ALBERTA ENVIRONMENTAL APPEALS BOARD

BOARD FILE NUMBER	23-046 – *WATER ACT* APPROVAL NO. DAUT0012841
APPELLANT	BIGHILL CREEK PRESERVATION SOCIETY
RESPONDENTS	AECON TRANSPORTATION WEST LTD. and DIRECTOR, REGULATORY ASSURANCE DIVISION SOUTH, ALBERTA ENVIRONMENT AND PROTECTED AREAS
DOCUMENT	**WRITTEN SUBMISSION OF THE APPELLANT**

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I. INTRODUCTION

1. The following abbreviations are used in this Submission:

   a. 2025 State of the Watershed Report – Bighill Creek Preservation Society (BCPS). 2025. Bighill Creek State of the Watershed Report. Cochrane, AB. Pp 120 + appendices (attached to this submission as **APPENDIX A**);

   b. Aecon – Aecon Transportation West Ltd.;

   c. Appellant – Bighill Creek Preservation Society;

   d. Approval - Approval No. DAUT0012841 dated July 20, 2023 issued by the Director under the *Water Act* authorizing Aecon to (1) place, construct, operate, maintain, remove, disturb works, in or on any land, water or water body, (2) maintain, remove or disturb ground, vegetation or other material in or on any land, water or water body and (3) alter flow, direction of flow or level of water, all for the purpose of aggregate extraction at NW-31-026-03-W5, SW-31-026-03-W5 in Rocky View County, Alberta;

   e. Board - Alberta Environmental Appeals Board;

   f. Colpitts Report – *Big Hill Springs Provincial Park Historical and Historiographical Report* (August 2026) 38 pp (attached to this submission in **APPENDIX B**);

   g. Director – Designated Director under the *Water Act*;

   h. *EPEA – Environmental Protection and Enhancement Act*, RSA 2000 c E-12;

   i. Fennell Report - *Mountain Ash Limited Partnership Summit Gravel Pit: Review of hydrogeology, geochemistry, fish and aquatics, and climate change* (January 2021) 57 pp and Addendum Soil Column Experiment (June 2021) 13 pp (attached to this submission in **APPENDIX C**);

j. Park – Big Hill Springs Provincial Park;

k. *Water Act* – *Water Act*, RSA 2000, c W-3.

2. The Appellant, Bighill Creek Preservation Society, is an Alberta-based registered society formed in 2015 with a mandate to ensure the natural and historical values of the Bighill Creek watershed are preserved for current and future generations.

3. The Appellant has an established record of conservation-related work in furtherance of its mandate. A full articulation of the Appellant's work is found on its website at www.bighillcreek.ca.

4. The 2025 State of the Watershed Report represents a decade of work by the Appellant to achieve its conservation mandate.

5. Big Hill Springs Provincial Park, one of Alberta's oldest provincial parks, lies at the approximate centre of the Bighill Creek watershed. Accordingly, the Appellant's work is dedicated to advocating for the preservation of the Park's ecological integrity, including the nationally significant Big Hill Spring located at the Park.

6. Since its inception, the Appellant has been raising concerns about the proliferation of gravel extraction above the catchment basin for the Big Hill Spring with operators, Rocky View County, the Town of Cochrane, and Alberta government officials.

7. The Appellant filed a statement of concern under the *Water Act* with Alberta Environment and Protected Areas in relation to the application for the Approval, and the statement of concern was accepted by the Director on May 31, 2022.

8. In *Bighill Creek Preservation Society* v. *Director, Regulatory Assurance Division South, Alberta Environment and Protected Areas*, re: *Mountain Ash Limited Partnership* (6 March 2024), Appeal No. 23-046-ID1 (AEAB), 2024 ABEAB 9, the Board ruled the Appellant is directly affected by the Approval and accordingly has standing under EPEA to commence an appeal of the Approval.

9. On or about July 17, 2026, the Board issued a Notice of Hearing regarding the Approval.

10. In *Foss et al. v Director, Regulatory Assurance Division South, Alberta Environment and Protected Areas, re: Aecon Transportation West Ltd.*, 2026 ABEAB 18, the Board determined the issues to be heard in this Appeal.

11. The Appellant engaged Dr. George Colpitts, a Professor and environmental historian in the Department of History, Faculty of Arts at the University of Calgary, to prepare a historical assessment of the Park.

12. In the Colpitts Report, Dr. Colpitts' assessment of the historical record of the Park confirmed the Big Hill Spring in the Park have been valued for more than a century for utilitarian, recreational, commercial, and aesthetic reasons. The historical record confirms that since the 1970s, Alberta officials have sought to protect the Park and the Big Hill Spring for its ecological value which, in turn, confirms the findings set out in the 2025 State of the Watershed Report.

13. The Colpitts Report is consistent with the actions by Alberta government officials responsible for provincial parks who have expressed concern about the impact of the Aecon mining on the Park. In a letter submitted to the Rocky View County on February 17, 2021, Alberta Environment and Parks noted concerns that the mine project impact assessment failed to fully assess impacts of the mine to groundwater quality and exposure to contaminants.

14. The Appellant engaged Dr. Jon Fennell, an experienced hydrogeologist and geochemist, to provide an expert report to ascertain the potential impacts of the Aecon mine on groundwater quality and quantity in the aquifer which is the source of the Big Hill Spring in the Park.

15. In the Fennell Report, Dr. Fennell's evaluation determined the mine would create a real risk of contamination into the groundwater aquifer which is the source for the Big Hill Spring in the Park. The Fennell Report concludes that the high risk and irreparable nature of this foreseeable harm requires that no gravel mining should be permitted within 1.6 kilometers of the Park and any mine located within an additional 1.6 kilometers from this setback should be required to leave at least 4 meters of undisturbed gravel above the groundwater table.

16. Aecon proposes to mine up to 25 meters of gravel to within 800 metres of the Park, leaving only 1 meter of gravel above the underlying groundwater aquifer which is the source of the Big Hill Spring in the Park. The Fennell Report indicates that removing gravel to this depth will impede the filtering mechanism and render the aquifer at risk of contamination from open pit operations and allows exposure to atmospheric oxygen that could enhance weathering. The Fennell Report also states that a vastly reduced filter would be susceptible to increased flushing and mobilization of fine particles, trace elements including selenium and heavy metals like arsenic and chromium into a fish-bearing stream – such as Bighill Creek – which receives approximately 50% of its flow from the Big Hill Spring downstream of the Park.

17. The Appellant disputes the assertions by Aecon that this mine will be a 'dry pit', that leaving just 1 metre of gravel above the groundwater aquifer will be adequate protection from contamination, that increased recharge is a positive impact, and that any contamination or turbidity will be limited in extent and never reach the Big Hill Spring. All of these assertions by Aecon are contestable on the evidence and demonstrate real uncertainty over the impacts of this mine on the Park, the Big Hill Spring, and Bighill Creek.

18. The Appellant submits the Aecon mining activities represent a material and permanent risk of irreparable harm to the groundwater aquifer underneath the mine, Big Hill Spring in the Park, Bighill Creek, and related wetlands, fish and riparian habitats. Accordingly, the Appellant requests that the Board recommend the Minister rescind the Approval or alternatively add terms and conditions to the Approval to implement preventative measures.

II. BIG HILL SPRINGS PROVINCIAL PARK

19. The Park was established in 1957, and accordingly is one of Alberta's first provincial parks. By the 1950's the attractive creek flowing over tufa falls and its sudden and clear spring, had become a local attraction for picnics, fishing and camping. The original land was apparently donated to Alberta by the estate of Senator Patrick Burns. Over the years, Calgary's Devonian Foundation and Canada's Nature Conservancy have tried to purchase adjacent lands to expand the park and protect the incised melt-water valley between the park and Cochrane. Parks Canada has

recognized the Big Hill Spring in the Park as nationally significant and among the top four most important mineral springs in Canada (See excerpt from *Natural History Study of Mineral and Thermal Springs in Canada* (Parks Canada, 1984) in **APPENDIX D –** a full copy of the Study is available on the Appellant's website at www.bighillcreek.ca**)**.

