BC Geological Survey
Assessment Report
38094

BRITISH COLUMBIA
The Best Place on Earth

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)]: Geological **TOTAL COST:** $7819.83

AUTHOR(S): Ronald J. Bilquist **SIGNATURE(S):** Ron Bilquist

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): **YEAR OF WORK:** 2018

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): Event # 5724061

PROPERTY NAME: Orp

CLAIM NAME(S) (on which the work was done): Orp 1 (604241) and Orp 2 (1057290)

COMMODITIES SOUGHT: gold

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: 102I 012

MINING DIVISION: Nanaimo **NTS/BCGS:** 102I 09E

LATITUDE: 50 ° 38 '59 " **LONGITUDE:** 128 ° 05 '06 " **(at centre of work)**

OWNER(S):
1) Ron Bilquist 2)

MAILING ADDRESS:
1410 Degnen Road
Gabriola B.C. V0R 1X7

OPERATOR(S) [who paid for the work]:
1) Ron Bilquist 2)

MAILING ADDRESS:
1410 Degen Rod
Gabriola, B.C.

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):
Upper Triassic; Karmutsen Formation submarine volcanic (basalt, pillow & pillow breccia), Quatsino Formation limestone, Parson Bay volcanics and calcareous and non calcareous sediments and Bonanza Group sub aerial volcaniclastic. North west dominant structures; decalcification & redeposition of calcium; orpiment, realgar; mineralization in area of approximately 40 meters by 30 meters.

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: Property File #840519, Aris 18568, 32396, and event #5586400 (2015)

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		Orp 1 (604241), Orp 2 (1057290)	$7819.83
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:	$7819.83

ASSESSMENT REPORT

on the

Geological Survey

of the

Orp & Orp 2 Mineral Claims

(604241 & 1057290)

Nanaimo Mining Division

Northern Vancouver Island

Map Sheet 102 I

Lat. 55 38' 59" N Long. 128 05' 10" W

Author: Ronald J. Bilquist

(Owner/Operator)

03 April 2019

Table of Contents **Page**

Introduction

The 'Orp' project is located at the north end of Vancouver Island just west of the small village of Holberg at NTS Zone 9U 564531 5611275. The project has strong similarities to the hot spring, "Carlin-Type", gold deposits found along the Carlin Trend of Nevada. At present the property is comprised of two claims consisting of 245.89 hectares, owned 100% by Ron Bilquist of Gabriola Island, B.C. (Table #1).

The claims cover an orpiment-realgar occurrence discovered by Ron Bilquist in 1974 while following up a small rounded cobble of orpiment found by a local in the gravels of the San Josef River. The mineralization was located in outcrops along the banks of the San Josef River as well as proximal outcrops of limestone and calcareous sediments protruding from the gently undulating topography. Soil geochemistry (1974 & 1988) in the vicinity of the occurrences is highly anomalous in mercury and arsenic which are considered to be path finders in exploration for Carlin-type deposits. Intersecting fault structures have been interpreted on the property that appear to trend through the calcareous sediments (Quatsino Formation limestone & the calcareous Parson Bay Formation sediments) which host the occurrences. These may serve as conduits for the mineral rich hydrothermal solutions which have precipitated the arsenic-mercury-antimony sulphides (orpiment, realgar, cinnabar & possible stibnite). The Bonanza Subgroup of pyritic volcanics and the Karmutsen Formation, +/- pyritic basalt, are adjacent to the calcareous sediments both on the west and east of the occurrences and could provide the source for 'soluble iron' necessary in these systems to 'drop' the gold out of solution. Alteration noted includes 'pulses' of decalcification and 'recalcification' of the calcareous sediments, possible pink k-spar alteration and disseminated magnetite in dyke rock at the discovery showing area.

The original soil geochemistry, a small program carried out over the discovery occurrence in 1974, was done at a time prior to clear cut logging in the area so soil horizons were well developed and undisturbed (Leighton, 1974). Soil geochemistry resulted in highly anomalous arsenic and mercury values. Gold values were not reported for unknown reasons but the author has this information and they were likely considered insignificant for the times. The most likely focus in 1974 was just to determine the presence of arsenic and mercury in the country rock.

The most detailed work on the occurrence was done in 1989 shortly after recent clear cut logging which may have affected the geochemical expression to some extent (Leighton, 1989). The results, however, do appear to mirror those of the 1974 survey and gold analysis can be seen in the analytical data at the end of the report for that year.

Contemporary thinking regarding "Carlin-Type" occurrences suggest that the tracer elements will drop out of solution without the gold unless there is a 'reason' for it to do so. For gold deposition, the mineralizing solutions must come in contact with a soluble iron so, in some cases, the gold may be distal to the arsenic and mercury anomalies.

