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March 14, 2017

Ms. Erica Hamilton  
Acting Commission Secretary  
British Columbia Utilities Commission  
Sixth Floor – 900 Howe Street  
Vancouver, BC V6Z 2N3

Dear Ms. Hamilton:

**RE: British Columbia Utilities Commission (BCUC or Commission)  
British Columbia Hydro and Power Authority (BC Hydro)  
Site C Clean Energy Project  
PUBLIC Quarterly Progress Report No. 6 – October to December 2016  
(Report)**

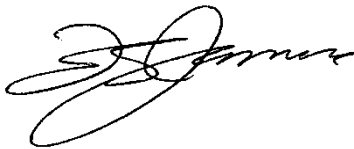
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BC Hydro writes to provide its public Report. Commercially sensitive and contractor-specific information has been redacted.

A confidential version of the Report is being filed with the Commission only under separate cover.

For further information, please contact Geoff Higgins at 604-623-4121 or by email at [bchydroregulatorygroup@bchydro.com](mailto:bchydroregulatorygroup@bchydro.com).

Yours sincerely,



Fred James  
Chief Regulatory Officer

st/ma

Enclosure (1)

**Site C Clean Energy Project**

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**Quarterly Progress Report No. 6**

**F2017 Third Quarter**

**October 2016 to December 2016**

**PUBLIC**

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## 1 **1 Project Status**

2 This Quarterly Progress Report No. 6 (**Report No. 6**) provides information  
3 concerning the Site C Clean Energy Project (**Project**) covering the period from  
4 September 1, 2016 to December 31, 2016.

### 5 **1.1 Overview and General Project Status**

6 The Project will construct a third dam and hydroelectric generating station on the  
7 Peace River in northeast B.C. to provide 1,100 megawatts of capacity, and produce  
8 about 5,100 gigawatt hours per year. In December 2014, the Project received  
9 approval from the Provincial Government to proceed to construction. The Project is  
10 in Implementation Phase and construction commenced July 27, 2015.

11 Construction activity for the Project remained relatively constant through the fall  
12 season, with 1,531 construction and environmental workers on site and a total  
13 workforce of 1,916 working on the project in December 2016, as reported by  
14 contractors. On the North Bank of the dam site, Early Works is complete and the  
15 contractor has demobilized from site. South Bank site preparation work was  
16 completed this quarter with the exception of clearing work in the Lower Reservoir  
17 area. The contractor re-mobilized to site in December 2016 and clearing work is  
18 planned to be completed in March 2017.

19 Peace River Hydro Partners and BC Hydro worked collaboratively to re-sequence  
20 planned work over the fall and winter to ensure the key schedule milestones are  
21 maintained. Peace River Hydro Partners has re-scheduled the work on the left bank  
22 into two phases. The first phase is to advance the excavation at the diversion tunnel  
23 inlet portal so they meet the schedule for the planned river diversion in 2019. The  
24 second phase of excavation will be completed over a longer duration as it is not  
25 required to be advanced for the river diversion. On the right bank, the contractor has  
26 re-sequenced their work on the drainage tunnel so that they can complete the

1 powerhouse excavation in parallel. As part of the re-sequenced work, Peace River  
2 Hydro Partners is planning additional equipment for the excavation.

3 Construction on the Moberly Bridge was completed in December 2016. BC Hydro  
4 continues to have weekly meetings with Peace River Hydro Partners to review  
5 construction performance and productivity. Any cost impacts to BC Hydro associated  
6 with rescheduling activities can be managed from existing allocated contingency  
7 budgets.

8 As part of Site C construction, excavation work has been underway for the past  
9 19 months to stabilize the slopes of the left bank for eventual dam construction. The  
10 need to stabilize the left bank was identified through geotechnical studies during the  
11 planning and regulatory phases of the project. Outside of the reporting period, in  
12 mid-February 2017, a tension crack appeared on the left bank of the dam site  
13 upstream of the future location of the dam. While tension cracks are not unexpected  
14 in this area, this particular crack was significant due to its 400-metre length. While  
15 there was some initial movement of soil, the tension crack has stabilized.

16 BC Hydro and its contractor installed instruments to measure and monitor stability  
17 around the tension crack. In addition, the project's independent engineer and  
18 technical experts in slope stability were brought in to assess the tension crack.  
19 These investigations will inform a remediation plan.

20 Safety is a top priority and no construction activities in the area of the tension crack  
21 are taking place until a plan is in place to safely remove the soil from the area. This  
22 area of unstable soil is slated to be removed as part of left bank slope stabilization.  
23 During the environmental assessment process, Natural Resources Canada  
24 concluded that BC Hydro had adopted best practices related to slope stability for the  
25 project.

26 The start of construction of the Site C 500 kV transmission line, 5L005, will be  
27 moved back due to the final decision to use the delta tower design and layout. This

1 resulted in transmission line clearing and transmission lattice tower steel  
2 procurement being completed later than originally planned, which delays the award  
3 of the transmission line construction contract. A new alignment is being implemented  
4 within the right of way which will allow the 500 kilo-volt transmission lines to be  
5 safely constructed while the 138 kilo-volt lines are still energized which reduces the  
6 duration of construction. It is expected the in-service date of October 2020 will still  
7 be met.

8 BC Hydro announced a shortlist of four proponent teams for the Generating Station  
9 and Spillways contract in September 2016. Since that time, Peace River Hydro  
10 Partners 2 has withdrawn from the procurement. It is not uncommon to have a team  
11 withdraw from a procurement process. We continue to have three very strong teams  
12 in the procurement and we look forward to selecting a preferred proponent in 2017.  
13 During the first week of November 2016, a Collaborative Meeting was held with each  
14 of the three Generating Station and Spillways Civil Works proponents. At these  
15 meetings, proponents had the opportunity to discuss provisions of the draft contract,  
16 and to discuss details of the specifications. BC Hydro is now making adjustments to  
17 the contract and the specifications based upon these comments. The final draft  
18 contract will be issued to the proponents in April 2017.

19 Overall, the progression of work is on track to achieve the BC Hydro Board of  
20 Directors (**Board**) approved in-service dates; the first unit is expected to come on  
21 line in December 2023 and the final in-service date is expected in November 2024.  
22 Costs are forecast to come within the Board approved budget amount, excluding  
23 reserve subject to Treasury Board control (\$8.335 billion).

24 [Table 1](#) provides a dashboard based on the Project status as at December 31, 2016.

1 **Table 1 Project Status Dashboard**

2 ● Green: No Concerns; ● Amber: Some Concerns but in Control; ● Red: Serious Concerns

Status as of:		December 2016	Overall:	●
<b>Overall Assessment</b>	●	The Project is on track for overall scope and schedule. The Project is on track with the Project completion date of November 2024. <sup>1</sup>		
<b>Schedule ISDs</b>	●	The overall schedule and progress remains on track to achieve the planned In-Service Dates.		
<b>Cost</b>	●	The Project is monitoring and evaluating specific cost pressures as well as potential cost savings. Overall cost forecast remains on track and total project cost is forecast to be within budget. There have been no draws on Treasury Board reserve.		
<b>Permits, Regulatory and Environmental</b>	●	Permits are on track and meeting schedule requirements. The large volume of permits continues to be managed by engaging with regulators, Aboriginal groups, and contractors to share information, seek feedback, and identify process improvements. Three orders were received from the Provincial Environmental Assessment Office and Canadian Environmental Assessment Office following site inspections in December. For details refer to section 1.2.6.3 Environmental Compliance Inspection and Enforcement.		
<b>Risks</b>	●	Identified risks are being managed and treatments are in place or planned. For details refer to section 4 Material Project Risks below.		
<b>Aboriginal Relations</b>	●	Impact Benefit Agreement offers have been made to First Nations significantly affected by the Project.		
<b>Litigation</b>	●	Decisions made by the Crown may be subject to additional judicial reviews by First Nations and others who may oppose the project.		
<b>Safety</b>	●	There was one Level 1 safety incident and four Level 2 safety incidents at the construction site this quarter.		

<sup>1</sup> The Board approved In Service Dates for total Project completion November 2024.



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1 **1.2 Major Accomplishments, Work Completed, Key Decisions and**  
2 **Key Issues**

3 **1.2.1 Aboriginal Consultation**

4 Pursuant to the Environmental Assessment Certificate and Federal Decision  
5 Statement, BC Hydro is required to consult with 13 Aboriginal groups with respect to  
6 the construction stage of the Project. This consultation includes provision of  
7 information on construction activities, support for the permit review process, and  
8 review and implementation of mitigation, monitoring and management plans, and  
9 permit conditions.

10 Efforts are ongoing to conclude impact benefit agreements with ten Aboriginal  
11 groups. To date, an Impact Benefit Agreement with McLeod Lake Indian Band and a  
12 Project Agreement with Dene Tha' First Nation have been publically announced.

13 **1.2.2 Litigation**

14 Of nine court challenges of environmental approvals and permits, four were  
15 discontinued, and five were dismissed by the courts. Four of the court decisions  
16 dismissing the legal challenges were appealed and three appeals were dismissed  
17 with one still pending. In addition, two appeals of BC Hydro's water licence have  
18 been filed with the Environmental Appeal Board and those appeals are currently in  
19 abeyance pending the outcome of the Court of Appeal decisions.