20. The Park receives approximately 250,000 visitors annually and was recently renovated at a cost of $1.2 million due to heavy use. The Park's ecology was created and is sustained by the Big Hill Spring that come from a groundwater aquifer extending approximately 30 square kilometers to the north and west. The Aecon mine site is located on the aquifer approximately 800 meters from the Park boundary where the Big Hill Spring come to the surface.

Historical Assessment

21. The following paragraphs on historical assessment summarize key findings in the Colpitts Report and the 2025 State of the Watershed Report.

22. In Alberta's territorial and provincial history, the site of the Park gained considerable value among settlers, early townspeople, and Calgarians. The site's dramatic valley topography, its well-watered and vegetative features, and the shelter provided by its forests attracted visitors from an early date.

23. In most of the site's history before and immediately after the park's establishment in 1957, Big Hill Spring– its creek, waterfalls, topography, and forests – gained value in respect to its scenic beauty.

24. Within a very circumscribed area, the water features, topography, and vegetation combined at the site to make Big Hill Spring appear like an "oasis amid the surrounding grassy hills," as Norman Willmore, the Minister of Lands and Forests, said in 1962.

Potable quality of Big Hill Creek Provincial Park Waters

25. Dominion Lands surveyors in the 1880s noted in their township surveys the intrinsic qualities of springs water around the site of what is now the Park. One recorded that, "The grass is rich and luxuriant, springs of fresh water are numerous (many of which never freeze)."

26. Settlers prized the Big Hill Spring for the potable water they provided them and their livestock. Family histories from the region attest to settlers choosing lands where creeks or springs flowed.

27. Some regional family histories recognized local springs running year-round or staying ice free late in the fall. The Big Hill Spring was appreciated in these early settlement days, but it is likely that they were not recognized as particularly unique in their intrinsic qualities to set them apart from other springs sources in the wider district.

28. The recognized potability of water from Big Hill Spring was appreciated by the Town of Cochrane when its council hired a water engineer in 1913 to present options to pipe water direct from the springs or from elsewhere on Big Hill Creek to be filtered in a reservoir.

Agricultural History

29. Ranching was the dominant agricultural activity at the site where the Park is now located. Its abundant grasslands and water sources attracted early settlers with livestock. A local history asserted that squatters lived "here and there" in the area "staying close to the running springs and protected from the wind to some extent." Some family histories confirm that early settlers, often moving between sites to take up lands in different parts of Alberta, chose land in the Big Hill Spring area in respect to its multiple spring sources and creeks.

30. Large ranch landownership consolidated the area's land use history for most of the 20th century. Ranchers depended on Bighill Creek and the various springs in the area to water their cattle.

Commercial Use

31. A creamery on Bighill Creek operated early in the settler period within the area later set aside as the Park. The creamery derived water power from the creek and its owner apparently used the creek's cold water in that locale as a refrigerant for cream and butter.

32. Apparently, in 1941, the provincial government investigated the Big Hill Spring as a potential site for a fish hatchery and acquired a portion of land within the current park in 1945. A small hatchery opened in 1950, but it proved a failure and was abandoned by 1956.

Recreational Value

33. The site of what is now the Park gained recreational value very early. Its geographic features encouraged its recreational use among settlers, townspeople, and Calgarians. They fished Bighill Creek and used the shelter of its forests for camping and picnicking.

34. The site's recreational values derived from its natural qualities. It is likely that townspeople and, especially, Calgarians, turned to the Big Hill Spring to achieve a sense of being back in nature in the anti-modernist movement gaining adherents early in the 20th century.

35. As early as 1934, a Calgary newspaper reporting on "Big Hill Springs" described it as a "favored spot with villagers and city folk alike." The writer drew attention to the "little fairy glade that surrounds the springs, with its miniature waterfalls and crystal pools".

36. Bighill Creek was popular for angling, although its fish populations declined rapidly by the 1920s to require the creek's restocking, at least as early as 1926.

37. As a popular recreational site and one of natural beauty, the area containing Big Hill Spring was set aside as a provincial park in 1957. The province had first set aside parks "for the purpose of protecting and preserving therein objects of natural beauty or fossil remains, or other objects, animate or inanimate, of geological, ethnological, historical or other scientific interest". Provincial parks were to be "used for the pleasure, recreation and general benefit" of Albertans in the 1951 Parks Act.

Ecological Value

38. Over most of the 20th century, the site of the Park was valued for its potable water, its natural beauty, and recreational opportunities. The historical record does not suggest that the complex hydrology or intrinsic qualities of Big Hill Spring were understood before the 1970s. The historical record suggests that up until the 1970s, Big Hill Spring was valued in utilitarian terms, and water features in the park, especially its many waterfalls, were understood as having a springs source as part of a larger assemblage of features that reinforced the site's picturesque qualities.

39. However, in the 1960s, a more comprehensive understanding of Big Hill Spring within its larger water basin emerged. In the early 1970s, ecological studies identified the significance of the springs and their importance in the preservation of the Park's natural and ecological values.

40. The importance of the Big Hill Spring ecology was well understood by the Parks Division and within the Department of Lands and Forests by 1973. The Parks Division thereafter attempted to preserve the integrity of the springs upstream, especially in planning that culminated in 1984 to expand park boundaries to include the area where the groundwater aquifer surfaces.

41. A 1973 Provincial Parks Policy Paper connected the Park's scenic values to the location where Big Hill Spring surfaces from the groundwater aquifer: The "spectacular bubbling springs adjacent to the park provide water for 30 small waterfalls, flowing the year around which are located in the park."

42. In 1974 a researcher providing the Parks Division a report on Bighill Spring's "Classification and Analysis of Ecological Problems," identified significant degradation of the Park's vegetation from overuse. In the report's summary of the Park's "Special Natural Features," the writer highlighted the springs: "In Big Hills Springs Park there are at least two unique natural areas in need of special treatment. The largest such area is the springs and waterfall area. This is a delicate area – the springs are approximately the same temperature all year long and remain open in winter, supporting a diverse and unique fauna and flora. Damage to this area is most notably by foot traffic which erodes streambanks and tramples vegetation."

43. Ecological studies of the Park to guide preservation efforts coincided with a change in the province's parks legislation. The 1974 Provincial Parks Act, for the first time, included the setting aside and protection of lands "of ecological interest."

44. The Park's 1976 mini master acknowledged the park's location in a "fescue grassland-aspen groveland biogeographic region," where "variability of topography and aspect in Big Spring Coulee cause a remarkable number of biotic environments." The plan's policy recommendations included, "That the springs which are the name sake of the park be acquired" and that the park be reclassified as a "preservation area."

45. In 1978, the Park was reclassified as a "Preservation Park." The Parks Division announced the park switching to day-use only, and explained in a media release that "Because of the ecosystem interface, distinct land forms and the variety of 'aspects' or slope directions within the park, Big Hill Springs contains a wide variety of vegetation and animal types." It was hoped that the Park being reserved for picnicking, hiking and natural walks" would "restore the park to a more natural state."

46. The Parks Division renewed the park's mini plan in 1982, but recognized "outstanding issues" remaining to be resolved. One such issue was that the location where Big Hill Spring surfaces was still outside the Park boundaries. The Park Division recommended that this location be acquired for the Park and that the Department of Environment begin active negotiations with its landowners.

