handed off to Site C contractors. During the February 28 download, the primary Halfway downstream logger (halfDN2) was found retrieved by persons unknown and left in shallow water near its coiled tether cable. During the June 3 download the same logger was found swung into shallow water by ice/debris from the Halfway River. These events resulted in periodic exposure of the logger between January 1 and February 28 and again between April 24 and June 6. During the June 6 download, the stainless cable tether was replaced with steel chain, which has proven to be more resistant to passing debris.

The Halfway downstream back-up logger (halfDN2BU) was found partially dislodged by passing Halfway River ice/debris but recorded seamless temperature data between January 1 and June 3, when the stations were handed off to Site C contractors.

### **3.1.4 Moberly River Confluence**

Peace River water temperature was monitored at points approximately 2.6 km upstream and 2.5 km downstream of the Moberly River confluence. Upstream stations were maintained on opposing banks (mobUP1 and mobUP2) and Moberly downstream logger and downstream back-up logger were both located on the south bank of the Peace River, within the influence of outfall from the Moberly River.

During the February 27 download, the tether cable of the mobUP2 logger was found cut and coiled up on the shore by persons unknown. Data was successfully recovered from the redundant mobUP1 logger located on the opposing bank of the river. Data was also successfully recovered from both Moberly downstream loggers (mobDN2 and mobDN2BU) on February 27, 2020. No further downloads could be completed for the Moberly stations in 2020 under the GMSWORKS-2 program due to boat access restrictions associated with Site C boom installation.

### **3.1.5 Pine River Confluence**

Peace River water temperature was monitored at points approximately 2.0 km upstream and 6.5 km downstream of the Pine River confluence. During Year 12, upstream stations were maintained on opposing banks (and both downstream loggers (pineDN1 and pineDN1BU) were located on the south river bank, within the influence of inputs from the Pine River.

The Pine upstream loggers (pineUP1 and pineUP2) both recorded seamless temperature data between January 1 and June 2, when the stations were handed off to Site C contractors.

The tether cable of the primary Pine downstream logger (pineDN1) was found severed during the February 27 download session and could not be replaced until the June 2 download. As a result no data was recovered from this station between January 1 and June 3. The stainless steel tether cable was replaced with steel chain during logger replacement on June 2. The Pine downstream back-up

logger (pineDN2\_BU) recorded seamless temperature data between January 1 and June 2, when both stations were handed off to Site C contractors.

#### **4.0 RECOMMENDATIONS**

During 2020, several loggers were believed to be lost due to human tampering or removal. The majority of these were in access-restricted areas with active Site C construction and reservoir clearing operations. Site C project crews should be instructed not to disturb or remove data recorders or their tethers.

In 2015, aluminum information tags reading “DATA RECORDER, PLEASE DO NOT DISTURB” were attached to the tether cables of loggers potentially accessible to the public and previously subject to tampering by curious persons. These tags should continue to be maintained.

The battery life of the Tidbit v2 Model #UTBI-001 temperature sensors is estimated at approximately 5-6 years. Scheduled replacement of units should continue in 2021 as per the table presented in Appendix IV.

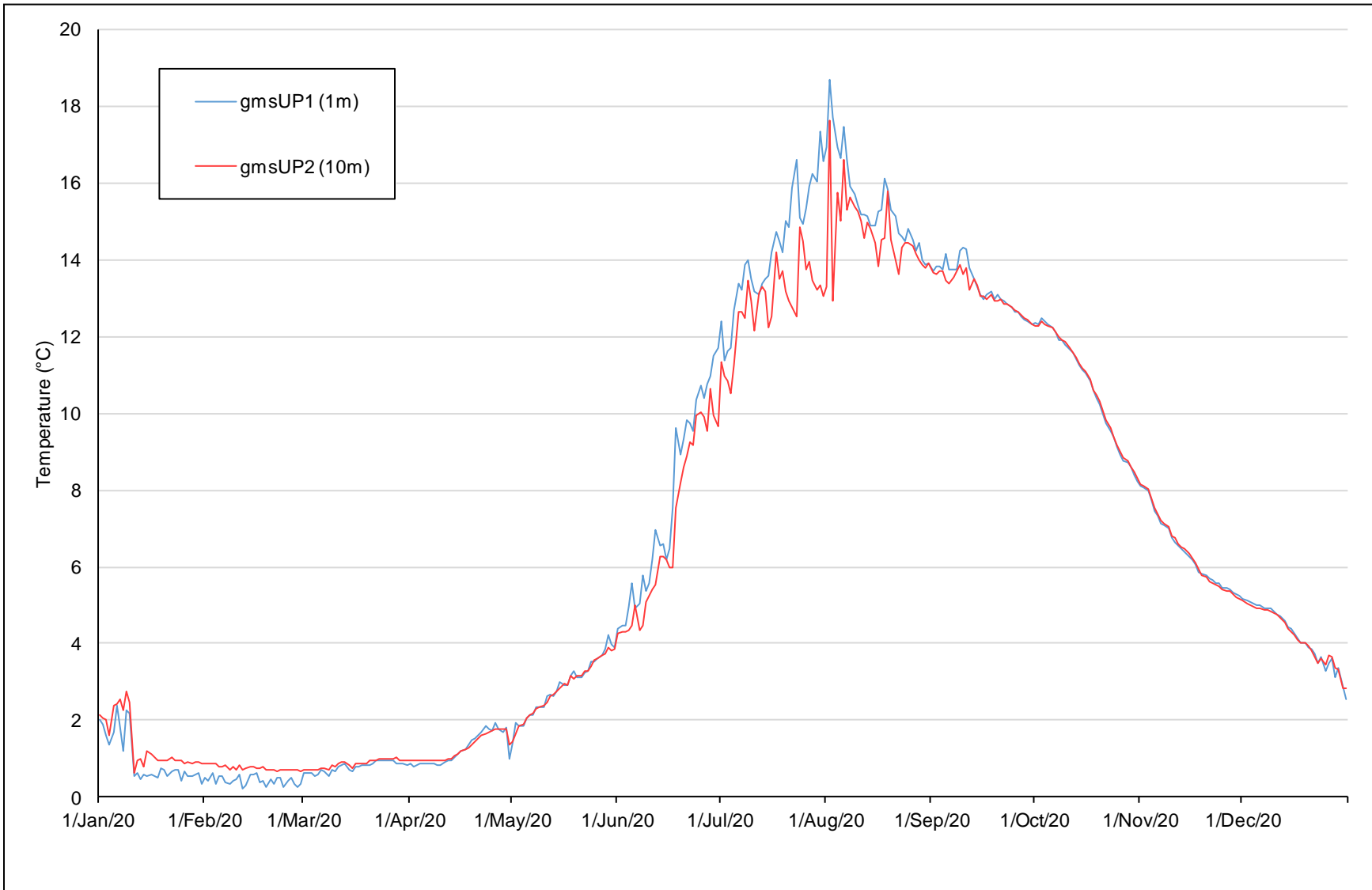


Figure 2. Comparison of daily mean water temperature at WAC Bennett Dam forebay station from 1 m depth (gmsUP1) and 10 m depth (gmsUP2) during Year 12, January 01, 2020 – December 31, 2020.



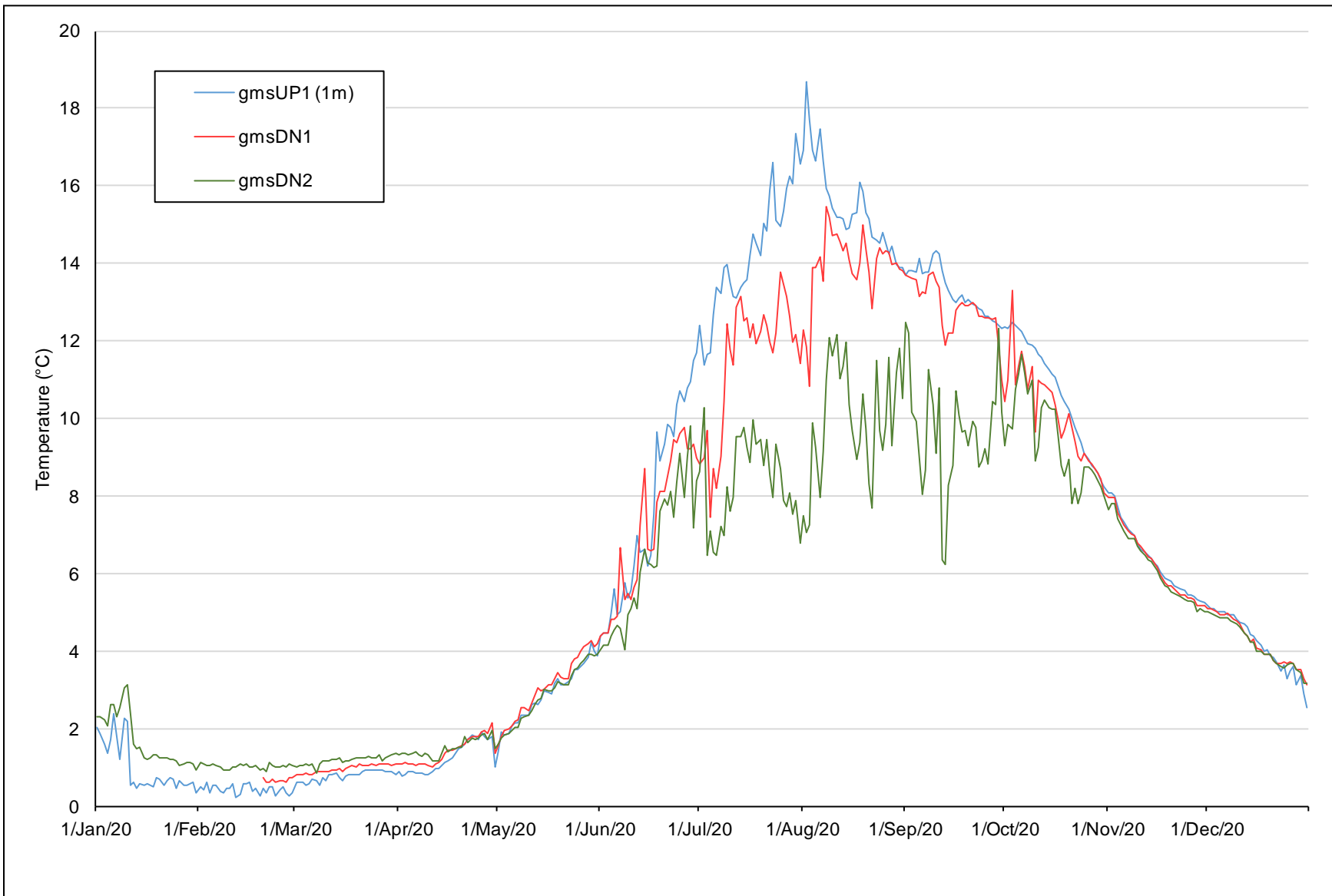


Figure 3. Comparison of daily mean water temperature at WAC Bennett Dam forebay surface (gmsUP1), and WAC Bennett Dam tailrace (gmsDN1 and gmsDN2) during Year 12, January 01, 2020 – December 31, 2020.