20 There were several developments in court proceedings in January 2017 and  
21 February 2017 which are outside the reporting period including:

- 22 • The Federal Court of Appeal dismissed the West Moberly and Prophet River  
23 First Nations appeal of the August 2015 Federal Court decision in which the  
24 Federal Court denied a legal challenge of the major Federal environmental  
25 approvals for Site C;

- 1 • The B.C. Court of Appeal dismissed the West Moberly and Prophet River First  
 2 Nations appeal of the September 2015 B.C. Supreme Court decision in which  
 3 the court denied a legal challenge of the major Provincial environmental  
 4 approval for Site C;
- 5 • The BC Hydro Ratepayers Association discontinued its legal challenge of the  
 6 *Fisheries Act* Authorization; and
- 7 • The Sierra Club has since decided not to proceed with its judicial review of a  
 8 *Wildlife Act* permit.
- 9 The details of the various proceedings and hearings with decisions pending are  
 10 summarized in [Table 2](#) below.

11 **Table 2 Summary of Proceedings with Hearings**  
 12 **or Decisions Pending**

Outcome		Date
<b>Federal Court: Federal Environmental Approval</b>		
Prophet River First Nation West Moberly First Nations	<b>Dismissed</b> Appeal filed Hearing date <b>Appeal Dismissed</b>	August 28, 2015 September 30, 2015 September 12, 2016 January 23, 2017
<b>Federal Court: Federal Permits</b>		
BC Hydro Ratepayers Association	Notice of Application filed <b>Discontinued</b>	September 19, 2016 January 23, 2017
<b>B.C. Court: Provincial Environmental Assessment Certificate</b>		
Prophet River First Nation West Moberly First Nations	<b>Dismissed</b> Appeal filed Hearing date <b>Appeal Dismissed</b>	September 18, 2015 October 19, 2015 December 5 to December 8, 2016 February 2, 2017
<b>B.C. Court: Provincial Permits</b>		
Prophet River First Nation West Moberly First Nations	Injunction application <b>Dismissed</b> Hearing of Petition complete <b>Petition Dismissed</b> Appeal filed Hearing date	August 28, 2015 November 17 to November 23, 2015 and February 2, 2016 October 31, 2016 November 30, 2016 To Be Determined

Outcome		Date
<b>Environmental Appeal Board</b>		
Prophet River First Nation West Moberly First Nations C. London	Water Licence appeals filed Hearing date	March 29, 2016 To Be Determined
<b>Other Proceedings</b>		
Building Trades v. BC Hydro	Civil claim filed Response to claim filed	March 2, 2015 April 10, 2015
Sierra Club of British Columbia	Judicial review filed <b>Discontinued</b>	July 20, 2016 January 27, 2017

1 Status as of February 2, 2017.

2 **1.2.3 Permits and Government Agency Approvals**

3 **1.2.3.1 Background**

4 In addition to the Environmental Assessment Certificate and the Federal Decision  
 5 Statement, provincial permits and federal authorizations are required to construct the  
 6 Project. Timing of the application for these permits and authorizations is staged and  
 7 aligned with the construction schedule, availability of detailed design information,  
 8 and by project component. Approximately 310 permits will be required throughout  
 9 the life of the project. Prior to the reporting period (Q3), 142 permits had been  
 10 received and are being actively managed. During the reporting period (Q3), 25 new  
 11 permits were received in accordance with the schedule.

12 **1.2.3.2 Federal Authorizations**

13 Federal authorizations are required under the *Fisheries Act* (Fisheries and Oceans  
 14 Canada) and the *Navigation Protection Act* (Transport Canada). All major Federal  
 15 authorizations for construction and operation of the Site C dam and reservoir were  
 16 received in July 2016. At this time, no further *Fisheries Act* authorizations are  
 17 anticipated. Additional *Navigation Protection Act* approvals for discrete works in the  
 18 reservoir (e.g., shoreline works, debris booms and Highway 29 bridges), are  
 19 anticipated to be issued at the regional level and are on schedule.

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### 1 **1.2.3.3 Provincial Permits**

2 The plan for obtaining Site C provincial permits involves a phased approach to the  
3 submission of applications to the Ministry of Forests, Lands and Natural Resource  
4 Operations based on project components and construction schedule.

5 Provincial permits are required primarily under the *Land Act*, *Water Sustainability*  
6 *Act*, *Forest Act*, *Heritage Conservation Act*, and *Mines Act*. The majority of the  
7 permits are administered by the Ministry of Forests, Lands and Natural Resource  
8 Operations and the Ministry of Energy and Mines.

9 Approximately 275 Provincial permits and approvals will be required throughout the  
10 life of the project. Prior to reporting period (Q3), 120 Provincial permits and  
11 approvals were received and are being actively managed. During this quarter,  
12 25 new Provincial permits and approvals were received in accordance with the  
13 schedule.

### 14 **1.2.3.4 Permitting Improvement**

15 In order to efficiently and effectively manage the large volume of permits required for  
16 the project, BC Hydro continues to engage with regulators, Aboriginal groups and  
17 contractors to share information, seek feedback, and identify process improvements.  
18 Process improvements include the following:

- 19 • BC Hydro continues to facilitate meetings with the Comptroller of Water Rights  
20 and contractors to ensure permit applications are coordinated, timely and  
21 sufficient;
- 22 • Regular permitting forums are being held with Aboriginal Groups to share  
23 information on upcoming permit applications and to seek feedback before  
24 applications are submitted to regulators; and
- 25 • BC Hydro continues to support the Ministry of Forests, Lands and Natural  
26 Resource Operations during the First Nations consultation process by attending

1 consultation meetings when invited to do so, and responding to First Nations  
2 questions on permit applications.

### 3 **1.2.4 Engineering and Construction**

#### 4 **1.2.4.1 Engineering**

5 The technical specifications for the Spillway, Power Intakes and Powerhouse have  
6 been issued in draft to the shortlisted respondents to the Generating Station and  
7 Spillways Request for Qualifications. Main Civil Works implementation design is  
8 continuing; the issuing of the construction drawings commenced following contract  
9 award. The Roller-Compacted Concrete Buttress Issue for Construction Drawings  
10 have been completed based on the Turbine and Generators and Powerhouse  
11 dimensions and these have been issued to Peace River Hydro Partners for  
12 preparation of Roller-Compacted Concrete placement in 2017. The technical  
13 specifications for the Hydro-Mechanical Contract Completions Contract and  
14 Protection and Control specifications are progressing to meet project schedule.  
15 Implementation design is underway for the 500 kV transmission lines, Peace  
16 Canyon 500 kV Gas Insulated Substation and Site C Substation. The next Technical  
17 Advisory Board is scheduled for June 5 to 9, 2017. A one day workshop is  
18 scheduled for February 20, 2017 with the Technical Advisory Board in Vancouver to  
19 provide an update on the Roller-Compacted Concrete excavations on the Right  
20 Bank and the additional analysis, which was requested by the Technical Advisory  
21 Board.

#### 22 **1.2.4.2 Construction**

23 Refer to [Appendix F](#) for the full construction schedule.

#### 24 **North (Left) Bank Site Preparation**

25 Work is completed and the contractor has demobilized from site. Key contract scope  
26 for North Bank Site Preparation included constructing approximately 7 km of access  
27 roads and excavation of approximately 2 million cubic metres of material. The last

1 construction component was the North Bank Road gully embankment, which was  
2 completed on November 4, 2016. Embankment movement on River Road (Blind  
3 Corner) still requires stabilization. A contractor has been selected to implement the  
4 remedial measures developed by BC Hydro.

#### 5 ***South (Right) Bank Site Preparation***

6 South Bank site preparation work, including Septimus rail siding, was completed this  
7 quarter with the exception of clearing work in the Lower Reservoir area including the  
8 Moberly River Valley. This clearing work was delayed due to protests in late 2015 to  
9 early 2016. The contractor re-mobilized in December 2016 and clearing work is  
10 planned to be completed in March 2017.

#### 11 ***Ministry of Transportation and Infrastructure Public Road Upgrades***

12 The Ministry of Transportation and Infrastructure's contractor, Al Simms and Sons,  
13 has substantially completed 269 Road and 240 Road. Both components are now  
14 paved and require minor work to finish. Old Fort Road re-alignment was completed  
15 near the Gate B entrance to Site C dam site with bottom left paving and is open to  
16 traffic. The final paving will be completed in spring 2017. Shoulder widening is also  
17 being carried out on Old Fort Road from the re-alignment section north to  
18 Highway 97. Work is scheduled to be completed by the end of June 2017.

