



<b>To</b> Robert Ellis, C.A.O.	<b>From</b> Roger Towsley, P.Geo, Senior Hydrogeologist
<b>Company</b> Municipal District of Bighorn No. 8	<b>MCSL Branch</b> 2131 – Edmonton, AB
<b>Re</b> Groundwater Report Recommendations	<b>Date</b> March 10, 2021
	<b>File Number</b> 2131-00114-00

## 1. INTRODUCTION

The MD of Bighorn No. 8 has requested that McElhanney Ltd. (McElhanney) provide an addendum with recommendations for the Physical Hydrogeological Assessment Report supplied to the MD in November, 2020. Although the report has several recommendations throughout, this memo summarizes them together and also provides additional recommendations as outlined below.

The following are recommendations to better understand the causes and mechanisms of flooding from water table rise in the North Community of Exshaw. This increased knowledge is expected to improve the effectiveness of proposed engineered solutions to community flooding.

- Install pressure transducers in all monitoring wells and commence monitoring of groundwater levels earlier in the spring (e.g. March) to capture the start of rise in groundwater levels in spring;
- Assess hydraulic conductivity with methods better suited for high permeability materials and reassess groundwater flow velocity and flux;
- Develop a work plan to evaluate whether the debris flood mitigation structure exacerbates or significantly contributes to spring flooding due to rising groundwater in the North Community through increased infiltration or impoundment of water;
- Continue groundwater monitoring and expand the groundwater monitoring network to assess:
  - Groundwater levels and flooding in the North Community in years with a normal mountain snowpack;
  - Effects of Bow River water levels on local groundwater levels;
  - Effects of impoundment of water in the sedimentation pond on local groundwater levels;
- Complete groundwater modelling to assess if dewatering through a series of groundwater extraction wells could be a viable option to reduce flooding in the Northern Community.
  - The modelling should consider the effectiveness of the dewatering program for reducing water levels in the community and also the potential withdrawal effects on Bow River water levels; and,
  - The effects that discharging water directly to the Bow River will have on raising water levels in the river with the potential for backflow into the community.

We trust the above provides the necessary information for your review. Please contact the undersigned should you have any questions.

Sincerely,

McElhanney Consulting Services Ltd.



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## STATEMENT OF LIMITATIONS

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