47. The Park's Resource Planning Branch followed up and estimated that "that a maximum 37.5 acres in an area adjacent to the park's western boundary" be acquired., and recommended the acquisition "in order that the important resource values of the springs are preserved, and the water quality of the creek running through the park is protected." It was also thought that this land would also serve as "a buffer from adjacent agricultural land use."

48. After some internal disagreements on whether to seek to purchase the additional lands, the Parks Division successfully negotiated an agreement with landowners in the area. The agreement included a complex arrangement which was only partially executed. Accordingly, only a portion of the sought-after lands were acquired and this is why the western portion of the Park constitutes a segregated block from the rest of the Park.

49. What is apparent from the historical record is that between the mid-1970s to mid-1980s, the Parks Division understood the importance of preserving Big Hill Spring outside the Park to ensure the quality of their water flowing into the Park to maintain its ecological integrity.

50. Preservation of the ecological integrity of Big Hill Spring remained a priority within the Parks Division. The Park's 1998 Management Plan recognized that the Park was "important in Alberta's protected area system due to the special resources contained in the Park (i.e. Springs, coulee landscape, vegetation). Although small in size, it is one of the few existing protected areas representing the Foothills Parkland Sub-Region."

51. The 1998 Management Plan also recognized that the "head waters of the springs are currently separated from the main public use area because of a non-contiguous land base. Land acquisitions will be pursued to protect the entire springs and sections of the creek associated with the Park."

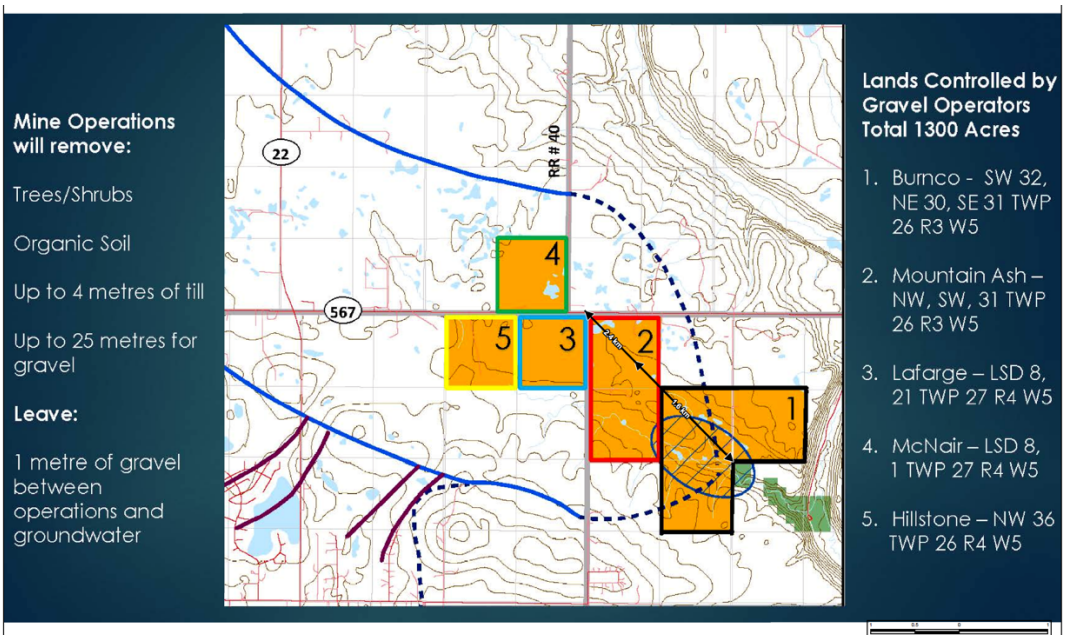
52. In that report's public consultation, the authors noted that, while landowners were divided on the issue of land purchases, "public input" indicated that "There was general support for any land acquisitions that would protect the actual springs."

53. In summary, the historical record of the Park confirms the Big Hill Spring has been valued for more than a century for utilitarian, recreational, commercial, and aesthetic reasons. The historical record also confirms that since the 1970s, Alberta officials have sought to protect the Park and the Big Hill Spring for its ecological value.

III. Adverse impacts on the environment and the aquatic environment, including to Bighill Creek and the mineral spring in Big Hill Springs Provincial Park

54. The Approval and the activity authorized by the Approval have an immediate, direct, and unbroken connection to the Park, the Big Hill Spring, and Bighill Creek. During the approval process, the Director and officials responsible for managing Alberta's provincial parks recognized that the Approval and the activity authorized by the Approval pose risks to both the Park itself and the features the Park is intended to protect, and recognized that the application requirements under the Code of Practice for Pits and the *Water Act* may not adequately address the full range of these risks.

55. The construction and operation of the Aecon mine is just one of several operating or proposed gravel mines immediately northwest of the Park and the cumulative impacts of this mine along with others in the region will have significant adverse impacts on the Big Hill Spring, the Park, (shown below as the green polygons in the lower right) and Bighill Creek:



56. Concern for the significant cumulative impact of these existing and proposed gravel mines has been placed before Rocky View County for more than a decade. These concerns, including impacts on the aquatic environment, were the basis for the requirement that Rocky View County develop and implement an aggregate resource plan in 2013 to ensure sustainable development of the resource.

57. Unfortunately, the planning process stalled for many years, and in the meantime these five existing or proposed gravel mines to be operated on top of the Big Hill Spring aquifer moved forward in various stages of approvals at Rocky View County with no substantial conditions addressing cumulative impacts on the aquatic environment or otherwise.

58. It is noteworthy to observe that these mines have all been approved in a very short timeframe in geological terms. Exact knowledge on impacts to groundwater remains uncertain. Scientific understanding requires time.

59. The process for the development of an aggregate resource plan in Rocky View County began in 2022. The President of the Appellant, Mr. Gerry Bietz, served as a member of the stakeholder advisory committee in the policy formation process.

60. The potential for adverse impacts on groundwater was a focal point for residents in the aggregate resource plan development process, with the proliferation of gravel operations on the Big Hill Springs aquifer of primary concern.

61. The stakeholder advisory committee identified several concerns raised by the local community and residents in relation to the adverse impacts of gravel mines on the aquatic environment and the aquifer which is the source for the Big Hill Spring in particular. Harm to groundwater is irreparable. Accordingly, setbacks and provision for adequate residual gravel filtration are needed where pits would operate over the Big Hill Springs aquifer.

Groundwater

62. The groundwater that flows in the aquifer beneath the Project Site is the source for the water discharging at the Big Hill Spring.

63. The Appellant was provided with assurances by the Director that groundwater impacts would be considered by Alberta Environment and Protected Areas. Correspondence with the Director in this regard is attached in **APPENDIX E.**

64. Despite this assurance, the Approval makes no substantial reference to impacts on groundwater or the aquifer.

65. Naturally-elevated concentrations of various metals and trace elements are already present in both the groundwater and surface water of the project site. However, there is a risk that these levels will change with disturbance and exposure of the aggregate layer contributing various constituents into the groundwater beneath the Project Site because of greater weathering and increased oxidation and leaching reactions. Exposure to atmospheric oxygen and increased precipitation creates an increased risk of mobilizing these naturally occurring, but harmful, contaminants into the groundwater, degrading its quality.

66. The Fennell Report provides evidence of changes that have been documented to occur to the groundwater beneath a gravel pit when compared to natural groundwater areas. This includes increases in temperature and acidity of the groundwater, as well as increases in sulphate and carbonic acid, which plays a role in mineral weathering and further liberation of trace elements into the water.

67. Additionally, increased concentrations of nitrates in the groundwater underlying gravel pits are associated with the decrease in filtering capacity from the removal of overlying soil cover. Once the overlying gravel is removed, even after the site is reclaimed, the thin residual gravel filter would provide ineffective protection from surface contaminants such as potential fecal coliform contamination caused by cattle.