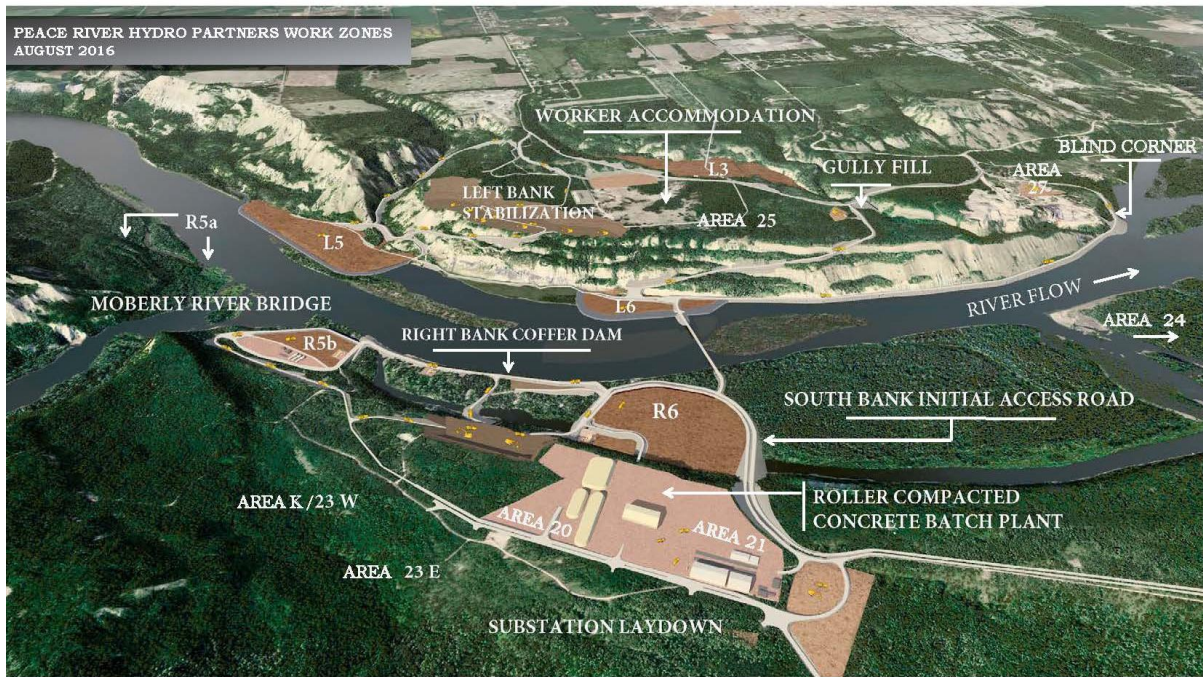
19 BC Hydro has entered into a contract with a designated business partner of an  
20 Aboriginal group for the shoulder widening of 271 Road, which is under Ministry of  
21 Transportation and Infrastructure jurisdiction. Work commenced in late August 2016  
22 but was stopped due to winter weather conditions. It is now scheduled to be  
23 completed by July 2017, which does not affect the critical path.

#### 24 ***Main Civil Works***

- 25 • Peace River Hydro Partners started the permanent work in June 2016 on the  
26 Left Bank Excavation;

- 1 • The Right Bank Drainage Tunnel received all permits in June 2016; work on the  
2 tunnel portal is complete and tunnelling is targeted to start in February 2017;  
3 Peace River Hydro Partners have been working this last quarter to obtain  
4 approvals for their water discharge management, shotcrete design and safety  
5 management plan from WorksafeBC;
- 6 • The first Relocated Surplus Excavated Material site was operational in early  
7 October 2016;
- 8 • Work on the Moberly River Construction Bridge started in September and was  
9 completed in December 2016;
- 10 • The Right Bank Cofferdam is at full height and cut-off installation started in late  
11 October 2016 and is targeted for completion in March 2017. There were some  
12 delays to completing this work due to the cold weather that was experienced at  
13 site in December 2016; and
- 14 • The Roller-Compacted Concrete Batch Plant construction was completed in  
15 time for the Roller-Compacted Concrete trial placement in December 2016.

1 **Figure 1 Map of Main Civil Works Work Areas**



2 **Table 3 Scope of Main Civil Works Contract**

Component	Description
Diversion works	Two approximately 11 metre diameter concrete-lined tunnels approximately 750 metres in length
Excavation and bank stabilization	Approximately 26 million cubic metres of overburden and rock excavation
Relocation	Relocation of surplus excavated material (including management of discharges)
Dams and Cofferdams	A zoned earth embankment 1,050 metres long and 60 metres above the present riverbed and stages 1 and 2 cofferdams
Roller-Compacted Concrete	Buttress – 800 metres long with 2 million cubic metres of concrete

3 **Quality Management**

4 Implementation and monitoring of Quality Control and Quality Assurance Plans are  
 5 required of all contractors. [Table 4](#) below identifies quality management  
 6 non-conformity instances during the quarter ending December 31, 2016.



1  
2

**Table 4      Quality Management Non-Conformity  
 Report Metrics**

Contract	Contractor	Reported this Period	Closed this Period	Reported to Date	Closed to Date
North Bank Site Preparation	Morgan Construction & Environmental	0	0	16	16
South Bank Site Preparation	Duz Cho Construction	0	1	1	1
Main Civil Works	Peace River Hydro Partners	88	48	136	72

3  
4  
5  
6  
7  
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9

The majority of quality non-conformities are related to the installation of the surface-mounted instrumentation for the right bank drainage tunnel. The surface-mounted instrumentation needed to be protected from damage from moving equipment. The surface-mounted instrumentation has now been protected. Other outstanding non-conformities are being resolved and reviewed weekly through face-to-face meeting with management from Peace River Hydro Partners and BC Hydro.

10

### **1.2.5      Safety**

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There was one Level 1 safety near miss and four Level 2 near misses at the construction site in this quarter. The Level 1 incident was related to an excavator that had tipped towards the river. The four Level 2 incidents included: back pain; foreign body to eye; property damage to excavator by large rock; and fractured ankle. The one Public Near Miss reported this quarter involved an employee observing a low hanging line over Old Fort Road, which could have impacted traffic flow. The line was reported to BC Hydro and Telus and Telus dispatched a crew to repaired their telephone line.

19  
20

[Table 5](#) below identifies the project safety metrics during the quarter ending December 31, 2016.

1 **Table 5 Safety Metrics**

	Reported this Period	Reported since Inception (July 27, 2015)
Fatality & Serious Injury <sup>2</sup>	0	0
Severity (number of calendar days lost due to injury per 200,000 hours worked) <sup>3</sup>	0	2
Lost Time Injury Frequency (number of injuries resulting in lost time per 200,000 hours worked) <sup>3</sup>	0	2
Contractor, employee, public near miss reports	47	291
Lost time incidents	1	2
Equipment/property damage reports <sup>4</sup>	34	175

2 **1.2.6 Environment**

3 **1.2.6.1 Mitigation, Monitoring and Management Plans**

4 The Environmental Assessment Certificate and Decision Statement conditions  
5 require the development of draft and final environmental management, mitigation  
6 and monitoring plans, as well as the submission of annual reports on some of these  
7 plans.

8 As of the end of this quarter, all required submissions have been made in  
9 accordance with the schedule and requirements of the conditions.

10 During the reporting period (Q3), four annual reports were submitted in accordance  
11 with the conditions.

12 **1.2.6.2 Technical Committees Required under Schedule A of the**  
13 **Conditional Water Licence**

14 Schedule A of the Conditional Water Licence requires that BC Hydro establish with  
15 Provincial and Federal Regulators two Technical Committees to provide oversight

<sup>2</sup> Excludes health events unrelated to work standards.

<sup>3</sup> BC Hydro is now capturing safety metrics data each week from our two Prime Contractors which includes man-hours worked. Although submissions have improved, BC Hydro continues to work with the Prime Contractors to improve the timeliness and accuracy of their reports.

<sup>4</sup> Types of equipment and property damage include vehicle damage, minor electrical fire damage, etc. Equipment damage data is collected through contractor monthly reports not the BC Hydro Incident Management System.

1 and guidance to the refinement and implementation of BC Hydro's Mitigation,  
2 Monitoring and Management Plans. The two Committees are: the Fisheries and  
3 Aquatic Habitat Mitigation and Monitoring Technical Committee; and the Vegetation  
4 and Wildlife Mitigation and Monitoring Technical Committee. Schedule A outlines a  
5 delivery schedule linked to Site C Project Construction Component for when the  
6 Technical Committees must review and revise various Mitigation and Monitoring  
7 Plans.

8 The Fish and Aquatic Technical Committee has met a total of 20 times to date,  
9 including two meetings in Q3 of this fiscal year. The Vegetation and Wildlife  
10 Technical Committee has met a total of 15 times to date, including three meetings in  
11 Q3 of this fiscal year. Both committees are meeting the timelines outlined in  
12 Schedule A of the Water License.

### 13 **1.2.6.3 Environmental Compliance Inspections and Enforcement**

14 Inspectors from the BC Environmental Assessment Office and Forests, Lands and  
15 Natural Resource Operations, Fisheries and Oceans Canada and from the Canadian  
16 Environmental Assessment Agency Office are expected to regularly inspect the  
17 Project to assess its compliance with Provincial Environmental Assessment  
18 Certificate conditions, Provincial permits and the Federal Decision Statement  
19 Conditions, respectively. In some quarters regulators may not inspect the project  
20 while other quarters may experience multiple inspections and potentially  
21 enforcement. The following summary provides context on regulatory agency  
22 inspections and enforcement that occurred prior to this quarter.

23 Forests, Lands and Natural Resource Operations inspected the project on three  
24 separate occasions and to date has not issued any inspection reports or orders.