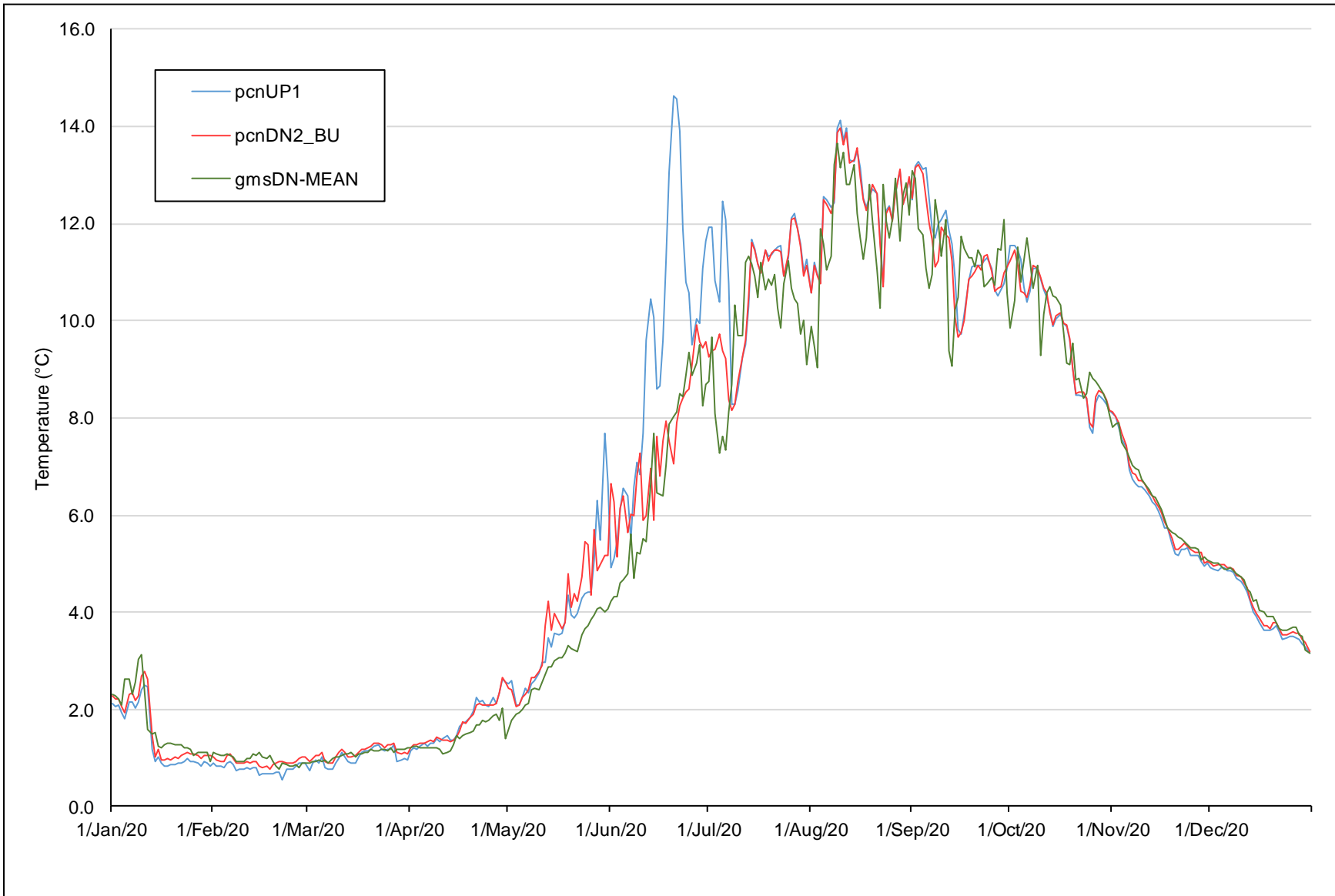


Figure 4. Comparison of daily mean water temperature at Peace Canyon forebay surface (pcnUP1), Peace Canyon tailrace (pcnDN2), and WAC Bennett Dam tailrace (gmsDN-MEAN) during Year 12, January 01, 2020 – December 31, 2020.

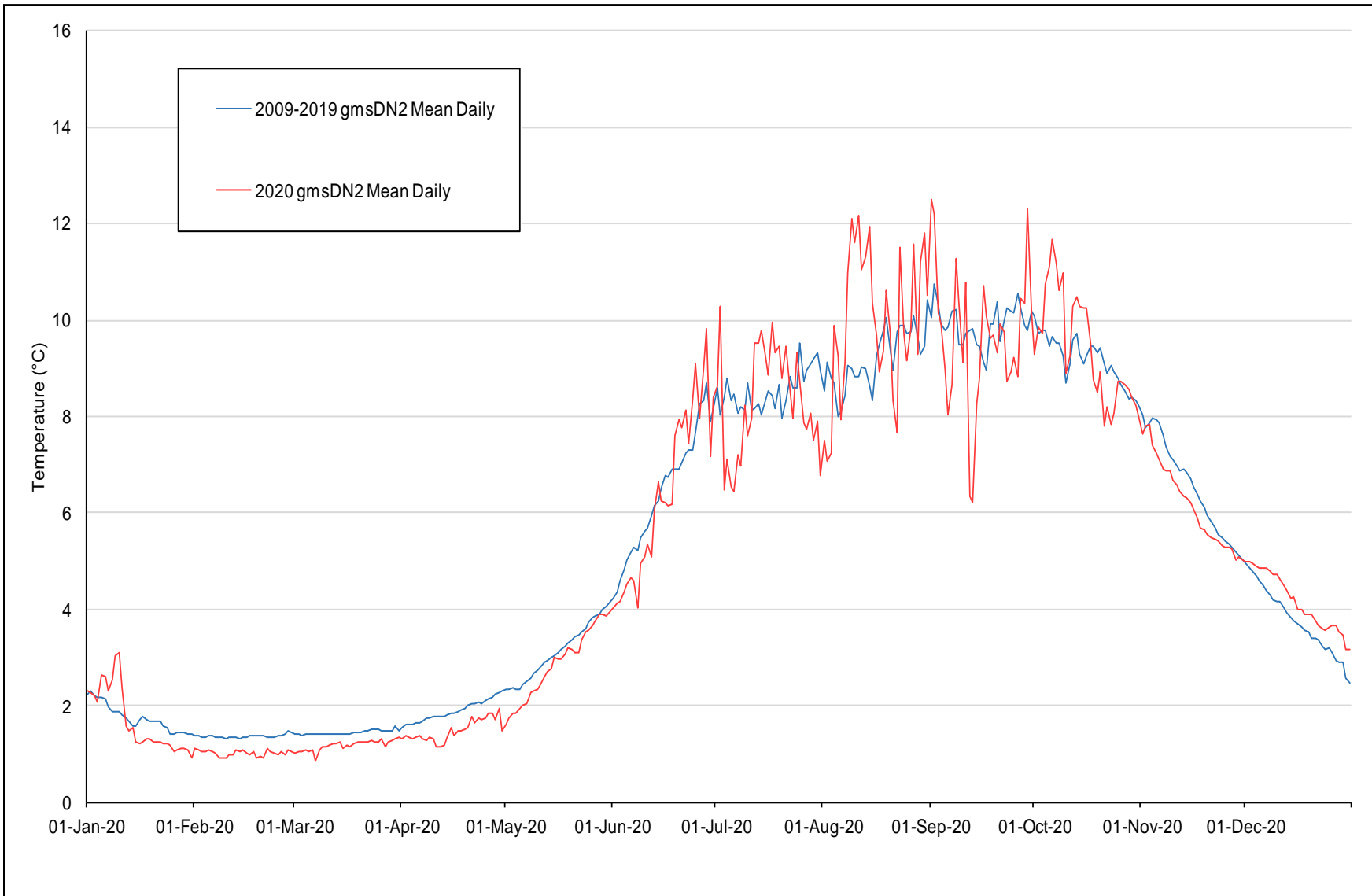


Figure 5. Comparison of Year 12 (2020) daily mean water temperature at WAC Bennett Dam tailrace north manifold (gmsDN2) with 2009 to 2019 daily mean water temperature (gmsDN2).

## **REFERENCES**

BC Hydro. 2010. Peace River Water Use Plan; monitoring program terms of reference – Peace River Baseline TGP/Temp. BC Hydro, Vancouver, BC. 7pp.

DES (Diversified Environmental Services). 2013. Peace River Water Use Plan Peace River Baseline TDGP/Temperature GMSWorks-2 - Year 4 Monitoring Program - Interim Report January 2012 to December 2012. Prepare for BC Hydro, Vancouver, BC. 24pp + appendices.

