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Ministry of Energy, Mines & Petroleum Resources
Mining & Minerals Division
BC Geological Survey

Assessment Report
Title Page and Summary

TYPE OF REPORT [type of survey(s)]: Geochemical Assessment

TOTAL COST: $20,000.00

AUTHOR(S): J. T. Shearer, M.Sc. P.Geo.

SIGNATURE(S): [signature]

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S):

YEAR OF WORK: 2017

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): 5669844

PROPERTY NAME: Bighorn

CLAIM NAME(S) (on which the work was done):

COMMODITIES SOUGHT: Phosphate

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN:

MINING DIVISION: Fort Steele Mining Division

NTS/BCGS: 82G/07W (82G.026)

LATITUDE: 49 ° 1796 ' " **LONGITUDE:** -114 ° 7499 ' " (at centre of work)

OWNER(S):
1) J. T. Shearer
2)

MAILING ADDRESS:

Port Coquitlam, BC V3C 2Z1

OPERATOR(S) [who paid for the work]:
1) Same as above
2)

MAILING ADDRESS:
Same as above

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):
The target is a phosphatic horizon in the basal Jurassic Fernie Group
The zone is 1m to 2m thick grading around 33.5% P2O5

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:

Assessment Reports 6859, 5556, 8989, 6365

Next Page

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping			
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for...)			
Soil			
Silt			
Rock			
Other			
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY / PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/trail			
Trench (metres)			
Underground dev. (metres)			
Other			
		TOTAL COST:	$20,000.00

GEOCHEMICAL ASSESSMENT REPORT
on the
BIGHORN PROPERTY

49.1769N LATITUDE/-114.7499"W LONGITUDE
NTS: 82G/07W (82G.026)
UTM: 664736E-5448127N

FORT STEELE MINING DIVISION
SOUTHEASTERN BRITISH COLUMBIA
Event # 5669844

For

FERTOZ INTERNATIONAL INC.
Unit 5 – 2330 Tyner Street,
Port Coquitlam, BC
V3C 2Z1
Phone: 604-970-6402

J. T. Shearer, M.Sc., P.Geo. (BC & Ontario)
E-mail: jo@HomegoldResourcesLtd.com

October 18, 2017

Fieldwork Completed Between July 15, 2017 and October 18, 2017

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SUMMARY

The Bighorn Property consists of the Bighorn Claims and is located in the Bighorn Creek and Wigwam River area of the Rocky Mountains, Fort Steele Mining Division, southeastern British Columbia, approximately 24 kilometres southeast of Morressey (30km south of Fernie, B.C). The property is accessed via an extensive network of logging and exploration roads.

The Bighorn claims were staked as part of the Fernie Project, whose primary objective was to evaluate the grade and continuity of the basal Fernie phosphate horizon in terms of establishing its potential as a large tonnage P_2O_5 resource. Previously, in 1929-1930 reconnaissance and detailed geologic mapping, hand trenching, sampling, inclined shafts and assaying was completed on phosphorite in the area.

The Bighorn Property is predominantly underlain by a sequence of Late Paleozoic to Mesozoic strata (Permian to Jurassic) that were deposited in the Alberta Trough under marine conditions and Late Jurassic to Cretaceous fluvio-deltaeic sediments that were subsequently deformed during the Late Cretaceous. Phosphatic rocks occur in a number of stratigraphic intervals within this sequence; however, the thickest and most continuous phosphate horizon was developed at the base of the Jurassic Fernie Group and is the focus of this project. The basal Fernie phosphatic strata are generally one to two metres thick.

Previous work on the Bighorn Property suggests average grades of the basal phosphorite horizon on the property are around 23.4% P_2O_5 across 1.2 metres.

Results for previous sampling are encouraging in P2O5 content. Current sampling shows an extensive strike length of the basal Fernie Formation.

Respectfully submitted,

J. T. Shearer, M.Sc., P.Geo. (BC & Ontario)

INTRODUCTION

Pell (1990) makes the following observations: Canada imported 2.39 million tonnes of phosphorite in 1986, approximately 80 per cent of which was used in the fertilizer industry. Other products which require the use of phosphorus include organic and inorganic chemicals, soaps and detergents, pesticides, insecticides, alloys, animal-food supplements, ceramics, beverages, catalysts, motor lubricants, dental and silicate cements (Barry, 1987). Approximately 55 million tonnes per annum are produced in the United States (Stowasser, 1989). Approximately 50 per cent of the phosphate rock imported into western Canada comes from Florida, the remainder being supplied from the Western U.S. (Barry, 1987). The majority of phosphate rock imported into eastern Canada is from Florida: minor amounts have also been imported from Togo, Tunisia and Morocco. Resources in Florida are rapidly being depleted (Stowasser, 1988): some experts feel that the western U.S. sources will not be able to meet the demand when Florida becomes exhausted, which suggests a possible niche for a new producer.

Phosphate rock produced in the U.S. is classified as acid or fertilizer grade, more than 31 per cent P_2O_5; furnace grade, 24 to 31 per cent P_2O_5; and beneficiation grade, 18 to 24 per cent P_2O_5. Acid grade rock is used directly in fertilizer plants, furnace grade rock is charged to electric furnaces and beneficiation grade rock is upgraded to acid or furnace feed (Stowasser, 1985).

Most commercial phosphate rock is used in fertilizer plants: feed for these plants must meet the following specifications:

P_2O_5 content: 27 to 42%
CaO/P_20_5 ratio:1.32 to 1.6
R_20_3/P_20_5:<0.1; R_20_3=$A1_20_3$+Fe_20_3+MgO
MgO content<l.O%

The phosphate rock mined in the western United States (Idaho, Montana, Wyoming, Utah) is from the Retort and Meade Peak members of the Permian Phosphoria Formation. The majority of mines are strip mining operations with ore zones ranging from 9 to 18 metres thick, with an average grade of 21.3 per cent P_2O_5. Overburden thickness is commonly 5 to 10 metres (Fantel et. al., 1984). Cominco American operated an underground phosphate mine in Montana. The phosphate horizon is 1 to 1.2 metres thick and has an average grade of >31 per cent P_2O_5. Most western U.S. phosphate ore is beneficiated by crushing, washing, classifying and drying (Stowasser, 1985). Phosphates mined in Florida and South Carolina are from the Miocene Hawthorne Formation and the younger, reworked deposits of the Bone Valley Formation. Ore thickness range from 3 to 8 metres, with overburden of 3 to 10 metres. Average grade is 7 per cent P_2O_5. Flotation processes are used to beneficiate the ores.

Phosphates mined in Tennessee have a minimum cut-off grade of 16 to 17.2 per cent P_2O_5 and a minimum thickness of 0.6 to 1.2 metres (Fantel et. al., 1984). Currently, there is no by-product recovery of yttrium from any of the U. S. operations. Phosphoria formation phosphorites from the western phosphate field contain an average of 300 ppm Y; phosphorites from North Carolina and Florida contain an average of 235-300 ppm Y; and, phosphorites from Tennessee contain an average of 63 ppm Y (Altschuler, 1980). The worldwide average yttrium value in phosphorites is 260 ppm (Altschuler, 1980).

The phosphorite beds in the Jurassic Fernie Group are thin (usually 1 to 2 metres, Butrenchuk, 1987a) relative to most phosphorites mined in the United States. As with most of the phosphate ores mined in the United States, Fernie phosphorites would require beneficiation to produce an acid grade product. The Fernie phosphorites have anomalous yttrium concentrations with respect to most other sedimentary phosphate deposits. If it proves feasible to recover yttrium during the production of phosphoric acid, as has been suggested by some researchers (Altschuler, et. al:, 1967), the economics of exploiting the Fernie Group basal phosphorite horizon will become significantly more attractive.

However, the strategy employed by Fertoz in the present program is to investigate the direct application phosphate to organic market. Contacts have been made to farmers already engaged with organic products.

Figure 1 Location Map

LOCATION and ACCESS

The Bighorn Claims are located 24km east-southeast of Morrissey, British Columbia along the Wigwam River Road, immediately northeast of Bighorn Creek and south of the Lodgepole South Fork Forest Development Road.

The Bighorn Claims consist of cells staked over Jurassic, Triassic and Permian sediments in an area where rich phosphate rock boulders were found. One outcrop of the phosphate bed was found beneath black Jurassic Fernie shales and immediately above, siltstones and fine grained sandstones of the Triassic Spray River Formation. It was not possible to determine the true thickness of the phosphate unit at this location. No Permian phosphate beds were found. The claims are largely covered by overburden.