25 In this reporting period, three agencies (BC Environmental Assessment Office,  
26 Forests, Lands and Natural Resource Operations and the Canadian Environmental  
27 Assessment Agency Office) completed a single coordinated inspection from

1 November 28, 2016 to December 2, 2016. They have not yet issued a final  
2 inspection report. On December 2, 2016, the Canadian Environmental Assessment  
3 Agency issued a stop work order pursuant to section 94 of the *Canadian*  
4 *Environmental Assessment Act* to BC Hydro related to work on the Moberly River  
5 Construction Bridge. The stop work was issued because the Contractor did not have  
6 the spill response kit and spill containment boom in the location prescribed in its  
7 Environmental Protection Plan. This stop work order was lifted on December 3, 2016  
8 following provision of satisfactory evidence that the work is compliant with the  
9 Federal Decision Statement Conditions. On December 19, 2016, this Agency also  
10 issued a Notice of Intent to issue an Order pursuant to section 94 of the *Canadian*  
11 *Environmental Assessment Act* related to not having contingency supplies of erosion  
12 and sediment control materials available onsite as per the Contractor's  
13 Environmental Protection Plans. On January 9, 2017 the Agency determined that an  
14 Order would not be issued following a satisfactory review of evidence of corrective  
15 actions, including evidence that contingency supplies are now in place. This is  
16 outside of the reporting period for this report. On December 22, 2016 the BC  
17 Environmental Assessment Office issued two Orders for non-compliance related to  
18 Environmental Assessment Certificate Conditions 56, 16 and 19; the monitoring of  
19 water wells and measures to protect amphibians. BC Hydro commenced monitoring  
20 of water wells in October 2016 and is providing the Environmental Assessment  
21 Office with the required documentation. Our Construction Environmental  
22 Management Plan includes measures to protect amphibians and BC Hydro is  
23 working with our contractor to ensure the work is in full compliance.

#### 24 **1.2.6.4 Heritage**

25 In accordance with a number of Environmental Assessment conditions and the  
26 Federal Decision Statement, the Site C Heritage Resources Management Plan  
27 addresses the measures that will be used to mitigate the adverse effects of the  
28 Project on heritage resources.

1 The Heritage field work includes regulatory requirements for pre-construction  
2 archaeological impact assessments in areas not accessible until now, systematic  
3 data recovery at selected archaeological sites, investigation of chance finds as  
4 required, and inspections of archaeological sites post-ground disturbance in  
5 construction. In addition, heritage reporting, and heritage compliance reviews of  
6 contract documents, contractor environmental plans and construction readiness  
7 plans were performed.

8 In this reporting period (Q3), 20 reports compiling the heritage data were completed,  
9 submitted and shared with First Nations.

#### 10 **1.2.6.5 Agriculture Mitigation and Compensation Plan - Framework**

11 BC Hydro worked with the Consultation Steering Committee comprised of staff from  
12 BC Hydro, the Ministry of Agriculture, and the Ministry of Energy and Mines, to  
13 develop the Framework for the Agricultural Mitigation and Compensation Plan. In  
14 developing the Framework, the Consultation Steering Committee considered the  
15 requirements of the Environmental Assessment Certificate condition (30);  
16 consultation feedback from regional agricultural stakeholders including land owners,  
17 tenure holders, Peace Region agricultural associations and local stakeholders; legal  
18 and financial advice; and background information including the Environmental  
19 Impact Statement and the Joint Review Panel Hearing report.

20 In accordance with the requirements of the condition, BC Hydro submitted the  
21 Framework on July 27, 2016 to the Peace River Regional District, the District of  
22 Hudson's Hope, and provided notification to affected landowners, tenure holders,  
23 and consultation participants of the framework being available on the Site C website.  
24 On August 12, 2016 an event was held at the Dawson Creek Agricultural Exhibition  
25 and Stampede to release the Framework and thank the agricultural sector for its  
26 participation to date, and requested feedback on the Framework during a 60-day  
27 comment period. The comment period closed at the end of September 2016, and

1 feedback will be considered in development of the draft Agricultural Mitigation and  
2 Compensation Plan. The draft Plan is due in January 2017, and a final Plan must be  
3 filed by July 2017 with the B.C. Environmental Assessment Office, Peace River  
4 Regional District, District of Hudson's Hope, the Ministry of Agriculture, the Ministry  
5 of Forests, Lands and Natural Resource Operations and affected landowners and  
6 tenure holders.

### 7 **1.2.7 Employment and Training Initiatives**

#### 8 ***Employment***

9 BC Hydro is using a managed open site labour approach which is an inclusive  
10 labour model. It does so by allowing all qualified contractors, regardless of union  
11 affiliation or status, to participate in the construction of the project.

12 With multiple employers working on site with different union affiliations there is a risk  
13 of union activity (e.g., organizing, raiding) that could cause site labour disruption  
14 resulting in safety and security issues, schedule delay, low productivity and morale,  
15 and increased costs. As with other major construction projects in B.C. there remains  
16 a risk of union activity occurring at certain periods during the length of the project.

17 To mitigate this BC Hydro has:

- 18 • Entered into a Memorandum of Understanding with certain British Columbia  
19 Building Trades unions to achieve labour stability and a mix of labour  
20 representation on site. This Memorandum of Understanding is specific to  
21 unions who have negotiated labour agreements for project work;
- 22 • Included labour stability terms such as no strike, no lockout, and no raiding  
23 provisions in major contracts on the site; and
- 24 • BC Hydro has implemented a site wide Labour Relations Contractor Committee  
25 to support labour stability on the site through communication, consultation,  
26 coordination and cooperation among contractors on the project.

1 To date there has been one successful union organizing drive on the project with no  
2 site disruption. ATCO Two Rivers Lodge operations workers were certified by the  
3 Teamsters 213 and ATCO Two Rivers Lodge and the Teamsters 213 successfully  
4 negotiated a first collective agreement. In addition, Saulteau Securiguard voluntarily  
5 recognized Teamsters as their union. Securiguard has a relationship with Teamsters  
6 at other locations, and is familiar with them and their labour agreements.

7 Securiguard is in the process of negotiating a collective agreement with Teamsters.

8 During this reporting period (Q3), the International Union of Operating Engineers  
9 Local 115 requested access to the camp in order to organize Peace River Hydro  
10 Partners workforce, who are currently represented by the Christian Labour  
11 Association of Canada, to join their union. This activity is called “raiding activity” or a  
12 “raid campaign”. There has been one BC Labour Relations Board application and  
13 hearing related to this raiding activity which surrounds the union’s ability to access  
14 the camp. The BC Labour Relations board issued a decision on the International  
15 Union of Operating Engineers Local 115’s application for union access to camp on  
16 January 25, 2017. The board granted the full access to the camp for three  
17 consecutive days per week until April 20, 2017. The International Union of Operating  
18 Engineers Local 115 must restrict their organizing efforts to certain times at camp  
19 and must comply with all safety and security policies and processes, unless  
20 amended by the decision. BC Hydro will be granting access to the Christian Labour  
21 Association of Canada under the same conditions. Currently no other unions have  
22 access to the camp unless they have a legal bargaining relationship with members  
23 working at the camp.

24 Contractors submit monthly workforce data electronically to BC Hydro. [Table 6](#)  
25 shows a snapshot of the total number of Construction contractors, Non-Construction  
26 contractors, Engineers, and Project Team workers for this quarter by month.

1 **Table 6 Site C Jobs Snapshot**

Month	Number of B.C. Workers <sup>5</sup>	Number of Total Workers <sup>5</sup>	% of BC Workers
October 2016	1,589	1,868	85
November 2016	1,471	1,796	82
December 2016	1,572	1,916	82

2 Refer to [Appendix E](#) for additional workforce information. The number of workers  
 3 continues to vary as the construction work progresses. For example, it is expected  
 4 that the number of workers will increase as main civil works ramps up. As job  
 5 opportunities become available, they are posted on the WorkBC website as well as  
 6 on the local Fort St. John’s WorkBC Employment Centre’s website (Employment  
 7 Connections).

8 ***Training Programs and Initiatives***

9 The Christian Labour Association of Canada has proposed an initiative to explore  
 10 the establishment of an onsite training facility on the Site C project, for the training of  
 11 the project workforce. This facility would be accessible to all contractors regardless  
 12 of union affiliation or status and would be housed on site. This facility would be able  
 13 to deliver theory portions of Construction Craft Worker training, and other relevant  
 14 apprenticeship programs at the site. Currently the Christian Labour Association of  
 15 Canada has developed a concept paper for the training facility and has provided it to  
 16 the Ministry of Jobs, Tourism and Skills Training and the Ministry of Advanced  
 17 Education for consideration. The Christian Labour Association of Canada is also  
 18 pursuing Western Diversification Funding. BC Hydro remains supportive of the  
 19 concept and has earmarked a location of the site for the facility should funding be  
 20 obtained.

21 The Christian Labour Association of Canada, the Industry Training Authority, and  
 22 Peace River Hydro Partners also began a training program in September 2016 with

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<sup>5</sup> Employment numbers provided by Site C contractors and consultants are subject to revision. Data not received by project deadline may not be included in the above numbers. Employment numbers are direct only and do not capture indirect or induced employment.



1 the Saulteau First Nations to provide Construction Craft Worker training via video  
2 conference (virtual classroom) in the First Nation's community. Peace River Hydro  
3 Partners has committed to hiring up to 12 individuals who graduate from the  
4 program for Site C work (provided they pass all standard Peace River Hydro  
5 Partners pre-employment tests). Ten individuals graduated from this program in  
6 November 2016. BC Hydro provided initial input and assisted in coordinating  
7 discussions between stakeholders.

