

**Peace Water Use Plan
Dinosaur Reservoir Management Plan**

**Monitoring Programs and Physical Works
Annual Report 2017**

Implementation Period: June 2016 to May 2017

- **GMSMON-14 DNR Tributary Habitat Review**
- **GMSWORKS-8 DNR Demonstration Tributary**
- **GMSWORKS-9 DNR Tributary Inventory & Feasibility**
- **GMSWORKS-12 PCR & WLL Recreation Access**
- **GMSWORKS-51 Hudson's Hope Boat Ramp Construction (Dinosaur)**
- **GMSWORKS-53 Boat Ramp Design Hudson's Hope**
- **GMSWORKS-56 Hudson's Hope Maintenance**

For Water Licences 123018, 123019, 123020, 123021, 123025

June 26, 2017

BC Hydro Peace Water Use Plan Dinosaur Reservoir Management Plan Annual Report: 2017

1 Introduction

This document represents a summary of the status and the results of the Peace Project Dinosaur Reservoir Management Plan Water Use Plan (WUP) monitoring program and physical works projects to May 31, 2017, as per the Peace Order under the *Water Act*, dated August 9, 2007. This annual report includes those projects in Schedule B of the Order. There is one monitoring program and six physical works.

2 Status

The following table outlines the dates that Terms of Reference (TOR) for the Dinosaur Reservoir Management Plan WUP monitoring program and physical works were submitted to and approved by the Comptroller of Water Rights (CWR).

Table 2-1: Dates of Dinosaur Reservoir Management Plan WUP TOR Submissions and Approvals by the Comptroller of Water Rights

Monitoring Program & Physical Works TOR	Order Clause	Original ToR Submission		Most Recent ToR Resubmission	
		Date Submitted	Date Approved	Date Submitted	Date Approved
GMSMON-14 DNR TRIBUTARY HABITAT	Schedule B.e.a	Aug 08, 2008	Sep 15, 2008	Jul 29, 2015	Aug 12, 2015
GMSWORKS-8 DNR DEMONSTRATION TRIBUTARY	Schedule B.1.b	May 09, 2008	Jun 02, 2008	Jul 29, 2015	Aug 12, 2015
GMSWORKS-9 DNR TRIBUTARY INVENTORY & FEASIBILITY	Schedule B.1.a	May 09, 2008	Jun 02, 2008		
GMSWORKS-12 DNR RECREATION ACCESS	Schedule B.2.a	May 09, 2008	Jun 02, 2008	Aug 07, 2009	Jan 20, 2010
GMSWORKS-51 BOAT RAMP HUDSONS HOPE (Dinosaur)	Schedule B.2	Apr 18, 2011	Apr 03, 2012	Oct 17, 2013	Jan 14, 2014
GMSWORKS-53 BOAT RAMP DESIGN HUDSONS HOPE (Dinosaur)	Schedule B.2	Apr 15, 2010	May 07, 2010	Oct 17, 2013	Jan 14, 2014
GMSWORKS-56 HUDSONS HOPE MAINTENANCE (Dinosaur)	Schedule B.2	Apr 18, 2011	Apr 03, 2012		

3 Schedule

The following table outlines the current schedule for the monitoring program and physical works being delivered for the Dinosaur Reservoir Management Plan WUP.

Table 3-1: Monitoring Program and Physical Works Schedule as of May 31, 2017

Monitoring Programs	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	WLR YR1	WLR YR2	WLR YR3	WLR YR4	WLR YR5	WLR YR6	WLR YR7	WLR YR8	WLR YR9	WLR YR10	WLR YR11	WLR YR12	WLR YR13	WLR YR14	WLR YR15
GMSMON-14: DNR Tributary Habitat			✓F					•							
GMSWORKS-8: DNR Demonstration Tributary			✓F					•							
GMSWORKS-9: DNR Tributary Inventory & Feasibility		✓F													
GMSWORKS-12: DNR Recreation Access	✓	✓	✓F												
GMSWORKS-51 Hudson's Hope Boat Ramp Construction (Dinosaur)					✓	✓F									
GMSWORKS-53 Boat Ramp Design Hudson's Hope			✓	✓	✓F										
GMSWORKS-56 Hudson's Hope Maintenance						✓	✓	✓	✓	u/w*	■*	■*	■*	■*	■*
Legend	<p>■ = Project to be undertaken/initiated in identified year ✓ = Project is completed for the year u/w = Project is under way * = Maintenance only in identified year • = Relief granted; Project cancelled ✓F = All field work for this project is complete. No further field work is planned. PCR = Project Completion Report submitted</p>														