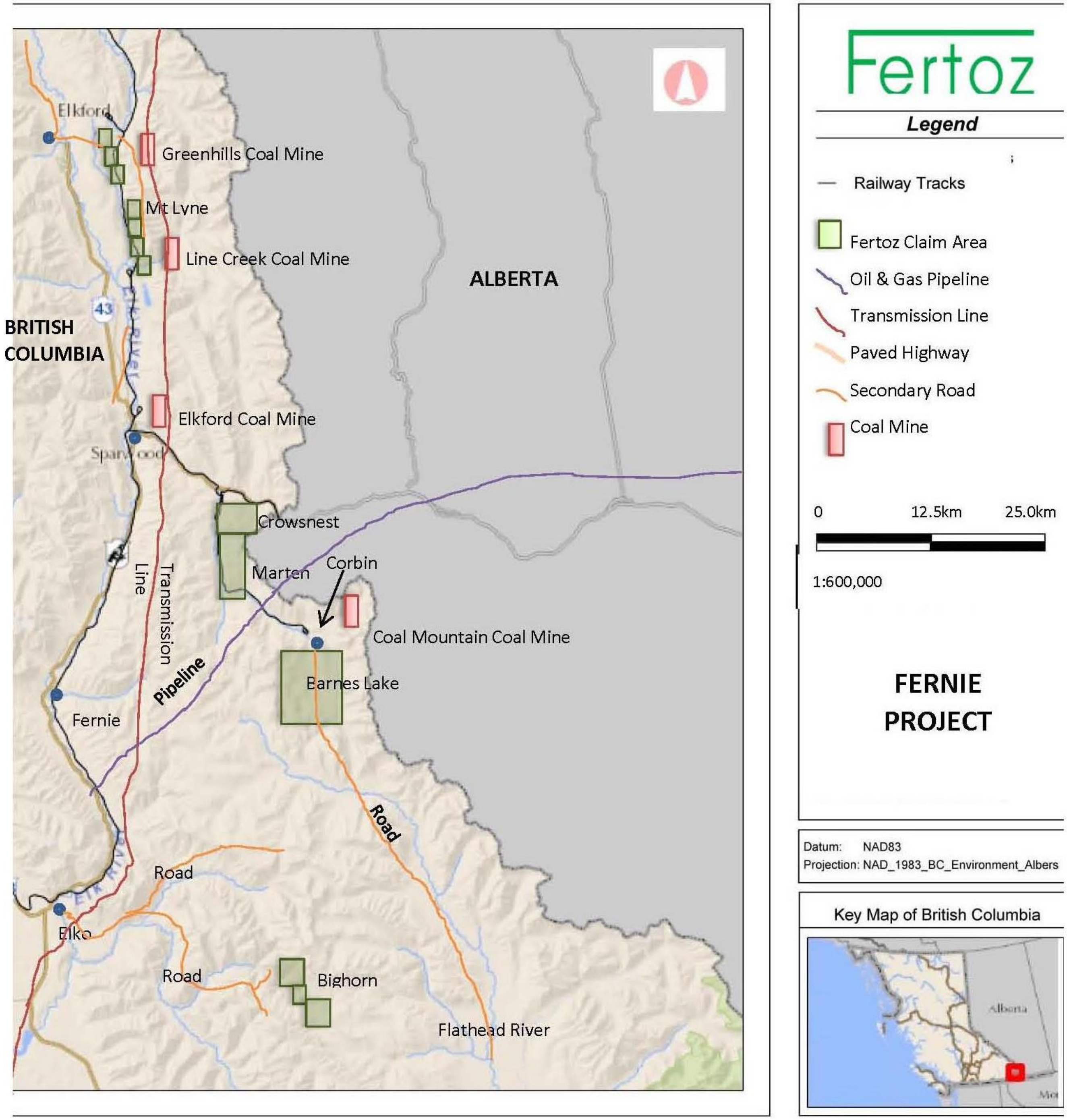


Figure 2 Detail Location and Claim Location

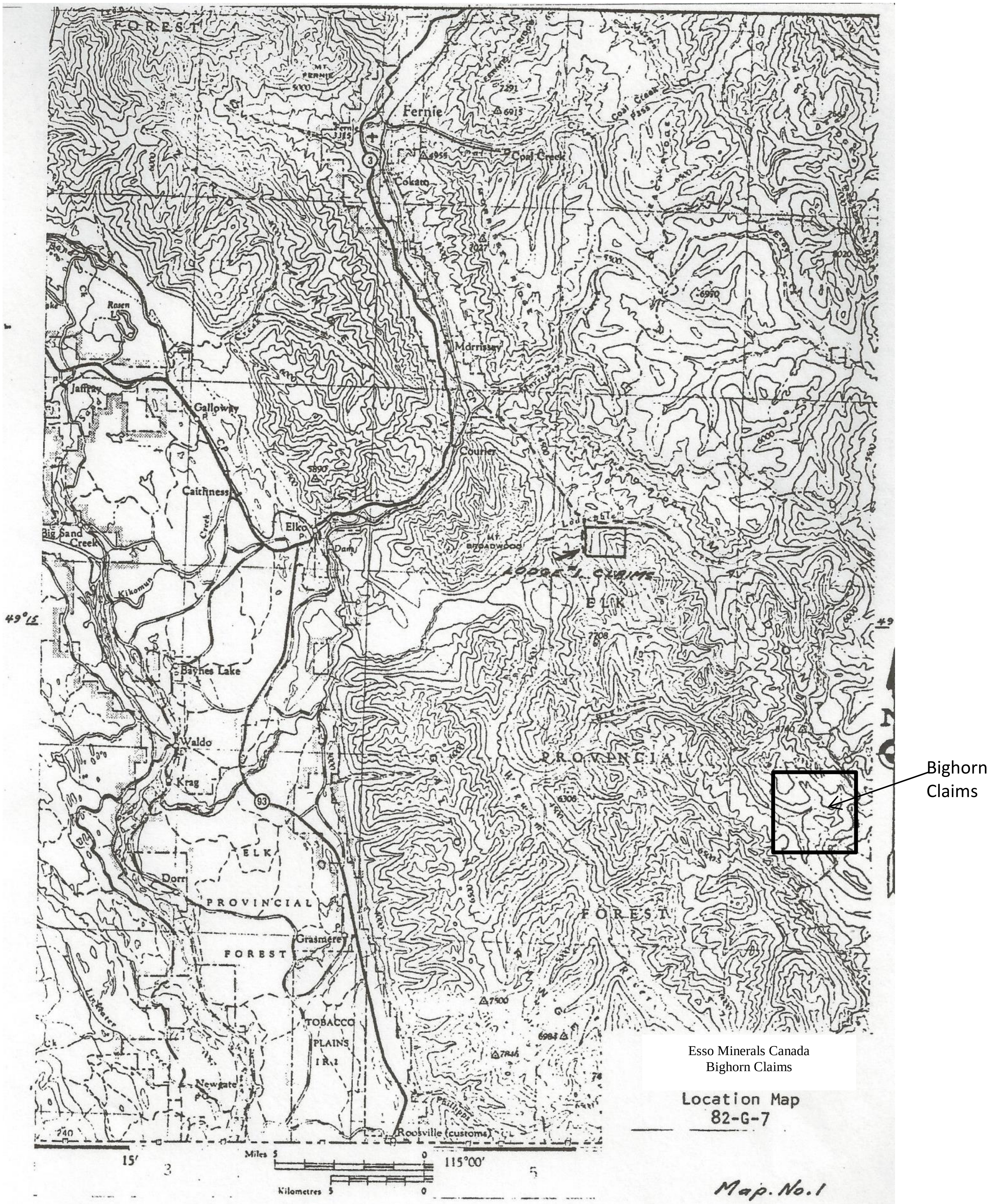


Figure 3 Access Map

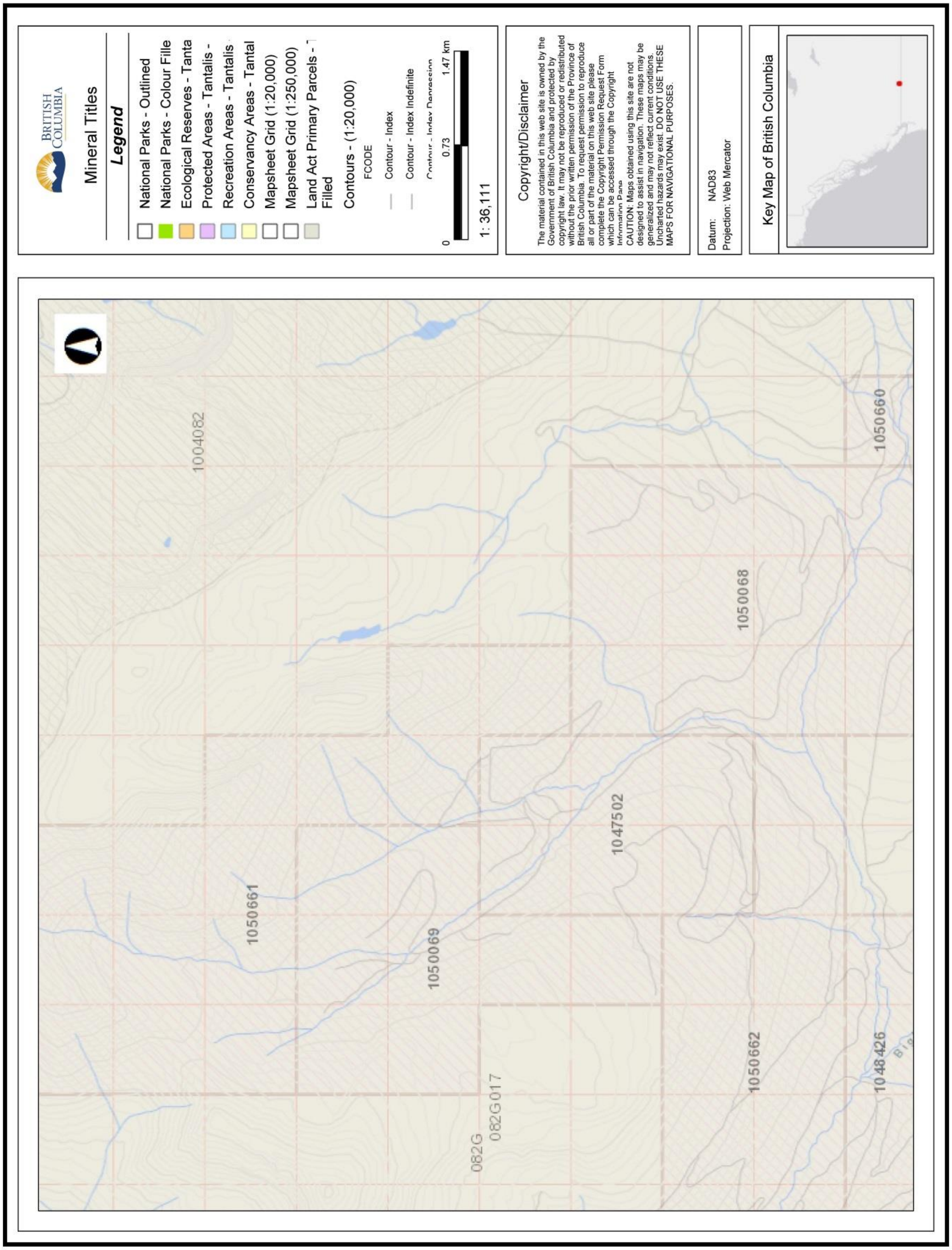


Figure 3a Claim Map

MINERAL TENURE

The Bighorn property, 7 claims encompassing 1,415.11 hectares were staked by J. T. Shearer as shown in Table 1 and Figure 2 and subsequently transferred to Fertoz International Inc.

TABLE I
List of Claims

Name	Tenure #	Area (ha)	Issue Date	Current Expiry Date	Registered Owner
Ram 1	1047502	126.72	October 29, 2016	October 29, 2021	Fertoz International
Ram 2	1050068	253.48	February 16, 2017	March 16, 2021	Fertoz International
Ram 3	1050069	168.93	February 16, 2017	March 16, 2021	Fertoz International
Ram 4	1050660	105.64	March 10, 2017	March 10, 2021	Fertoz International
Ram 5	1050661	295.58	March 10, 2017	March 10, 2021	Fertoz International
Ram 6	1050662	253.48	March 10, 2017	March 10, 2020	Fertoz International
Bighorn 7	1050686	211.28	March 11, 2017	March 11, 2020	Fertoz International

Total 1,415.11 ha

Cash may be paid in lieu if no work is performed. Following revisions to the Mineral Tenures Act on July 1, 2012, claims bear the burden of $5 per hectare for the initial two years, $10 per hectare for year three and four, $15 per hectare for year five and six and $20 per hectare each year thereafter.

HISTORY

Phosphatic horizons at the base of the Jurassic Fernie Group in southeastern British Columbia were discovered in 1925 (Telfer, 1933) and have been the subject of periodic exploration by Cominco (Kenny, 1977) and others since that time. Phosphate strata in the Bighorn area were (in the mid and late 1970's) explored by Western Warner Oils Ltd., Medesto Exploration Ltd. and Esso Minerals (Dorian, 1975; Pelzer, 1977; Dales 1978). The phosphate potential of the area was also addressed in a number of recent academic and government studies (Butrenchuk, 1987a, 1987b; Macdonald, 1985; 1987).

Thirteen holes were drilled in 1977 on the Lodge #1 claim to the north of Bighorn, as a program to test overburden depths, basement topography, and geological structure, and to sample the phosphate bed, if penetrated. The program was designed to provide a rapid bedrock appraisal of the area, with no holes to be drilled deeper than 75 metres unless the phosphate bed was penetrated. All holes were drilled vertically with a truck mounted Sanderson Cyclone Drill equipped with Mission Megadrill downhole hammer, 2 7/8" drillstem, and a 3" diameter VTM core barrel to be used if required. A total of 262.17m of 4" hole was drilled. A chip sample was kept for each hole by Kevin J. Heffernan.

Results for 2014 sampling Bighorn01 at 5460695N+0660329E, elevation1414m, are low in P2O5 content but close to 1977 drill hole 06A which gave (assessment report 6717):

downhole hammer			
77-06	9.8m to 10.4m	0.6m	black phosphate rock, soft crumbly
77-06A	9.1m to 10.2m	1.1m	Interbedded phosphorite and shale
	10.2m to 10.7m	0.5m	Silty shale with scattered oolites, phosphates
	10.7m to 11.6m	0.9m	Phosphorite, abundant calcite on fractures as cement
Assays for hole 77-06A			
	7.62m to 9.14m	1.52m	0.85% P_2O_5
	9.14m to 10.21m	1.07m	12.90% P_2O_5
	10.21m to 11.58m	1.37m (4.459 ft.)	20.80% P_2O_5
	11.58m to 12.3m	0.72m	0.63% P_2O_5

Minfile description of the Bighorn Zones are as follows:

The Bighorn phosphate prospect outcrops on Inverted Ridge on the south side of Bighorn Creek, 45 km southeast of Fernie.

The area in the vicinity of Bighorn Creek near the southwest margin of the Fernie Basin is underlain by fine-grained quartzose sandstones, siltstones and dolomitic siltstones of the Permian Ranger Canyon Formation (Ishbel Group), overlain by siltstones and calcareous or dolomitic siltstones of the Triassic Sulphur Mountain Formation (Spray River Group), followed by shales, siltstones and minor sandstones of the Jurassic Fernie Group. These units are situated on the west limb of an anticline trending northwest along the east side of the MacDonald thrust fault. This stratigraphy is locally warped into a smaller anticline-syncline pair.

Phosphate mineralization is contained in the Fernie Group and the Ranger Canyon Formation. A phosphorite horizon trends northwest along the southwest side of Bighorn Creek at the base of the Fernie Group. The horizon consists of a 0.75 metre thick layer of dense black phosphate with limonite blebs, overlain by 1.5 metres of silty shale and pelletal phosphate, which is in turn overlain by 1.5 metres of chocolate-coloured shale. A sample taken across its 2 metre thickness contained 18.50 per cent P_2O_5 (Open File 1987-16, Figure 33). A composite chip sample averaged over a true thickness of 0.51 metres contained 23.74 per cent P_2O_5 and 0.690 per cent yttrium (Assessment Report 19938, page 16, section IVR89-2).

This occurrence was first explored by First Nuclear Corporation in 1981 and then prospected by Formosa Resources Corporation in 1989.