8 Additionally, in August 2013, Northern Lights College started distributing BC Hydro  
9 Trades & Skilled Training Bursary Awards. As of November 2016, 176 students had  
10 received bursaries, including 67 Aboriginal students who have benefitted from the  
11 bursary in programs such as electrical, welding, millwright, cooking, social work and  
12 many others.

## 13 **1.2.8 Community Engagement & Communication**

### 14 **1.2.8.1 Local Government Liaison**

15 BC Hydro offered to enter into community agreement discussions with five  
16 communities in the vicinity of the Site C dam site and reservoir area: City of Fort St.  
17 John, District of Taylor, District of Chetwynd, District of Hudson's Hope and the  
18 Peace River Regional District. The focus of these agreements is primarily to set out  
19 implementation of any environmental assessment conditions relevant to each  
20 community, and to set out ongoing engagement between BC Hydro and each  
21 community during Site C construction.

22 During the quarter, BC Hydro continued to oversee implementation of the City of  
23 Fort St. John Community Agreement, and to work cooperatively with the District of  
24 Taylor and the District of Chetwynd to oversee implementation of their respective  
25 agreements. The next bi-annual committee meeting, in accordance with the Fort St.  
26 John Community Agreement, will be held in March 2017, to track progress against  
27 that agreement.

1 In addition, BC Hydro and the District of Hudson’s Hope concluded discussions and  
2 began legal drafting of an agreement that addresses both Site C and existing  
3 operations in the vicinity of Hudson’s Hope. The District and BC Hydro each finalised  
4 their respective ratification measures in Q3. Outside of this reporting period, the  
5 agreement was finalized and announced publicly. Implementation will begin in the  
6 next quarter.

7 BC Hydro and the Peace River Regional District have also renewed discussions  
8 toward an agreement to address direct impacts on their infrastructure and services,  
9 which is primarily inundation by the reservoir of their portions of their outfall located  
10 several kilometres upstream from the dam site.

11 The Regional Community Liaison Committee, which is comprised of local elected  
12 officials and local Aboriginal groups, will meet at least three times each year. The  
13 most recent meeting took place on December 7, 2016 and again, was well attended.  
14 Invitations to the Committee have included local Aboriginal groups and previous  
15 attendees have represented McLeod Lake Indian Band and Doig River First Nation.  
16 This latest meeting welcomed representatives from Blueberry River First Nations as  
17 new members of the committee. Several standing agenda items include an overview  
18 of construction activities, a review of local procurement and local employment, a  
19 review of recent public enquiries, and open agenda for community issues and  
20 concerns. As of this quarter, a total of 11 communities have participated as  
21 committee members, including eight local governments and three local Aboriginal  
22 groups (McLeod Lake, Doig River and Blueberry River) as well as the two MLAs for  
23 Peace River North and Peace River South. Attendance remains high and committee  
24 members actively participate in meetings, and continue to advocate for local  
25 interests with respect to the project for business, employment and local construction  
26 impacts and concerns.

1 **1.2.8.2 Business Liaison and Outreach**

2 On December 21, 2016 BC Hydro provided notification to the Site C business  
3 directory of the following opportunities:

- 4 • Request For Proposals for Supply of 550kV Disconnect Switches;
- 5 • Request For Proposals for Supply and Delivery of Grillage Foundations; and
- 6 • Request For Proposals for Supply and Installation of Control Building for South  
7 Bank Substation.

8 On December 22, 2016, BC Hydro provided notification to the Site C Business  
9 Directory for the following opportunities:

- 10 • Request For Proposals for Design Build Team to Build a Fifty (50)-Unit Certified  
11 Passive House Multi-Family Housing Development in Fort St. John, B.C.  
12 (issued by BC Housing); and
- 13 • Request For Proposals for Reservoir Slope and Shoreline Stabilization.

14 **1.2.8.3 Community Relations and Consultation**

15 BC Hydro continued to implement its construction communications program during  
16 the quarter. This program includes maintaining the project website  
17 [www.sitecproject.com](http://www.sitecproject.com) with current information.

18 **Construction Bulletins:**

19 Bi-weekly Construction Bulletins were issued throughout this period. These bulletins  
20 are posted on the project website and sent by email to the web-subscriber list.

21 **Public Enquiries:**

22 In total, BC Hydro received 666 public enquiries between October and  
23 December 2016, down from 805 in the previous quarter. The majority of these  
24 enquiries continued to be about business and job opportunities, although there were

1 also some construction impact concerns from local residents. [Table 7](#) shows the  
2 breakdown of some of the most common enquiry types:

3 **Table 7 Public Enquiries Breakdown**

Enquiry Type <sup>6</sup>	October	November	December
Job Opportunities	206	176	118
Business Opportunities	33	28	19
Construction Impact <sup>7</sup>	6	4	4

4 **1.2.8.4 Communications Activities**

5 Based on a search using the media database Infomart, there were 277 stories in  
6 B.C. news media in the October to December 2016 period on the Site C Project,  
7 compared to 401 stories in the previous quarter.

8 We have accommodated a number of site tour requests during the quarter for  
9 external groups. Examples include the Vancouver Sun, Blueberry River First  
10 Nations, International Brotherhood of Electrical Workers, Ministry of Transportation  
11 and Infrastructure, Ministry of Forests, Lands and Natural Resource Operations, and  
12 the Office of the Auditor General.

13 **1.2.8.5 Housing Plan and Housing Monitoring and Follow-Up Program**

14 BC Hydro and BC Housing signed a Contribution Agreement on July 19, 2016  
15 related to the development, construction and operation of a building in Fort St. John  
16 comprised of 50 residential rental units. This Agreement is the outcome of detailed  
17 discussions between the two partners to find the most appropriate approach to  
18 meeting Condition 48 and the housing terms of the Community Measures  
19 Agreement with the City of Fort St. John. The Agreement structured the financial  
20 contribution from BC Hydro to enable financially viable operation of the ten  
21 affordable housing units in the near-term and financially viable operation of all  
22 50 units of affordable housing in the longer term.

<sup>6</sup> This table is a sample of enquiry types and does not include all enquiry types received.

<sup>7</sup> The nature of the construction impact inquiries is primarily air quality, noise and traffic conditions.

1 The Agreement sets out the terms of the housing project, and has a target  
2 completion date for occupancy of October 31, 2018. BC Housing has decided to  
3 proceed with a Certified Passive House standard to provide the opportunity to  
4 showcase the Project's energy efficiency features. The City of Fort St. John has  
5 been a strong advocate for Passive Houses and will partner with BC Hydro in  
6 showcasing the building as a demonstration project for energy efficient building  
7 techniques.

8 During the quarter, BC Housing and the City of Fort St. John completed negotiations  
9 successfully for the purchase of a City-owned lot for the housing, located at  
10 9404 93<sup>rd</sup> Avenue. The City has initiated public notification processes, and re-zoning  
11 processes, as part of the offer of sale with BC Housing. BC Housing has issued a  
12 Request for Proposals for construction of the building and anticipates breaking  
13 ground in spring 2017.

#### 14 **1.2.8.6 Labour and Training Plan**

15 In accordance with Environmental Assessment Condition 53, a Labour and Training  
16 Plan was developed and submitted to the Environmental Assessment Office on  
17 June 5, 2015.

18 This plan includes reporting requirements to support educational institutions in  
19 planning their training programs to support potential workers in obtaining Project  
20 jobs in the future. This report was issued to the appropriate training institutions in the  
21 Northeast Region of B.C., in July 2016. The next report will be issued in  
22 summer 2017.

#### 23 **1.2.8.7 Health Care Services Plan and Emergency Service Plan**

24 The Project Health Clinic is contracted by BC Hydro with Halfway River International  
25 SOS Medical Ltd., a partnership between Halfway River First Nation and  
26 International SOS. The Clinic continues to operate in its permanent location within

1 the Two Rivers Lodge, and based on camp occupancy was staffed 24/7 during this  
2 period with a Nurse Practitioner and Advanced Care Paramedics.

3 BC Hydro and the clinic operator continue to liaise with the local health care  
4 community. BC Hydro and the Clinic staff hosted 20 representatives from the  
5 WorkSafeBC, North Peace Division of Family Practice, Northern Health Authority  
6 and Project contractors on September 30, 2016 for a meeting and tour of the worker  
7 accommodation facility and on-site health clinic. The Clinic provides workers with  
8 access to primary and preventative health care and work-related injury evaluation  
9 and treatment services and is currently open seven days a week, 24 hours a day.  
10 Since opening the Project health clinic there have been a total of 1,768 patient  
11 interactions. During the reporting period (Q3), there were 785 patient interactions, of  
12 which 112 were occupational and 673 non-occupational. During the quarter, several  
13 preventive health themes were promoted to workers, including: travel health and  
14 Zika Virus; cough, cold and flu including recognition of viral vs. bacterial; the  
15 importance of hand hygiene for prevention; prostate cancer awareness;  
16 hypothermia; and cold stress injuries.