4 Monitoring Program and Physical Works Terms of Reference

The monitoring program and physical works being implemented under the Dinosaur Reservoir Management Plan WUP are described in Terms of Reference. These Terms of Reference and the reports for work completed to date can be found here:

https://www.bchydro.com/about/sustainability/conservation/water_use_planning/northern_interior/peace_river/dinosaur_reservoir.html

5 Status of Monitoring Program

5.1 GMSMON-14 Dinosaur Reservoir Tributary Habitat

GMSMON-14 was intended to monitor the effectiveness of physical works to be constructed under GMSWORKS-8 (Dinosaur Reservoir Demonstration Tributary), which was conditional on the outcome of the feasibility study GMSWORKS-9 (Dinosaur Reservoir Tributary Inventory). However, as explained in Section 6.2 below, as there were no feasible access restoration options identified in GMSWORKS-9, no works were constructed under GMSWORKS-8. Consequently, the CWR relieved BC Hydro (in a letter dated August 12, 2015) of the obligation to deliver GMSWORKS-8 and GMSMON-14.

6 Status of Physical Works

6.1 GMSWORKS-8 Dinosaur Reservoir Demonstration Tributary

As per section 5.1 GMSMON-14 (above), the CWR relieved BC Hydro of the obligation to deliver this project (in a letter dated August 12, 2015).

6.2 GMSWORKS-9 Dinosaur Reservoir Tributary Inventory and Feasibility

The objective of this study was to evaluate the number and extent of tributaries around the Dinosaur Reservoir that were impacted by the operation of the reservoir and/or by the accumulations of debris, and determine whether restoration access opportunities existed. The inventory was completed in November 2009. The study concluded that debris levels were sparse and were not restricting fish access at tributaries, and that there were no feasible access restoration opportunities. This project is complete.

6.3 GMSWORKS-12 Dinosaur Recreational Access (Feasibility of Boat Ramps)

The objective of this feasibility study was to evaluate options for improved boat launch facilities on Dinosaur Reservoir including the options for relocating and improving the dock, and upgrading the ramp. The site on Dinosaur Reservoir is at Hudson's Hope Park, on the north side of the lake. At the time of this study, it had adequate upland parking area, a single-lane cast-in-place concrete boat ramp, a floating dock and a rubble mound breakwater.

Reconnaissance surveys were completed at the Hudson's Hope Park boat launch in 2009. Feasibility was assessed based on engineering, archaeological, and environmental criteria, and recommendations were provided for enhancements.

The report included options for replacing the floating dock, and extending and upgrading the breakwater. It also included options for boat ramp upgrades.

This project is complete.

The subsequent design work was completed under GSMWORKS-53 in Section 6.4 below.

6.4 GSMWORKS-51 Hudson's Hope Boat Ramp Construction (Dinosaur)

This project is for the construction of the approved design for the boat ramp works at Hudson's Hope Park as described below in GSMWORKS-53. Construction commenced in 2012 and was completed in May 2013. The previously existing boat ramp, dock and gangway were replaced, the boat basin was dredged, and erosion controls were implemented to provide:

- Access to the full dock at all water levels;
- Double lane ramp;
- Tie up points around all sides of the dock to accommodate the size of watercraft specified in the user requirements;
- Larger floating dock;
- Extension and reconstruction of the rubble mount breakwater; and
- Minimized erosion and ice scour at the site through placement of riprap along the impacted shoreline areas and in front of the new foreshore site.

The construction on this project is complete.

Maintenance for this ramp occurs under GSMWORKS-56.

6.5 GSMWORKS-53 Boat Ramp Design Hudson's Hope

Under Clause (m) of Conditional Water Licence 123025 for Dinosaur Reservoir, BC Hydro is required to provide reservoir access at areas as directed by the CWR. Hudson's Hope Park was identified as a site for improved access as part of the WUP.

The feasibility study was completed in 2009 under GSMWORKS-12 (see section 6.3).