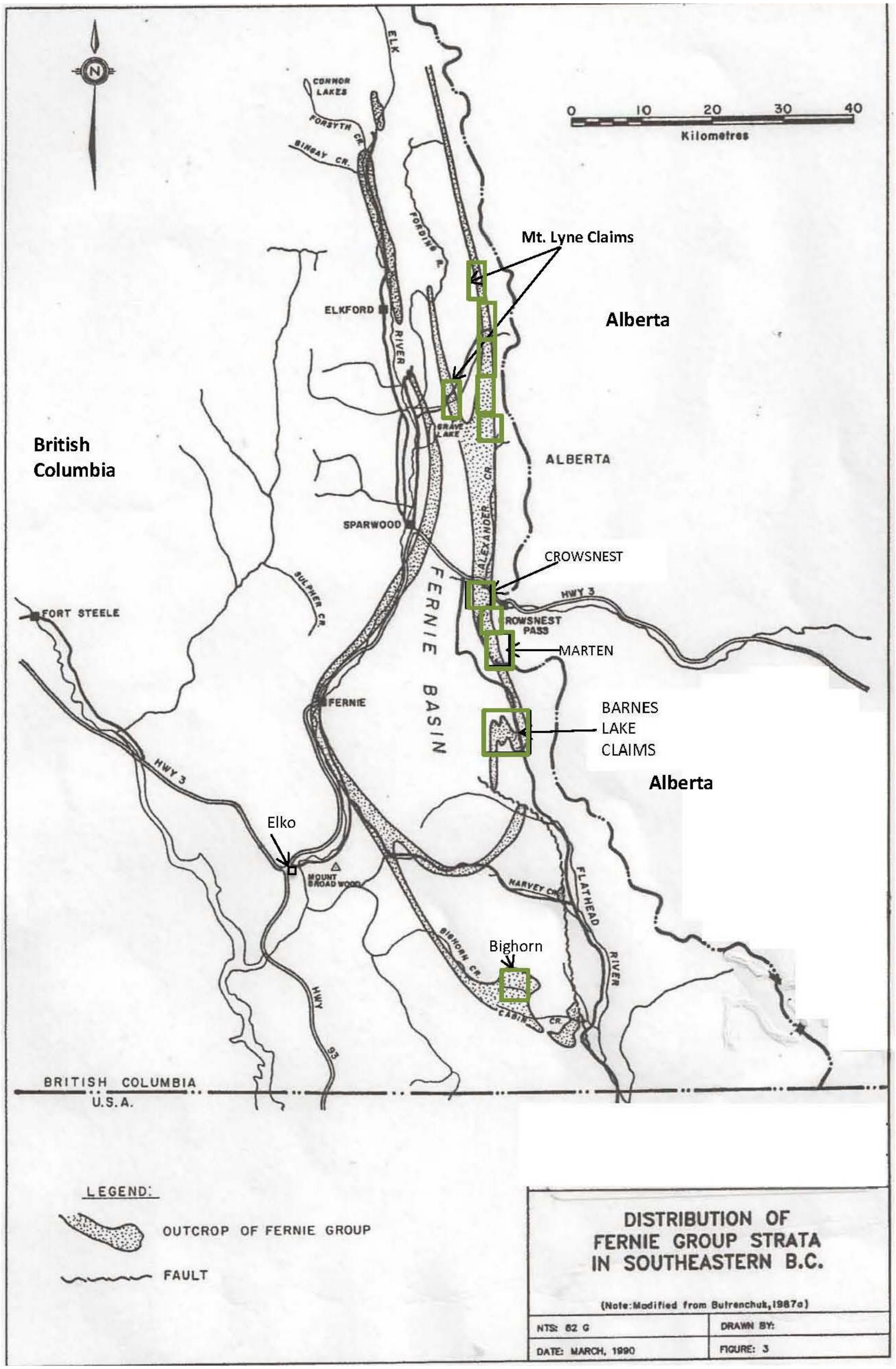


Figure 3c Distribution of Fernie Group Strata in Southern British Columbia

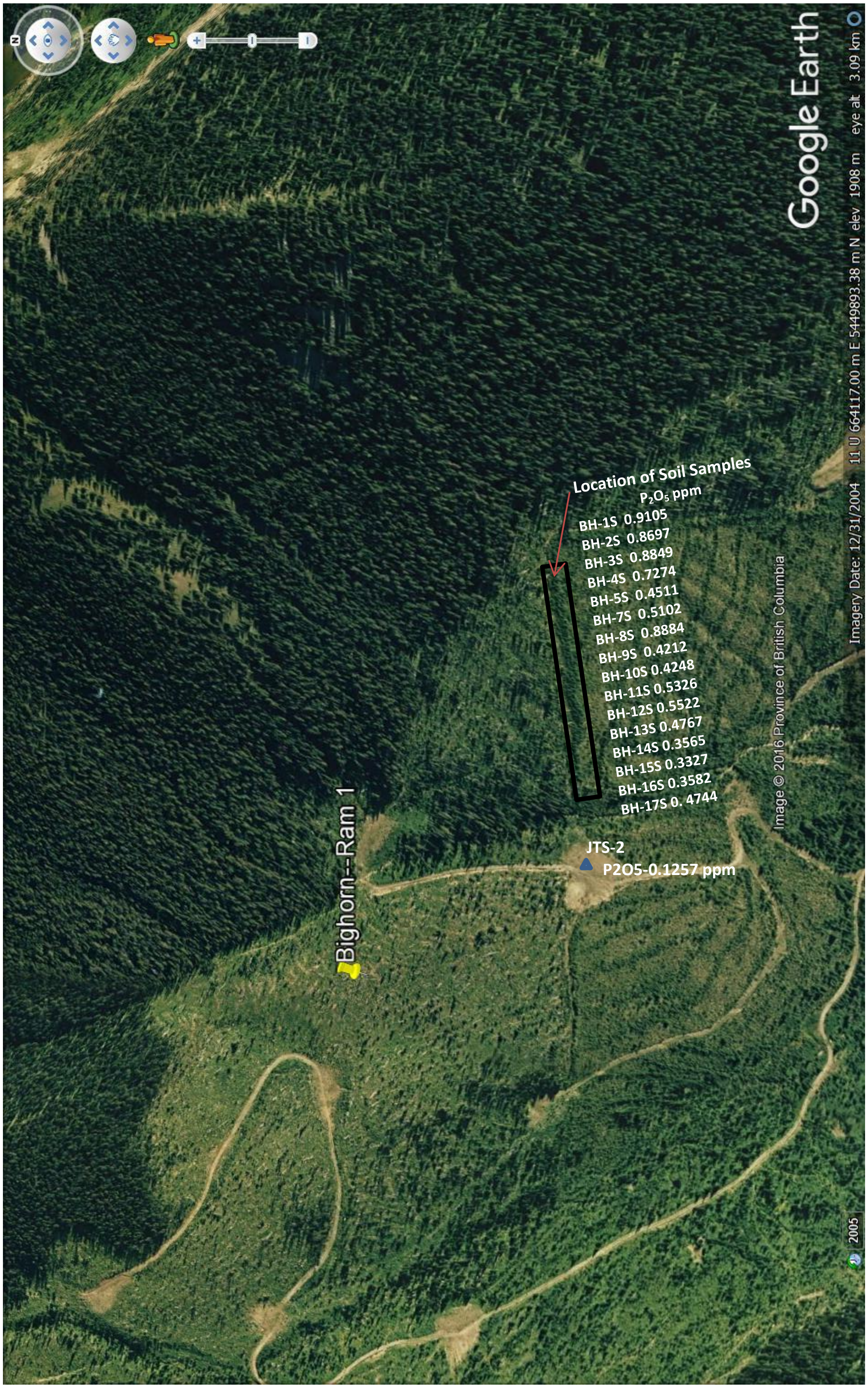


Figure 3d General Google Image of Bighorn Area

REGIONAL GEOLOGY

The Bighorn area is underlain by a series of predominantly marine strata which range in age from Devonian to Jurassic and non-marine fluvio-deltaic sediments of late Jurassic to Cretaceous age. Reconnaissance geological mapping in the region (Newmarch, 1953; Price,1965; 1964; 1962; 1961) has shown that these strata are now exposed in a broad, doubly plunging syncinorium, commonly referred to as the Fernie Basin. This synclinorium is broadly delineated by the distribution of the Jurassic Fernie Group in southeastern British Columbia (Figure 3): the structure is complicated by second order folds and later faults, both easterly directed thrusts and west-side down normal faults.

Phosphatic horizons (Figure 4) are known to occur at a number of intervals within the Paleozoic and Mesozoic stratigraphic section (Butrenchuk, 1987a; Kenny, 1977; Macdonald, 1987; Telfer, 1933). Phosphatic strata at the base of the Fernie Group are considered to have the best potential (Butrenchuk, 1987a; Macdonald, 1987).

REGIONAL STRATIGRAPHY

Upper Devonian strata exposed in the vicinity of the Fernie Basin consist of massive, grey, fine grained, cliff forming limestones of the Palliser Formation. These limestones are commonly mottled and locally interbedded with brown dolostones. They are overlain by the Devono-Mississippian Exshaw Formation, which predominantly consists of black, fissile shale, cherty shale, siltstone and minor limestone (Kenny, 1977). The Exshaw Formation is generally 6 to 30 metres in thickness (Figure 4). Four phosphatic horizons exist within the Exshaw Formation: the lowest is less than 50 cm thick and has grades of less than 9 per cent P_2O_5; the middle two horizons are both around one metre thick, have grades of up to 10 per cent P_2O_5 and are separated by approximately two metres of shale: and the uppermost phosphatic zone, which has very limited extent, contains grades which always exceed 15 per cent P_2O_5 and is always less than 15 cm thick (Macdonald, 1987).

The Mississippian Banff Formation has a gradational contact with the underlying Exshaw Formation. It is 280 to 430 metres thick and consists of dark grey, fissile shale and bands of argillaceous limestone that grade upwards into dark grey, massive, finely crystalline limestone and dolostone. The Rundle Group, which is also Mississippian in age, conformably overlies the Banff Formation and attains a thickness of approximately 700 metres. It consists of a series of resistant, thick-bedded crinoidal limestones, grey and black, finely crystalline limestones, dark, argillaceous limestones, dolostones and minor black and green shale (Butrenchuk, 1987a: Kenny, 1977).

Conformably overlying the Mississippian carbonates are Pennsylvanian strata of the Spray Lakes Group which consist of a lower unit, the Tunnel Mountain Formation and an upper unit, the Kananaskis Formation. The Tunnel Mountain Formation comprises a uniform, monotonous sequence of reddish-brown weathering dolomitic sandstone and siltstone that attains a maximum thickness of 500 metres at its western margin, near the Elk River. The Tunnel Mountain Formation is disconformably overlain by the Kananaskis Formation which consists of light grey, silty dolostones and dolomitic siltstones and is generally around 55 metres thick. Chert nodules and intraformational chert breccias are found in the upper part of the section. Slightly phosphatic horizons, containing up to 9 per cent P_2O_5, are reported as rare occurrences within the Kananaskis Formation (Macdonald, 1987).

The Kananaskis Formation of the Spray Lakes Group is unconformably overlain by Permian strata of the Ishbel Group. Together, the Spray Lake Group and the Ishbel Group comprise the Rocky Mountain

Supergroup (Figure 4). The Ishbel Group, which has been correlated with the Phosphoria Formation in the western United States, consists of the Johnston Canyon, Telford, Ross Creek and Ranger Canyon formations, from oldest to youngest, respectively.

The Johnston Canyon Formation comprises a series of recessive weathering, thin to medium-bedded siltstones, silty carbonate rocks and sandstones, with minor shale and chert. It varies from 1 to 60 metres in thickness and commonly contains phosphatic rocks. Thin, intraformational, phosphate-pebble conglomerate beds are common throughout the formation and, locally, mark its base. Phosphate is present as black nodules in distinct horizons within the siltstones, locally cements siltstone beds and, locally occurs in pelletal siltstone or pelletal silty phosphorite beds which are slightly greater than 1 metre in thickness (Butrenchuk, 1987a; Macdonald, 1987). The pelletal phosphorites can contain up to 21 per cent P_2O_5, but are of limited distribution: the basal conglomerate is less than 50 centimetres thick and generally contains 3-4 per cent P_2O_5, only; the nodular and phosphate pebble-conglomerate beds can have cumulate thicknesses of up to 22 metres, but grades rarely exceed 10 per cent P_20_5 over a few 10s of centimetres.
The Telford and Ross Creek Formations, which attain thicknesses of 210-225 and 90-150 metres respectively, are of limited distribution, exposed only in the Telford Thrust, west of the Elk Valley in the Sparwood region. The Telford Formation consists of resistant-weathering, thick-bedded, sandy, oolitic and fossiliferous rocks. Rarely, slightly phosphatic horizons are present, with grades commonly around 11 per cent P_2O_5 across 30 centimetres. The Ross Creek Formation is composed of recessive, thin-bedded siltstone, argillaceous siltstone, minor carbonate and chert. Nodular phosphate horizons are present throughout this unit and are best developed in the upper portions. Locally, phosphatic coquinoid beds are also present. Reported phosphate grades are only 1.7 to 6 per cent P_2O_5 (Butrenchuk, 1987a; Macdonald, 1987).

The Ranger Canyon Formation, which can be up to 60 metres thick, paraconformably to disconformably overlies the Ross Creek Formation. It predominantly consists of resistant, cliff-forming, thick-bedded, blue-grey cherts, cherty sandstones, siltstones, fine sandstones and conglomerates. Minor gypsum and dolomite are also present. The base of the formation is marked by thin, phosphate-cemented, chert-pebble conglomerates that locally contain massive, phosphatic intraclasts. Phosphate also occurs as nodules in brownish weathering sandstone beds in the upper part of the formation. With the exception of phosphatic strata near the Fernie ski hill, most of the horizons are reportedly low grade: the highest values reported are 13.3 per cent P_2O_5 across 0.5 metres (Butrenchuk, 1987a; Macdonald, 1987).

Permian strata are unconformably overlain by the Triassic Sulphur Mountain Formation of the Spray River Group. The Sulphur Mountain Formation is between 100 and 496 metres thick and typically consists of rusty brown weathering, medium-bedded siltstones, calcareous and dolomitic siltstones, silty dolostones and limestones and minor shale. Locally, the Sulphur Mountain Formation is overlain by pale weathering, variegated dolostones, limestones, sandstones and intraformational breccias of the Whitehorse Formation. The Whitehorse Formation, which can be from 6 to 418 metres in thickness, is middle to upper Triassic in age and is the upper member of the Spray River Group. It is not present in most areas (Butrenchuk, 1987a).

The Jurassic Fernie Group unconformably overlies the Triassic strata. It consists of a lower zone of dark grey to black shales, dark brown shales, phosphates and minor limestones, siltstones and sandstones (the basal phosphate zone and equivalent Nordegg Member, Poker Chip Shales and the Rock Creek Member), a middle unit of light grey shale, calcareous sandstone and sandy limestone (the Grey Beds) and an upper unit of yellowish-grey to pale brown or dark grey weathering glauconitic sandstone and shale grading upwards into interbedded fine grained sandstone, siltstone and black shales (the Green and Passage beds). In southeastern British Columbia, the Fernie Group is 70 to 376 metres in thickness and generally thickens to the west (Freebold, 1957; Kenny, 1977; Macdonald, 1987; Price, 1965).

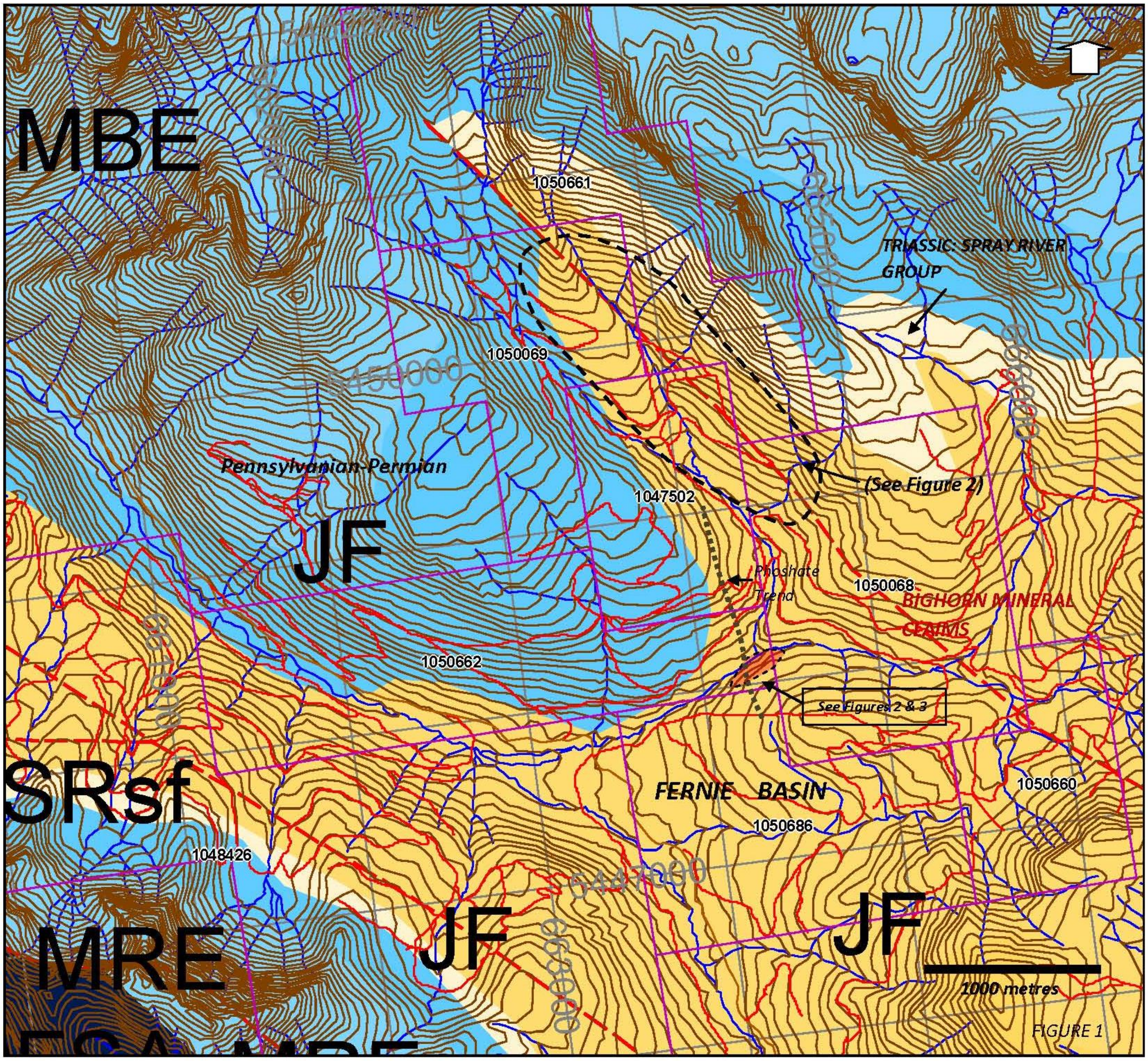
The base of the Fernie Group is marked by a persistent pelletal phosphorite horizon that is 1 to 2 metres in thickness and generally contains greater than 15 per cent P_2O_5; grades up to 30 per cent P_2O_5 have been found. It commonly consists of two pelletal phosphorite beds separated by a thin, chocolate brown to black phosphatic shale bed. The basal phosphorite rests either directly on Triassic strata or is separated from the underlying rocks by a thin phosphatic conglomerate. Phosphatic shales of variable thickness, generally less than 3 metres, overlie the phosphorites. The top of this sequence is locally marked by a yellow-orange bentonite bed. This part of the formation is Sinemurian in age and generally considered to be a lateral facies of the Nordegg Member and Nordegg equivalent beds. A second phosphatic horizon is present in the Bajocian Rock Creek Member, approximately 60 metres above the base of the Fernie Group. This zone is extremely low grade, generally containing less than one per cent P_2O_5 and is often associated with belemnite-bearing calcareous sandstone beds (Butrenchuk, 1987a; Freebold, 1957; Macdonald, 1987).