Future exploration on the project should focus on mapping the structures (mineral conduits) and using all data available plus stream (moss mat) geochemistry to try locate where the gold has been concentrated. More prospecting is also needed to locate and sample all areas with favorable alteration.

Access and Location –

The Orp claims are located approximately five kilometres west of Holberg, a small logging community, west of Port Hardy on the northern end of Vancouver Island (Figure #1).

Access to the claim is about a 45 minute drive via a good gravel road from Port Hardy to Holberg. From Holberg the claim can be reached via an all season logging road westerly from Holberg. The west boundary of the claim is about 50 meters east of the edge of a recent logging slash.

The claim is about 100 to 200 meters above sea level and straddles the San Josef River. The topography is generally gentle and rolling on the claim but the second growth after clear cut logging is incredibly thick in some areas. The forests are a mixture of fir and cedar with some areas of thick, nearly impenetrable, salal and underbrush.

The Property – The Orp property consists of two claims (Figure #2) comprising a total of 245.89 hectares acquired in 2009 and 2018. The record numbers for the claims this report will be concerned with are 604241 and 1057290. The current owner and operator is Ronald John Bilquist, the author of this report.

Table #1

Claim	Record #	Hectares	Expiry Date
Orp	604241	40.98	2026 Aug 20*
Orp 2	1057290	204.91	2022 Aug 06*