17 Outside of the reporting period, there was an outbreak of gastrointestinal infections  
18 at the Site C project site. There were approximately 40 cases in total which  
19 represents a small proportion of our workforce of over 1,300 people working on site.  
20 The site and camp remained open and in operation throughout the outbreak, and all  
21 amenities are now available at the camp. BC Hydro reacted to this outbreak by  
22 collaborating with our contractors, the on-site medical clinic and the Northern Health  
23 Authority. There was a plan in place for the Site C project to deal with an illness  
24 outbreak and control measures were quickly implemented to reduce the  
25 transmission of the virus.

1    **1.2.8.8    *Property Acquisitions***

2    In the third quarter of F2017, BC Hydro completed the acquisition of rights over  
3    private lands impacted by the transmission line clearing and construction and  
4    completed the acquisition of land and rights required for the Cache Creek  
5    Highway 29 realignment. BC Hydro continued discussions with owners whose land  
6    is required for reservoir clearing in winter 2017/18 and the Halfway River  
7    Highway 29 realignment in 2019. In addition BC Hydro reached agreement with  
8    three crown tenure holders and continued discussions with the remaining two tenure  
9    holders, all of whom are impacted by transmission line clearing and construction.

10   **1.3            Key Procurement and Contract Developments**

11   The Project procurement approach was approved by the Board of Directors in  
12   June 2012 for the construction of the Project. The procurement approach defined the  
13   scope of the major contracts and their delivery models, as summarized in [Table 8](#)  
14   below.

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**Table 8 Major Project Contracts and Delivery Models**

Component	Contract	Procurement Model	Anticipated Timing
Worker Accommodation	Worker Accommodation and site services contract	Design-Build-Finance-Operate-Maintain	Completed
Earthworks	Site Preparation contracts	Predominantly Design-Bid-Build	Various, through F2017
	Main Civil Works contract	Design-Bid-Build	Completed
Reservoir Clearing	Multiple reservoir clearing contracts to be awarded over seven to eight years	Design-Bid-Build	One Agreement awarded for the Lower Reservoir
Generating Station and Spillways	Turbines and Generators contract	Design-Build	Completed
	Generating Station and Spillways Civil Works contract	Design-Bid-Build	Request for Proposals issued September 2016
	Hydro-Mechanical Equipment contract	Supply Contract	Request for Qualifications issued October 2016
	Powertrain Balance of Plant Equipment Supply	Supply Contracts	Commence: 2017 to 2018
	Completion Contract (Powertrain Balance of Plant Equipment Installation)	Install Contract	Commence: 2017
Electrical and Transmission Infrastructure	Transmission Lines contract	Design-Bid-Build	Various, through F2017 to F2018
	Site C substation contract	Design-Bid-Build	Commence: F2017
	Peace Canyon Substation upgrade contract	Design-Build	Contract Award: Quarter 4 F2017
Highway 29 Realignment	Design-Bid-Build in partnership with B.C. Ministry of Transportation and Infrastructure with anticipated award of the first contracts in 2017 with subsequent contract being awarded through 2018 to 2019.		

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### 1.3.1 List of Major Contracts Awarded (Excess of \$50 million)

Since inception of the Project, four major contracts (e.g., greater than \$50 million in value) have been awarded: Worker Accommodation, Site Preparation: North Bank, Main Civil Works and Turbine-Generator. The contracts were procured through a public competitive process and awarded based on a rigorous evaluation process within the budget established for each contract. A list of contracts in excess of \$50 million is shown in [Table 9](#) below.



1 **Table 9 Major Project Contracts Awarded**

Work Package	Contract Value	Current Status
Site Preparation: North Bank (\$ million)	60	Contract executed July 2015 and includes amendments to December 2016.
Worker Accommodation (\$ million)	465	Contract executed September 2015
Main Civil Works (\$ billion)	1.75	Contract executed December 2015
Turbine-Generator (\$ million)	464	Contract executed March 2016

2 In 2016, procurement of two major work packages commenced: Generating Station  
 3 and Spillways Civil Works contract and Hydro-Mechanical Equipment contract.  
 4 Procurement of these work packages is currently on track.

5 **1.3.2 Large Contracts to Date (Excess of \$10 million)**

6 BC Hydro has provided a table in [Appendix B](#) which shows the breakdown to date of  
 7 the contracts awarded in excess of \$10 million and cumulative variances.

8 **1.3.3 Contract Management**

9 **1.3.3.1 Material Changes to the Major Contracts**

10 There have been no material changes to the Major contracts to date.

11 **1.3.3.2 Contingency and Project Reserve Draws**

12 As part of the total project capital cost estimate of \$8.335 billion, \$794 million  
 13 (nominal) of contingency was allocated to the Site C Project at Final Investment  
 14 Decision in December 2014. This excludes \$440 million of project reserve which is  
 15 being held by the Treasury Board. There have been no draws on project reserve to  
 16 date.

17 Subsequently, additional contingency amounts from Interest-During-Construction  
 18 savings have been identified to augment initial allocation. BC Hydro's weighted  
 19 average cost of debt was reduced in 2016 and resulted in savings of \$76 million in  
 20 the quarter ended June 30, 2016.

1 At the Final Investment Decision, \$175 million was added to the project budget,  
2 related to a change in the start of construction to summer 2015. These amounts  
3 have been approved by the Board to be added to contingency.

4 The Interest-During-Construction savings and unallocated budget amounts totalling  
5 \$251 million was added to the original contingency allocation of \$794 million,  
6 resulting in the revised total contingency budget of \$1,044.5 million. As of  
7 December 31, 2016, \$285 million has been released to management and allocated  
8 to work packages (e.g., to be spent) through a work package change notice in order  
9 to fund contract award and/or contract contingency.

10 Refer to [Appendix D](#) for more detailed information regarding contingency and project  
11 reserve draws.

1 **1.4 Plans During Next Six Months**

2 The key milestones for the next six months are listed in [Table 10](#).

3 **Table 10 Key Milestones**

Milestone	Plan Date	Forecast/ Actual Date	Variance (months)	Status
North Bank (271) Road complete	June 2016	July 2017	(13)	Late – The delay is not impacting overall progression of work.
Moberly Bridge Complete	November 2016	December 2016	(1)	Late – The delay was mitigated by installation of a temporary bridge to allow for progression of work.
Tender Design for 5L5 Complete	February 2017	February 2017	0	On Track
Transmission Peace Canyon Gas Insulated Switchgear Contract Award	February 2017	February 2017	0	On Track
Transmission 5L5 & 5L6 Tower Contract Award	February 2017	February 2017	0	On Track
South Bank Stage 1 Cofferdam Complete	April 2017	March 2017	1	On Track
Powerhouse Excavation Complete	April 2017	May 2017	(1)	At Risk – The delay does not impact the overall Main Civil Works schedule and Peace River Hydro Partners remain on track for the concrete placement milestone.
Cache Creek Roads Contract Award	June 2017	June 2017	0	On Track

Milestone	Plan Date	Forecast/ Actual Date	Variance (months)	Status
Generating Station & Spillways Civil Contract Award	July 2017	October 2017	(3)	Late – Procurement timeline adjusted but construction milestones unchanged

1 **1.5 Impacts on Other BC Hydro Operations**

2 For the reporting period, there were no material impacts on the generation operation  
3 at the GM Shrum and Peace Canyon Dams or on water management at the Williston  
4 and Dinosaur reservoirs.

5 **1.6 Site Photographs**

6 Refer to [Appendix A](#) for site construction photographs.

## 2 Project Schedule

### 2.1 Project In Service Dates

BC Hydro currently shows all in service dates on track per [Table 11](#).

**Table 11 Project In-Service Dates**

Description/Status	Final Investment Decision Planned ISD <sup>8</sup>	F2017-F2019 Service Plan <sup>9</sup>	Status <sup>10</sup> and Comments
5L5 500kV Transmission Line	October 2020	September 2020	On Track
Site C Substation	November 2020	October 2020	On Track
5L6 500kV Transmission Line	July 2023	September 2023	On Track
Unit 1 (First Power)	December 2023	December 2023	On Track
Unit 2	February 2024	February 2024	On Track
Unit 3	May 2024	May 2024	On Track
Unit 4	July 2024	July 2024	On Track
Unit 5	September 2024	September 2024	On Track
Unit 6	November 2024	November 2024	On Track

The approved Final Investment Decision schedule involved the first unit coming into service in December 2023. The Project has advanced implementation phase activities to mitigate schedule risk.

## 3 Project Costs and Financing

### 3.1 Project Budget Summary

[Table 12](#) below presents the overall Project Budget, based on the Final Investment Decision (December 2014), represented in nominal dollars.

<sup>8</sup> Based on plan at Final Investment Decision, December 2014.

<sup>9</sup> Based on BC Hydro F2017-F2019 Service Plan approved in January 2016.

<sup>10</sup> Status based on comparison to BC Hydro F2017-F2019 Service Plan.

1 **Table 12 Project Budget Summary**

Description	Capital Amount (Nominal \$ million) *
Dam, Power Facilities, and Associated Structures	4,120
Offsite Works, Management and Services	1,575
<b>Total Direct Construction Cost</b>	<b>5,695</b>
Indirect Costs	1,235
<b>Total Construction and Development Cost</b>	<b>6,930</b>
Interest During Construction	1,405
<b>Project Cost, before Treasury Board Reserve</b>	<b>8,335</b>
Treasury Board Reserve	440
<b>Total Project Cost</b>	<b>8,775</b>

2 \* Budget values are rounded to the nearest \$5 million and include allocations of contingency.