The Kootenay Formation, of upper Jurassic to Cretaceous age, overlies rocks of the Fernie Group. It consists of dark grey carbonaceous sandstone, gritty to conglomeratic sandstone, siltstone, shale and coal and can be from 150 to 520 metres thick (Price, 1965).

Age	Group/Formation (Thickness,metres)	Lithology	Phosphatic Horizons	Thickness (metres)	Grade (% P_2O_5)
Cretaceous	Kootenay Fm.	-grey to black carbonaceous siltstone and sandstone; nonmarine;coal			
Jurassic	Fernie Gp. (+244)	-black shale,siltstone,limestone; marine to nonmarine at top -glauconitic shale in upper section -belemnites; common fossil	-approximately 60 metres above base low-grade phosphate bearing calcareous sandstone horizon or phosphatic shale -Bajocian -basal phosphate in Sinemurian strata; generally pelletal/oolitic; rarely nodular;1-2 metres thick; locally two phosphate horizons; top of phosphate may be marked by a yellowish-orange weathering marker bed.	1-2	11-30
		regional unconformity			
Triassic	SPRAY RIVER GP.: Whitehorse Fm.	-dolomite,limestone,siltstone			
	SPRAY RIVER GP.: Sulphur Mntn. Fm. (100-496)	-grey to rusty brown weathering sequence of siltstone, calcareous siltstone and sandstone,shale, silty dolomite and limestone	-nonphosphatic in southeastern British Columbia		
		regional unconformity			
Permian	ROCKY MOUNTAIN SUPERGROUP, ISHBEL GROUP: Ranger Canyon Fm. (1-60)	-sequence of chert,sandstone and siltstone;minor dolomite and gypsum;conglomerate at base -shallow marine deposition	-upper portion-brown,nodular phosphatic sandstone;also rare pelletal phosphatic sandstone (few centimetres to +4 metres) -basal conglomerate-chert with phosphate pebbles present (≤1 metre)	0.6 0.5-1.0	9.5 13-18
		unconformity			
	ISHBEL GROUP: Ross Creek Fm.(90-150)	-sequence of siltstone,shale chert,carbonate and phosphatic horizons areally restricted to Telford thrust sheet -west of Elk River,shallow marine deposition	-phosphate in a number of horizons as nodules and finely disseminated granules within the matrix -phosphatic coquinoid horizons present	0.4-1.0	1.7-6.0
	ISHBEL GROUP: Telford Fm. (210-225)	-sequence of sandy carbonate containing abundant brachiopod fauna;minor sandstone -shallow marine deposition	-rare,very thin beds or laminae of phosphate;rare phosphatized coquinoid horizon	0.3	11.4
	ISHBEL GROUP: Johnson Canyon Fm. (1-60)	-thinly bedded,rhythmic sequence of siltstone,chert,shale, sandstone and minor carbonate; basal conglomerate -shallow marine deposition	-locally present as a black phosphatic siltstone or pelletal phosphate -phosphate generally present as black ovoid nodules in light coloured siltstone;phosphatic interval ranges in thickness from 1-22 metres -basal conglomerate (maximum 30 cm thick) contains chert and phosphate pebbles	0.2-0.3 1-22 1-2	3.0-4.0 0.1-11.0 14.2-21.2
		regional unconformity			
Pennsylvanian	SPRAY LAKES GP.: Kananaskis Fm. (±55)	-dolomite,silty,commonly contains chert nodules or beds	-locally,minor phosphatic siltstone in uppermost part of section		
	SPRAY LAKES GP.: Tunnel Mntn Fm. (±500)	-dolomitic sandstone and siltstone			
Mississippian	Rundle Gp. (±700)	-limestone,dolomite,minor shale, sandstone and cherty limestone			
	Banff Fm. (280-430)	-shale,dolomite,limestone			
Devonian-Mississippian	Exshaw Fm. (6-30)	-black shale,limestone -areally restricted in south-eastern British Columbia	-an upper nodular horizon -phosphatic shale and pelletal phosphate 2-3 metres above base -basal phosphate <1 metre thick		
Devonian	Palliser Fm.	-limestone			

FIGURE 4: STRATIGRAPHIC SUMMARY INCLUDING PHOSPHATE-BEARING HORIZONS IN SOUTHEASTERN BRITISH COLUMBIA (modified from Butrenchuk, 1987a). Thickness not to scale.

Figure 4 Stratigraphic Summary



Local Geology map – Bighorn Mineral Claims
The property is dominantly underlain by the Jurassic, Fernie Basin black shale, which overlies the Triassic Spray River Group comprised of indurated shale, mudstone and siltstone. These rock formations are regionally underlain by Pennsylvanian-Permian Rocky Mountain Group consisting mainly of dolomitic carbonate rock units.

Figure 5 Local Geology

PROPERTY GEOLOGY

The Bighorn area is underlain by a sequence of sedimentary rocks which range from Permian to Lower Cretaceous in age (Figure 6). Geological mapping at a scale of 1:5,000, concentrated on locating the basal Fernie Group phosphorite horizon, which marks the Triassic/Jurassic boundary in this region.

The Bighorn claims are underlain by strata correlative with the Ranger Canyon Formation of the Permian Ishbel Group, the Sulphur Mountain Formation of the Triassic Spray River Group and the Jurassic Fernie Group (Figures 5). Ishbel Group strata older than the Ranger Canyon Formation may also be present on the property, but little attention was paid to this part of the stratigraphy. Late Jurassic to early Cretaceous sandstones, siltstones and coal beds of the Kootenay Formation are exposed on a ridge crests on the northwestern corner of the claims.

Rocks assigned to the Ranger Canyon Formation are predominantly medium to thick bedded, cream to buff to light grey weathering, fine grained sandstones, siltstones and dolomitic siltstones with white to light grey fresh surfaces. Locally, thin cherty and chert nodule rich layers are present within the siltstones. Thin grey limey beds may also be present, interlayered with the siltstones and are particularly common at the top of the section, immediately underlying Triassic siltstones. These limey beds are locally fossiliferous, containing rugosan corals and possible crinoid fragments. At one location, along the main access road, dark grey siltstones containing black phosphate nodules were present near the top of the Permian section and were overlain by grey calcareous beds.

Rocks correlative with the Triassic Sulphur Mountain Formation in the Bighorn area are predominantly buff, yellowish-brown and chocolate brown weathering, thin to medium bedded siltstones and shaley siltstone with a grey to buff fresh surface. Horizons consisting of dark brown shale with thin siltstone interlayers are common within this formation and, throughout much of the property, occur at the top of the formation.

Fernie Group rocks are recessive weathering and for the most part not well exposed. Where the base of the Fernie is exposed and the section complete, it is marked by a phosphorite horizon that is commonly 1.1 to 2.1 metres thick. In many areas the top of the section has been eroded and therefore thicknesses impossible to estimate; locally, backthrusting has placed Triassic and basal Jurassic strata over Jurassic Fernie shales, disrupting the sequence. The basal phosphorite horizon generally consists of poorly to well consolidated, gritty, pelletal phosphorite and shaley phosphorite capped by phosphatic shale. Trenches and hand pits at the southern part of the property revealed beds containing phosphate nodules within a pelletal phosphorite matrix. Brown and black shales commonly overlie the phosphorites; locally, extremely hard, dark grey nodular siltstone layers occur within the shales immediately overlying the phosphatic sequence.

The monotonous, fissile black shales which overlie the basal Fernie phosphorites give way, upsection to black, brown and dark grey shales with interbedded boudinaged buff to orange weathering dolostones, buff fossiliferous fine-grained sandstones and light grey limestone beds. Further upsection light grey to yellowish grey calcareous shales occur within the Fernie Group.

On the northwestern corner of the property, gritty grey sandstones, siltstones and thin coal beds of the late Jurassic to Cretaceous Kootenay Formation crop out, but were not examined in detail.

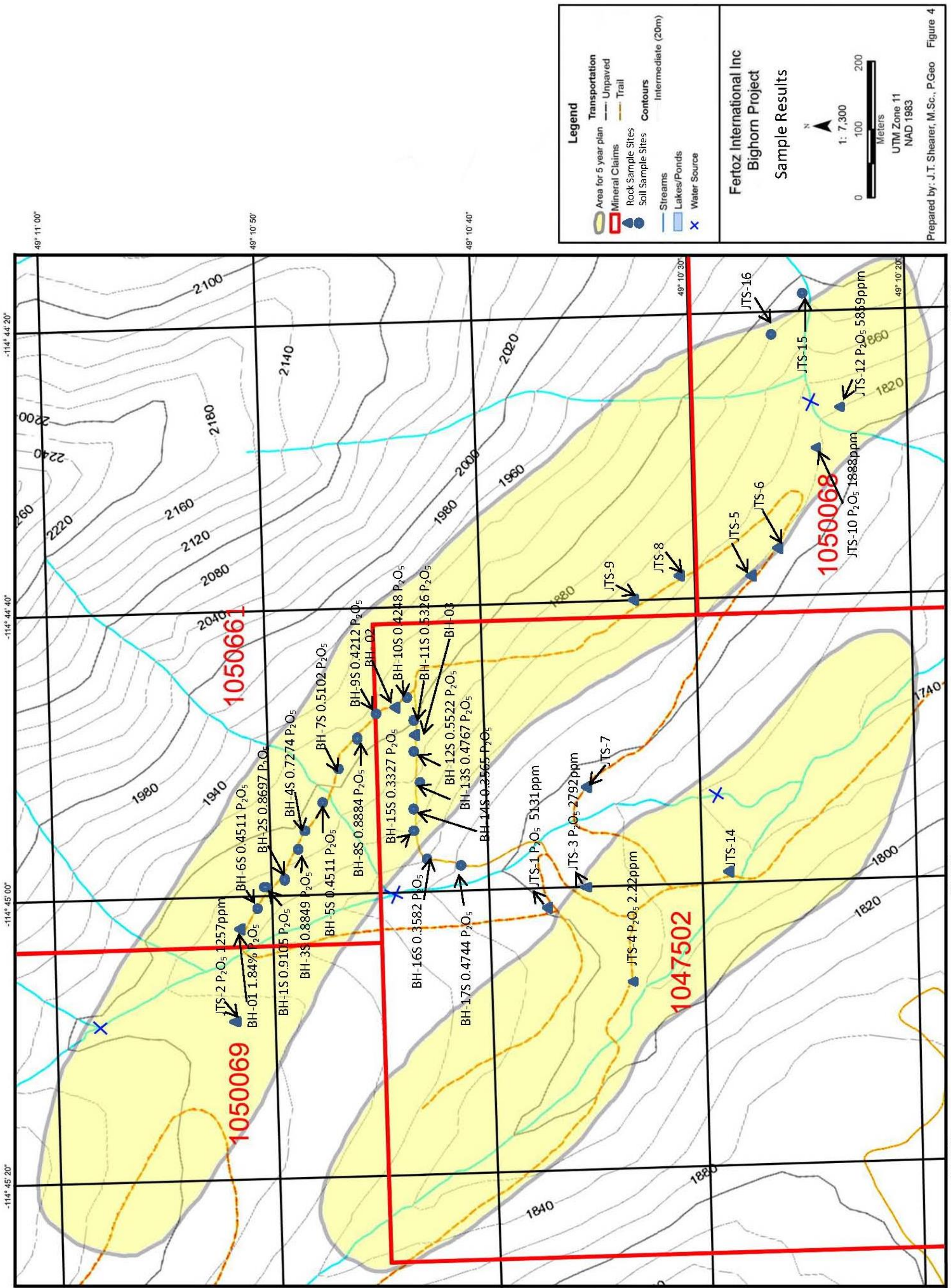


Figure 6 Sample Locations and Results

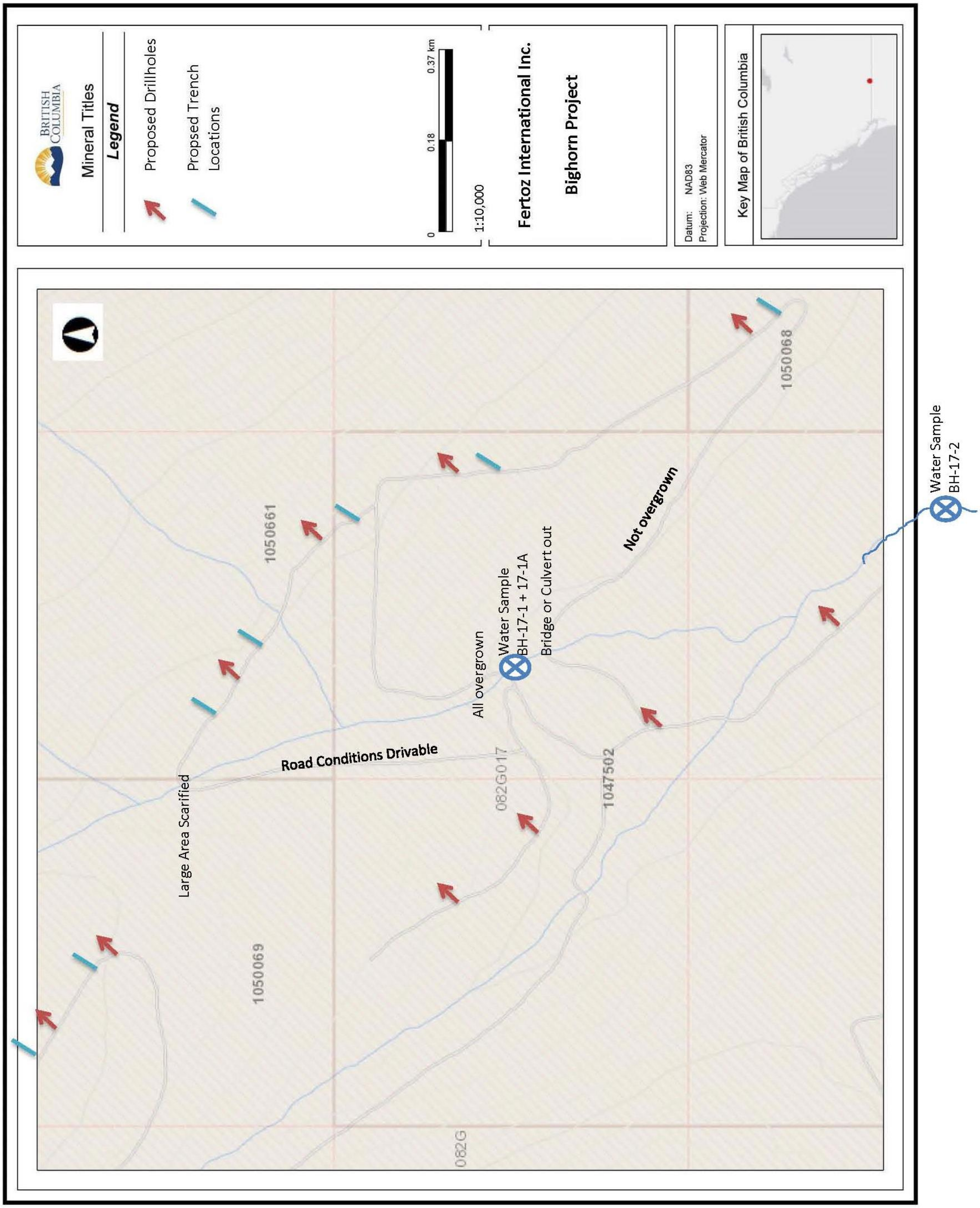


Figure 7 Water Sample Locations

WORK PROGRAM 2017

The work was conducted between August 17 and August 26, 2017, which included locating historical phosphate workings, re-sampling a number of old trenches, reconnaissance mapping, prospecting and soil sampling.