DES (Diversified Environmental Services). 2021. Peace River Water Use Plan Peace River Spill Total Dissolved Gas Pressure/Temperature Monitoring Program – June/July 2021. Prepared for BC Hydro, 6911 Southpoint Drive, Burnaby, BC

**Appendix I.** Temperature monitoring station location information for Year 12, January 01, 2020 to December 31, 2020.

Site ID	Serial #	Location	UTM (Zone 10)		Comment
			East	North	
gmsUP1	20823636	WAC Bennett Forebay	548841	6209022	steel buoy; 1 m depth
gmsUP2	20823637	WAC Bennett Forebay	548841	6209022	steel buoy; 10 m depth
gmsDN1	20655136	GMS Tailrace	548881	6207761	southbank; deflection wier riprap
gmsDN1BU	10676155	GMS Tailrace	548881	6207761	southbank; deflection wier riprap
gmsDN2	10669739	GMS Tailrace	548828	6207836	north bank; riprap below Tunnel portal #3
gmsDN2BU	20332121	GMS Tailrace	548828	6207836	north bank; riprap below Tunnel portal #3
pcnUP1	20332186	Peace Canyon Forebay	562710	6204068	anti-vortex log boom; 1 m depth
pcnDN2	10156319	Peace Canyon Tailrace	562803	6204854	north bank; rock slab
pcnDN2BU	10635061	Peace Canyon Tailrace	562803	6204854	north bank; rock slab
HalfUP1	20332123	Halfway Confluence - upstream	595181	6230117	south bank; spruce tree
HalfUP2	20030829	Halfway Confluence - upstream	595559	6230543	north bank; spruce tree
HalfDN2	10669748	Halfway Confluence - downstream	598310	6232377	north bank; balsam poplar
HalfDN2BU	10156314	Halfway Confluence - downstream	598287	6232344	north bank; balsam poplar
MobUP1	10887852	Moberly Confluence - upstream	627158	6232349	south bank; alder
MobUP2	20655180	Moberly Confluence - upstream	627501	6232563	north bank; birch tree
MobDN1	10676146	Moberly Confluence - downstream	630776	6229287	south bank; alder
MobDN1BU	10676147	Moberly Confluence - downstream	630875	6229303	south bank; alder
PineUP1	10669747	Pine Confluence - upstream	641032	6225367	south bank; alder
PineUP2	20655135	Pine Confluence - upstream	641655	6225305	north bank; balsam poplar stump
PineDN1	20655185	Pine Confluence - downstream	648074	6222792	south bank; alder
PineDN1BU	10893055	Pine Confluence - downstream	648371	6222823	south bank; alder
PineMS1	10893069	Pine Mainstem - upstream of Peace	641757	6223604	north bank; steel piling
PineMS2	10635067	Pine Mainstem - upstream of Peace	641757	6223604	north bank; steel piling
BeatMS1	20322122	Beaton Mainstem - upstream of Peace	663118	6221234	east bank; birch tree
BeatMS2	20030828	Beaton Mainstem - upstream of Peace	663118	6221234	east bank; birch tree
PouceUP1	20655184	Pouce Coupe confluence - upstream	*316876	6225223	south bank; birch; *UTM Zone 11
PouceUP2	10893068	Pouce Coupe confluence - upstream	*315884	6226162	south bank; birch; *UTM Zone 11

**Appendix II.** Reference temperature values and corresponding logger fix values recorded during download events in Year 12, January 01, 2020 to December 31, 2020.

Logger ID	Date	Fix Temp	Ref Temp	Error
gmsUP1	19-Feb-20	0.2	0.0	0.2
	6-Jul-20	13.2	13.0	0.2
	18-Nov-20	5.8	5.7	-0.1
gmsUP2	19-Feb-20	0.7	0.6	0.1
	6-Jul-20	12.6	12.5	0.1
	18-Nov-20	5.9	5.9	0.0
gmsDN1	19-Feb-20	0.7	0.6	0.1
	6-Jul-20	9.1	9.3	-0.2
	18-Nov-20	5.7	5.6	0.1
gmsDN1_BU	19-Feb-20	0.7	0.6	0.1
	6-Jul-20	9.1	9.3	-0.2
	18-Nov-20	5.8	5.6	0.2
gmsDN2	19-Feb-20	0.9	1.0	-0.1
	6-Jul-20	6.7	6.6	0.1
	18-Nov-20	5.7	5.7	0.0
gmsDN2_BU	19-Feb-20	1.0	1.0	0.0
	6-Jul-20	6.8	6.6	0.2
	18-Nov-20	5.5	5.7	-0.2
pcnUP1	19-Feb-20	0.8	0.9	-0.1
	6-Jul-20	11.7	11.9	-0.2
	18-Nov-20	5.7	5.6	0.1
pcnDN2	19-Feb-20	0.8	0.7	0.1
	6-Jul-20	9.3	9.2	0.1
	18-Nov-20	5.7	5.5	0.2
pcnDN2_BU	19-Feb-20	0.9	0.7	0.2
	6-Jul-20	9.3	9.2	0.1
	18-Nov-20	5.7	5.5	0.2
halfUP1	28-Feb-20	1.0	0.9	0.1
	3-Jun-20	6.5	6.4	0.1
halfUP2	28-Feb-20	1.1	1.0	0.1
	3-Jun-20	6.8	6.6	0.2
halfDN2	28-Feb-20	0.9	0.9	0.0
	3-Jun-20	-	10.0	-
halfDN2_BU	28-Feb-20	1.0	0.9	0.1
	3-Jun-20	9.8	10.0	-0.2

**Appendix II.** Reference temperature values and corresponding logger fix values recorded during download events in Year 12, January 01, 2020 to December 31, 2020, cont.

Logger ID	Date	Logger Temp	Reference Temp	Error
mobUP1	27-Feb-20	1.0	1.0	0.0
mobUP2	27-Feb-20	-	1.0	-
mobDN1	27-Feb-20	1.0	1.0	0.0
mobDN1_BU	27-Feb-20	1.0	1.0	0.0
pineUP1	27-Feb-20	1.1	1.0	0.1
	2-Jun-20	11.3	11.5	-0.2
pineUP2	27-Feb-20	1.2	1.0	0.2
	2-Jun-20	10.5	10.8	-0.3
pineDN1	27-Feb-20	-	0.9	-
	2-Jun-20	-	8.3	-
pineDN1_BU	27-Feb-20	0.9	0.9	0.0
	2-Jun-20	8.3	8.3	-0.1

**Appendix III. Year 12 download information forms, January 01, 2020 to December 31, 2020.**

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM											
<b>SITE ID</b>	gmsUP1		<b>LOCATION</b>			GMS Forebay		<b>BANK</b>			
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>			20332187		<b>UTM</b>	548841	6209022	
<b>DOWNLOAD DATE</b>	19	Feb	2020	<b>DOWNLOAD TIME</b>			13:28		<b>CREW</b>	BC TE	
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	0.0		<b>AIR TEMP</b>	-3		<b>ICE CONDITIONS</b>		none
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	100	cm	<b>DISLODGED</b>	no		<b>REASON</b>					
<b>BURIED</b>	no		<b>FUNCTIONAL</b>	wet		<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	steel buoy		
COMMENTS											
Download OK											
Stainless steel cable OK											
Replac#43											
<b>SITE ID</b>	gmsUP2		<b>LOCATION</b>			GMS Forebay		<b>BANK</b>			
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>			10676160		<b>UTM</b>	548841	6209022	
<b>DOWNLOAD DATE</b>	19	Feb	2020	<b>DOWNLOAD TIME</b>			13:24		<b>CREW</b>	BC TE	
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	0.6		<b>AIR TEMP</b>	-3		<b>ICE CONDITIONS</b>		none
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	10	m	<b>DISLODGED</b>	no		<b>REASON</b>					
<b>BURIED</b>	no		<b>FUNCTIONAL</b>	wet		<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	steel buoy		
COMMENTS											
Download OK											
Stainless steel cable OK											
Replac#20											
<b>SITE ID</b>	gmsDN2		<b>LOCATION</b>			GMS Tailrace RDB		<b>BANK</b>		north	
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>			10669739		<b>UTM</b>	548828	6207836	
<b>DOWNLOAD DATE</b>	19	Feb	2020	<b>DOWNLOAD TIME</b>			12:05		<b>CREW</b>	BC TE	
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	1.0		<b>AIR TEMP</b>	-3		<b>ICE CONDITIONS</b>		none
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	150	cm	<b>DISLODGED</b>	no		<b>REASON</b>					
<b>BURIED</b>	no		<b>FUNCTIONAL</b>	wet		<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	rock		
COMMENTS											
Primary Logger - Replac#11, SN 10669739											
Back-up logger gmsDN2BU in same capsule; Replac#37, SN 20332121 downloaded @ 12:04											
both downloads OK											
cable OK (stainless steel cable section attached to galvanized cable around rock)											
<b>SITE ID</b>	gmsDN1		<b>LOCATION</b>			GMS Tailrace LDB		<b>BANK</b>		south	
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>			10635063		<b>UTM</b>	548881	6207761	
<b>DOWNLOAD DATE</b>	19	Feb	2020	<b>DOWNLOAD TIME</b>			12:31		<b>CREW</b>	BC TE	
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	0.6		<b>AIR TEMP</b>	-3		<b>ICE CONDITIONS</b>		none
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	-	cm	<b>DISLODGED</b>	yes		<b>REASON</b>					
<b>BURIED</b>			<b>FUNCTIONAL</b>	no		<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	rock		
COMMENTS											
cable pulled to shore and cut; both loggers lost											
Lost primary logger Replac#7 (SN 10635063) replaced with Replac#47 (SN 20655136)											
Lost backup logger Replac#38 (SN 20332152) replaced with Replac#19 (SN 10676155)											



**BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM**

<b>SITE ID</b>	pcnUP1	<b>LOCATION</b>	PCN Forebay			<b>BANK</b>	north	
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	20332186			<b>UTM</b>	562684	6204075
<b>DOWNLOAD DATE</b>	19	Feb	2020	<b>DOWNLOAD TIME</b>	14:38		<b>CREW</b>	BC TE
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	0.9	<b>AIR TEMP</b>	6.0		<b>ICE CONDITIONS</b>	none

**LOGGER CONDITIONS**

<b>WATER DEPTH</b>	100	cm	<b>DISLODGED</b>	no	<b>REASON</b>			
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	log boom	

**COMMENTS**

download OK  
 stainless steel cable OK  
 Replac#42

<b>SITE ID</b>	pcnDN2	<b>LOCATION</b>	PCN Tailrace			<b>BANK</b>	north	
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	10156317			<b>UTM</b>	562803	6204854
<b>DOWNLOAD DATE</b>	19	Feb	2020	<b>DOWNLOAD TIME</b>	-		<b>CREW</b>	BC TE
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	0.7	<b>AIR TEMP</b>	6.0		<b>ICE CONDITIONS</b>	none

**LOGGER CONDITIONS**

<b>WATER DEPTH</b>	-	cm	<b>DISLODGED</b>	yes	<b>REASON</b>	corrosion		
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	no	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	rock	

**COMMENTS**

logger lost - end cap corroded off steel capsule  
 logger Replac#2 (SN 10156317) replaced with Replac#1 (SN10156319); delayed launch @ 16:00  
 stainless steel cable OK

<b>SITE ID</b>	pcnDN2_BU	<b>LOCATION</b>	PCN Tailrace			<b>BANK</b>	north	
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	10635061			<b>UTM</b>	562803	6204854
<b>DOWNLOAD DATE</b>	19	Feb	2020	<b>DOWNLOAD TIME</b>	15:09		<b>CREW</b>	BC TE
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	0.7	<b>AIR TEMP</b>	6.0		<b>ICE CONDITIONS</b>	none

**LOGGER CONDITIONS**

<b>WATER DEPTH</b>	150	cm	<b>DISLODGED</b>	no	<b>REASON</b>			
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	rock	

**COMMENTS**

download OK  
 stainless steel cable OK  
 Anchored to same rock as pcnDN2  
 Replac#9

<b>SITE ID</b>		<b>LOCATION</b>				<b>BANK</b>		
<b>LOGGER TYPE</b>		<b>LOGGER SERIAL #</b>				<b>UTM</b>		
<b>DOWNLOAD DATE</b>				<b>DOWNLOAD TIME</b>			<b>CREW</b>	
<b>TEST RECORDER TYPE</b>		<b>WATER TEMP</b>		<b>AIR TEMP</b>			<b>ICE CONDITIONS</b>	

**LOGGER CONDITIONS**

<b>WATER DEPTH</b>		cm	<b>DISLODGED</b>		<b>REASON</b>			
<b>BURIED</b>		<b>FUNCTIONAL</b>		<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>		

**COMMENTS**

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM										
SITE ID	pouceUP1		LOCATION	Peace R mainstem u/s of Pouce Coupe R			BANK	south		
LOGGER TYPE	Tidbit		LOGGER SERIAL #	20655134			UTM	11	316876	6225223
DOWNLOAD DATE	26	Feb	2020	DOWNLOAD TIME				CREW	BC TE	
TEST RECORDER TYPE	YSI		WATER TEMP	0.9	AIR TEMP	4.0	ICE CONDITIONS	none		
LOGGER CONDITIONS										
WATER DEPTH	-	cm	DISLODGED		yes	REASON	ice			
BURIED			FUNCTIONAL	no	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	birch	
COMMENTS										
stainless steel cable parted - logger lost										
lost logger Replac#45 (SN 20655134) replaced with Replac#48 (SN 20655184)										
stainless steel cable and steel capsule replaced										
SITE ID	pouceUP2		LOCATION	Peace R mainstem u/s of Pouce Coupe R			BANK	north		
LOGGER TYPE	Tidbit		LOGGER SERIAL #	10893068			UTM	11	315884	6226162
DOWNLOAD DATE	26	Feb	2020	DOWNLOAD TIME	15:55			CREW	BC TE	
TEST RECORDER TYPE	YSI		WATER TEMP	1.1	AIR TEMP	4.0	ICE CONDITIONS	none		
LOGGER CONDITIONS										
WATER DEPTH	30	cm	DISLODGED		yes	REASON	debris			
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	birch	
COMMENTS										
logger partially swung to shore by debris; still functional										
download OK										
Replac#27										
stainless steel cable OK										
SITE ID			LOCATION				BANK			
LOGGER TYPE			LOGGER SERIAL #				UTM			
DOWNLOAD DATE				DOWNLOAD TIME				CREW		
TEST RECORDER TYPE			WATER TEMP		AIR TEMP		ICE CONDITIONS			
LOGGER CONDITIONS										
WATER DEPTH		cm	DISLODGED		REASON					
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE		
COMMENTS										
SITE ID			LOCATION				BANK			
LOGGER TYPE			LOGGER SERIAL #				UTM			
DOWNLOAD DATE				DOWNLOAD TIME				CREW		
TEST RECORDER TYPE			WATER TEMP		AIR TEMP		ICE CONDITIONS			
LOGGER CONDITIONS										
WATER DEPTH		cm	DISLODGED		REASON					
BURIED			FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE		
COMMENTS										

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM											
<b>SITE ID</b>	mobUP2		<b>LOCATION</b>	u/s of Moberly River				<b>BANK</b>	north		
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>	10669754				<b>UTM</b>	627501	6232563	
<b>DOWNLOAD DATE</b>	27	Feb	2020	<b>DOWNLOAD TIME</b>	-				<b>CREW</b>	BC TE	
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	1.0	<b>AIR TEMP</b>	5.0		<b>ICE CONDITIONS</b>	none		
LOGGER CONDITIONS											
<b>WATER DEPTH</b>			<b>DISLODGED</b>	yes	<b>REASON</b>	tapered					
<b>BURIED</b>			<b>FUNCTIONAL</b>	no	<b>IF DRY, HEIGHT ABOVE WATER</b>			cm	<b>TETHER TYPE</b>	Birch	
COMMENTS											
Cable pulled to shore and cut - logger and capsule gone lost logger Replac#16 (SN 10669754) replaced w ith Replac#49 (SN 20655180)											
<b>SITE ID</b>	mobUP1		<b>LOCATION</b>	u/s of Moberly River				<b>BANK</b>	south		
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>	10887852				<b>UTM</b>	627158	6232349	
<b>DOWNLOAD DATE</b>	27	Feb	2020	<b>DOWNLOAD TIME</b>	15:45				<b>CREW</b>	BC TE	
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	1.0	<b>AIR TEMP</b>	5.0		<b>ICE CONDITIONS</b>	none		
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	80	cm	<b>DISLODGED</b>	no	<b>REASON</b>						
<b>BURIED</b>	no		<b>FUNCTIONAL</b>	w et	<b>IF DRY, HEIGHT ABOVE WATER</b>			cm	<b>TETHER TYPE</b>	alder	
COMMENTS											
dow nload OK Replac#21 stainless steel cable OK											
<b>SITE ID</b>	mobDN1_BU		<b>LOCATION</b>	d/s of Moberly River				<b>BANK</b>	south		
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>	10676147				<b>UTM</b>	630875	6229303	
<b>DOWNLOAD DATE</b>	27	Feb	2020	<b>DOWNLOAD TIME</b>	15:01				<b>CREW</b>	BC TE	
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	1.0	<b>AIR TEMP</b>	4.0		<b>ICE CONDITIONS</b>	none		
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	100	cm	<b>DISLODGED</b>	no	<b>REASON</b>						
<b>BURIED</b>	no		<b>FUNCTIONAL</b>	w et	<b>IF DRY, HEIGHT ABOVE WATER</b>			cm	<b>TETHER TYPE</b>	alder	
COMMENTS											
dow nload OK Replac#18 stainless steel cable OK											
<b>SITE ID</b>	mobDN1		<b>LOCATION</b>	d/s of Moberly River				<b>BANK</b>	south		
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>	10676146				<b>UTM</b>	630776	6229287	
<b>DOWNLOAD DATE</b>	27	Feb	2020	<b>DOWNLOAD TIME</b>	15:09				<b>CREW</b>	BC TE	
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	1.0	<b>AIR TEMP</b>	4.0		<b>ICE CONDITIONS</b>	none		
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	100	cm	<b>DISLODGED</b>	no	<b>REASON</b>						
<b>BURIED</b>	no		<b>FUNCTIONAL</b>	w et	<b>IF DRY, HEIGHT ABOVE WATER</b>			cm	<b>TETHER TYPE</b>	alder	
COMMENTS											
dow nload OK Replac#17 steel chain OK											