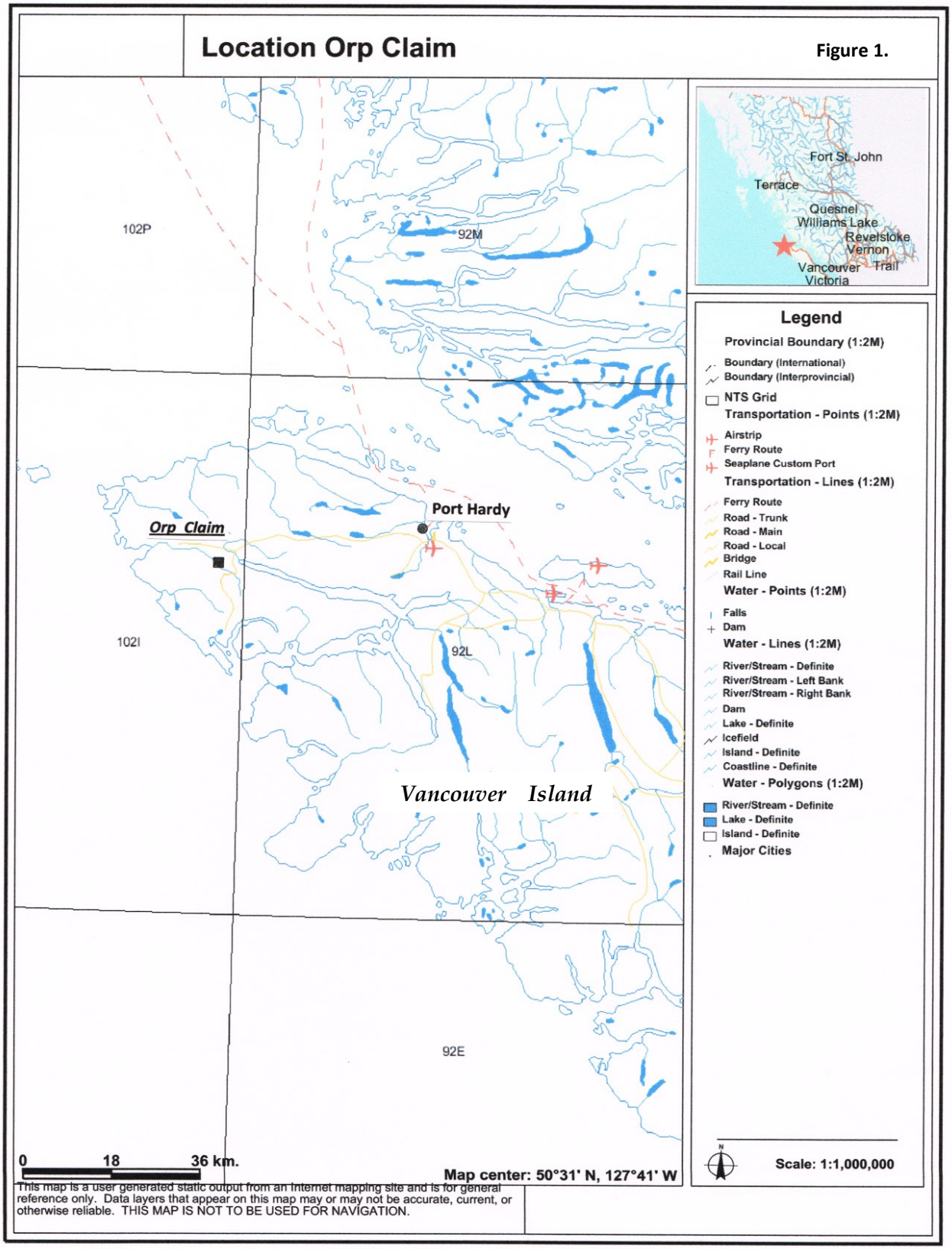
**on acceptance of this report*

History –

1974 – Property File Document #840519; *Report on the S.J. Claims – Winter Harbour Area, British Columbia – For British Newfoundland Exploration Limited by D.G. Leighton, Stokes Exploration Management Co. Ltd.*

Mineralization was discovered by the author of this report in 1974 after float of solid orpiment with realgar was found by a resident at the Holberg military base and brought to the attention of geologist Doug Leighton of Stokes Exploration Management Company, a small Vancouver exploration company. The float was traced upstream to where mineralization was discovered in calcareous sedimentary and limestone outcrops.

Following the discovery of the mineralization, four '2-post' claims were staked. Stream sediment sampling was done in the immediate area and 33 soil samples were taken from three short grid lines over the discovery area. In the general area of the discovery, stream and soil samples were significantly anomalous in arsenic and mercury as well as areas with spotty elevated gold.


Location Orp Claim
Figure 1.
102P
92M
102I
92L
92E
Orp Claim
Port Hardy
Vancouver Island
Fort St. John
Terrace
Quesnel
Williams Lake
Revelstoke
Vernon
Vancouver
Victoria
Trail
Legend
Provincial Boundary (1:2M)
Boundary (International)
Boundary (Interprovincial)
NTS Grid
Transportation - Points (1:2M)
Airstrip
Ferry Route
Seaplane Custom Port
Transportation - Lines (1:2M)
Ferry Route
Road - Trunk
Road - Main
Road - Local
Bridge
Rail Line
Water - Points (1:2M)
Falls
Dam
Water - Lines (1:2M)
River/Stream - Definite
River/Stream - Left Bank
River/Stream - Right Bank
Dam
Lake - Definite
Icefield
Island - Definite
Coastline - Definite
Water - Polygons (1:2M)
River/Stream - Definite
Lake - Definite
Island - Definite
Major Cities
0
18
36 km.
Map center: 50°31' N, 127°41' W
Scale: 1:1,000,000
This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