For mapping and sampling control, maps were downloaded from BC Mineral Title Online and hand held Garmin – GPSmap60CSx was utilized. Most times the accuracy of GPS readings were within ± 3 metres of the mapping (i.e. rock outcrop) or sampling site. Each rock outcrop was briefly noted in field book and plotted on base map and each grab sample collected was briefly described with GPS position recorded, photographs were also taken as part of field documentation.

The Property is along the front ranges of the Rocky Mountains in southeastern British Columbia.

Mapping and sampling surveys conducted along the headwaters of Bighorn Creek identified a phosphate-bearing horizon. This horizon trends northwest appears to extend up northwestern branch of the creek (see figure 8) .

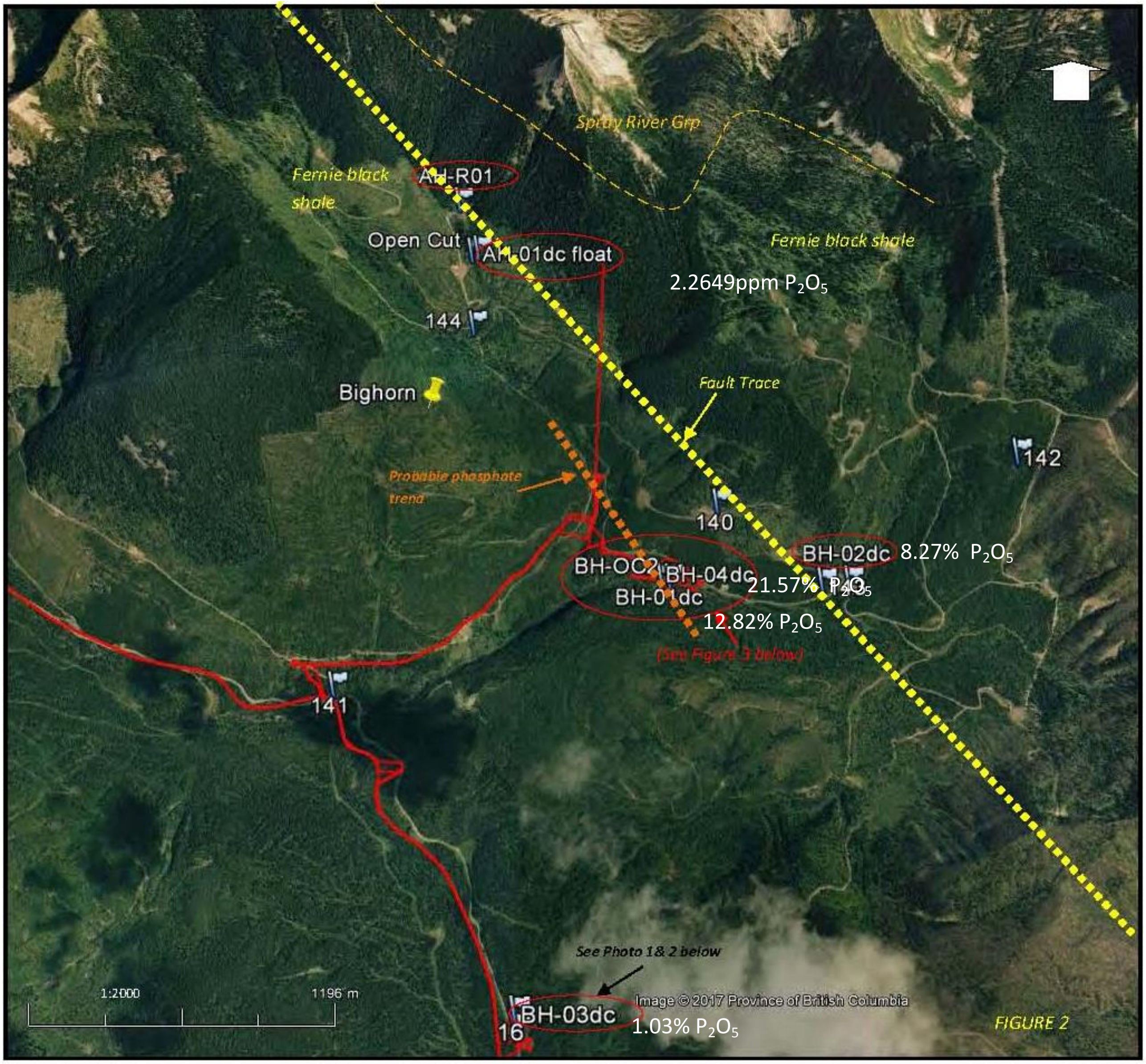
Assays were conducted by using an XRF Unit factory calibrated (Cert No. 0154-0557-1) on October 30, 2013, Instrument #540557 Type Olympus DPO-2000 Delta Premium. The instrument was calibrated using Alloy Certified reference materials by ARM1 and NIS5 standards. Only certified operators were employed and that were experienced in XRF assay procedures. Read times were 120 seconds or greater.

Results of the XRF assays are contained in Appendix III with sample descriptions are contained in Appendix IV.

Soil samples, figure 8, show the subcrop of the phosphate horizon. The soils over the phosphate horizon are relatively thin. Average depth of samples was 10cm to 15cm (refer to Appendix IV)

Rock samples from a large road pit/trench area at DC sample 03 returned higher P2O5 values and needs detail follow-up work.

Three water samples were collected (Appendix V) to establish a geochemical baseline.



GPS reconnaissance traverses: **BH-R01**: dolomitic shale (probable Spray River); **BH01dc:** float material, black shale weakly phosphatic. Reconnaissance surveys within small watershed are masked by overburden. Float material observed is mainly black shale and the recessive nature of this area suggests it is underlain by the Fernie Formation. A northeast trending fault mapped by the GSC also occupies this area as shown above. Outcrop **BH-OC2**: float material black shale with abundant calcite veinlets, phosphatic about 10-15% oolitic texture.

Figure 8 Google Image of Area with Waypoints

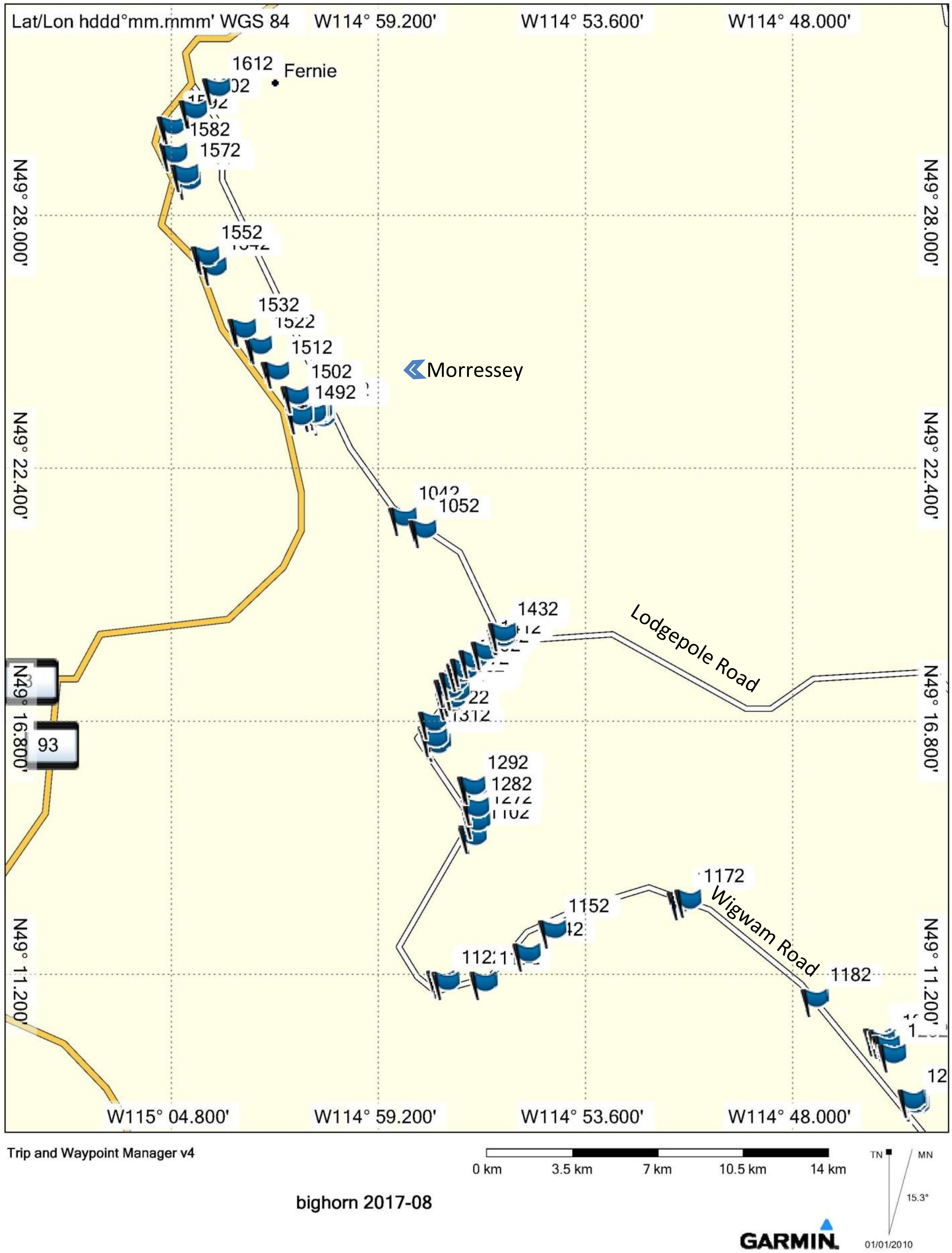


Figure 9 Garmin Map and Access Map

*Grab Sample **BH-03dc**: GPS location: 663981E-5446325N, sub-crop taken adjacent to road side near divide (height of land) leading to Flat Head River valley. Sample is comprised mainly of black shale.*