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM											
SITE ID	pineUP1	LOCATION	u/s of Pine River			BANK	south				
LOGGER TYPE	Tidbit	LOGGER SERIAL #	10669747			UTM	641032	6225367			
DOWNLOAD DATE	27	Feb	2020	DOWNLOAD TIME	16:21	CREW	BC TE				
TEST RECORDER TYPE	YSI	WATER TEMP	1.0	AIR TEMP	5.0	ICE CONDITIONS	none				
LOGGER CONDITIONS											
WATER DEPTH	100	cm	DISLODGED	no	REASON						
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	alder			
COMMENTS											
download OK											
Replac#14											
Stainless steel cable OK											
SITE ID	pineUP2	LOCATION	u/s of Pine River			BANK		north			
LOGGER TYPE	Tidbit	LOGGER SERIAL #	20655135			UTM	641655	6225305			
DOWNLOAD DATE	27	Feb	2020	DOWNLOAD TIME	16:31	CREW	BC TE				
TEST RECORDER TYPE	YSI	WATER TEMP	1.0	AIR TEMP	5.0	ICE CONDITIONS	none				
LOGGER CONDITIONS											
WATER DEPTH	100	cm	DISLODGED	yes	REASON	tampered					
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	poplar stump			
COMMENTS											
download OK											
Replac#46											
Stainless steel cable OK											
SITE ID	pineDN1	LOCATION	d/s of Pine River			BANK	south				
LOGGER TYPE	Tidbit	LOGGER SERIAL #	20332124			UTM	648074	6222792			
DOWNLOAD DATE	27	Feb	2020	DOWNLOAD TIME	-	CREW	BC TE				
TEST RECORDER TYPE	YSI	WATER TEMP	0.9	AIR TEMP	5.0	ICE CONDITIONS	none				
LOGGER CONDITIONS											
WATER DEPTH	-	cm	DISLODGED	yes	REASON					unk	
BURIED		FUNCTIONAL	no	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	alder			
COMMENTS											
cable severed - logger gone											
Lost logger Replac#41 (SN20332124) to be replaced next session - no more spares available today											
SITE ID	pineDN1_BU	LOCATION	d/s of Pine River			BANK	south				
LOGGER TYPE	Tidbit	LOGGER SERIAL #	10893055			UTM	648371	6222823			
DOWNLOAD DATE	27	Feb	2020	DOWNLOAD TIME	16:50	CREW	BC TE				
TEST RECORDER TYPE	YSI	WATER TEMP	0.9	AIR TEMP	5.0	ICE CONDITIONS	none				
LOGGER CONDITIONS											
WATER DEPTH	120	cm	DISLODGED	no	REASON						
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	alder			
COMMENTS											
download OK											
Replac#25											
Steel chain OK											

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM											
<b>SITE ID</b>	halfUP2	<b>LOCATION</b>	u/s of Half way River			<b>BANK</b>		north			
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	20030829			<b>UTM</b>	595559	6230543			
<b>DOWNLOAD DATE</b>	28	Feb	2020	<b>DOWNLOAD TIME</b>	13:08	<b>CREW</b>	BC TE				
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	1.0	<b>AIR TEMP</b>	4.0	<b>ICE CONDITIONS</b>	none				
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	140	cm	<b>DISLODGED</b>	no	<b>REASON</b>						
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	spruce				
COMMENTS											
download OK											
Replac#33											
stainless steel cable OK											
<b>SITE ID</b>	halfUP1	<b>LOCATION</b>	u/s of Half way River			<b>BANK</b>		south			
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	26332123			<b>UTM</b>	595181	6230117			
<b>DOWNLOAD DATE</b>	28	Feb	2020	<b>DOWNLOAD TIME</b>	13:19	<b>CREW</b>	BC TE				
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	0.9	<b>AIR TEMP</b>	4.0	<b>ICE CONDITIONS</b>	none				
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	200	cm	<b>DISLODGED</b>	no	<b>REASON</b>						
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	spruce tree				
COMMENTS											
download OK											
Replac#39											
stainless steel cable OK											
<b>SITE ID</b>	halfDN2	<b>LOCATION</b>	d/s of Half way River			<b>BANK</b>		north			
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	10669748			<b>UTM</b>	598310	6232377			
<b>DOWNLOAD DATE</b>	28	Feb	2020	<b>DOWNLOAD TIME</b>	13:50	<b>CREW</b>	BC TE				
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	0.9	<b>AIR TEMP</b>	4.0	<b>ICE CONDITIONS</b>	none				
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	40	cm	<b>DISLODGED</b>	yes	<b>REASON</b>	tampered					
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	balsam pop				
COMMENTS											
logger pulled to shore by persons unknown and left in shallow water; wet today but likely intermittently exposed											
download OK											
Replac#15											
stainless steel cable OK											
<b>SITE ID</b>	halfDN2_BU	<b>LOCATION</b>	d/s of Half way River			<b>BANK</b>		north			
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	10156314			<b>UTM</b>	598287	6232344			
<b>DOWNLOAD DATE</b>	28	Feb	2020	<b>DOWNLOAD TIME</b>	13:39	<b>CREW</b>	BC TE				
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	0.9	<b>AIR TEMP</b>	4.0	<b>ICE CONDITIONS</b>	none				
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	80	cm	<b>DISLODGED</b>	yes	<b>REASON</b>		debris				
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	balsam pop				
COMMENTS											
logger partially swung to shore by debris; still functional											
download OK											
Logger file ID: halfDN2BU											
tether chain OK											

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM											
SITE ID	pineUP1	LOCATION	u/s of Pine River			BANK	south				
LOGGER TYPE	Tidbit	LOGGER SERIAL #	10669747			UTM	641032	6225367			
DOWNLOAD DATE	2	June	2020	DOWNLOAD TIME	14:10	CREW	BC TE				
TEST RECORDER TYPE	YSI	WATER TEMP	11.5	AIR TEMP	18.0	ICE CONDITIONS	none				
LOGGER CONDITIONS											
WATER DEPTH	100	cm	DISLODGED	yes	REASON	ice	debris				
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	alder			
COMMENTS											
cable partially sw ung to shore by debris but logger still functional											
dow nload OK											
Replac#14											
Stainless steel cable replaced w ith steel chain											
SITE ID	pineUP2	LOCATION	u/s of Pine River			BANK		north			
LOGGER TYPE	Tidbit	LOGGER SERIAL #	20655135			UTM	641655	6225305			
DOWNLOAD DATE	2	June	2020	DOWNLOAD TIME	14:00	CREW	BC TE				
TEST RECORDER TYPE	YSI	WATER TEMP	10.8	AIR TEMP	18.0	ICE CONDITIONS	none				
LOGGER CONDITIONS											
WATER DEPTH	150	cm	DISLODGED	no	REASON						
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	poplar stump			
COMMENTS											
dow nload OK											
Replac#46											
Stainless steel cable OK											
SITE ID	pineDN1	LOCATION	d/s of Pine River			BANK	south				
LOGGER TYPE	Tidbit	LOGGER SERIAL #	20655185			UTM	648074	6222792			
DOWNLOAD DATE	2	June	2020	DOWNLOAD TIME	n/a	CREW	BC TE				
TEST RECORDER TYPE	YSI	WATER TEMP	8.3	AIR TEMP	18.0	ICE CONDITIONS	none				
LOGGER CONDITIONS											
WATER DEPTH	-	cm	DISLODGED		REASON						
BURIED		FUNCTIONAL		IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	alder			
COMMENTS											
New logger Replac#50 (SN 20655185) and steel capsule installed today after cable found cut on Feb 27, 2020											
replaced stainless steel cable w ith steel chain											
SITE ID	pineDN1_BU	LOCATION	d/s of Pine River			BANK	south				
LOGGER TYPE	Tidbit	LOGGER SERIAL #	10893055			UTM	648371	6222823			
DOWNLOAD DATE	2	June	2020	DOWNLOAD TIME	12:46	CREW	BC TE				
TEST RECORDER TYPE	YSI	WATER TEMP	8.3	AIR TEMP	18.0	ICE CONDITIONS	none				
LOGGER CONDITIONS											
WATER DEPTH	100	cm	DISLODGED	no	REASON						
BURIED	no	FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER		cm	TETHER TYPE	alder			
COMMENTS											
dow nload OK											
Replac#25											
Steel chain OK											

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM											
<b>SITE ID</b>	pineMS1	<b>LOCATION</b>	Pine River mainstem			<b>BANK</b>		north			
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	10893069			<b>UTM</b>	641757	6223604			
<b>DOWNLOAD DATE</b>	2	June	2020	<b>DOWNLOAD TIME</b>	13:41	<b>CREW</b>	BC TE				
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	8.3	<b>AIR TEMP</b>	18.0	<b>ICE CONDITIONS</b>	none				
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	40	cm	<b>DISLODGED</b>	yes	<b>REASON</b>	ice	debris				
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	steel piling				
COMMENTS											
logger partially sw ung to shore by spring ice breakup and debris; w et today but likely intermittently exposed											
dow nload OK											
Replac#28											
stainless steel cable OK											
<b>SITE ID</b>	pineMS2	<b>LOCATION</b>	Pine River mainstem			<b>BANK</b>		north			
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	10635067			<b>UTM</b>	641757	6223604			
<b>DOWNLOAD DATE</b>	2	June	2020	<b>DOWNLOAD TIME</b>	13:41	<b>CREW</b>	BC TE				
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	8.3	<b>AIR TEMP</b>	18.0	<b>ICE CONDITIONS</b>	none				
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	50	cm	<b>DISLODGED</b>	yes	<b>REASON</b>	ice	debris				
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	steel piling				
COMMENTS											
logger partially sw ung to shore by spring ice breakup and debris; still functional											
dow nload OK											
Replac#10											
stainless steel cable OK											
<b>SITE ID</b>	beatMS1	<b>LOCATION</b>	Beatton R mainstem			<b>BANK</b>	east				
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	20322122			<b>UTM</b>	663118	6221234			
<b>DOWNLOAD DATE</b>	2	June	2020	<b>DOWNLOAD TIME</b>	10:56	<b>CREW</b>	BC TE				
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	13.6	<b>AIR TEMP</b>	17.0	<b>ICE CONDITIONS</b>	none				
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	120	cm	<b>DISLODGED</b>	no	<b>REASON</b>						
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	birch				
COMMENTS											
dow nload OK											
Replac#36											
<b>SITE ID</b>	beatMS2	<b>LOCATION</b>	Beatton R mainstem			<b>BANK</b>	east				
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	20030828			<b>UTM</b>	663118	6221234			
<b>DOWNLOAD DATE</b>	2	June	2020	<b>DOWNLOAD TIME</b>	11:10	<b>CREW</b>	BC TE				
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	13.6	<b>AIR TEMP</b>	17.0	<b>ICE CONDITIONS</b>	none				
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	120	cm	<b>DISLODGED</b>	no	<b>REASON</b>						
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	birch				
COMMENTS											
dow nload OK											
Replac#32											