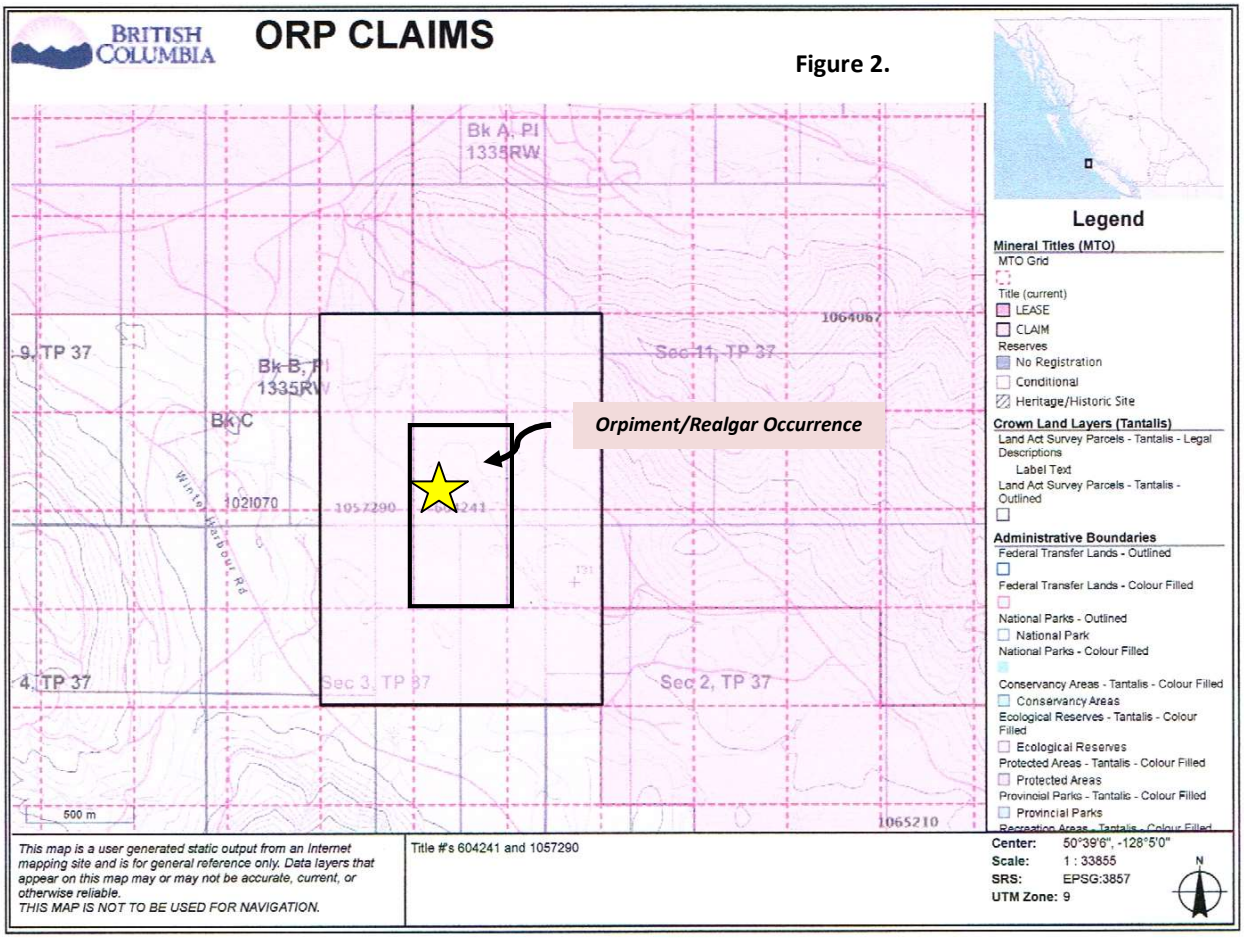


Figure 2.

History Cont'd –

1989 - ARIS # 18568; *Geological & Drilling Report on the Holberg Property;* D.G. Leighton, March 28, 1989.

In the spring of 1988 Formosa Resources Corporation optioned the property from Lone Trail Exploration (owners Ron Bilquist and Les Allen) and, under the direction of Doug Leighton, carried out programs of geophysics and geochemistry followed by four BQ diamond drill holes. Two holes each were drilled from two separate set ups. Minor geological mapping and prospecting was also done at this time.

The results of the diamond drilling were disappointing, at the least, partially because the holes did not reach the intended target zone. Since the work by Formosa Resources, no serious programs have been carried out until the author reacquired the property in May 2009.

2011 – ARIS # 32396*;* *Assessment Report on the Prospecting Survey of the Orp #1 Mineral Claim*; Ronald J. Bilquist, 01 July 2011.

The area of the original discovery was 'rediscovered' and the general area prospected and mapped. Seven rock samples were taken with five of these very anomalous in arsenic.

2015 – Assessment Report; Assessment *Report on the Geological Survey of the Orp #1 Mineral Claim*; Ronald J. Bilquist, 12 April 2016.

Work consisted of stream sediment and rock sampling as well as examinations of alteration and mineralisation at the discovery zone.

Purpose & Summary of 2018 Work Program –

Work in 2018 was intended to continue the geological mapping out into the new claim added in 2018 as well as to fill in gaps and reassess the mapping from the previous years' work. Preparatory work prior to the field work and, to a greater extent, following the field work as well, was directed at interpretation of the regional geology in relation to the genesis of "Carlin-style" gold deposits with the purpose of using this information in the interpretation of the local geology and mineralization of the Orp property.

Four days were spent in the field mapping from June 4th to June 07th. Traverses in the south western area of the property were hampered by active logging but some outcrops were accessed in this area along the main, Winter Harbour, road. New outcrops were found on the north side of the San Josef River upstream from the discovery area as well within the old 1988 grid area (Leighton, 1989).

Regional and Property Geology:

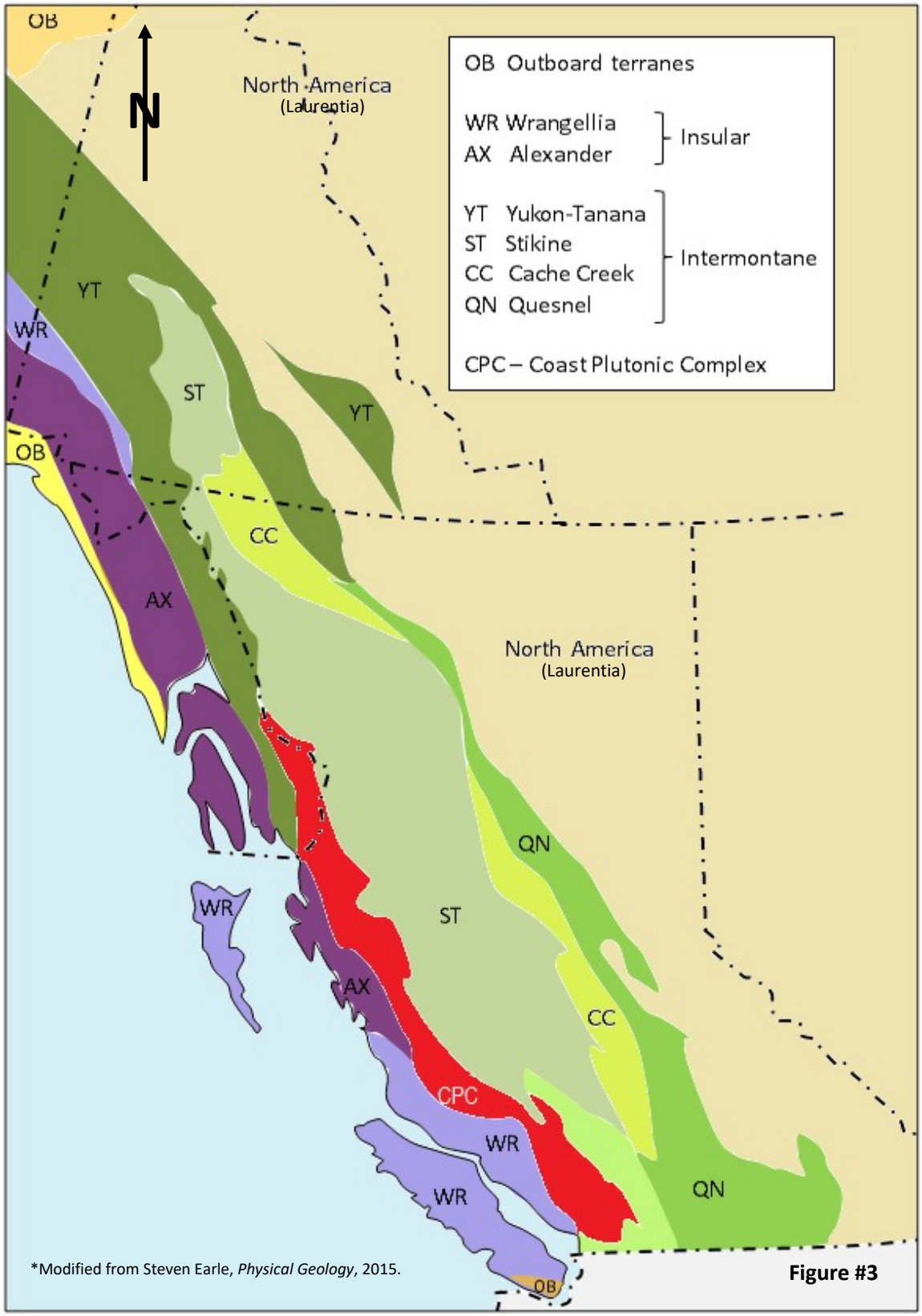
Regional Geology –

The North American Continent is thought to have formed from *Pangaea*, a much larger "super continent", as it broke apart about 200 million years ago with the various pieces, including Laurentia (North America), drifting apart to their current positions.

Northern Vancouver Island is located in part of what is known as the *Wrangellia Terrane* which is the event that formed some of the oldest rocks we have on present day Vancouver Island. During the Upper Triassic, west of *Laurentia*, a rapid uplift of greater than 1 kilometer in elevation caused subaqueous eruptions of basaltic lava. The lavas poured out of the ocean floor for a relatively short period of time (less than 3.5 million years) and in the process formed an oceanic plateau with the basalt thickness of between one and 6 kilometers stretching from British Columbia to Alaska. The eruptions were thought to be centered along, or over, a long extinct Island Arc (Dostal et al, 2010). This was the beginnings of the Wrangellian Terrain.

Following the formation of the sub oceanic plateau of basalts, an accretion of the shells from multitudes of marine animals resulted in layers of limestone and sediments overlying the basalt. At the same time, the entire mass was moving slowly towards the North American Continent along with the Alexander

The Accreted Terranes of British Columbia **6.**



*Modified from Steven Earle, *Physical Geology*, 2015.

Figure #3

Terrane. About 100 million years ago the terrains collided, slowly but violently, with the North American Continent buckling the landscape to form mountains and ridges and crushing the weaker and softer rocks. Wrangellian Terrain (Figure #3) is defined in numerous locations along the west coast of North America (Laurentia) from Alaska down through the Yukon and the west coast of British Columbia including and parts of the coast mountains of British Columbia (Earle, 2015).