68. Organic and inorganic constituents can also leach into the groundwater beneath the Project Site pit by precipitation infiltrating through disturbed soil materials once they are placed back over the excavation as part of reclamation. This is heightened by the till's high content of clays, which may have metals or trace elements absorbed to their surfaces, and its exposure to enhanced weathering by rain that is mildly acidic.

69. Groundwater quality may also be impacted by the introduction of contaminants from non-natural sources, including spills in the Project Site of lubricants, fuels and other hydrocarbons used in mine operations, or by the introduction of road dust from locally applied chemicals such as herbicides, dust retardants, or other materials.

70. The Fennell Report identifies the concern that the mobility and toxicity of contaminants or dissolved elements that either exist naturally or are introduced into the groundwater can be influenced by geochemical conditions in the groundwater environment, such as oxygenation (and changes to oxidation-reduction potential) and pH. That both of these properties can shift as a result of gravel extraction above underlying groundwater was identified by Dr. Fennell in his report.

71. The contamination of groundwater beneath the Project Site may also occur as a result of the local water table under the Project Site rising and coming closer to, or into contact with, the exposed surface at the base of the pit. There is a reasonable probability that the water table beneath the Project Site will increase above the normal range of observed variability, possibly rising by as much as a meter in response to future intense rainfall events or other weather- or climate-related phenomena.

72. The Fennell Report identifies a risk of increased mobilization of fine particulate matter and/or colloids into the underlying groundwater as a result of the removal of the overlying till and gravel enhancing downward vertical flow. Once in the groundwater, this fine particulate material may not be effectively filtered out in the aquifer and can be transported to any receptors

downstream of the Project Site, either in the remaining sand & gravel or in the fractured bedrock below the sand & gravel, or both. Colloids (very small particles) forming part of this fine particulate matter may also provide a means to transport trace elements and contaminants within the groundwater, furthering their mobility.

73. Despite the potential for filtration of particulate material as it moves through the aquifer, the risk remains for a turbidity plume to migrate in the groundwater from beneath the Project Site to downstream receptors, including the Big Hill Spring in the Park. The Fennell Report provides evidence of a turbidity plume originating at a gravel operation that retained a turbidity level 800 m downstream 5 times higher than the level set by Alberta's freshwater aquatic life (FWAL) turbidity guidelines. This indicates a real risk exists that a turbidity plume originating at the Project Site could travel the approximately 800 m distance to the springs and still exceed provincial guidelines.

74. Once contaminants enter the groundwater below the Project Site, preventative measures would be required to stop them from migrating off the Project Site. The Fennell Report identifies one such measure as a groundwater recovery well that could capture contaminants by pumping groundwater to the surface and managing it safely. However, if groundwater were pumped to the surface to capture contaminants, then groundwater flow to the downstream receptors would be interrupted, leading to additional impacts on the quantity of groundwater flow.

75. The Fennell Report indicates a risk that increased turbidity in the groundwater beneath the Project Site could lead to increases in the turbidity of water emerging at the springs, possibly in excess of provincial guidelines for the protection of freshwater aquatic life.

76. Similarly, the potential for the excavation to result in increased mobilization of metals and trace elements (as separate or co-contaminants with the turbidity), the alteration of geochemical conditions of the groundwater, including increased oxygenation, changes to oxidation-reduction potentials, and altered pH levels, and the risk of increased concentrations of mobilized particulate matter, coliform bacteria, and other contaminants, all poses a risk of adverse impacts to the aquatic environment.

77. There are no measures in the Approval for preventing or mitigating the spread of contaminants if they were to enter the groundwater, including the groundwater monitoring and stormwater management plans attached to the Approval. Rather, Aecon's groundwater response

plan requires the development of a risk management plan only after an exceedance is detected, investigated, and confirmed to be related to the operation.

78. The Fennell Report identifies that gravel excavations can result in increased temperatures of underlying groundwater. Similarly, the absence of the overlying thick layer of gravel will lead to greater heating of the aggregate layer at the base of the pit during the summer months and cooling during winter months. This could lead to increased groundwater temperatures at certain times of the year, and also allow the frost line to penetrate through the residual aggregate layer and impede flow from those deposits.

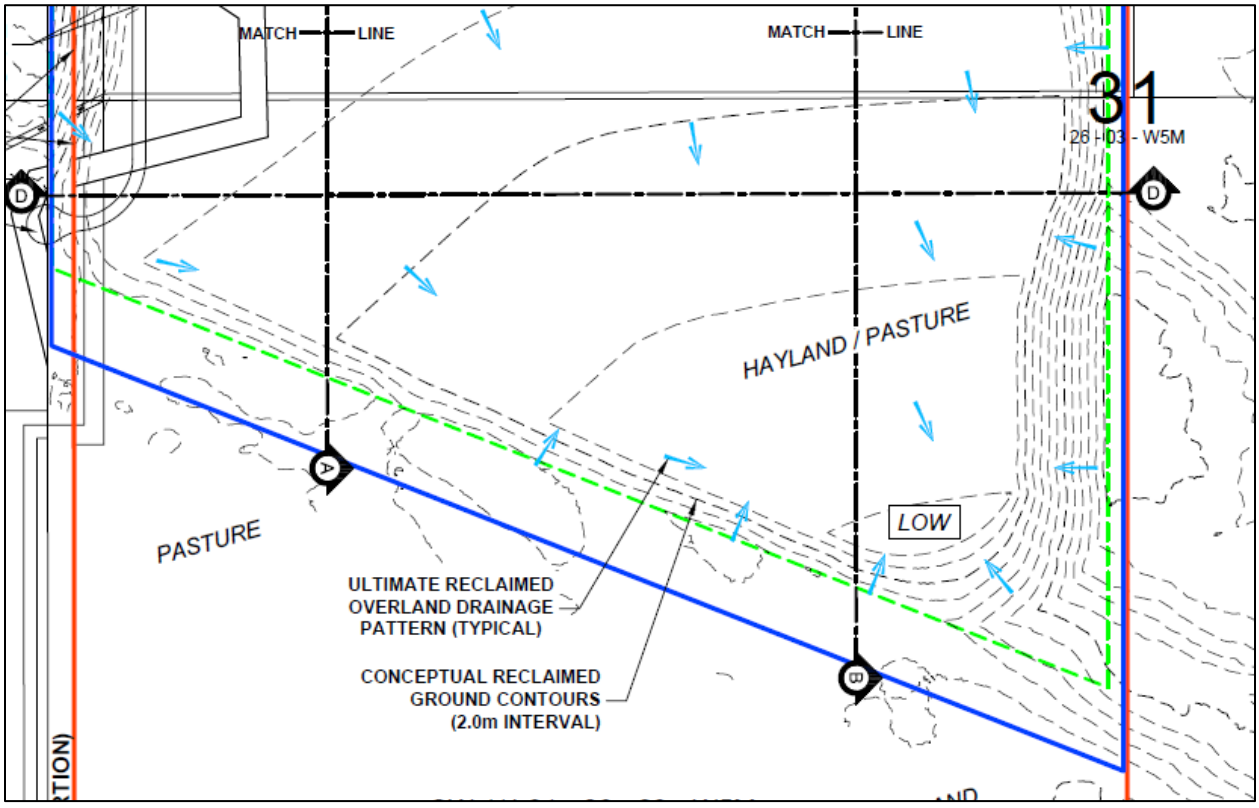
79. The Director's Record shows little engagement with Aecon's responses to the supplemental information requests and it appears that Aecon's responses were essentially accepted by the Director as is, with few follow-up questions or challenges to Aecon's submissions other than to identify uncertainty in the estimation of groundwater velocity and to stress the importance of monitoring.