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM											
<b>SITE ID</b>	pineMS1	<b>LOCATION</b>	Pine River mainstem			<b>BANK</b>		north			
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	10893069			<b>UTM</b>	641757	6223604			
<b>DOWNLOAD DATE</b>	2	June	2020	<b>DOWNLOAD TIME</b>	13:41	<b>CREW</b>	BC TE				
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	8.3	<b>AIR TEMP</b>	18.0	<b>ICE CONDITIONS</b>	none				
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	40	cm	<b>DISLODGED</b>		yes	<b>REASON</b>	ice	debris			
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>		cm	<b>TETHER TYPE</b>	steel piling			
COMMENTS											
logger partially sw ung to shore by spring ice breakup and debris; w et today but likely intermittently exposed											
dow nload OK											
Replac#28											
stainless steel cable OK											
<b>SITE ID</b>	pineMS2	<b>LOCATION</b>	Pine River mainstem			<b>BANK</b>		north			
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	10635067			<b>UTM</b>	641757	6223604			
<b>DOWNLOAD DATE</b>	2	June	2020	<b>DOWNLOAD TIME</b>	13:41	<b>CREW</b>	BC TE				
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	8.3	<b>AIR TEMP</b>	18.0	<b>ICE CONDITIONS</b>	none				
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	50	cm	<b>DISLODGED</b>		yes	<b>REASON</b>	ice	debris			
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>		cm	<b>TETHER TYPE</b>	steel piling			
COMMENTS											
logger partially sw ung to shore by spring ice breakup and debris; still functional											
dow nload OK											
Replac#10											
stainless steel cable OK											
<b>SITE ID</b>	beatMS1	<b>LOCATION</b>	Beatton R mainstem			<b>BANK</b>	east				
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	20322122			<b>UTM</b>	663118	6221234			
<b>DOWNLOAD DATE</b>	2	June	2020	<b>DOWNLOAD TIME</b>	10:56	<b>CREW</b>	BC TE				
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	13.6	<b>AIR TEMP</b>	17.0	<b>ICE CONDITIONS</b>	none				
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	120	cm	<b>DISLODGED</b>	no	<b>REASON</b>						
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>		cm	<b>TETHER TYPE</b>	birch			
COMMENTS											
dow nload OK											
Replac#36											
<b>SITE ID</b>	beatMS2	<b>LOCATION</b>	Beatton R mainstem			<b>BANK</b>	east				
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	20030828			<b>UTM</b>	663118	6221234			
<b>DOWNLOAD DATE</b>	2	June	2020	<b>DOWNLOAD TIME</b>	11:10	<b>CREW</b>	BC TE				
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	13.6	<b>AIR TEMP</b>	17.0	<b>ICE CONDITIONS</b>	none				
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	120	cm	<b>DISLODGED</b>	no	<b>REASON</b>						
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>		cm	<b>TETHER TYPE</b>	birch			
COMMENTS											
dow nload OK											
Replac#32											



BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM												
<b>SITE ID</b>	pouceUP1		<b>LOCATION</b>	Peace R mainstem u/s of Pouce Coupe R				<b>BANK</b>	south			
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>	20655184				<b>UTM</b>	11	316876	6225223	
<b>DOWNLOAD DATE</b>	2	June	2020	<b>DOWNLOAD TIME</b>	16:15				<b>CREW</b>	BC TE		
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	10.0	<b>AIR TEMP</b>	20.0		<b>ICE CONDITIONS</b>	none			
<b>0</b>												
<b>WATER DEPTH</b>	150	cm	<b>DISLODGED</b>	no		<b>REASON</b>	ice					
<b>BURIED</b>	no		<b>FUNCTIONAL</b>	yes		<b>IF DRY, HEIGHT ABOVE WATER</b>		cm	<b>TETHER TYPE</b>	birch		
<b>COMMENTS</b>												
down load OK												
Replac#48												
stainless steel cable OK												
<b>SITE ID</b>	pouceUP2		<b>LOCATION</b>	Peace R mainstem u/s of Pouce Coupe R				<b>BANK</b>	north			
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>	10893068				<b>UTM</b>	11	315884	6226162	
<b>DOWNLOAD DATE</b>	2	June	2020	<b>DOWNLOAD TIME</b>	16:27				<b>CREW</b>	BC TE		
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	11.2	<b>AIR TEMP</b>	20.0		<b>ICE CONDITIONS</b>	none			
<b>LOGGER CONDITIONS</b>												
<b>WATER DEPTH</b>	200	cm	<b>DISLODGED</b>	no		<b>REASON</b>						
<b>BURIED</b>	no		<b>FUNCTIONAL</b>	wet		<b>IF DRY, HEIGHT ABOVE WATER</b>		cm	<b>TETHER TYPE</b>	birch		
<b>COMMENTS</b>												
down load OK												
Replac#27												
stainless steel cable OK												
<b>SITE ID</b>			<b>LOCATION</b>					<b>BANK</b>				
<b>LOGGER TYPE</b>			<b>LOGGER SERIAL #</b>					<b>UTM</b>				
<b>DOWNLOAD DATE</b>				<b>DOWNLOAD TIME</b>					<b>CREW</b>			
<b>TEST RECORDER TYPE</b>			<b>WATER TEMP</b>		<b>AIR TEMP</b>			<b>ICE CONDITIONS</b>				
<b>LOGGER CONDITIONS</b>												
<b>WATER DEPTH</b>		cm	<b>DISLODGED</b>			<b>REASON</b>						
<b>BURIED</b>	no		<b>FUNCTIONAL</b>	wet		<b>IF DRY, HEIGHT ABOVE WATER</b>		cm	<b>TETHER TYPE</b>			
<b>COMMENTS</b>												
<b>SITE ID</b>			<b>LOCATION</b>					<b>BANK</b>				
<b>LOGGER TYPE</b>			<b>LOGGER SERIAL #</b>					<b>UTM</b>				
<b>DOWNLOAD DATE</b>				<b>DOWNLOAD TIME</b>					<b>CREW</b>			
<b>TEST RECORDER TYPE</b>			<b>WATER TEMP</b>		<b>AIR TEMP</b>			<b>ICE CONDITIONS</b>				
<b>LOGGER CONDITIONS</b>												
<b>WATER DEPTH</b>		cm	<b>DISLODGED</b>			<b>REASON</b>						
<b>BURIED</b>			<b>FUNCTIONAL</b>	wet		<b>IF DRY, HEIGHT ABOVE WATER</b>		cm	<b>TETHER TYPE</b>			
<b>COMMENTS</b>												

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM											
<b>SITE ID</b>	halfUP2	<b>LOCATION</b>	u/s of Half way River			<b>BANK</b>	north				
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	20030829			<b>UTM</b>	595559	6230543			
<b>DOWNLOAD DATE</b>	3	June	2020	<b>DOWNLOAD TIME</b>	10:23	<b>CREW</b>	BC TE				
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	6.6	<b>AIR TEMP</b>	14.0	<b>ICE CONDITIONS</b>	none				
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	100	cm	<b>DISLODGED</b>	no	<b>REASON</b>						
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	spruce				
COMMENTS											
down load OK											
Replac#33											
stainless steel cable OK											
<b>SITE ID</b>	halfUP1	<b>LOCATION</b>	u/s of Half way River			<b>BANK</b>	south				
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	26332123			<b>UTM</b>	595181	6230117			
<b>DOWNLOAD DATE</b>	3	June	2020	<b>DOWNLOAD TIME</b>	10:46	<b>CREW</b>	BC TE				
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	6.4	<b>AIR TEMP</b>	14.0	<b>ICE CONDITIONS</b>	none				
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	200	cm	<b>DISLODGED</b>	no	<b>REASON</b>						
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	spruce tree				
COMMENTS											
down load OK											
Replac#39											
stainless steel cable OK											
<b>SITE ID</b>	halfDN2	<b>LOCATION</b>	d/s of Half way River			<b>BANK</b>	north				
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	10669748			<b>UTM</b>	598310	6232377			
<b>DOWNLOAD DATE</b>	3	June	2020	<b>DOWNLOAD TIME</b>	11:23	<b>CREW</b>	BC TE				
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	10.0	<b>AIR TEMP</b>	16.0	<b>ICE CONDITIONS</b>	none				
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	0	cm	<b>DISLODGED</b>	yes	<b>REASON</b>	ice	debris				
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	dry	<b>IF DRY, HEIGHT ABOVE WATER</b>	100	cm	<b>TETHER TYPE</b>	balsam pop			
COMMENTS											
logger sw ung to shore by spring debris; high and dry											
down load OK											
Replac#15											
replaced stainless steel cable w ith steel chain											
<b>SITE ID</b>	halfDN2_BU	<b>LOCATION</b>	d/s of Half way River			<b>BANK</b>	north				
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	10156314			<b>UTM</b>	598287	6232344			
<b>DOWNLOAD DATE</b>	3	June	2020	<b>DOWNLOAD TIME</b>	11:02	<b>CREW</b>	BC TE				
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	10.0	<b>AIR TEMP</b>	16.0	<b>ICE CONDITIONS</b>	none				
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	100	cm	<b>DISLODGED</b>	no	<b>REASON</b>	debris					
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	balsam pop				
COMMENTS											
down load OK											
Logger file ID: halfDN2BU											
steel tether chain OK											
replaced corroded steel capsule											