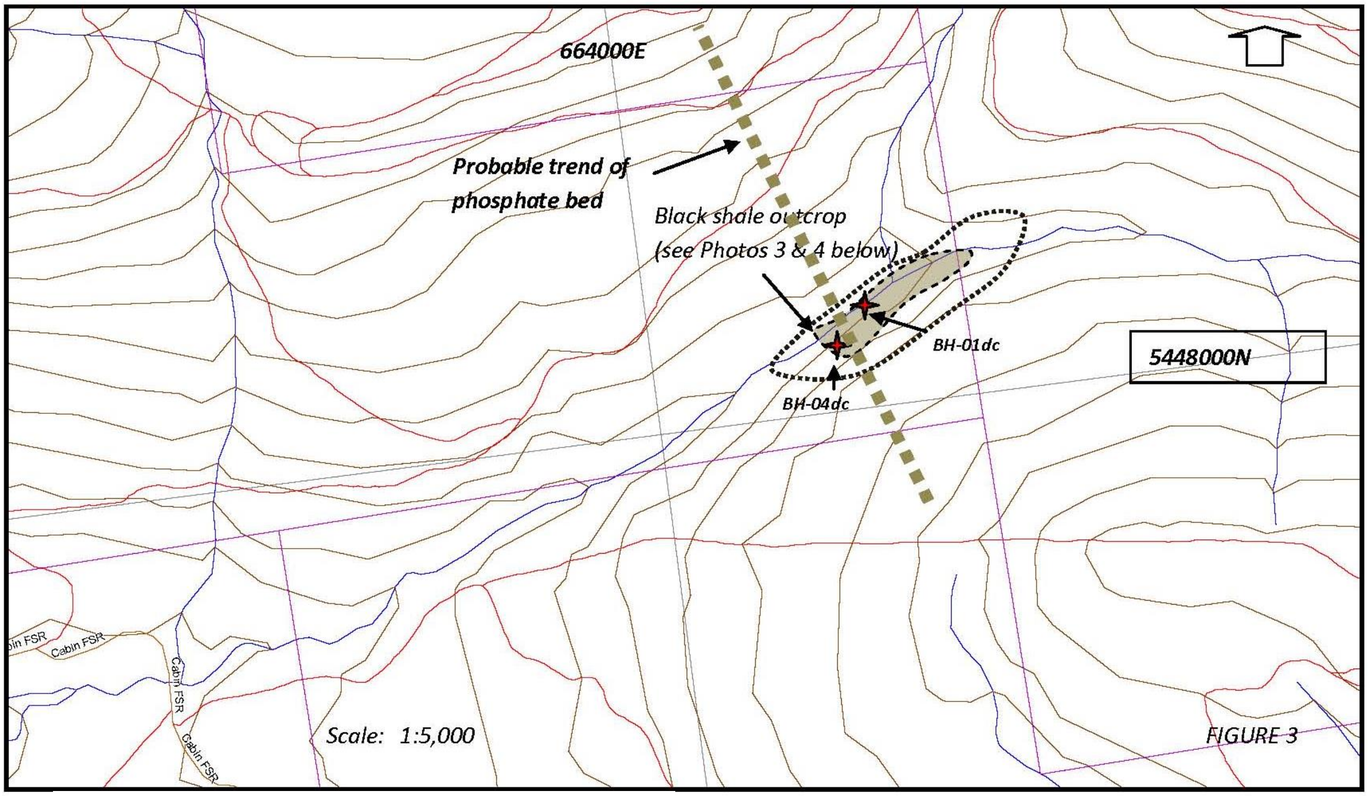
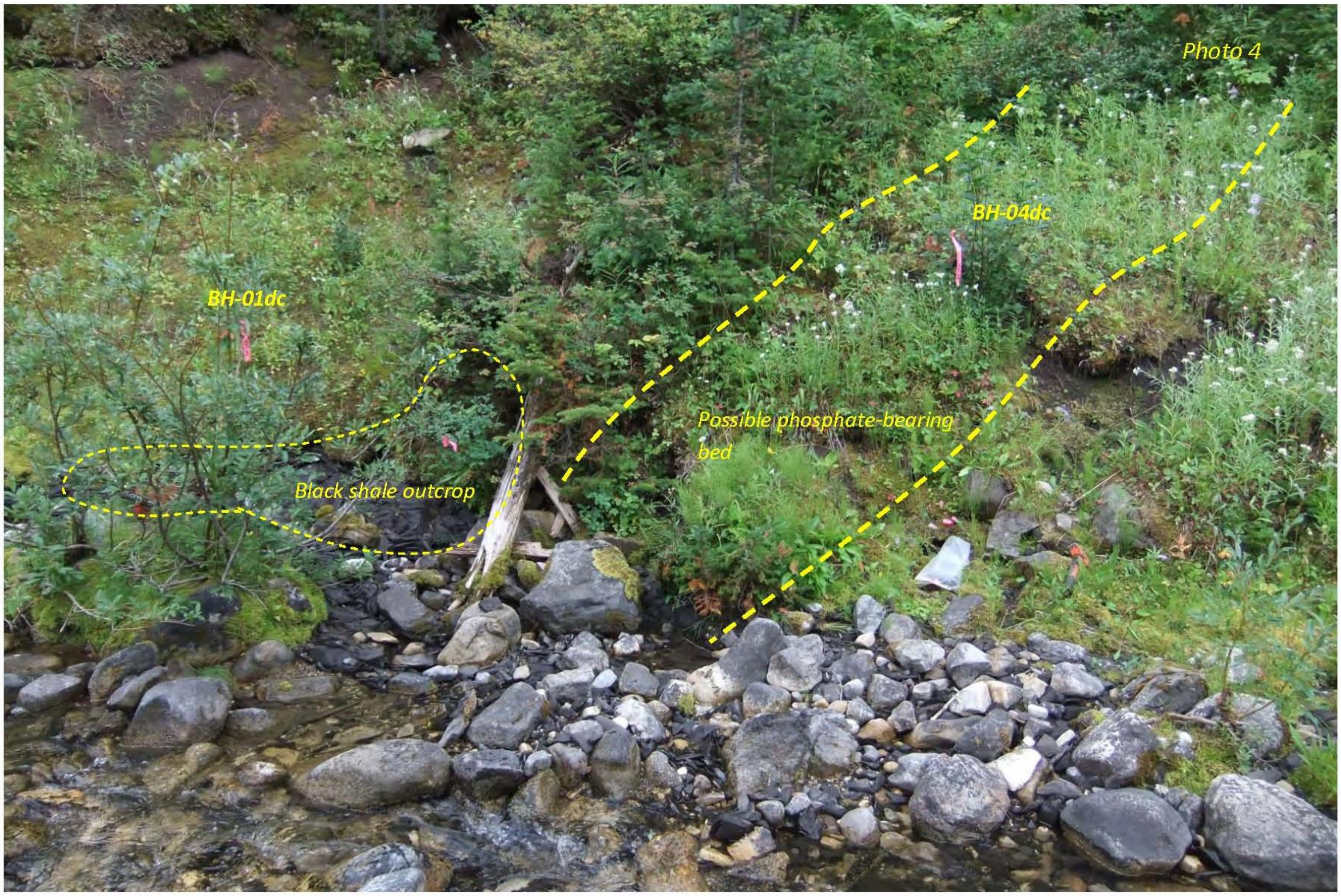


Figure 10 Phosphate Zone Bighorn Claims

Fernie black shale outcrop along small stream



Fernie black shale phosphatic outcrop. Two grab samples were collected from this exposed bank see descriptions below.

Sample No.	*UTM GPS Location*	*Brief Description*
BH-01dc	*664736E-5448127N*	*Thin bedded black shale with oolitic texture – phosphate*
BH-04dc	*664730E-544125N*	*Black shale appears to be part of phosphate horizon.*

Fernie black shale is well exposed along the stream. Western section of this outcrop contains increase phosphate and may host phosphate-bearing horizon trending northwesterly (Figure 3). Further mapping would have to be conducted along this creek bed in order to determine the extent of phosphate mineralization. Black shale beds strike northwest and dominantly dip 20-25°northeast.

CONCLUSIONS and RECOMMENDATIONS

The Bighorn claim, which can be reached by road from Fernie, B.C., is underlain by a series of Upper Paleozoic and Mesozoic strata that were deposited off the western margin of North America between the Permian and late Jurassic. Considerable phosphatic strata occur at the base of the Jurassic Fernie Group.

On the Bighorn claim, complete sections of the phosphatic strata are 1.11 to 2.1 metres in thickness and average 22.5 per cent P_2O_5. One incomplete section, where the upper beds were eroded away, was 0.98 metres in thickness and contained 32.62 per cent P_2O_5.

North of Bighorn, on the western limb of the easternmost anticline, an area was located where the phosphate horizon dips in a downslope direction at an angle approximately parallel to or slightly steeper than the slope: this scenario is favourable for exploiting the resource with minimal removal of overburden.

The work done to date has been preliminary and has not addressed questions such as the effects of surface weathering and the potential of changes in grade with depth from surface.

In 2017 the program consisted of reconnaissance geochemistry, rock sampling, soil sampling and establishing access.

Results for previous sampling and 2017 assays are encouraging in P2O5 content. Current sampling shows an extensive strike length of the basal Fernie Formation. Follow-up work is recommended for 2018.

Respectfully Submitted,

J. T. Shearer, M.Sc., P.Geo. (BC & Ontario)

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APPENDIX I

STATEMENT of QUALIFICATIONS

October 18, 2017

STATEMENT of QUALIFICATIONS

I, Johan T. Shearer of Unit 5 – 2330 Tyner Street, in the City of Port Coquitlam, in the Province of British Columbia, do hereby certify:

1. I graduated in Honours Geology (B.Sc., 1973) from the University of British Columbia and the University of London, Imperial College, (M.Sc. 1977).

2. I have practiced my profession as an Exploration Geologist continuously since graduation and have been employed by such mining companies as McIntyre Mines Ltd., J.C. Stephen Explorations Ltd., Carolin Mines Ltd. and TRM Engineering Ltd. I am presently employed by Homegold Resources Ltd.

3. I am a fellow of the Geological Association of Canada (Fellow No. F439). I am also a member of the Canadian Institute of Mining and Metallurgy, the Geological Society of London and the Mineralogical Association of Canada. I am a member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia (P.Geo., Member Number 19,279).

4. I am an independent consulting geologist employed since December 1986 by Homegold Resources Ltd. At Unit #5 2330 Tyner Street, Port Coquitlam, British Columbia.

5. I am the author of the report entitled "Geochemical Assessment Report on the Bighorn Property" dated October, 2017.

6. I have visited the property on August 15-19, 2017. I have carried out mapping and sample collection and am familiar with the regional geology and geology of nearby properties. I have become familiar with the previous work conducted on the Barnes Lake Project by examining in detail the available reports and maps and have discussed previous work with persons knowledgeable of the area.

Dated at Port Coquitlam, British Columbia, 18th day of October, 2017.

J.T. Shearer, M.Sc., P. Geo. (BC & Ontario)

APPENDIX II

STATEMENT of COSTS

October 18, 2017

Appendix II

Bighorn Property
Statement of Costs
2017

Wages	Total
J. T. Shearer, M.Sc., P.Geo, Geologist 6 days @ $700/day, August 14-19, 2017	$4,200.00
Dan Cardinal, B.Sc., P.Geo., Geologist 6 days @ $650/day, August 14-19, 2017	3,900.00
W.B. Lennan, P.Geo., Geologist 2 days @ $600/day	1,200.00
Subtotal Wages	$9,300.00
Transportation	
Truck 1 – 6 days @ $120/day	720.00
Truck 2 – 6 days @ $100/day	600.00
Fuel	950.00
Hotel, Fernie	750.00
Meals & Food	760.00
Eric MacKenzie, 6 days @ $4000/day, August 14-19, 2017	2,400.00
Analytical, Water Samples	850.00
XRF Assays (using Certified Operator)	350.00
Field Supplies – bags, GPS, Radios, @ $50/day	300.00
Data Compilation and Interpretation and Water Interpretation	1,400.00
Report Writing	1,400.00
Word Processing and Reproduction	350.00
Subtotal Expenses	$01,830.00
Total	**$20,130.00**

Event #	566984
Date Filed	October 18, 2017
Amount	$ 20,000.00
PAC	$ 5,246.00
Total Filed	$ 25,246.00

APPENDIX III

ASSAY RESULTS

October 18, 2017

Bighorn Assay Results Soil and Rock Samples

Rock Sample	**Reading No**	**P_2O_5**			**UTM**
BH-01	4 - 2017-08-21	7374			663912E 5450006N
BH-01	5 - 2017-08-21	1.84%			663912E 5450006N
BH-01	6 - 2017-08-21	1.78%			663912E 5450006N
BH-01	7 - 2017-08-21	1.57%			663912E 5450006N
BH-02	9 -2017-08-21	1435			664253E 5449298N
BH-02	11 - 2017-08-21	913			664253E 5449298N
BH-02	15 - 2017-08-21	1107			664253E 5449298N
BH-02	17 - 2017-08-21	No P			664253E 5449298N
BH-03	18 - 2017-08-21	1.5%			664248E 5449760N
BH-03	19 - 2017-08-21	6835			664248E 5449760N
BH-03	31 - 2017-08-21	8133			664248E 5449760N
JTS-21-Bighorn	30 - 2017-08-21	7812			664248E 5449760N
Soil Sample			**Soil Horizon**	**Sample Depth cm**	
BH-1S	16 - 2017-08-24	6522	B-C	10	663969E 5449980N
BH -2S	18 - 2017-08-24	9205	B-C	10	663985E 5449971N
BH -3S	19 - 2017-08-24	8697	B-C	20	664023E 5449941N
BH -4S	20 - 2017-08-24	8849	B-C	15	664059E 5449920N
BH -5S	21 - 2017-08-24	7274	B-C	15	664100E 5449887N
BH -6S	22 - 2017-08-24	4511	B-C	15	663931E 5449998N
Dan Sample	2017-08-24	1.43	B-C	10	663981E 5449325N
BH-oldc	2017-08-24	3.40	B-C	10	664085E 5449456N
BH-7S	33 - 2017-08-24	5102	B-C	10	664138E 5449876N
BH-8S	34 - 2017-08-24	8884	B-C	10	664192E 5449852N
BH-9S	35 - 2017-08-24	4212	B-C	15	664221E 5449816N
BH-10S	36 - 2017-08-24	4248	B-C	15	664247E 5449779N
BH-11S	37 - 2017-08-24	5326	B-C	15	664217E 5449763N
BH-12S	38 - 2017-08-24	5522	B-C	15	664173E 5449764N
BH-13S	39 - 2017-08-24	4767	B-C	10	664126E 5449762N
BH-14S	40 - 2017-08-24	3565	B-C	10	664091E 5449762N
BH-15S	41 - 2017-08-24	3327	B-C	10	664063E 5449761N
BH-16S	42 - 2017-08-24	3582	B-C	10	664026E 5449744N
BH-17S	43 - 2017-08-24	4744	B-C	10	664015E 5449694N