3 **3.2 Project Expenditure Summary**

4 [Table 13](#) provides a summary of the Final Investment Decision approved *total*  
 5 Project cost, the current forecast *total* Project cost and the variance between the  
 6 two; and the plan *to date* amounts, the actual costs *to date* and the variance  
 7 between the two.

8 **Table 13 Total Project Expenditure Summary**  
 9 **(\$ million Nominal) Compared to Final**  
 10 **Investment Decision**

Description	Final Investment Decision	Forecast	Final Investment Decision Plan to Date	Actuals to Dec. 31, 2016	Variance
Total Project Costs	8,335	8,335	985	1,453	(468)
Treasury Board Reserve	440	440	0	0	0
<b>Authorized Project Cost</b>	<b>8,775</b>	<b>8,775</b>	<b>985</b>	<b>1,453</b>	<b>(468)</b>

11 [Table 14](#) provides a summary of the F2017-F2019 Service Plan *total* Project cost,  
 12 the current forecast *total* Project cost and the variance between the two; and the  
 13 plan *to date* amounts, the actual costs *to date* and the variance between the two.

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**Table 14 Total Project Expenditure Summary  
 (\$ million Nominal) Compared to  
 F2017-F2019 Service Plan**

Description	F2017-F2019 Service Plan	Forecast	F2017-F2019 Service Plan to Date	Actuals to December 31, 2016	Variance
Total Project Costs	8,335	8,335	1,561	1,453	108
Treasury Board Reserve	440	440	0	0	0
<b>Authorized Project Cost</b>	<b>8,775</b>	<b>8,775</b>	<b>1,561</b>	<b>1,453</b>	<b>108</b>

4 There is no variance between the *total* project costs approved in the Final  
 5 Investment Decision and the total project costs approved in the  
 6 F2017-F2019 Service Plan. Variances between the plan to date amounts occur due  
 7 to differences in the timing of project implementation activities.

8 Variances are primarily due to a shift of expenditures for some Properties  
 9 purchases, Mitigation and Compensation, Highways and Lower Reservoir clearing  
 10 into future periods. Further explanations are in [Appendix D](#).

### 11 **3.3 Internal Project Financing versus External Borrowings to Date**

12 To date, all project funding has been from internal borrowings and there has been no  
 13 Site C Project specific debt issued. As part of BC Hydro’s debt management  
 14 strategy, BC Hydro has reduced its exposure to variable debt and is managing  
 15 variable rate debt within a board approved range of 5 per cent to 25 per cent and a  
 16 target of 15 per cent. In addition, to lock in historically low interest rates, BC Hydro  
 17 has hedged 50 per cent (\$4.4 billion) of its forecast future debt issuances from  
 18 F2017 to F2024 through the use of derivative contracts.

1 **4 Material Project Risks**

2 This section describes the material Project risks that have high residual exposure to  
3 BC Hydro. Commercially sensitive numbers and content, and/or content that could  
4 be seen to prejudice BC Hydro’s negotiating position, are redacted in the public  
5 version. Note that the residual consequence and residual probability levels are  
6 qualitative assessments. Refer to [Table 15](#) for a list of risks.

7 **Table 15 Material Project Risks**

Risk Event/ Description	Risk and Response Summary	Trend in Risk Exposure <sup>11</sup>
Delay to Permitting	Permits and licences are still required for several portions of construction activity. Delays to these permits and licences could result in delays to the associated construction work. BC Hydro is proactively working with contractors, federal and provincial authorities, and First Nations to mitigate this risk.  Please refer to section <a href="#">1.2.2</a> for further information on legal issues related to permits and approvals.	↓
Litigation	Refer to section <a href="#">1.2.2</a> and <a href="#">Table 2</a> for status of judicial reviews related to environmental approvals and permits.  On October 31, 2016 the Supreme Court of BC dismissed a petition by two First Nations to overturn provincial permits issued for the construction of the Project. The two First Nations have submitted an appeal of this ruling and no hearing date has been set.	↓
First Nations	BC Hydro has continued to negotiate agreements with several First Nations. The status of some specific negotiations is confidential at this time.  Impact Benefit Agreements with First Nations provide First Nations with Project benefits and mitigate the risk of legal challenges.	→

<sup>11</sup> Arrow direction represents the change since the last Quarterly Progress Update report.



Risk Event/ Description	Risk and Response Summary	Trend in Risk Exposure <sup>11</sup>
Market response to procurement	<p>BC Hydro received a strong response to the Request for Qualifications for the Generating Station and Spillways Hydro-Mechanical Equipment contract that is under evaluation. BC Hydro will short-list the top qualified proponents to then receive the Generating Station and Spillways Hydro-Mechanical Equipment Request for Proposal.</p> <p>The Generation Station and Spillway Civil Works Request for Proposals is under development; however, one of the prequalified Proponents has withdrawn leaving three strong pre-qualified Proponents to receive the Request for Proposals.</p> <p>To date, BC Hydro has received positive and competitive market responses (Worker Accommodation, Main Civil Works, Turbine and Generators) and will continue with market sounding, robust Request for Qualification processes, honorariums for un-successful short-listed proponents that submitted a bona fide proposal, and other engagement activities.</p> <p>Market response risks will continue to be monitored and could be impacted if the project construction schedule is delayed significantly.</p>	→
Labour Relations & Stability	<p>BC Hydro is using an inclusive labour approach with a managed open site. This allows for participation by all union and non-union labour groups and allows access to the largest pool of skilled and experienced labour.</p> <p>BC Hydro entered into a memorandum of understanding with certain B.C. Building Trades unions to achieve labour stability and a mix of labour representation on site, including building trades unions. This is specific to unions who have negotiated labour agreements for Project work. All major contracts contain no strike, no lockout, and no raiding provisions.</p> <p>BC Hydro has implemented a site wide Labour Relations Contractor Committee. The purpose of this committee is to support labour stability on the site through communication, consultation, coordination and cooperation among contractors on the project.</p> <p>Due to multiple employers working onsite with different union affiliations there is a risk of site labour disruption (e.g., organizing, raiding and increased site union activity), which would result in safety and security issues, schedule delay, low productivity and morale, and increased costs.</p> <p>Due to multiple employers working on site with different union affiliations there could be various raiding periods due to multiple collective agreement durations/terms.</p>	↑

Risk Event/ Description	Risk and Response Summary	Trend in Risk Exposure <sup>11</sup>
Geotechnical risks	<p>Events associated with geotechnical risks have occurred or have been identified. The contractor responded to requirements for redesign of left bank haul road due to pre-identified instability that the contractor was monitoring. The contractor is executing an alternate design to address these conditions and mitigate risk to their schedule.</p> <p>The current strategies to mitigate geotechnical risks include transferring some degree of ground condition risks to the contractor to resolve including conducting field-scale trials and additional monitoring to determine the response when shale bedrock is exposed to the elements.</p>	→
Construction cost – labour	<p>Potential cost increases could arise if there is competition with other projects for labour resources, labour instability, or changing workforce demographics. Based on current market conditions in the infrastructure and energy sector, the labour risk is low however the recent federal announcement of pipeline projects could impact labour prices and availability of skilled labour. There remains the potential for market labour conditions to shift in the future and if so this risk may increase.</p>	→
Construction cost – commodities and equipment	<p>Construction commodity and equipment cost risks have declined slightly over the past year. Key commodities such as steel, diesel and gasoline are below BC Hydro's forecast when preparing the original cost estimate. Diesel and gasoline rack pricing are currently slightly below the baseline rate established for fuel escalation in the Main Civil Works contract, although underlying oil prices have been slowly rising during the 2016 calendar year.</p> <p>The downturn in the Alberta and BC oil-patch has reduced competing demand for major commodities and equipment. There remains some risk of higher-than-expected commodity costs due to a material change in market conditions, although this is offset by BC Hydro having let most of its major construction contracts such as Main Civil Works, Turbines &amp; Generators, Worker Accommodation and for which most elements of commodity risk are transferred to the respective contractor at the time of award</p>	→

Risk Event/ Description	Risk and Response Summary	Trend in Risk Exposure <sup>11</sup>
Construction execution	<p>Over the last quarter, Peace River Hydro Partners, the Main Civil Works contractor, has increased their productivity on the Left Bank to advance the re-sequenced work, which has reduced short term schedule risk. Construction on the Moberly Bridge was completed in December 2016 and the main civil works scope is on track to meet the re-sequenced schedule milestones and the planned river diversion in 2019. Peace River Hydro Partners is planning additional resources on the Right Bank as part of the re-sequenced work. BC Hydro continues to have weekly meetings with Peace River Hydro Partners to review construction performance and productivity.</p> <p>All Contractors on the Project have experienced difficulties in adapting their construction methodologies to achieve the Project's environmental commitments. To address this, BC Hydro is working collaboratively with the Contractors to help them comprehend these commitments and to implement solutions that meet regulators' expectations.</p>	↑
Foreign exchange	<p>Some of Site C project costs are in foreign currency, and will be affected by fluctuations in the exchange rate between the Canadian Dollar and these foreign currencies. Approximately 20 per cent of the Site C direct construction costs are based on foreign currency.</p> <p>The Canadian dollar has weakened significantly compared to the U.S. dollar since the 2014 capital cost estimate was developed. However, the award of major contracts (particularly the Turbine Generator contract) has reduced BC Hydro's exposure to currency fluctuations by transferring the risk to the contractor after award.</p> <p>The impact on future procurements may be larger than BC Hydro has seen to date, depending on future movement in foreign exchange markets, future movement in commodity and equipment markets, and the ability of the proponents to source from a range of foreign markets. Residual risk on contracts yet to be procured is partially mitigated through contractor flexibility around sourcing of material, resulting in an exposure to a basket of currencies rather than solely the U.S. dollar.</p>	→