The sequence of rocks described above represent the regional geology of Northern Vancouver Island where the rocks described as being sub aqueous basalts are the Karmutsen Formation, the limestone would be the Quatsino Formation and the sediments that overly the limestone are the Parson Bay Group. Government mapping in 2011 shows a section of volcanics overlying the Quatsino Formation (limestone) and stratigraphically below the calcareous sediments of the Parson Bay Formation. These volcanics are described as mainly being basaltic tuff & tuff breccia, lapilli tuff, volcanic debris flows, pillow flows & breccias and andesitic tuff breccia (Nixon et al, 2011). The link to this latest geological interpretation of Northern Vancouver Island can be found in the references of this report.

Obviously, the tectonic activity continues and the current tectonic activity should be described at this time as it is “key” to the regional geology for the Northern Vancouver Island area and is, most likely, instrumental in the generation of the type of ore deposition that is proposed for the north west of Vancouver Island.

Approximately 80 kilometers west of Vancouver Island, deep on the ocean floor, is an extremely active north-south trending fault where the North American Continent meets the deep sea floor that extends from northern Vancouver Island south to about Cape Mendocino in Northern California. This fault is known as the Cascadia Fault (Figure #4). Pulses of volcanic eruptions along the structure are creating a thickening, sub oceanic, crust with the Juan de Fuca Plate on the east and the Pacific Plate on the west. The Juan de Fuca Plate is moving north north-easterly at a rate of about four centimeters per year and is sub ducting under the North American Plate as it ‘butts’ up against it (More & Yorath, 1992). The North American Plate is actually also moving, but in a south westerly direction.

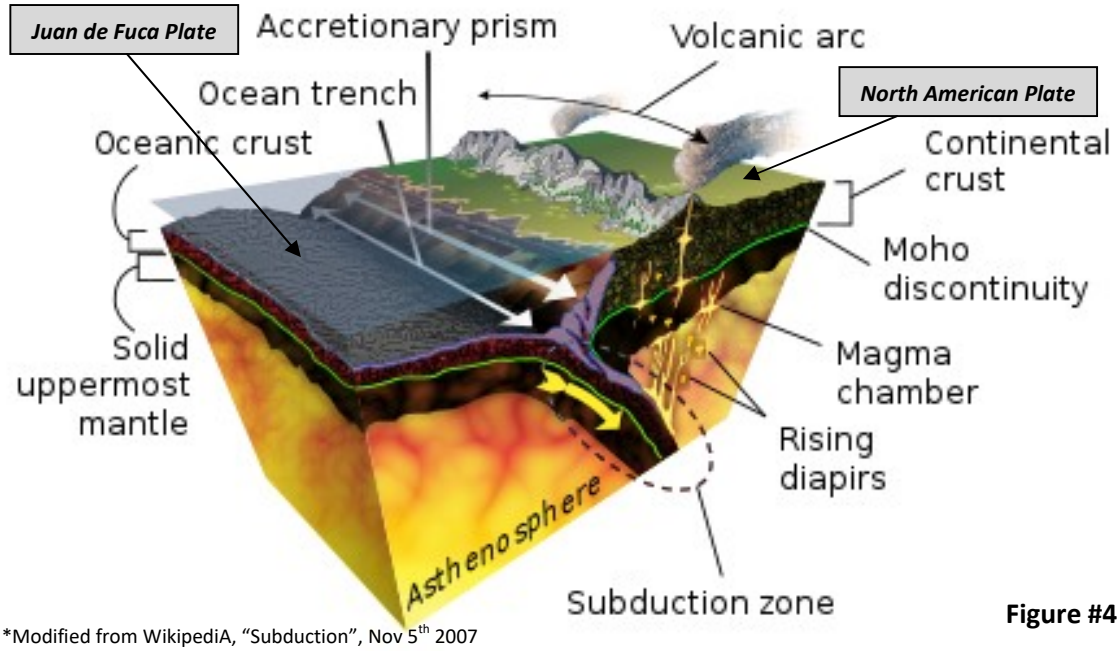
The Cascadia Fault represents a line of more of less continuous geological stress with numerous earthquakes recorded along its length. Their appears to be other zones of weakness further to the east that are sub parallel to the Cascadia Fault and are manifested by irregular, but linear, patterns of volcanic eruptions. Mount Mazama erupted approximately 7800 years ago, Mount Meager 2350 years ago and Mount St Helens just 38 years ago in 1980, indicating that the plates are still actively grinding away today.

Hot spring activity, east of the Cascadia Fault, has occurred (past and present) in similar linear patterns as that of the volcanic activity, notably along the western ‘rim’ of Vancouver Island and includes active thermal springs at Ahousat, Hot springs Cove, Fair Harbour (?) and others. A stronger linear of thermal springs on the mainland continues from Harrison Hot Springs northerly to at least the Takhini near Whitehorse in the Yukon.

