

1 **Q. (Reference Application, Sandy Brook Penstock Replacement, page 9) It is stated “The**
2 **penstock wooden staves are in poor condition and the saddles are experiencing severe**
3 **cracking.” Please provide a copy of all reports during the period from 2005 to 2019**
4 **concerning the condition of the Sandy Brook penstock. When did the penstock start**
5 **leaking? Will the penstock be replaced with a wooden stave penstock with an expected**
6 **life of 50 years?**

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8 A. There are no reports to provide for the period from 2005 to 2019 concerning the
9 condition of the Sandy Brook Plant penstock.¹

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11 The exact timing of the first leak detected on the Sandy Brook Plant penstock is
12 unknown. Woodstave penstocks are susceptible to leakage throughout their service lives.
13 Minor leakage is to be expected and can be mitigated by the use of wooden shims and
14 steel band tightening. This method can only be used effectively while the condition of
15 the wooden staves is favorable. As deterioration of the wooden staves progresses, the
16 insertion of wooden shims can no longer effectively mitigate leakage and band tightening
17 will crush deteriorated wooden staves. The wooden staves at the Sandy Brook Plant have
18 deteriorated to a level where wooden shims and band tightening will no longer effectively
19 mitigate leakage and the penstock must now be replaced.

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21 The Sandy Brook Plant penstock will not be replaced with a woodstave penstock.
22 Replacement options include, but are not limited to, steel, fibreglass reinforced polymer,
23 centrifugally cast fibreglass, reinforced polymer mortar, and high density polyethylene.
24 Penstocks manufactured from these materials have an expected service life of 80 years or
25 more.

¹ The *Penstock Inspection Summary Report* prepared by Kleinschmidt Associates Canada Inc., included as Appendix B of *Report 1.2 Sandy Brook Plant Penstock Replacement*, was completed in April 2021.