Risk Event/ Description	Risk and Response Summary	Trend in Risk Exposure <sup>11</sup>
Interest rate variability	<p>Interest during construction costs will be affected by fluctuations in market interest rates. Currently, market interest rates are expected to be lower than assumed in BC Hydro's budget at the Final Investment Decision.</p> <p>BC Hydro has reduced its exposure to variable rate debt and increased its exposure to fixed rate debt. An application to the Commission for a new Debt Hedging Regulatory Account to capture the gains and losses related to the hedging of future debt issuance was approved by the British Columbia Utilities Commission in March 2016. BC Hydro has hedged 50% of its forecast future debt issuances from F2017 to F2024 through the use of derivative contracts.</p>	↓
Change in Tax Rates	<p>There is the potential for a change in tax rates that apply to Site C (e.g., PST, carbon tax) as well as the potential for a portion of GST to be unrecoverable.</p> <p>BC Hydro is monitoring potential changes to federal and provincial taxes and their potential effects. Where appropriate, BC Hydro will secure advance rulings on tax applicability to reduce uncertainty in treatment.</p>	→

## **Site C Clean Energy Project**

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### **Quarterly Progress Report No. 6**

#### **Appendix A**

#### **Site Photographs**

**Figure A-1** Moberly River Construction Bridge Facing South. Photo taken November 4, 2016.



**Figure A-2** Right Bank Cofferdam – Grab 2 Installing Panel 246. Photo taken November 5, 2016



**Figure A-3 Right Bank Drainage Tunnel Portal - Face Was Cleaned and Marked for Mapping. Photo taken November 25, 2016**



**Figure A-4 Commissioning Concrete Plant. Photo taken November 8, 2016**



**Figure A-5** Area 21, Roller-Compacted Concrete Trial Enclosure. Photo taken December 2, 2016



**Figure A-6** Right Bank Drainage Tunnel Facing South – Prepared Rock Surface Covered and Heated prior to Shotcrete Application. Photo taken December 2, 2016





**Figure A-7 Relocated Surplus Excavation Materials  
R6 - Facing Northeast. Photo taken  
December 2, 2016.**



**Figure A-8 Roller-Compacted Concrete Trial  
Enclosure. Photo taken  
December 2, 2016**



**Figure A-9 Relocated Surplus Excavation Materials – Fish Salvage. Photo taken December 2, 2016**



**Figure A-10 Wuthrich Quarry Facing West – Plant Layout. Photo taken December 2, 2016**



**Figure A-11 Worker Accommodation North Mud Room and Lobby Entrance.**



**Site C Clean Energy Project**

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**Quarterly Progress Report No. 6**

**Appendix B**

**Summary of Individual Contracts Exceeding  
\$10 million**

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**ATTACHMENT**

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**Site C Clean Energy Project**

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**Quarterly Progress Report No. 6**

**Appendix C**

**Project Progression**

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**Quarterly Progress Report No. 6**

**Appendix D**

**Detailed Project Expenditure**

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## **Site C Clean Energy Project**

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### **Quarterly Progress Report No. 6**

#### **Appendix E**

#### **Workforce Overview**

**Table E-1 Current Site C Jobs Snapshot (October to December 2016)<sup>12</sup>**

Type of Work	October 2016		November 2016		December 2016	
	Number of B.C. Workers	Number of Total Workers	Number of B.C. Workers	Number of Total Workers	Number of B.C. Workers	Number of Total Workers
Construction and Environmental and Non-- Construction Contractors <sup>13</sup> (including some subcontractors). Excludes work performed outside of B.C. (e.g., Manufacturing)	1,236	1,466	1,136	1,382	1,250	1,531
Engineers and Project Team <sup>14</sup>	353	402	335	414	322	385
<b>TOTAL</b>	<b>1,868</b> (85%)	<b>1,589</b>	<b>1,471</b> (82%)	<b>1,796</b>	<b>1,572</b> (82%)	<b>1,916</b>

Employment numbers provided by Site C contractors and consultants are subject to revision. Data not received by project deadline may not be included in the above numbers. During the month of November 2016, there were no workers working under the federal Temporary Foreign Worker Program from Construction and Non-Construction Contractors. BC Hydro has contracted companies for major contracts, such as main civil works, who have substantial global expertise. In November, there were 26 management and professionals working on the project through the federal International Mobility Program.

<sup>12</sup> Employment numbers are direct only and do not capture indirect or induced employment.

<sup>13</sup> Construction and Environmental and Non-- Construction Contractors includes work performed on Site C dam site, transmission corridor, reservoir clearing area, public roadwork, worker accommodation and services.

<sup>14</sup> Project Team includes consultants, BC Hydro Construction Management and other offsite Site C project staff. An estimate is provided where possible if primary residence is not given.

**Table E-2 Preliminary Site C Apprentices Snapshot  
(October to December 2016)**

Month	Number of Apprentices
October 2016	17
November 2016	19
December 2016	40

Data is subject to change based on revisions received from the contractors.

**Table E-3 Current Site C Job Classification Groupings**

Biologists & Laboratory	Carpenters	Construction and Environmental Inspectors	Construction Managers/ Supervisors	Crane Operators	Electricians	Engineers
Foresters	Health Care Workers	Heavy Equipment Operators	Housing Staff	Heating, Ventilation, and Air Conditioning	Kitchen Staff	Labourers
Mechanics	Office Staff	Pipefitters/ Plumbers	Security Guards	Surveyors	Truck Drivers	Welders

**Table E-4 Aboriginal Inclusion Snapshot (March to November 2016)**

Month	Number of Aboriginal Workers
March 2016	90
April 2016	104
May 2016	131
June 2016	179
July 2016	176
August 2016	196
September 2016	118
October 2016	145
November 2016	149
December 2016	187

The information shown has been provided by BC Hydro's on-site construction and non-construction contractors and their sub-contractors that have a contractual requirement to report on Aboriginal inclusion in their workforce.

Employees voluntarily self-declare their Aboriginal status to their employer and there may be Aboriginal employees that have chosen not to do so; therefore, the number of Aboriginal employees may be higher than shown in the table.

As with any construction project, the number of workers — and the proportion from any particular location — will vary month-to-month and also reflects the seasonal nature of construction work. The number of workers will also vary as a contract's scope of work is completed by the contractor.

## **Site C Clean Energy Project**

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### **Quarterly Progress Report No. 6**

#### **Appendix F**

#### **Site C Construction Schedule**

**Table F-1 Site C Construction Schedule**

Construction Activity	2015				2016				2017				2018				2019				2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>Dam Site Area</b>	2015				2016				2017				2018				2019				2020				2021				2022				2023				2024			
Clearing: dam site																																								
Access roads at the dam site																																								
Worker accommodation																																								
Peace River construction bridge																																								
Excavation and material relocation																																								
Coffdams and diversion tunnels																																								
Earthfill dam																																								
Roller-compacted-concrete buttress																																								
Generating station and spillways																																								
Turbines and generators (installation)																																								
Substation																																								
Powerhouse transmission lines																																								
Viewpoint construction/landscaping																																								
Demobilization and site reclamation																																								
<b>Roads and Highways</b>	2015				2016				2017				2018				2019				2020				2021				2022				2023				2024			
Public road improvements																																								
240 Road																																								
269 Road																																								
271 Road																																								
Old Fort Road																																								
Highway 29 realignment																																								
Bear Flat/Cache Creek																																								
Halfway River																																								
Dry Creek																																								
Ferrell Creek																																								
Ferrell Creek East																																								
Lynx Creek																																								
<b>Peace River / Reservoir Area</b>	2015				2016				2017				2018				2019				2020				2021				2022				2023				2024			
Clearing: east end of reservoir																																								
Clearing: lower reservoir to Cache Creek																																								
Clearing: Cache Creek to Halfway River																																								
Clearing: Halfway River to Hudson's Hope																																								
River diversion																																								
Reservoir filling and operations																																								
<b>Transmission Works</b>	2015				2016				2017				2018				2019				2020				2021				2022				2023				2024			
Transmission line clearing																																								
Transmission line construction																																								
Extension of Peace Canyon switchyard																																								
<b>Hudson's Hope Shoreline Protection</b>	2015				2016				2017				2018				2019				2020				2021				2022				2023				2024			
DA Thomas Road upgrades																																								
Hudson's Hope Berm																																								
<b>Production &amp; Transport of Materials</b>	2015				2016				2017				2018				2019				2020				2021				2022				2023				2024			
85 <sup>th</sup> Avenue Industrial Lands																																								
Portage Mountain Quarry																																								
West Pine Quarry																																								
Wuthrich Quarry																																								

The construction schedule is indicative only and subject to change. The purpose of the schedule is to illustrate the general sequence of construction activities, but the dates and schedule may change.

October 2016