The evolution of the regional geology over time is critical in creating the setting in which we find the wide variety of mineral occurrences – some of which become advanced projects and even producing

mines. The setting of the Orp project area of north western Vancouver Island is similar in some respects to the Carlin Trend of Nevada. This will be discussed in the *Discussion* portion of this report.

Subduction: Juan De Fuca & North American Plates



*Modified from WikipediA, "Subduction", Nov 5th 2007

Figure #4

The "regional" geology for the area surrounding location of the Orp claims, starting from the oldest which are the Upper Triassic, Vancouver Group which includes the *Karmutsen Formation* - Carnian, possibly Middle Triassic (Ladinian) at the base and the *Quatsino Formation* - Upper Triassic (Carnian to Lower Norian) and which overlies the Karmutsen (Nixon et al, 2011). A brief description of each, from oldest to youngest in the area, follows below.

Karmutsen Formation: consists primarily of sub marine volcanics; pillow and flow, generally amygdaloidal, occasionally brecciated; rare sediment and limestone.

Quatsino Formation: a medium to pale grey limestone with some chert nodules and silica replacements and rarely fossiliferous.

Parson Bay Formation: a thinly laminated grey to black interbedded limestone and calcareous to non-calcareous mudstone; occasionally grey to green lithic feldspathic/tuffaceous wacke, siltstone, shale pebble conglomerate. Near the base of the formation are basaltic and tuff breccias, lapilli tuff, debris flow, pillow flows and breccias.

Bonanza Group: Layered rocks including interbedded volcaniclastic and sediments; mostly submarine.

Regional structures that transect the area include the *Holberg Fault* which trends approximately 290 degrees and aligns fairly well with the trend of Holberg Inlet. The Holberg Fault appears to terminate at the *William Lake Fault*, which appears to be a parallel set of thrust, and/or subduction related faults that trends north westerly though the Orp property to William Lake. The *William Lake Fault* appears to define the contact of the Quatsino and Karmutsen Formations and also the Quatsino Formations with the Parson Bay Formation rocks to the west. There are also numerous other small faults defined that help to explain the geological offsets in this region (Nixon et al, 2011 & Muller, et al, 1974).

Surficial Geology – The last glaciation that took place on Vancouver Island began with a 'cooling' that began approximately 25,000 years ago and ended more or less 13,500 years ago. When the cooling started, ice began to build up, and remain, in the higher elevations. As this continued, gravity came into play, the ice masses slid down and filled the valley bottoms and basins with no common directional movement. Meanwhile, on the mainland continent about 15,000 years ago, the ice had grown and as space ran out, the mass began to spread out in all directions possible. A movement of ice westward, towards Vancouver Island took place, pushing everything in its path in a slow and steady westerly direction. Pretty well all of Vancouver Island was covered in ice with a few exceptions including the tops of the highest mountains and some low lying areas such as Brooks Peninsula. A cover of glacial till built up and covered much of the landscape during this time.

During the melt, which was likely in warm-cool pulses to begin with, some of the till remained in place while in some areas it was washed away or 'reworked' and mixed with sand/sandy gravels. The resulting outwash during this time deposited large areas of sand, gravel and boulders. Along with this, there was slumping of overburden from the steep slopes of the mountains creating more surficial confusion of the overburden (Bobrowsky and Sibbeck, 1996)

Property Geology – The geology of the Orp property trends more or less with the regional trend of North West to north by north west and this can be seen on the property with the trend of structures and contacts. From east to west, the Orp property is underlain by a north-westerly striking and mainly southwest dipping, sequence of rocks. The geology, starting in the east, comprises mafic, sub marine, volcanic rocks of the Karmutsen Formation (the oldest rocks mapped in this region). Continuing westerly there is a sequence of limestone, volcanics, calcareous sediments and then more volcanics - likely the youngest in this region - the Bonanza Group rocks.

The volcanic outcrops in the eastern claim area (Karmutsen) are in a relatively steep, west facing, mountain slope which breaks at, or near, the contact with the limestone (Quatsino Formation) at the base of the slope. The outcrops of limestone, which in some areas appears to dip westerly, continue across a gently undulating, "karst-type", topography to the San Juan River near the center of the claims. Outcrops of brecciated limestone have been noted near the main 'discovery showing' at the San Josef River. Brecciation of limestone is also seen along 'crude' linears in the karst-type topography to the east where circular basins, or 'swallow holes', with eroded drainages at the bottom define the linears. The breccias could represent collapse features, underlying faults or both.

East of the San Josef River, sandwiched between outcrops of limestone, is an elongated series of outcrops of possible volcaniclastic and sediments which likely represent the lower Parson Bay Formation (Nixon et al, 2011). These rocks are non-calcareous and are overlying the limestone. The pattern of the outcrops of the volcanics suggest a width of up to 200 meters with a north westerly trend that ends just north of Orp Creek. The volcanics occur in slightly more elevated topography where the slightly higher elevation differences probably defines the limits of the volcanic while the limestone occupies the lower lying, more recessive, areas.