The design approved by the CWR in 2010 included replacing the existing single lane ramp with a double lane concrete boat launch at the site to a toe elevation of El. 498.8 m (1636.5 ft.), replacing the floating walkway at a new alignment, and installation of a breakwater. The design also required a dredge of the basin to reach the toe elevation.

The works were constructed under GSMWORKS-51 above (section 6.4). This project is complete.

6.6 GSMWORKS-56 Hudson's Hope Maintenance

This project is for the maintenance of the boat ramp constructed under GSMWORKS-51 (Hudson's Hope Boat Ramp Construction). Annual installation of the floating access dock and walkway is completed before the recreation season

begins. The dock and walkway are removed at the end of the season for winter storage. Maintenance is in place.

An updated TOR for GMSWORKS-56 will be submitted to your office by September 30, 2017. This TOR will be updated to be consistent with the maintenance approach approved for other boat launches for which BC Hydro has either water license or WUP responsibilities.

7 Monitoring Program and Physical Works Costs

The following table summarizes the Dinosaur Reservoir Management Plan WUP monitoring program and physical works costs approved by the CWR and the Actual Costs to May 31, 2017.

Table 7-1: Dinosaur Reservoir Management Plan WUP Monitoring Program and Physical Works Costs

Monitoring Programs	Costs approved by CWR	Life to Date Actuals (LTD)	Estimated to Complete (Forecast)	Total Forecast (LTD and Forecast)	Variance Total to Approved	Explanation	Corrective Action
GMSM14A DNR Tributary Habita	\$32,018	\$32,018	\$0	\$32,018	\$0	Project cancelled	
GMSM14A DNR Tributary Habita - OR DM	\$14,509	\$14,509	\$0	\$14,509	\$0		
GMSM14A DNR Tributary Habita - OR Imp	\$17,509	\$17,509	\$0	\$17,509	\$0		
GMSW08A DNR Demonstration	\$15,886	\$15,886		\$15,886	\$0	Project cancelled	
GMSW08A DNR Demonstration - OR DM	\$7,878	\$7,878		\$7,878	\$0		
GMSW08A DNR Demonstration - OR Imp	\$8,008	\$8,008		\$8,008			
GMSW09A DNR Tributary Inven	\$41,013	\$32,900	\$2,722	\$35,623	\$5,390	Project complete. Final completion report to be submitted.	
GMSW09A DNR Tributary Inven - OR DM	\$16,013	\$9,775	\$2,722	\$12,497	\$3,516		
GMSW09A DNR Tributary Inven - OR Imp	\$25,000	\$23,125		\$23,125	\$1,875		
GMSW12A DNR Recreation Acc	\$118,729	\$71,586	\$1,932	\$73,518	\$45,211	Project complete. Final completion report to be submitted.	
GMSW12A DNR Recreation Acc - OR DM	\$60,765	\$15,400	\$1,932	\$17,331	\$43,434		
GMSW12A DNR Recreation Acc - OR Imp	\$57,964	\$56,186	\$0	\$56,186	\$1,778		
GMSW51A BRC Dinosaur	\$3,258,435	\$4,250,851	\$0	\$4,250,851	(\$992,416)	Project complete. This non-remissible project overspend was due to schedule delays and material deficiencies.	
GMSW51A BRC Dinosaur - ONR DM	\$180,300	\$6,156	\$0	\$6,156	\$174,144		
GMSW51A BRC Dinosaur - ONR Imp	\$3,078,135	\$4,244,695	\$0	\$4,244,695	(\$1,166,560)		
GMSW53A BRD Dinosaur	\$87,965	\$62,315	\$0	\$62,315	\$25,650	Project complete	
GMSW53A BRD Dinosaur - ONR DM	\$12,965	\$9,694	\$0	\$9,694	\$3,271		
GMSW53A BRD Dinosaur - ONR Imp	\$75,000	\$52,621	\$0	\$52,621	\$22,379		
GMSW56A Dinosaur Maintenance	\$100,000	\$57,022	\$42,233	\$99,255	\$745		
GMSW56A Dinosaur Maintenance - ONR DM	\$0	\$8,217	\$7,909	\$16,126	(\$16,126)		
GMSW56A Dinosaur Maintenance - ONR Imp	\$100,000	\$48,805	\$34,324	\$83,129	\$16,871		

OR - Ordered Remissible
 ONR - Ordered Non-Remissible

* Red values in parentheses denote overage.