Surface Water

80. Bighill Creek is supplied by groundwater and will be impacted by any effects to the groundwater that flows in the aquifer beneath the Project Site. Monitoring data summarized in the 2025 State of the Watershed Report indicates that the flow of water in the creek is strongly controlled by meteorological conditions that affect groundwater conditions. The data confirms that all creek flows are sustained by groundwater inputs, that is, spring water, except during peak events, such as snowmelt or large rainfall events.

81. Groundwater in this way plays an important role in moderating the effects of meteorological fluctuations and maintaining stable flow in Bighill Creek, providing stable habitats for aquatic species. If the groundwater flow at the Project Site is impacted by gravel extraction, changes to the recharge rate of the aquifer will clearly have impacts on the flow in Bighill Creek and on the stability of aquatic species habitats. Similarly, changes to groundwater temperature may impact cold water fish species, like brook, brown, and rainbow trout, that are resident in the Creek. Changes in flow and temperature could also impact aquatic invertebrate species diversity and abundance.

82. The surface water flow pattern will be very different after reclamation than it currently is. The natural pattern of surface water flow is complex and multidirectional. By contrast, the flow regime created by the reclamation plan is unvaried and unidirectional. All surface water drainage will flow to the lowest point in the southeastern-most corner of the reclaimed pit. This will effectively direct surface flow from the full catchment area of the Project Site to the SE corner of the pit, resulting in pooling and increased amounts of infiltration and groundwater recharge in that concentrated area, with heightened potential for flushing and downward mobilization of materials from the soil, subsoil, and residual aggregate layer into the fractured bedrock.



83. The water that flows out of Big Hill Spring provides as much as 50% of the flow in Bighill Creek. In this way, any reduction in groundwater flow to the springs will have a direct impact on the flow within Bighill Creek. Any disruption of the groundwater flow to the springs, such as could arise from pumping to prevent the mobilization of contaminants off the Project Site, would have a corresponding impact on surface water flow rates in Bighill Creek.

Reclamation

84. The Approval does not address mine closure and reclamation.

85. Aecon's commitments regarding on site reclamation are set out in the Post-Mining Reclamation Plan. The Plan consists of only 14 pages. The majority of the content in the Plan describes pre-construction or construction mitigations on the site, rather than reclamation activities.

86. Aecon's reclamation commitments in the Post-Mining Reclamation Plan are the following statements:

a. the reclamation objective is to achieve the legislated requirement of 'equivalent land capability' following best industry practices;

b. upland and wetland soils (top and sub) removed from the surface of the site will be stockpiled together;

c. native prairie in phase 1 will be stripped and stockpiled separately;

d. progressive reclamation and direct topsoil placement will occur as soon as practically possible;

e. reclaimed final slopes will have a 3:1 configuration;

f. vegetation will be hydroseeded within the first growing season of topsoil placement;

g. subsoil will be decompacted prior to topsoil placement and will be recontoured to tie in to surrounding landscape and create drainage patterns consistent with surrounding land use;

h. additional reclamation activities as needed based on monitoring of reclaimed areas.

87. Aside from the vague commitment to create drainage patterns consistent with surrounding land use, none of the reclamation commitments address impacts to the aquatic environment, despite the aquatic landscape being included in the definition of "land" in the *Conservation and Reclamation Regulation*, Alta Reg 115/1993. There is no reference to groundwater in the reclamation plan.

88. The Appellant observes the following non-exhaustive list of omissions in the reclamation plan relevant to surface and groundwater:

a. No detailed description of 'best industry practices';

b. No reference to contamination in the site resulting from equipment, machinery, and other sources;

c. No reference to the potential for contamination from constituents in replacement soils leaching into the groundwater;

d. No reference to the removal of asphalt and constructed areas;

e. No reference to compaction required of side slopes;

f. No reference to replacement of impacted prairie pothole wetlands;

g. No explanation of what material will be used to safely slope the side slopes of the excavated area – given the 3:1 configuration it seems reasonable to presume fill will be imported and the reclamation plan provides no discussion of standards that will be met to ensure contamination is avoided and similar soil characteristics relevant to processes such as infiltration are maintained.

89. The pre-construction topography of the Project site is diverse and variable. There is no reference in the reclamation plan as to how this topographic variation of the site will be restored.

90. The Fennell Report states the post-reclamation altered landscape (and topography) of the Project site will impact recharge in the aquatic environment. These impacts will be aggravated by climate change and the removal of the aggregate from the site. The Fennell Report also states that the post-reclamation landscape may exacerbate the infiltration of contaminants into the groundwater. Aecon's reclamation plan and the Approval fail to address any of these potential impacts.

91. The absence of terms and conditions in the Approval and the lack of precision or specificity in the COP reclamation commitments is of significant concern to the Appellant given that Alberta Environment and Protected Areas does not have adequate processes for reclamation monitoring,

enforcement, and security requirements on pit operators. For these inadequacies, the Appellant refers to the 2019 Auditor General of Alberta Report on the Management of Sand and Gravel Pits (see https://www.oag.ab.ca/reports/alberta-environment-and-parks-management-of-sand-and-gravel-pits-followup-nov-2019/).

92. Furthermore, the legislative regime for reclamation of an aggregate pit in Alberta is concerned with the restoration of the land surface only. The success of the reclamation process is evaluated during a reclamation inquiry, as per the *Conservation and Reclamation Regulation*, and requires achieving "equivalent land capability," meaning the land must have the ability, based on an evaluation of its physical, chemical and biological characteristics, including topography, drainage, hydrology, soils and vegetation, to support various land uses similar to what it could support before the excavation. This evaluation will be based on the properties of the surface, soils, and subsoil, so does not focus on the underlying materials or the aquifer and groundwater (see e.g. EPA, Lands Policy, 2026, No. 2 - *Directive for Reclamation Certificate Site Assessments for Pits and Quarries – Cultivated Lands* at s 4.2).

93. Certainty of effective reclamation of the site is required to ensure the protection of water quality and the aquatic environment. The amount of security proposed by Aecon, $808,628.47, is inadequate to ensure the effective reclamation of the Project Site. It is based on an assumption there will be no contamination of the site, which is not realistic over the course of multi-year mining operations. The risk of contamination, and its subsequent impacts on groundwater, is identified by the Fennell Report and acknowledged by Aecon. In its 2019 Report (ibid), the Auditor General estimated the cost of full reclamation of aggregate pits at $15,000 per hectare. The proposed Aecon mine is 84 hectares in size, which suggests the full cost to reclaim the project will be $1,260,000. This suggests the amount of security proposed by Aecon is only two-thirds of the actual cost to reclaim the Project Site.

IV. PRECAUTIONARY PRINCIPLE

What is the Precautionary Principle?

94. The precautionary principle was set out in the 1992 Rio Declaration and now permeates federal and provincial environmental legislation in Canada. The principle sets out that "where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as

a reason for postponing measures to prevent environmental degradation" (*114957 Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town)*, 2001 SCC 40, at paras 30-31). In simple terms, the principle requires decision-makers to exercise caution and implement preventative measures in the face of scientific uncertainty where an activity threatens serious or irreversible environmental harm. Or put another way, it is better to be safe than sorry.