Bighorn 2017 XRF

Date	Reading	Mg	Mg +/-	Al	Al +/-	Si	Si +/-	P	P +/-	S	S +/-	Cl	Cl +/-	K	K +/-	Ca	Ca +/-	Ti	Ti +/-	V	V +/-
21/08/2017	BH-01	ND		4.07	0.06	20.41	0.13	0.7374	0.0238	0.1445	0.0033	ND		2.142	0.0144	8.52	0.05	0.4075	0.0231	ND	
21/08/2017	BH-01	ND		4.62	0.06	30.78	0.16	1.8388	0.0289	0.3217	0.0042	ND		2.6083	0.0147	0.3988	0.0066	0.333	0.0199	ND	
21/08/2017	BH-01	ND		4.75	0.06	24.24	0.15	1.7775	0.0298	0.3412	0.0046	ND		2.8668	0.0183	1.0909	0.0096	0.4653	0.0233	0.051	0.0095
21/08/2017	BH-01	ND		3.6	0.06	28.35	0.17	1.5704	0.0305	0.3089	0.0047	ND		2.3178	0.0154	0.8843	0.0089	0.4012	0.0235	ND	
21/08/2017	BH-02	ND		0.8993	0.0417	1.6004	0.0186	0.1435	0.0242	0.0357	0.0023	ND		0.0375	0.0023	59.11	0.39	0.0761	0.02	ND	
21/08/2017	BH-02	ND		0.4901	0.0384	1.1833	0.0159	0.0913	0.0238	0.0891	0.0024	ND		ND		63.07	0.4	0.0646	0.0197	ND	
21/08/2017	BH-02	ND		1.0162	0.0441	2.0897	0.0223	0.1107	0.0253	0.0271	0.0024	ND		0.0427	0.0025	61.18	0.41	0.0729	0.0212	ND	
21/08/2017	BH-02	ND		0.172	0.0369	0.7755	0.0137	ND		0.056	0.0023	ND		ND		60.3	0.41	ND		ND	
21/08/2017	BH-03	ND		1.611	0.0464	3.7913	0.0331	1.5475	0.0312	0.1323	0.0029	ND		0.1079	0.0028	53.18	0.35	0.1038	0.0216	ND	
21/08/2017	BH-03	ND		0.3638	0.0369	1.796	0.0196	0.6835	0.0254	0.1581	0.0028	ND		ND		57.95	0.38	0.0638	0.0193	ND	
21/08/2017	BH-03	ND		1.0885	0.0449	3.1922	0.0316	0.8133	0.0282	0.0898	0.0028	ND		0.1395	0.003	49	0.36	0.148	0.0238	ND	
21/08/2017	JTS-21-Bighorn	ND		1.0276	0.0438	3.4086	0.0326	0.7812	0.0283	0.1309	0.003	ND		0.0131	0.0025	50.99	0.37	0.1506	0.024	ND	
24/08/2017	BH-Float	ND		1.0589	0.0415	7.55	0.06	2.2649	0.0348	0.7729	0.0069	ND		0.1899	0.0033	39.1	0.27	0.0965	0.0198	ND	
24/08/2017	BH-1S	ND		3.1211	0.0472	21.15	0.12	0.9105	0.0195	0.0376	0.0023	ND		1.0299	0.0072	0.0292	0.0038	0.2821	0.0167	ND	
24/08/2017	BH-2S	ND		4.56	0.06	12.84	0.09	0.8697	0.0196	0.0392	0.0024	ND		0.8531	0.007	0.539	0.0056	0.3092	0.017	0.0244	0.0067
24/08/2017	BH-3S	ND		3.77	0.05	21.17	0.13	0.8849	0.0201	0.0186	0.0023	ND		1.5597	0.0103	0.7667	0.0069	0.3114	0.0177	0.0298	0.0072
24/08/2017	BH-4S	ND		4.89	0.06	15.02	0.1	0.7274	0.0174	0.0343	0.0022	ND		1.5336	0.0105	0.3649	0.0048	0.3	0.0161	ND	
24/08/2017	BH-5S	ND		3.95	0.07	15.5	0.13	0.4511	0.0205	0.02	0.0031	ND		1.857	0.0162	0.4201	0.0064	0.4661	0.0231	0.0319	0.0086
24/08/2017	BH-7S	ND		3.3133	0.0483	20.5	0.12	0.5102	0.0164	0.0106	0.0021	ND		1.4181	0.0093	0.2157	0.0044	0.3105	0.017	0.028	0.0068
24/08/2017	BH-8S	ND		4.45	0.05	19.07	0.11	0.8884	0.0191	0.0076	0.0021	ND		1.4867	0.0098	0.1456	0.0043	0.3402	0.0174	ND	
24/08/2017	BH-9S	ND		3.75	0.06	14.58	0.11	0.4212	0.0178	0.0146	0.0024	ND		1.5932	0.0122	2.4479	0.0184	0.3309	0.0191	ND	
24/08/2017	BH-10S	ND		4.43	0.06	15.09	0.11	0.4248	0.0164	0.007	0.0023	ND		1.9101	0.0141	0.4546	0.0057	0.4277	0.0194	ND	
24/08/2017	BH-11S	ND		4.93	0.06	18.18	0.12	0.5326	0.0168	ND		ND		1.7108	0.0118	0.1609	0.0045	0.4413	0.0189	0.0231	0.0069
24/08/2017	BH-12S	ND		5.31	0.06	15.6	0.1	0.5522	0.0165	0.0087	0.0021	ND		1.4925	0.0105	0.291	0.0047	0.4177	0.0182	ND	
24/08/2017	BH-13S	ND		4.25	0.06	16.62	0.11	0.4767	0.016	ND		ND		1.3469	0.0097	0.1044	0.004	0.4287	0.0185	0.0294	0.0069
24/08/2017	BH-14S	ND		3.69	0.06	15.51	0.11	0.3565	0.0168	0.0127	0.0024	ND		1.2671	0.0101	0.7079	0.0071	0.3625	0.019	0.0274	0.0073
24/08/2017	BH-15S	ND		4.53	0.06	15.95	0.11	0.3327	0.0152	ND		ND		1.7104	0.0121	0.6784	0.0066	0.3894	0.0183	0.0218	0.0068
24/08/2017	BH-16S	ND		4.86	0.06	16.03	0.11	0.3582	0.0151	ND		ND		2.0948	0.0146	0.3254	0.005	0.4527	0.0191	0.0261	0.007
24/08/2017	BH-17S	ND		5.01	0.06	16.95	0.11	0.4744	0.0162	ND		ND		2.185	0.0149	0.156	0.0046	0.4435	0.019	0.0241	0.0069

Cr	Cr +/-	Mn	Mn +/-	Fe	Fe +/-	Co	Co +/-	Ni	Ni +/-	Cu	Cu +/-	Zn	Zn +/-	As	As +/-	Se	Se +/-	Rb	Rb +/-	Sr	Sr +/-	Y
ND		0.2425	0.0079	1.2016	0.0161	ND		0.0046	0.0009	ND		0.0024	0.0005	0.0015	0.0003	ND		0.006	0.0002	0.0066	0.0002	0.0017
ND		0.2258	0.0069	1.1258	0.0139	ND		0.0026	0.0008	ND		0.0037	0.0004	ND		ND		0.0053	0.0002	0.0062	0.0002	0.0013
ND		0.275	0.008	1.3939	0.017	ND		ND		ND		0.0041	0.0005	ND		ND		0.0068	0.0002	0.0068	0.0002	0.0016
ND		0.161	0.0066	1.1298	0.0155	ND		ND		ND		0.0031	0.0005	0.0011	0.0003	ND		0.0048	0.0002	0.0062	0.0002	0.0019
ND		0.0192	0.0042	0.1499	0.007	ND		ND		ND		ND		ND		ND		ND		0.0359	0.0006	ND
ND		0.0123	0.0038	0.1517	0.007	ND		ND		ND		0.0025	0.0006	0.0015	0.0004	ND		ND		0.0317	0.0006	ND
ND		ND		0.1314	0.0069	ND		ND		ND		ND		ND		ND		ND		0.0377	0.0006	ND
ND		0.0146	0.0041	0.0714	0.0053	ND		ND		ND		ND		ND		ND		ND		0.0304	0.0006	ND
0.0189	0.0056	0.0961	0.0069	1.8905	0.026	ND		ND		ND		0.0021	0.0006	0.0015	0.0004	ND		ND		0.026	0.0005	0.0038
ND		0.1631	0.0082	1.0399	0.018	ND		ND		ND		ND		ND		ND		ND		0.0402	0.0006	0.0034
ND		0.1091	0.0075	2.5679	0.0331	ND		0.0047	0.0013	ND		0.0033	0.0007	0.0021	0.0005	ND		0.0008	0.0002	0.0261	0.0006	0.0027
ND		0.1264	0.0079	1.6047	0.0247	ND		ND		ND		ND		0.0021	0.0005	ND		ND		0.0757	0.001	0.0037
ND		0.1391	0.0074	1.4822	0.0216	ND		ND		ND		0.002	0.0005	ND		ND		0.0006	0.0002	0.0293	0.0005	0.0046
ND		0.0082	0.0023	2.1705	0.0196	ND		0.0024	0.0007	ND		0.0097	0.0006	0.001	0.0002	ND		0.0029	0.0001	0.0036	0.0001	0.0008
ND		0.0325	0.003	3.3444	0.0292	ND		ND		ND		0.0181	0.0008	0.0008	0.0002	ND		0.0053	0.0002	0.0106	0.0002	0.0013
ND		0.0802	0.0041	2.4576	0.0219	ND		0.0034	0.0008	0.0022	0.0006	0.0114	0.0006	0.0009	0.0002	ND		0.0053	0.0002	0.0062	0.0002	0.0027
ND		0.0648	0.0036	4.0887	0.0321	ND		0.0038	0.0008	0.0045	0.0007	0.0206	0.0008	0.0018	0.0003	0.0004	0.0001	0.0093	0.0002	0.0104	0.0002	0.0024
ND		0.065	0.0047	5.56	0.05	ND		0.0036	0.0011	0.0038	0.0009	0.0112	0.0009	ND		ND		0.0157	0.0004	0.0091	0.0003	0.003
0.0092	0.0031	0.0773	0.0039	2.2917	0.0204	ND		ND		ND		0.0128	0.0006	0.001	0.0002	ND		0.0053	0.0002	0.0045	0.0002	0.0022
ND		0.0982	0.0043	2.7004	0.023	ND		0.0023	0.0007	0.002	0.0006	0.0102	0.0006	ND		ND		0.0041	0.0002	0.0049	0.0002	0.0017
ND		0.0612	0.0041	3.7526	0.034	ND		0.0055	0.001	0.0062	0.0009	0.0299	0.0011	0.0018	0.0003	ND		0.0087	0.0003	0.0079	0.0002	0.0029
0.0119	0.0032	0.0704	0.0041	4.9231	0.0409	ND		0.0042	0.0009	0.0037	0.0008	0.0101	0.0007	0.001	0.0003	ND		0.0131	0.0003	0.008	0.0002	0.0024
0.0097	0.0031	0.1068	0.0046	4.726	0.0367	ND		ND		0.0029	0.0007	0.0123	0.0007	ND		ND		0.0129	0.0003	0.0089	0.0002	0.0019
0.0099	0.003	0.0405	0.0032	4.2952	0.034	ND		0.0028	0.0008	0.0032	0.0007	0.014	0.0007	0.0008	0.0002	ND		0.0101	0.0003	0.0092	0.0002	0.0018
ND		0.0548	0.0035	4.3146	0.0345	ND		0.0026	0.0008	0.0023	0.0007	0.0143	0.0007	ND		ND		0.0107	0.0003	0.009	0.0002	0.0017
ND		0.072	0.0042	4.1938	0.037	ND		ND		0.0028	0.0007	0.0189	0.0009	ND		ND		0.0099	0.0003	0.0092	0.0002	0.0018
ND		0.0569	0.0037	4.3048	0.035	ND		0.004	0.0009	0.0031	0.0007	0.014	0.0007	ND		ND		0.011	0.0003	0.0083	0.0002	0.0023
ND		0.0647	0.0039	5.4363	0.0425	ND		0.0029	0.0009	0.0035	0.0007	0.0096	0.0007	ND		ND		0.0149	0.0003	0.0085	0.0002	0.0025
0.0103	0.0032	0.0626	0.0038	5.2098	0.0404	ND		0.0063	0.001	0.0037	0.0007	0.0122	0.0007	ND		ND		0.0149	0.0003	0.0083	0.0002	0.0029

Y +/-	Zr	Zr +/-	Mo	Mo +/-	Ag	Ag +/-	Cd	Cd +/-	Sn	Sn +/-	Sb	Sb +/-	W	W +/-	Hg	Hg +/-	Pb	Pb +/-	Bi	Bi +/-	Th	Th +/-	U	U +/-	LE	LE +/-
0.0002	0.0494	0.0006	ND		ND		ND		ND		ND		ND		ND		0.0033	0.0004	ND		ND		ND		62.05	0.22
0.0002	0.0406	0.0004	ND		ND		ND		ND		ND		ND		ND		0.0027	0.0003	ND		ND		ND		57.68	0.21
0.0002	0.0343	0.0004	ND		ND		ND		ND		ND		ND		ND		0.0036	0.0004	ND		ND		ND		62.68	0.22
0.0002	0.06	0.0006	ND		ND		ND		ND		ND		ND		ND		0.0026	0.0004	ND		ND		ND		61.19	0.23
	ND		ND		ND		ND		ND		ND		ND		ND		0.0056	0.0006	ND		ND		ND		37.88	0.29
	ND		ND		ND		ND		ND		ND		ND		ND		0.0047	0.0005	ND		ND		ND		34.81	0.3
	ND		0.0009	0.0002	ND		ND		ND		ND		ND		ND		0.0057	0.0006	ND		ND		ND		35.28	0.31
	ND		ND		ND		ND		ND		ND		ND		ND		0.0053	0.0006	ND		ND		ND		38.58	0.3
0.0003	0.0039	0.0003	ND		ND		ND		ND		ND		ND		ND		0.0043	0.0005	ND		ND		ND		37.48	0.31
0.0002	0.0012	0.0003	ND		ND		ND		ND		ND		ND		ND		0.0055	0.0005	ND		ND		ND		37.73	0.29
0.0003	0.0047	0.0004	0.0012	0.0003	ND		ND		ND		ND		ND		ND		0.0056	0.0006	ND		ND		ND		42.8	0.32
0.0003	0.003	0.0004	0.0013	0.0003	ND		ND		ND		ND		ND		ND		0.0047	0.0006	ND		ND		ND		41.68	0.32
0.0003	0.0037	0.0003	ND		ND		ND		ND		ND		ND		ND		0.0055	0.0005	ND		ND		ND		47.29	0.28
0.0001	0.0382	0.0004	ND		ND		ND		ND		ND		ND		ND		0.0021	0.0003	ND		ND		ND		71.2	0.17
0.0002	0.0216	0.0004	ND		ND		ND		ND		ND		ND		ND		0.0023	0.0003	ND		ND		ND		76.54	0.16
0.0002	0.0328	0.0004	ND		ND		ND		ND		ND		ND		ND		0.0016	0.0003	ND		ND		ND		68.89	0.18
0.0002	0.0158	0.0003	ND		ND		ND		ND		ND		ND		ND		0.0018	0.0003	ND		ND		ND		72.91	0.17
0.0003	0.0188	0.0004	ND		ND		ND		ND		ND		ND		ND		0.0036	0.0005	ND		0.0032	0.0008	ND		71.61	0.23
0.0002	0.0339	0.0004	ND		ND		ND		ND		ND		ND		ND		0.0014	0.0003	ND		ND		ND		71.26	0.17
0.0002	0.0427	0.0005	ND		ND		ND		ND		ND		ND		ND		0.0016	0.0003	ND		ND		ND		70.75	0.17
0.0002	0.0329	0.0005	0.0007	0.0002	ND		ND		ND		ND		ND		ND		0.0015	0.0003	ND		ND		ND		72.94	0.19
0.0002	0.0203	0.0004	ND		ND		ND		ND		ND		ND		ND		0.0017	0.0003	ND		ND		ND		72.18	0.19
0.0002	0.0203	0.0003	ND		ND		ND		ND		ND		ND		ND		0.0028	0.0004	ND		ND		ND		69.12	0.19
0.0002	0.023	0.0004	ND		ND		ND		ND		ND		ND		ND		0.0021	0.0003	ND		ND		ND		71.92	0.18
0.0002	0.024	0.0004	ND		ND		ND		ND		ND		ND		ND		0.0028	0.0003	ND		ND		ND		72.3	0.18
0.0002	0.0204	0.0004	ND		ND		ND		ND		ND		ND		ND		0.0028	0.0004	ND		ND		ND		73.73	0.19
0.0002	0.0223	0.0004	ND		ND		ND		ND		ND		ND		ND		0.0022	0.0003	ND		ND		ND		71.95	0.18
0.0002	0.019	0.0004	ND		ND		ND		ND		ND		ND		ND		0.0026	0.0004	ND		0.0019	0.0006	ND		70.29	0.2
0.0002	0.0188	0.0003	ND		ND		ND		ND		ND		ND		ND		0.0029	0.0004	ND		0.002	0.0006	ND		69.4	0.2

