

CABIN CREEK PHOSPHATE PROJECT

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Phosphorous is essential to all forms of animal life and together with nitrogen and potassium, is necessary for plant growth. Phosphate rock is the most suitable source of raw material in the manufacture of chemical phosphate fertilizers. This industry consumes approximately 95% of the world's phosphate production. Phosphate rock, in its natural state, is also used for fertilizer applications.

Phosphate is produced from three sources: marine sedimentary rocks, igneous apatite (carbonatites), and guano-derived deposits. Approximately 80% of phosphate production is from bedded sedimentary rocks, such as those located within the Jurassic Fernie Formation of southeastern British Columbia.

Earth Riches Resources Inc. is interested in the area that covers the southern limit of the Fernie Basin and includes the southernmost exposures of phosphate rock in the Basin. It is located 76 kilometres by road southerly from the town of Fernie. Imperial Oil Ltd. began exploration for phosphate in this region in 1978. Further investigation was done by First Nuclear Corporation in 1982. Exploration by individuals and other companies has continued sporadically to the present. Earth Riches Resources became interested in this area in 2000.

The Cabin Creek phosphorite bed occurs at the base of the Jurassic Fernie Formation. The phosphatic layer is 1.51 to 3.51 metres thick, and has been traced along a strike length of approximately 1700 metres. It consists of compact to semicompact pellets. The pellets are typically subrounded to subangular, structureless, well sorted and 0.1 to 0.3

millimetres in diameter. The matrix consists of quartz, calcite, minor potassic feldspar, and trace amounts of albite, dolomite and illite. The geological resource for the Cabin Creek area, as calculated by Earth Riches Resources staff, is estimated at 1.5 million tonnes averaging 19 to 20% P₂O₅ to a depth of 25 metres.

Although the total phosphate content of the Cabin Creek phosphorite is lower than that of material imported from the western United States, available phosphate compares favourably. Available phosphate is defined as the amount of phosphate that dissolves in a weak citric acid solution, which is believed to imitate conditions near plant roots. As well, phosphate rock from the Fernie Formation, and particularly from the Cabin Creek area, generally contains lower levels of the toxic metals cadmium, arsenic, uranium, selenium and lead (Table 1) than phosphate from other locations.

BIBLIOGRAPHY

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TABLE 1: GEOCHEMISTRY OF SELECTED PHOSPHATE DEPOSITS.

Location	As	Pb	H ppm	U	C	P ₂ O ₅	F %	Organic Carbon
Montana Gray	53	66	1	121	1	31	2	0.24
Phosphoria Fm.								
Soda Springs Id.	10	47	0.05	70	23	28	*N/A	*N/A
Phosphoria Fm.								
Cabin Creek Fernie Fm	16	18	1	40	1	21	2	2.6
Phosphoria Fm.(average)	40	10	N/A	90	50	30.5	3.1	2.1
Fernie Fm.(average)	30	13	N/A	33	0.9	20.5	1.43	1.63
	*not available							