95. The precautionary principle was initially implemented in Canada by the Supreme Court of Canada as an aide to interpret provincial environmental legislation and guide discretionary decision-making in *114957 Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town)* (ibid at paras 30 - 32):

> 30. …As stated in *Driedger on the Construction of Statutes*, *supra*, at p. 330:
>
> > [T]he legislature is presumed to respect the values and principles enshrined in international law, both customary and conventional. These constitute a part of the legal context in which legislation is enacted and read. In so far as possible, therefore, interpretations that reflect these values and principles are preferred.
>
> 31. The interpretation of By-law 270 contained in these reasons respects international law's "precautionary principle", which is defined as follows at para. 7 of the *Bergen Ministerial Declaration on Sustainable Development* (1990):
>
> > In order to achieve sustainable development, policies must be based on the precautionary principle. Environmental measures must anticipate, prevent and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
>
> [emphasis in original]

96. Over the course of the 25 years since the *Spraytech* decision, the precautionary principle has become firmly established as a component of decision-making by statutory officials under environmental legislation across Canada. The precautionary principle has been referenced and applied in numerous judicial decisions across all levels of courts and jurisdictions across the country, including three Supreme Court of Canada judgements issued after *Spraytech*: *Castonguay Blasting Ltd. v. Ontario (Environment)*, 2013 SCC 52 (CanLII), [2013] 3 SCR 323, <https://canlii.ca/t/g1038>, *Reference re Impact Assessment Act*, 2023 SCC 23 (CanLII), <https://canlii.ca/t/k0l1g>, *Taylor v. Newfoundland and Labrador*, 2026 SCC 5 (CanLII), <https://canlii.ca/t/kj4vm>.

97. In its 2026 *Taylor v. Newfoundland and Labrador* decision (ibid at paras 197 – 203), the Supreme Court of Canada summarized its decisions on the precautionary principle and observed that the principle now has wider application beyond environmental law, furthering the reach of the principle in the Canadian legal system:

> (i) What Is the Precautionary Principle?
>
> [197] The precautionary principle originated in the context of environmental policy. At the 1990 United Nations Bergen Conference on Sustainable Development, the Environment Ministers of 34 countries, including Canada, laid out the following formulation of the principle in a Ministerial Declaration, the Bergen Ministerial Declaration on Sustainable Development in the ECE Region, U.N. Doc. A/CONF.151/PC/10, Ann. I, August 6, 1990 (Bergen Declaration):
>
> In order to achieve sustainable development, policies must be based on the precautionary principle. Environmental measures must anticipate, prevent and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. [p. 19]
>
> [198] According to this definition, the principle applies when governments set environmental policies. It calls for a preventive and anticipatory mindset to address the causes of environmental harms and states that the lack of full scientific certainty should not be used to justify inaction in the face of the threat of serious or irreversible environmental damage. This precautionary principle has become an important and oft-cited principle in the realm of international law and has been incorporated into numerous domestic environmental statutes.
>
> (ii) Canadian Judicial Treatment of the Precautionary Principle
>
> [199] This Court has considered the precautionary principle when interpreting provisions relating to environmental law in three cases. It was first considered in 114957 Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town), 2001 SCC 40, [2001] 2 S.C.R. 241, where this Court was asked to interpret a bylaw that restricted the use of pesticides (J. Abouchar, "The Precautionary Principle in Canada: The First Decade" (2002), 32 E.L.R. 11407). While the bylaw did not refer to the principle, the Court cited the statement from the Bergen Declaration. It noted that the bylaw "respects international law's 'precautionary principle'", and that there may be "currently sufficient state practice to allow a good argument that the precautionary principle is a principle of customary international law" (Spraytech, at paras. 31-32, quoting Bergen Declaration, at para. 7, and J. Cameron and J. Abouchar, "The Status of the Precautionary Principle in International Law", in D. Freestone and E. Hey, eds., The Precautionary Principle and International Law (1996), 29, at p. 52).

> [200] In Castonguay Blasting Ltd. v. Ontario (Environment), 2013 SCC 52, [2013] 3 S.C.R. 323, this Court interpreted a provision of the Environmental Protection Act, R.S.O. 1990, c. E.19. Again, while the principle was not referenced explicitly in the statute, the Court considered that the provision in question "gives effect to" and is "consistent with" the precautionary principle, following Spraytech (para. 20).
>
> [201] Finally, this Court affirmed the Bergen Declaration definition of the precautionary principle in Reference re Impact Assessment Act, 2023 SCC 23. Here, the statute expressly stated that the Impact Assessment Act, S.C. 2019, c. 28, s. 1, itself must be administered in a manner that applies the precautionary principle (para. 145).
>
> [202] Each of these cases involved interpreting a statute or bylaw on an environmental matter. This case raises new questions regarding the precautionary principle outside of the well-established spheres of international law and domestic environmental law.
>
> [203] Some lower courts have relied on the precautionary principle beyond the environmental context (see, e.g., R. v. Michaud, 2015 ONCA 585, 127 O.R. (3d) 81, at para. 102; Procureur général du Québec v. Gallant, 2021 QCCA 1701). In addition, certain courts have also cited the precautionary principle in cases involving the COVID-19 pandemic in recent years, including when conducting a s. 1 analysis (see Ontario (Attorney General) v. Trinity Bible Chapel, 2023 ONCA 134, 166 O.R. (3d) 81; Grandel v. Saskatchewan, 2022 SKKB 209; Schuyler Farms Limited v. Dr. Nesathurai, 2020 ONSC 4711; Spencer v. Canada (Attorney General), 2021 FC 361, 490 C.R.R. (2d) 1).

98. Notably as international law, both as part of a treaty or convention which has been ratified by Canada and as customary international law, the precautionary principle applies within Canada as an aide to interpreting legislation and assessing the reasonableness of statutory decisions, irrespective of whether the legislation explicitly references the principle. As the Supreme Court of Canada stated in *Canada (Minister of Citizenship and Immigration) v. Vavilov*, 2019 SCC 65 (CanLII), [2019] 4 SCR 653, <https://canlii.ca/t/j46kb>:

> [114] We would also note that in some administrative decision making contexts, international law will operate as an important constraint on an administrative decision maker. It is well established that legislation is presumed to operate in conformity with Canada's international obligations, and the legislature is "presumed to comply with the values and principles of customary and conventional international law": R. v. Hape, 2007 SCC 26, [2007] 2 S.C.R. 292, at para. 53; R. v. Appulonappa, 2015 SCC 59, [2015] 3 S.C.R. 754, at para. 40. Since Baker, it has also been clear that international treaties and conventions, even where they have not been implemented domestically by statute, can help to inform whether a decision was a reasonable exercise of administrative power: Baker, at paras. 69-71.

The Precautionary Principle, *EPEA* and the *Water Act*

99. In a series of recent decisions, Alberta courts have ruled that the precautionary principle permeates *EPEA* and that in the face of scientific uncertainty regarding environmental harms, the Director and the Board have a legal obligation to apply the principle in their decision-making under *EPEA* and the *Water Act*.

100. In *Christian v Alberta Environmental Appeals Board*, 2024 ABKB 586 (CanLII), <https://canlii.ca/t/k7967> (at paras 89-99) the Court held the precautionary principle imbues *EPEA* and must be considered by the Board in making decisions under both *EPEA* and the *Water Act*. The failure of the Board to consider the precautionary principle was one of the reasons for why the Court quashed the Board's decision to refuse a stay request under section 97 of *EPEA*.

101. In *McKechnie v Alberta Environmental Appeals Board*, 2025 ABKB 724 (CanLII), <https://canlii.ca/t/kh0k3> (at para 134), the Court reiterated that the precautionary principle is engaged under *EPEA* and the *Water Act*, and in the face of scientific uncertainty regarding the potential for environmental harm the precautionary principle "encourages proactive action in environmental protection".

102. In *Skibsted v Alberta (Environment and Protected Areas)*, 2026 ABKB 98 (CanLII), <https://canlii.ca/t/kj97q> (at paras 86 – 92) the Court quashed a Board decision for failing to properly consider and apply the precautionary principle regarding the potential for harm to designated critical wetland habitat for a threatened migratory bird species. In doing so, the Court noted the following attributes of the precautionary principle relevant to its application under *EPEA* and the *Water Act*: (i) there is no assumption under the precautionary principle that development is necessary and desirable; (ii) an application of the precautionary principle does not require a balancing of interests of development with environmental protection; and (iii) the precautionary principle eschews the imposition of an onus or requirement for "conclusive" evidence of environmental harm..