APPENDIX IV

SAMPLE DESCRIPTIONS

October 18, 2017

Sample List Bighorn 2017

Sample	Description	UTM	
JTS-1	White quartzite, muscovite common	663944E 5449564N	Zone 11
JTS-2	Brown quartzitic shale, abundant grey weathering, lst, stylolithic common	663787E 5450003N	Zone 11
JTS-3	Slabby weathering, SST, micacious	663962E 5449487N	Zone 11
JTS-4	On lower road, chalky, siltstone	663844E 5449455N	Zone 11
JTS-5	Black shaley limestone, float	664454E 5449261N	Zone 11
JTS-6	Slabby Siltstone	664502E 5449228N	Zone 11
JTS-7	By major creek, bighorn, slabby siltstone, black	664337E 5449516N	Zone 11
JTS-8	Finely laminated siltstone, "paper shale"	664461E 5449330N	Zone 11
JTS-9	Black weathering, light grey siltstone, ammonites in slab	664412E 5449400N	Zone 11
JTS-10	Grt/quartzitic, maybe tuff, quartz eyes	664610E 5449178N	Zone 11
JTS-12	Dark slabby SST-siltstone	664663E 5449161N	Zone 11
JTS-14	Very weathered, Jurassic, on road up to clear cuts 045° direction along creek, NW side	664017E 5449304N	Zone 11
JTS-15	Rusty, grey siltstone	664856E 5449226N	Zone 11
JTS-16	Dark grey-black	664818E 5449234N	Zone 11
JTS-17	7.71% P_2O_5 near DC sample BH-03dc, phosphorite zone	663248E 5449760N	Zone 11

Sample	Description	UTM	
BH-R01	dolomitic shale (probable Spray River)	663912E 5450006N	Zone 11
BH01dc	float material, black shale weakly phosphatic. Reconnaissance surveys within small watershed are masked by overburden. Float material observed is mainly black shale and the recessive nature of this area suggests it is underlain by the Fernie Formation. A northeast trending fault mapped by the GSC also occupies this area as shown above (Figure 2). Outcrop	664273E 5449764N	Zone 11
BH-OC2	float material black shale with abundant calcite veinlets, phosphatic about 10-15% oolitic texture.	664253E 5449798N	Zone 11
BH-03dc	GPS location: 663981E-5446325N, sub-crop taken adjacent to road side near divide (height of land) leading to Flat Head River valley. Sample is comprised mainly of black shale.	664248E 5449760N	Zone 11

APPENDIX V

WATER SAMPLES

October 18, 2017

Bighorn Water Samples

Sample #	Ph	Condition	Temperature	GPS	Date	Comment
BLSW-17-1/BLSW-17-1A	9.2	468	10.6	0660472 5493174	23-08-17 9:27AM	Total water?? Bottle broken
BLSW-17-2/BLSW-17-2A	8.8	322	10.4	0668854 5481855	23-08-17 1:08PM	
BLSW-17-3/BLSW-17-3A	8.6	230	14.2	0667924 5484329	23-08-17 1:58PM	

Table 1
Surface Water Total Metals
Big Horn Project - August 2017

Sample ID	RDL	BH17-1	BH17-1A	BH17-2	BH17-2A	BH17-3	WQG (bold)	WQG (underline)	CSR (italics)
		L1981759-7	L1981759-8	L1981759-9	L1981759-10	L1981759-11			
			dup. of 17-1		dup. of 17-2				
Date Sampled		25-08-17	25-08-17	25-08-17	25-08-17	25-08-17	AW_{FW}	DW	DW
Aluminum	10	<	<	<	<	<	50 pH>6.5	200	9500
Antimony	0.5	<	<	<	<	<	9	n/g	6
Arsenic	1	<	<	<	<	<	5	10	10
Barium	1	38	37	38	38	140	1000	n/g	1000
Beryllium	5	<	<	<	<	<	0.13	n/g	n/s
Boron	100	<	<	<	<	<	1200	5000	5000
Cadmium	0.05	<	<	<	<	<	0.28 - 0.49a	n/g	5
Chromium	0.5	<	<	<	<	<	1(VI), 8.9(III)	n/g	50
Cobalt	0.5	<	<	<	<	<	110 (4)c	n/g	n/s
Copper	1	<	<	<	<	<	6.08-12.36 (0.04-2)c a	500	1000
Iron	30	<	<	<	<	<	350	n/g	6500
Lead	1	<	<	<	<	<	8.73-16.65a	10	10
Magnesium	50	14100	13900	10800	10800	5450	n/g	n/g	100000*
Manganese	10	<	<	<	<	<	1274-1965a	n/g	550
Mercury	0.2	<	<	<	<	<	0.1 (0.02)c	1	1
Molybdenum	1	<	<	<	<	<	1000	250	250
Nickel	5	<	<	<	<	<	25-150a	n/g	n/s
Selenium	1	<	<	<	<	<	2	10	10
Silver	0.05	<	<	<	<	<	ST 0.1-3 (LT 0.05-1.5)c a	n/g	n/s
Sodium	2000	<	<	<	<	9000	n/g	n/g	200000*
Strontium	-	101	99.2	71.2	70.3	252	n/g	n/g	22000
Thallium	0.2	<	<	<	<	<	0.8	n/g	n/s
Titanium	50	<	<	<	<	<	2000, 4600f	n/g	n/s
Uranium	0.2	0.38	0.37	0.4	0.39	<	8.5	n/g	20
Zinc	5	<	<	<	<	<	54 - 171.75a	5000	5000
Bismuth	200	<	<	<	<	<	n/g	n/g	n/s
Calcium	50	45700	45200	47900	48700	51800	10000->20000f	n/g	n/s
Lithium	50	<	<	<	<	<	n/g	n/g	730
Potassium	2000	<	<	<	<	<	n/g	n/g	n/s
Silicon	-	-	-	-		<	n/g	n/g	n/s
Tin	30	<	<	<	<	<	n/g	n/g	22000
Vanadium	30	<	<	<	<	<	n/g	n/g	n/s
Zirconium	-	-	-	-	-	-	n/g	n/g	n/s

Conventional Parameters	BH17-1	BH17-1A	BH17-2	BH17-2A	BH17-3
					<
Field pH (lab)	9.2 (8.33)	9.2 (8.35)	9 (8.27)	9 (8.29)	8.4 (8.17)
Hardness $CaCO_3$ mg/L	180	185	171	171	150
Conductivity u S	266	266	252	252	257
Temperature °C	11	11	10.6	10.6	12

NOTES

All Concentrations in micrograms per litre (u g/L) except pH unitless and Hardness (mg/L)

RDL	Reported Detection Limit
CSR	Contaminated Sites Regulation (April 1, 1997)
WQG	BC Water Quality Guidelines, Approved and Working (August 2006)
AW	Aquatic Life, FW - Freshwater, M - Marine
a	Standard is Hardness Dependent - see notes in table
b	Standard is pH Dependent - see notes in table
c	Maximum 30 day average
d	Minimal Risk (Hazard)
e	1 hr average (4 day average)
f	Consult Metals Notes Tables for details
n/s	Standard not available for this constituent
n/g	Guideline not available for this constituent
*	Canadian Maximum allowable concentration
Bold	Exceeds WQG (AW) guideline for this sample
Underline	Exceeds WQG (DW) guideline for this sample
Italics	Exceeds CSR (DW) standard for this sample
*	Taste and Colour

Table 2
Surface Water Dissolved Metals
Big Horn Project - August 2017

Sample ID	RDL	BH17-1	BH17-1A	BH17-2	BH17-2A	BH17-3	WQG (bold)	WQG (underline)	CSR (italics)
		L1981759-7	L1981759-8	L1981759-9	L1981759-10	L1981759-11			
			dup. of 17-1		dup. of 17-2				
Date Sampled		25-08-17	25-08-17	25-08-17	25-08-17	25-08-17	AW_{FW}	DW	DW
Aluminum	10	<	<	<	<	<	50 pH>6.5	200	9500
Antimony	0.5	<	<	<	<	<	20	14	6
Arsenic	1	<	<	<	<	<	5	25	10
Barium	1	39	41	38	38	14	5000 (1000)c	n/g	1000
Beryllium	5	<	<	<	<	<	5.3	4	n/s
Boron	100	<	<	<	<	<	1200	5000	5000
Cadmium	0.05	<	<	<	<	<	0.01 - 0.96a	n/g	5
Chromium	0.5	<	<	<	<	<	1(VI), 8.9(III)	n/g	50
Cobalt	0.5	<	<	<	<	<	110 (4)c	n/g	n/s
Copper	1	<	<	<	<	<	2-472 (0.04-2)c a	500	1000
Iron	30	<	<	<	<	<	n/g	n/g	6500
Lead	1	<	<	<	<	<	3-11,877a	50	10
Magnesium	50	14300	14800	10800	10900	5260	n/g	n/g	100000*
Manganese	10	<	<	<	<	<	700-1900/800-3800a	n/g	550
Mercury	0.2	<	<	<	<	<	0.1 (0.02)c	1	1
Molybdenum	1	<	<	<	<	<	1000a	250	250
Nickel	5	<	<	<	<	<	25-150a	n/g	n/s
Selenium	1	<	<	<	<	<	2	10	10
Silver	0.05	<	<	<	<	<	0.1-3 (0.05-1.5)c a	n/g	n/s
Sodium	2000	<	<	<	<	8600	n/g	n/g	200000*
Strontium	-	106	111	73.8	74.3	256	n/g	n/g	22000
Sulphur	-	-	-	-	-	-	n/g	n/g	n/s
Thallium	0.01	<	<	<	<	<	6.3	2	n/s
Titanium	50	<	<	<	<	<	2000, 4600f	6.3	n/s
Uranium	0.2	0.34	0.33	0.36	0.36	<	300	n/g	20
Zinc	5	<	<	<	<	<	33-3716a	5000	5000
Bismuth	200	<	<	<	<	>	n/g	n/g	n/s
Calcium	50	48500	49700	50500	50600	51300	4000-8000f	n/g	n/s
Lithium	50	<	<	<	<	<	870	n/g	n/s
Potassium	2000	<	<	<	<	<	373000	n/g	n/s
Silicon	-	2570	2650	2350	2360	2800	n/g	n/g	n/s
Tin	30	<	<	<	<	<	n/g	n/g	n/s
Vanadium	30	<	<	<	<	<	6	n/g	n/s
Zirconium	-	-	-	-	-	-	n/g	n/g	n/s

Conventional Parameters					
Field pH (lab)	9.2 (8.33)	9.2 (8.35)	9 (8.27)	9 (8.29)	8.4 (8.17)
Hardness $CaCO_3$ mg/L	180	185	171	171	150
Conductivity μS	266	266	252	252	257
Temperature °C	11	11	10.6	10.6	12

NOTES

All Concentrations in micrograms per litre (μg/L) except pH unitless and Hardness (mg/L)

RDL	Reported Detection Limit
CSR	Contaminated Sites Regulation (April 1, 1997)
WQG	BC Water Quality Guidelines, Approved and Working (August 2006)
AW	Aquatic Life, FW - Freshwater, M - Marine
a	Standard is Hardness Dependent - see notes in table
b	Standard is pH Dependent - see notes in table
c	Maximum 30 day average
d	Minimal Risk (Hazard)
e	1 hr average (4 day average)
f	Consult Metals Notes Tables for details
n/s	Standard not available for this constituent
n/g	Guideline not available for this constituent
Bold	Exceeds WQG (AW) guideline for this sample
Underline	Exceeds WQG (DW) guideline for this sample
Italics	Exceeds CSR (DW) standard for this sample
*	Taste and Colour

Table 3
Surface Water Analytical Results
Anions,Alkalinity, pH, Acidity, Nutrients
Big Horn Project - August 2017

Sample ID	RDL	BH17-1	BH17-1A	BH17-2	BH17-2A	BH17-3	bold WQG	underline WQG	italics CSR
		L1981759-7	L1981759-8	L1981759-9	L1981759-10	L1981759-11			
			dup. of 17-1		dup. of 17-2				
Date Sampled		25-08-17	25-08-17	25-08-17	25-08-17	25-08-17	AW_{FW}	DW	DW
Total Ammonia (as N)	0.005	<	<	<	<	<	0.102-2.08 e,f	n/g	n/s
Dissolved Ammonia (as N)	0.005	<	<	<	<	<	0.102-2.08 e,f	n/g	n/s
Total Alkalinity ($CaCO_3$) mg/L	0.5	158	154	147	146	140	< 20000 d	n/g	n/s
PP Alkalinity (CaCO3)	0.5	-		-		-	n/g	n/g	n/s
Bicarbonate Alkalinity (HCO3)	0.5	154	150	147	144	140	n/g	n/g	n/s
Carbonate Alkalinity (CO3)	1	3.6	4	<	1.6	<	n/g	n/g	n/s
Hydroxide Alkalinity (OH)	1	<	<	<	<	<	n/g	n/g	n/s
Bromide (Br)	0.05	<	<	<	<	<	n/g	n/g	10
Fluoride (F)	0.01	0.052	0.053	0.134	0.133	0.075	0.2-0.3 a c	1.5	1.5
Dissolved Chloride (Cl)	0.5	<	<	<	<	0.84	600	250	250
Dissolved Sulphate (SO4)	1	11.6	11.7	7.36	7.3	17.4	128 - 429a	500	500
Nitrate (N)	0.005	<	<	0.0186	0.0205	<	32.8	n/g	10
Nitrate plus Nitrite (N)	0.02	<	<	0.0186	0.0205	<	n/g	10	10
Nitrite (N)	0.001	<	<	<	<	<	0.02 - 0.2b long term 0.06-0.6 short term	1	3.2
Orthophosphate (P)	0.001	<	<	0.0019	<	0.0058	n/g	n/g	n/s
Total Phosphorous (P) mg/L	0.3	<	<	<	<	<	0.005-0.015 (lakes)	0.01	n/s
Dissolved Phosphorous (P) mg/L	0.3	<	<	<	<	<	n/g	n/g	n/s
Field pH (lab pH)	-	9.2 (8.33)	9.2 (8.35)	9 (8.27)	9 (8.29)	8.4 (8.17)	>6.5 <9	>6.5 <8.5	n/s
Acidity (As $CaCO_3$)	1	<	<	<	<	1.1	n/g	n/g	n/s

NOTES

All concentrations in milligrams per litre (mg/L)

RDL	Reported Detections Limit
CSR	Contaminated Sites Regulation, effective April 1, 1997
WQG	Water Quality Guidelines (BC Approved and Working)
AW_{FW}	Aquatic Life - Fresh water
DW	Drinking water
a	Standard is hardness dependent, (see Notes Table)
b	Standard is Chloride concentration dependent, see Notes Table
c	Guideline is for Total, used for comparison
d	See Notes Table
e	pH dependent
f	Temperature Dependent
n/s	No standard for this constituent
n/g	No guideline for this constituent
<	Less than reported detection limit
-	Not Analyzed
Bold	Exceeds WQG AW_{FW} Guideline for this sample
Underline	Exceeds WQG DW Guideline for this sample
Italics	Exceeds CSR DW Standard for this sample