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM											
SITE ID	gmsUP1		LOCATION	GMS Forebay				BANK			
LOGGER TYPE	Tidbit		LOGGER SERIAL #	20332187				UTM	548841	6209022	
DOWNLOAD DATE	6	Jul	2020	DOWNLOAD TIME	11:53				CREW	BC TE	
TEST RECORDER TYPE	YSI		WATER TEMP	13.0	AIR TEMP	18		ICE CONDITIONS	none		
LOGGER CONDITIONS											
WATER DEPTH	100	cm	DISLODGED	no		REASON					
BURIED	no		FUNCTIONAL	wet		IF DRY, HEIGHT ABOVE WATER	cm	TETHER TYPE	steel buoy		
COMMENTS											
Down load OK											
Stainless steel cable OK											
Replac#43											
SITE ID	gmsUP2		LOCATION	GMS Forebay				BANK			
LOGGER TYPE	Tidbit		LOGGER SERIAL #	10676160				UTM	548841	6209022	
DOWNLOAD DATE	6	Jul	2020	DOWNLOAD TIME	11:56				CREW	BC TE	
TEST RECORDER TYPE	YSI		WATER TEMP	12.5	AIR TEMP	18		ICE CONDITIONS	none		
LOGGER CONDITIONS											
WATER DEPTH	10	m	DISLODGED	no		REASON					
BURIED	no		FUNCTIONAL	wet		IF DRY, HEIGHT ABOVE WATER	cm	TETHER TYPE	steel buoy		
COMMENTS											
Down load OK											
Stainless steel cable OK											
Replac#20											
SITE ID	gmsDN2		LOCATION	GMS Tailrace RDB				BANK			north
LOGGER TYPE	Tidbit		LOGGER SERIAL #	10669739				UTM	548828	6207836	
DOWNLOAD DATE	6	Jul	2020	DOWNLOAD TIME	10:39				CREW	BC TE	
TEST RECORDER TYPE	YSI		WATER TEMP	6.6	AIR TEMP	18		ICE CONDITIONS	none		
LOGGER CONDITIONS											
WATER DEPTH	150	cm	DISLODGED	no		REASON					
BURIED	no		FUNCTIONAL	wet		IF DRY, HEIGHT ABOVE WATER	cm	TETHER TYPE	rock		
COMMENTS											
Primary Logger - Replac#11, SN 10669739											
Back-up logger gmsDN2BU in same capsule; Replac#37, SN 20332121 down loaded @ 10:39											
both down loads OK											
cable OK (stainless steel cable section attached to galvanized cable around rock)											
SITE ID	gmsDN1		LOCATION	GMS Tailrace LDB				BANK			south
LOGGER TYPE	Tidbit		LOGGER SERIAL #	20655136				UTM	548881	6207761	
DOWNLOAD DATE	6	Jul	2020	DOWNLOAD TIME	10:52				CREW	BC TE	
TEST RECORDER TYPE	YSI		WATER TEMP	9.3	AIR TEMP	18		ICE CONDITIONS	none		
LOGGER CONDITIONS											
WATER DEPTH	30**	cm	DISLODGED	no		REASON					
BURIED	no		FUNCTIONAL	wet		IF DRY, HEIGHT ABOVE WATER	cm	TETHER TYPE	rock		
COMMENTS											
**Dinosaur Reservoir level very low											
Primary logger - Replac#47 (SN 20655136) - Down load OK											
Back-up logger gmsDN1BU in same capsule; Replac#19, SN 10676155; Down loaded OK @ 10:52											

**BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM**

<b>SITE ID</b>	pcnUP1	<b>LOCATION</b>	PCN Forebay			<b>BANK</b>	north	
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	20332186			<b>UTM</b>	562684	6204075
<b>DOWNLOAD DATE</b>	6	Jul	2020	<b>DOWNLOAD TIME</b>	9:38	<b>CREW</b>	BC TE	
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	11.9	<b>AIR TEMP</b>	16.0	<b>ICE CONDITIONS</b>	none	

**LOGGER CONDITIONS**

<b>WATER DEPTH</b>	100	cm	<b>DISLODGED</b>	no	<b>REASON</b>			
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	log boom	

**COMMENTS**

download OK  
 stainless steel cable OK  
 Replac#42

<b>SITE ID</b>	pcnDN2	<b>LOCATION</b>	PCN Tailrace			<b>BANK</b>	north	
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	10156319			<b>UTM</b>	562803	6204854
<b>DOWNLOAD DATE</b>	6	Jul	2020	<b>DOWNLOAD TIME</b>	9:27	<b>CREW</b>	BC TE	
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	9.2	<b>AIR TEMP</b>	15.0	<b>ICE CONDITIONS</b>	none	

**LOGGER CONDITIONS**

<b>WATER DEPTH</b>	150	cm	<b>DISLODGED</b>	no	<b>REASON</b>			
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	rock	

**COMMENTS**

Download OK  
 Replac#1  
 stainless steel cable OK

<b>SITE ID</b>	pcnDN2_BU	<b>LOCATION</b>	PCN Tailrace			<b>BANK</b>	north	
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	10635061			<b>UTM</b>	562803	6204854
<b>DOWNLOAD DATE</b>	6	Jul	2020	<b>DOWNLOAD TIME</b>	9:28	<b>CREW</b>	BC TE	
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	9.2	<b>AIR TEMP</b>	15.0	<b>ICE CONDITIONS</b>	none	

**LOGGER CONDITIONS**

<b>WATER DEPTH</b>	150	cm	<b>DISLODGED</b>	no	<b>REASON</b>			
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	rock	

**COMMENTS**

Download OK  
 stainless steel cable OK  
 Anchored to same rock as pcnDN2  
 Replac#9

<b>SITE ID</b>		<b>LOCATION</b>				<b>BANK</b>		
<b>LOGGER TYPE</b>		<b>LOGGER SERIAL #</b>				<b>UTM</b>		
<b>DOWNLOAD DATE</b>				<b>DOWNLOAD TIME</b>		<b>CREW</b>		
<b>TEST RECORDER TYPE</b>		<b>WATER TEMP</b>		<b>AIR TEMP</b>		<b>ICE CONDITIONS</b>		

**LOGGER CONDITIONS**

<b>WATER DEPTH</b>		cm	<b>DISLODGED</b>		<b>REASON</b>			
<b>BURIED</b>		<b>FUNCTIONAL</b>		<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>		

**COMMENTS**

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM											
<b>SITE ID</b>	gmsUP1		<b>LOCATION</b>	GMS Forebay				<b>BANK</b>			
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>	20332187				<b>UTM</b>	548841	6209022	
<b>DOWNLOAD DATE</b>	18	Nov	2020	<b>DOWNLOAD TIME</b>	14:17				<b>CREW</b>	BC TE	
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	5.7	<b>AIR TEMP</b>	-10		<b>ICE CONDITIONS</b>	none		
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	100	cm	<b>DISLODGED</b>	no	<b>REASON</b>						
<b>BURIED</b>	no		<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>		cm	<b>TETHER TYPE</b>	steel buoy		
COMMENTS											
Download OK											
Stainless steel cable OK											
Replac#43 (SN 20332187) retired and replaced with Replac#51 SN 20823636											
<b>SITE ID</b>	gmsUP2		<b>LOCATION</b>	GMS Forebay				<b>BANK</b>			
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>	10676160				<b>UTM</b>	548841	6209022	
<b>DOWNLOAD DATE</b>	18	Nov	2020	<b>DOWNLOAD TIME</b>	14:19				<b>CREW</b>	BC TE	
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	5.7	<b>AIR TEMP</b>	-10		<b>ICE CONDITIONS</b>	none		
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	10	m	<b>DISLODGED</b>	no	<b>REASON</b>						
<b>BURIED</b>	no		<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>		cm	<b>TETHER TYPE</b>	steel buoy		
COMMENTS											
Download OK											
Stainless steel cable OK											
Replac#20 (SN 10676160) retired and replaced with Replac#52 SN 20823637											
<b>SITE ID</b>	gmsDN2		<b>LOCATION</b>	GMS Tailrace RDB				<b>BANK</b>			north
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>	10669739				<b>UTM</b>	548828	6207836	
<b>DOWNLOAD DATE</b>	18	Nov	2020	<b>DOWNLOAD TIME</b>	13:05				<b>CREW</b>	BC TE	
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	5.7	<b>AIR TEMP</b>	-10		<b>ICE CONDITIONS</b>	none		
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	150	cm	<b>DISLODGED</b>	no	<b>REASON</b>						
<b>BURIED</b>	no		<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>		cm	<b>TETHER TYPE</b>	rock		
COMMENTS											
Primary Logger - Replac#11, SN 10669739											
Back-up logger gmsDN2BU in same capsule; Replac#37, SN 20332121 downloaded @ 13:03											
Both downloads OK											
cable OK (stainless steel cable section attached to galvanized cable around rock)											
<b>SITE ID</b>	gmsDN1		<b>LOCATION</b>	GMS Tailrace LDB				<b>BANK</b>			south
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>	20655136				<b>UTM</b>	548881	6207761	
<b>DOWNLOAD DATE</b>	18	Nov	2020	<b>DOWNLOAD TIME</b>	13:25				<b>CREW</b>	BC TE	
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	5.6	<b>AIR TEMP</b>	-10		<b>ICE CONDITIONS</b>	none		
LOGGER CONDITIONS											
<b>WATER DEPTH</b>	150	cm	<b>DISLODGED</b>	no	<b>REASON</b>						
<b>BURIED</b>	no		<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>		cm	<b>TETHER TYPE</b>	rock		
COMMENTS											
Primary logger - Replac#47 (SN 20655136) - Download OK											
Back-up logger gmsDN1BU in same capsule; Replac#19, SN 10676155; Downloaded OK @ 13:26											

BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM										
SITE ID	pcnUP1		LOCATION	PCN Forebay			BANK	north		
LOGGER TYPE	Tidbit		LOGGER SERIAL #	20332186			UTM	562684	6204075	
DOWNLOAD DATE	18	Nov	2020	DOWNLOAD TIME	11:43			CREW	BC TE	
TEST RECORDER TYPE	YSI		WATER TEMP	5.6	AIR TEMP	-12.0		ICE CONDITIONS	none	
LOGGER CONDITIONS										
WATER DEPTH	100	cm	DISLODGED	no	REASON					
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER			cm	TETHER TYPE	log boom
COMMENTS										
<p>dow nload OK  stainless steel cable OK  Replac#42  Moved logger one boom stick closer to shore due to deteriorating log</p>										
SITE ID	pcnDN2		LOCATION	PCN Tailrace			BANK	north		
LOGGER TYPE	Tidbit		LOGGER SERIAL #	10156319			UTM	562803	6204854	
DOWNLOAD DATE	18	Nov	2020	DOWNLOAD TIME	10:40			CREW	BC TE	
TEST RECORDER TYPE	YSI		WATER TEMP	5.5	AIR TEMP	-12.0		ICE CONDITIONS	none	
LOGGER CONDITIONS										
WATER DEPTH	120	cm	DISLODGED	no	REASON					
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER			cm	TETHER TYPE	rock
COMMENTS										
<p>Dow nload OK  Replac#1  stainless steel cable buried from summer spill but OK</p>										
SITE ID	pcnDN2_BU		LOCATION	PCN Tailrace			BANK	north		
LOGGER TYPE	Tidbit		LOGGER SERIAL #	10635061			UTM	562803	6204854	
DOWNLOAD DATE	18	Nov	2020	DOWNLOAD TIME	10:34			CREW	BC TE	
TEST RECORDER TYPE	YSI		WATER TEMP	5.5	AIR TEMP	-12.0		ICE CONDITIONS	none	
LOGGER CONDITIONS										
WATER DEPTH	120	cm	DISLODGED	no	REASON					
BURIED	no		FUNCTIONAL	wet	IF DRY, HEIGHT ABOVE WATER			cm	TETHER TYPE	rock
COMMENTS										
<p>Dow nload OK  stainless steel cable buried from summer spill but OK  Anchored to same rock as pcnDN2  Replac#9</p>										
SITE ID			LOCATION				BANK			
LOGGER TYPE			LOGGER SERIAL #				UTM			
DOWNLOAD DATE				DOWNLOAD TIME				CREW		
TEST RECORDER TYPE			WATER TEMP		AIR TEMP			ICE CONDITIONS		
LOGGER CONDITIONS										
WATER DEPTH		cm	DISLODGED		REASON					
BURIED			FUNCTIONAL		IF DRY, HEIGHT ABOVE WATER			cm	TETHER TYPE	
COMMENTS										

**BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM**

<b>SITE ID</b>	gmsUP1		<b>LOCATION</b>	GMS Forebay		<b>BANK</b>		
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>	20823636		<b>UTM</b>	548841	6209022
<b>DOWNLOAD DATE</b>	23	Feb	2021	<b>DOWNLOAD TIME</b>	13:42		<b>CREW</b>	BC TE
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	0.5	<b>AIR TEMP</b>	2	<b>ICE CONDITIONS</b>	60 cm

**LOGGER CONDITIONS**

<b>WATER DEPTH</b>	100	cm	<b>DISLODGED</b>	no	<b>REASON</b>			
<b>BURIED</b>	no		<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>		cm	<b>TETHER TYPE</b> steel buoy

**COMMENTS**

Download OK  
 Stainless steel cable OK  
 Replac#51

<b>SITE ID</b>	gmsUP2		<b>LOCATION</b>	GMS Forebay		<b>BANK</b>		
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>	20823637		<b>UTM</b>	548841	6209022
<b>DOWNLOAD DATE</b>	23	Feb	2021	<b>DOWNLOAD TIME</b>	13:39		<b>CREW</b>	BC TE
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	0.6	<b>AIR TEMP</b>	2	<b>ICE CONDITIONS</b>	none

**LOGGER CONDITIONS**

<b>WATER DEPTH</b>	10	m	<b>DISLODGED</b>	no	<b>REASON</b>			
<b>BURIED</b>	no		<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>		cm	<b>TETHER TYPE</b> steel buoy

**COMMENTS**

Download OK  
 Stainless steel cable OK  
 Replac#52

<b>SITE ID</b>	gmsDN2		<b>LOCATION</b>	GMS Tailrace RDB		<b>BANK</b>		north
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>	10669739		<b>UTM</b>	548828	6207836
<b>DOWNLOAD DATE</b>	23	Feb	2021	<b>DOWNLOAD TIME</b>	12:37		<b>CREW</b>	BC TE
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	1.2	<b>AIR TEMP</b>	2	<b>ICE CONDITIONS</b>	none

**LOGGER CONDITIONS**

<b>WATER DEPTH</b>	200	cm	<b>DISLODGED</b>	no	<b>REASON</b>			
<b>BURIED</b>	no		<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>		cm	<b>TETHER TYPE</b> rock

**COMMENTS**

Primary Logger - Replac#11, SN 10669739  
 Back-up logger gmsDN2BU in same capsule; Replac#37, SN 20332121 downloaded @ 12:37  
 Both downloads OK  
 cable OK (stainless steel cable section attached to galvanized cable around rock)

<b>SITE ID</b>	gmsDN1		<b>LOCATION</b>	GMS Tailrace LDB		<b>BANK</b>		south
<b>LOGGER TYPE</b>	Tidbit		<b>LOGGER SERIAL #</b>	20655136		<b>UTM</b>	548881	6207761
<b>DOWNLOAD DATE</b>	23	Feb	2021	<b>DOWNLOAD TIME</b>	12:54		<b>CREW</b>	BC TE
<b>TEST RECORDER TYPE</b>	YSI		<b>WATER TEMP</b>	0.7	<b>AIR TEMP</b>	2	<b>ICE CONDITIONS</b>	none

**LOGGER CONDITIONS**

<b>WATER DEPTH</b>	200	cm	<b>DISLODGED</b>	no	<b>REASON</b>			
<b>BURIED</b>	no		<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>		cm	<b>TETHER TYPE</b> rock

**COMMENTS**

Primary logger - Replac#47 (SN 20655136) - Download OK  
 Back-up logger gmsDN1BU in same capsule; Replac#19, SN 10676155; Download OK @ 12:56

**BC HYDRO PEACE RIVER TEMPERATURE MONITORING - DOWNLOAD INFORMATION FORM**

<b>SITE ID</b>	pcnUP1	<b>LOCATION</b>	PCN Forebay			<b>BANK</b>	north	
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	20332186			<b>UTM</b>	562684	6204075
<b>DOWNLOAD DATE</b>	23	Feb	2021	<b>DOWNLOAD TIME</b>	11:27		<b>CREW</b>	BC TE
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	1.0	<b>AIR TEMP</b>	2.0		<b>ICE CONDITIONS</b>	none

**LOGGER CONDITIONS**

<b>WATER DEPTH</b>	100	cm	<b>DISLODGED</b>	no	<b>REASON</b>			
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	log boom	

**COMMENTS**

download OK  
 stainless steel cable OK  
 Replac#42

<b>SITE ID</b>	pcnDN2	<b>LOCATION</b>	PCN Tailrace			<b>BANK</b>	north	
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	10156319			<b>UTM</b>	562803	6204854
<b>DOWNLOAD DATE</b>	23	Feb	2021	<b>DOWNLOAD TIME</b>	11:08		<b>CREW</b>	BC TE
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	0.9	<b>AIR TEMP</b>	2.0		<b>ICE CONDITIONS</b>	none

**LOGGER CONDITIONS**

<b>WATER DEPTH</b>	150	cm	<b>DISLODGED</b>	no	<b>REASON</b>			
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	rock	

**COMMENTS**

Download OK  
 Replac#1

<b>SITE ID</b>	pcnDN2_BU	<b>LOCATION</b>	PCN Tailrace			<b>BANK</b>	north	
<b>LOGGER TYPE</b>	Tidbit	<b>LOGGER SERIAL #</b>	10635061			<b>UTM</b>	562803	6204854
<b>DOWNLOAD DATE</b>	23	Feb	2021	<b>DOWNLOAD TIME</b>	11:08		<b>CREW</b>	BC TE
<b>TEST RECORDER TYPE</b>	YSI	<b>WATER TEMP</b>	0.9	<b>AIR TEMP</b>	2.0		<b>ICE CONDITIONS</b>	none

**LOGGER CONDITIONS**

<b>WATER DEPTH</b>	150	cm	<b>DISLODGED</b>	no	<b>REASON</b>			
<b>BURIED</b>	no	<b>FUNCTIONAL</b>	wet	<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>	rock	

**COMMENTS**

Download OK  
 Anchored to same rock as pcnDN2  
 Replac#9

<b>SITE ID</b>		<b>LOCATION</b>				<b>BANK</b>		
<b>LOGGER TYPE</b>		<b>LOGGER SERIAL #</b>				<b>UTM</b>		
<b>DOWNLOAD DATE</b>				<b>DOWNLOAD TIME</b>			<b>CREW</b>	
<b>TEST RECORDER TYPE</b>		<b>WATER TEMP</b>		<b>AIR TEMP</b>			<b>ICE CONDITIONS</b>	

**LOGGER CONDITIONS**

<b>WATER DEPTH</b>		cm	<b>DISLODGED</b>		<b>REASON</b>			
<b>BURIED</b>		<b>FUNCTIONAL</b>		<b>IF DRY, HEIGHT ABOVE WATER</b>	cm	<b>TETHER TYPE</b>		

**COMMENTS**



**Appendix IV.** Summary of temperature logger deployment dates and anticipated replacement dates.

Site ID	Serial #	Location	Date Deployed	Replace Date
gmsUP1	20823636	WAC Bennett Forebay	Nov 2020	2026
gmsUP2	20823637	WAC Bennett Forebay	Nov 2020	2026
gmsDN1	20655136	GMS Tailrace	Feb 2020	2026
gmsDN1BU	10676155	GMS Tailrace	Feb 2020	2026
gmsDN2	10669739	GMS Tailrace	Apr 2015	2021
gmsDN2BU	20332121	GMS Tailrace	Jul 2018	2024
pcnUP1	20332186	Peace Canyon Forebay	Mar 2019	2025
pcnDN2	10156319	Peace Canyon Tailrace	Feb 2020	2026
pcnDN2BU	10635061	Peace Canyon Tailrace	Apr 2015	2021