103. Noteworthy among each of these three recent Court of King's Bench decisions is that they all involve the judicial review of a Board decision made pursuant to an appeal of a Director's decision made pursuant to the *Water Act*, and the substance of each appeal concerned the potential for adverse harm to the aquatic environment. The factual circumstances of both the *Christian* and

McKechnie decisions is similar to facts in this Appeal: the threat of serious or irreversible harm to water in an important aquifer sustaining local ecology resulting from the construction of a gravel mine and the removal of overburden, and some uncertainty on the cause-and-effect relationship.

104. In *Foss et al. v Director, Regulatory Assurance Division South, Alberta Environment and Protected Areas, re: Aecon Transportation West Ltd.*, 2026 ABEAB 18 at para 66, the Board confirmed that the precautionary principle is codified in section 38 of the *Water Act*.

Application of the Precautionary Principle to this Appeal

105. The precautionary principle applies where (1) the activity under scrutiny poses a threat of serious or irreversible environmental harm and (2) there is uncertainty as to the cause-and-effect relationship between the activity and the harm. These are findings of fact.

106. Factors relevant to a determination of serious or irreversible harm include the following:

a. the spatial scale of the threat

b. the magnitude of possible impacts

c. the socio-ecological value of the threatened environment

d. the temporal scale (including delayed effects) of possible impacts, in terms of both the timing and the longevity (or persistence) of the impacts

e. the complexity and connectivity of pathways facilitating the possible impacts

f. the manageability of possible impacts

g. the basis for and level of public concern

h. the reversibility of the possible impacts and, if reversible, the timeframe for reversing the impacts, and the difficulty and expense of reversing the impacts.

107. Several of the above factors are engaged in the matter at hand. There is a risk of permanent degradation of the nature and quality of the springs if the groundwater is affected. The nature of the connectivity of the springs to the aquifer underlying the Project Site means that any effects of the mining operation on the groundwater will also affect the springs and Park. In particular, any

changes to groundwater recharge, chemistry, and filtration arising from the removal of the thick layer of aggregate will be permanent, as the properties of the aggregate will not be replaced and conditions will remain. By the time impacts on the Park are detected, it will be too late to prevent them.

108. Additionally, as identified in the Statements of Concern filed with the Director, the tufa formations in the Park took thousands of years to be deposited and yet could be destroyed over the course of several years following commissioning and reclamation of the gravel mine.

109. There is a demonstrated high level of public concern about the potential impacts to the springs that could arise. The Director received 255 statements of concern from members of the public, of which 114 were accepted. The foremost issue across all the statements of concern was impacts to the Park.

110. The Director also received a petition with 11,487 signatures as part of one of the Statements of Concern filed. Although the petition was not taken to represent 11,487 individual statements of concern, it was acknowledged and accepted by the Director, and its relevance as an indication of public concern is material.

111. The level of public concern is further demonstrated by the fact that some statement of concern filers hired or commissioned scientific studies to provide to the Director in support of their submissions.

112. Concerns with the Aecon mine were also raised by Alberta Parks in two submissions which stressed in particular the risks of groundwater impacts on the Park (a copy of these submissions are attached in **APPENDIX F**). Additional concerns from Alberta Parks were expressed to the Director in the supplementary information process, noting in particular that not all of Alberta Parks concerns were addressed by the Director.

113. Alberta Parks specifically identified that the Big Hill Spring in the Park flows year-round and is nationally significant. The significance and uniqueness of the springs is also identified in Statements of Concern filed with the Director.

114. The Park was established in 1957 and is one of the oldest provincial parks in Alberta. The Colpitts Report confirms the Park was established in recognition of its value as a recreational site

and tourist spot. This importance continues, as the Park receives over 250,000 visitors each year and provides important natural and recreational green space in close proximity to large urban centers.

115. The Colpitts Report also attests that when the Park was expanded to protect the Big Hill Spring, this expansion was to protect ecological integrity of the Park.

116. If the flow, water quality, or temperature of the springs are impacted, or if the natural value of the springs as a recreation site is diminished by those impacts, then the reasons for the very existence of the Park will be lost. Thus, the socio-ecological value of the Park and the springs environment contained therein would be irrevocably diminished if impacts to the groundwater arise from the mining activity authorized by the Approval.

117. As just described, the possible impacts to the springs and Park are complex and interconnected. They reflect interactions between topics such as geology, hydrogeology, geochemistry and regional climate trends and yet manifest upon the socio-ecological environment and the value of human experience.

118. The foregoing demonstrates that the mining activity authorized by the Approval may result in serious and irreversible harm to the water aquifer which is the source of the Big Hill Spring and the Park. As such, a proper assessment of the risks and potential consequences is required but has not been fully performed to justify the *Water Act* Approval.

119. The Appellant also notes that in *Hanson and Lindberg v. Director, Northern Region, Operations Division, Alberta Environment and Sustainable Resource Development, re: County of St. Paul* (07 November 2013), Appeal Nos. 13-005 and 006-ID1 (A.E.A.B.) at paras 51 – 57, the Board has previously found that harm to an aquatic environment is often difficult or impossible to reverse if an approval is later varied or rescinded, and moreover any such restoration work will likely cause further impacts.

120. The determination of an absence of scientific certainty on the cause-and-effect relationship will involve consideration on the sufficiency of the evidence that there might be serious or irreversible harm, the type of uncertainty, and the potential (if any) to reduce uncertainty.

121. The evidence before the Board demonstrates that there is real risk of irreversible harm that could arise by mining to within one metre of the groundwater aquifer. However, there is also uncertainty in the record on the cause-and-effect relationship between the planned gravel extraction and those harms.

122. The Fennell Report identifies a number of risks related to groundwater quality and quantity and the impacts those could have on the Big Hill Spring and the Park. Furthermore, these risks of harm are complex, intertwined, and may be exacerbated or amplified by the ongoing use and development of other existing and proposed mines in the region. Groundwater flow, recharge, and geochemistry are all influenced by a wide range of interactions including regional climate trends, precipitation, soil and aggregate composition, mining operations and procedures, chemical reactions, infiltration rates, and up- and down-stream influences including the development of additional aggregate mines that will be removing the same aquifer.

123. Uncertainty here is real and substantial.

124. With respect, the Appellant asserts Aecon is being disingenuous when it predicts no impacts on the Big Hill Spring or the Park. This is simply not a credible position based on the evidence, or lack thereof, placed before the Director, and the Director's review of that evidence.

125. The Appellant notes that the Director's staff acknowledged in early 2022 that "[t]he scientific information provided as part of the application has yet to be fully reviewed to determine the validity of the statement that ground water and the springs that create the unique tufa formations in the par[k] will not be impacted."

126. The Appellant notes that the first supplemental information request made to Aecon consisted largely of concerns raised by the Fennell Report.

127. The Aecon responses are essentially bald assertions that the mining activity is not expected to cause harm to the aquatic environment.

128. These responses should not be mistaken for certainty. Notably, in response to Aecon's submissions, the Director commented: "In order to verify conclusions in the SIR about the protection of groundwater and the Tufa depositional environment, AEP hydrogeological subject

matter experts strongly believe that monitoring is very important to provide early warning signals of any potential deviation beyond the proponent's projections and predictions."

129. In other words, the Appellant submits the Director properly recognized that the potential for risks of harms to groundwater and the springs remained uncertain.

130. The foregoing demonstrates there is significant uncertainty on the impact that mining gravel to within one metre of the water table in the sand and gravel aquifer beneath Aecon's site, in addition to other future mine developments, will have on the quality and quantity of surface and groundwater, and the resulting adverse impact that would have on the nationally-recognized Big Hill Spring in the Park, including impacts on the tufa formations and aquatic habitat that the springs sustain.

131. The evidence demonstrates that the activity authorized by the Approval may result in serious or irreversible harm to the groundwater impacted by this mine and there is scientific uncertainty on the cause-and-effect relationship between the activity and the harm. Scientists can and do disagree. Groundwater science is never certain. The removal of aggregate in the Aecon mine is a thirty-year project risking forever harm to the Park and its socio-ecological integrity. The potential magnitude and irreversibility of harm requires more information, more study, and extra layers of safety. Accordingly, the precautionary principle is engaged and requires the Director and the Board to err on the side of caution and ensure a proper level of assessment and implementation of preventative measures.

132. In issuing the Approval, the Director failed to err on the side of caution. Despite acknowledging the Appellant's concerns about the threat of harm posed by the Aecon mine to the groundwater and the thermal spring in the Park that relies on this groundwater, the Approval has no terms or conditions specifically addressing the threat to the sand and gravel aquifer and the features sustained by it. There are no thresholds associated with water monitoring and reporting which trigger preventative action.

133. Accordingly, the Board is required to implement the precautionary principle in making its decision in this Appeal.

134. The Board has experience applying the precautionary principle in a context such as this.

135. In *Municipality of Crowsnest Pass v. Director, Southern Region, Environmental Management, Alberta Environment*, 2009 ABEAB 27 (CanLII), <https://canlii.ca/t/jrcsn> the Board applied the precautionary principle in response to scientific uncertainty on whether a proposed water well was hydraulically connected to surface water. The Director had refused to issue a water licence for the well because of a possible connection to surface water for which no allocation could be granted in law, and the Director's position was that absolute certainty of a hydraulic barrier would have to be demonstrated before the licence could be issued. The Board recommended that the Minister uphold the Director's decision, and in making this recommendation the Board applied the precautionary principle:

> [146] In this particular case, the precautionary principle needs to apply. There is a significant amount of uncertainty regarding the aquifer and the barrier that might exist. Water is a valuable resource that needs to be protected and preserved, which is the reason the legislators enacted the Allocation Order. Since a great deal of uncertainty still exists regarding the aquifer and its properties, the Board considers it appropriate to recommend to the Minister that he confirm the Director's decision that the application is denied.

136. Of note, the Board also relied on the precautionary principle because the Board rejected the Director's position on the need for absolute certainty in the appliable science. Instead, the Board acknowledged that definitive evidence in relation to impacts on groundwater will always be elusive: "The evidence of the two hydrogeologists made it clear to the Board that absolute certainty in matters of understanding groundwater properties and movement is not always possible." (at para 147)

137. This is the same type of uncertainty before the Board here.

138. Section 38 of the *Water Act* provides the Director with discretionary authority to impose precautionary terms and conditions on the Approval:

> **38**(1) Subject to section 34, the Director may issue or refuse to issue an approval to an applicant to commence or continue an activity.
>
> (2) In making a decision under this section, the Director
>
> (a) must consider, with respect to the applicable area of the Province, the matters and factors that must be considered in issuing an approval, as specified in an applicable approved water management plan,

(b) may consider any existing, potential or cumulative

(i) effects on the aquatic environment,

(ii) hydraulic, hydrological and hydrogeological effects, and

(iii) effects on household users, licensees and traditional agriculture users,

that result or may result from the activity, and

(c) may consider

(i) effects on public safety, and

(ii) any other matters applicable to the approval that, in the opinion of the Director, are relevant.

(3) The Director may issue an approval subject to any terms and conditions that the Director considers appropriate.

(4) The Director may issue an approval that authorizes the temporary diversion of water associated with carrying out an activity.

(5) An approval authorizing the temporary diversion of water associated with carrying out an activity does not provide any priority with respect to that water.

(6) When the Director issues an approval it must include an expiry date.

139. Section 38 is noteworthy here in that it authorizes the Director to consider any impacts on the aquatic environment (which includes groundwater), including cumulative and hydrogeological effects.

140. In *Morton v. Canada (Fisheries and Oceans)*, 2015 FC 575 (CanLII), <https://canlii.ca/t/ghjfq> the precautionary principle was applied to a regulatory approval to require appropriate terms and conditions. The Appellant submits the Board should likewise do so in this case.

Precautionary measures the Board should implement

141. The preventative measures required by the precautionary principle should be proportionate to the risk. The more significant and likely the threat of harm, the greater the degree of precaution required. This, of course, requires that the risk be properly identified and assessed.

142. The Appellant submits that the significance of the threat of harm to the nationally-recognized Big Hill Spring and one of Alberta's oldest and highly valued protected areas is justification for the Board recommending that the Minister rescind the Approval.

143. In the alternative to recission, the Appellant submits the following precautionary measures to address impacts on water quality, water quantity, the Big Hill Spring and the Park:

a. Require at least 4 meters of gravel, above the 10-year high groundwater elevation (measured at the wettest time of year) be left on the mine floor to provide greater infiltration protection unless it can be clearly proven by the proponent that a lesser amount will suffice. Establish a means to monitor and report mine floor elevation in relation to the underlying water table to ensure that operations remain suitably above for dry pit operations. Provide sufficient exceedance and response protocol;

b. Restrict the area of exposed mine floor and stock piles to 20 acres to reduce leaching and run off;

c. Rephase the project so that the first phase of the project occurs in the northwest corner at the greatest possible geographic distance from the Park;

d. Require the installation of a comprehensive system of monitoring wells up and down gradient, to report water table elevation, chemical quality, temperature, and turbidity on a continual basis using proper in-well technology. Water table monitoring must be established in the unmined sections directly down-gradient of the mined sections;

e. Monitor the water table elevation and water quality at least for one full year before the mining activity commences in the mined subsection;

f. Require that the location of monitoring wells, required monitoring frequency and list of analytes, evaluation and reporting protocols, and any other support systems must be designed and approved by independent experts;

g. Require monitoring and reporting of water and sediment analysis at all holding ponds and sump inlets, pond freeboard levels, and rate and volume of discharge to sumps;

h. Require periodic drone monitoring of the project site at intervals determined by Rocky View County to ensure that the site development is sticking to its Master Site Development Plan;

i. Require a process by which all information regarding monitoring data, analyses and flagged exceedances is made available and distributed to all stakeholders simultaneously, including any analysis by the Director and support staff;

j. Require that any ponds be lined with an impenetrable barrier and have monitoring immediately downgradient to detect any seepage losses into the groundwater;

k. Require Aecon to develop and implement a risk management and emergency response plan for water pollution incidents, including when and what type of proven remedies would be employed to ensure protection of the groundwater and connected systems.

144. In the alternative to recission, the Appellant submits the following precautionary measures to address cumulative environmental impacts:

a. Require all mine operators in this region to develop and implement a program to address cumulative groundwater exceedance thresholds and response thereto;

b. Require all mine operators implement up gradient monitoring to confirm water quality and quantity impacts created by Hillstone, and others as other mines commence operations;

c. Recommend to the Minister that the Alberta government implement robust provincial oversight and standardized regulatory application of the aggregate industry.

145. In the alternative to recission, the Appellant submits the following precautionary measures to address mine closure and reclamation impacts:

a. Add terms and conditions to the Approval to specifically address post-closure remediation and reclamation objectives in relation to surface and groundwater protection;

b. Require Aecon to post an adequate security deposit to cover post-closure remediation and reclamation.

Respectfully submitted on September 4, 2026.

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