At the San Juan River there appears to be a fault contact of the limestone with calcareous sediments of the Parson Bay Formation. The sedimentary rocks are intensely brecciated at a number of locations along the river as is the limestone directly across the river (east bank) from the brecciated calcareous sediments at least at the orpiment 'discovery' occurrence. The brecciation is thought to be a part of a north-west structure and is likely an extension of the *William Lake Fault* which is shown by government mapping to cut through the Orp property at about this location (Nixon et al, 2011).

A feldspar porphyritic dyke outcrops in the San Josef River about 150 meters upstream from the discovery occurrence. The dyke averages about 20 meters in width, trending north westerly and appears to be steep westerly, to vertical, dipping. The dyke likely came up along the above mentioned north-north west trending *William Lake Fault* and has been both in outcrop as well as large proximal float along its trend. The orpiment-realgar occurrences to date have only been found on the west side of the dyke. At the discovery occurrence the dyke is intensely sheared and tiny, almost microscopic, specs of magnetite and rare orpiment. Elsewhere, the dyke does not appear to have this mineralization.

Approximately 350 meters upstream to the south east on the east river bank, more outcrops of dyke rock are exposed. These outcrops are likely from the same dyke above although they would have to be structurally offset about 100 meters to the north east to be in their current position.

Outcrops on the south west side of the San Josef River are scarce until near the south west corner of Orp 2 (#1057290). There are a few outcrops of what appears to be sub aerial volcaniclastic rocks in the ditches of the Winter Harbour Road at this location.

There is evidence of the importance structure has played in the mineral deposition on the Orp project. A study of the satellite imagery shows an intersection of two strong lineaments near the area of the discovery showings. One lineament trends the same direction as the large porphyry dyke, and is likely the above mentioned *William Lake Fault*. Its trend is northwest at approximately 157 deg. The other lineament, the *Orp Creek Fault*, trends about 288 degrees and aligns more or less with the direction of Orp Creek. Brecciation and shearing has been noted along the trend of both of these lineaments. The two structures appear to intersect at the discovery showings near the confluence of Orp Creek with the San Josef River.

More shearing has been also noted in 'decalcified' Parson Bay sediments along the east bank of the San Josef River about 160 meters downstream from the main showings. The trend is approximately 151 degrees with an 85 degree dip to the west.

Near the west boundary of the claims, three areas of brecciated Quatsino Limestone have been noted which have a linear trend of approximately 154 degrees. This feature has also been tentatively interpreted as a large fault although the sink, or 'swallow' holes, that appear to line up in a linear fashion, could also be related to structural features (faults) underlying the limestone.

Technical Data and Interpretation

Mineralization & Alteration: The most spectacular mineralization on the property is in the form of massive orpiment with realgar, occasionally having white quartz and amethyst associated. Small to large rounded pieces of orpiment and realgar float have been found in the San Josef River as well as the small tributary creek (Orp Creek) at the discovery showing. Cinnabar has also been identified in grab samples taken at the discovery occurrence.

In two proximal areas away from the river, one to ten centimeter pieces of angular orpiment and realgar float were found covering the overburden. When excavating the site with the rock pick, massive orpiment with realgar was found over widths of .5 and 1 meter in intensely sheared sediment and limestone host. Both areas continue under the overburden in all directions.

Relatively coarse cubic pyrite is commonly found sparsely disseminated in the calcareous Parson Bay sediments but is not considered significant as it appears to be common to this sequence of rocks where ever found. Occasional patches of argillic alteration have been noted but in no instances are they pervasive, or do they appear to be directly associated with the orpiment-realgar mineralization.

Shearing and moderate silicification has been mapped in the vicinity of the discovery showings and along the western flank of the large feldspar porphyry dyke. The dyke is intensely sheared at the discovery showings and appears to be potassic altered with possible 'acid' etching and erosion of some feldspars. Fine disseminated magnetite and orpiment are noted in the altered dyke (Photos #'s 5 & 6).

Other alteration in the area of the showings is a fairly widespread evidence of an episodic 'carbonate dissolution', or 'decalcification', of the host rocks and a redeposition in more or less the same area. Most of the orpiment and realgar seems to be along the western flank of the feldspar porphyry dyke however, in the geochemical data from the soil survey of 1989, there appears to be other areas of potential east of the dyke and west of the San Josef River (Leighton, 1989).

During the process of decalcification and subsequent redeposition, the calcite 'redeposit' manifests as elongated, 5 to 10 centimeter, discontinuous veinlets and veins (Photo #3). There appears to be at least three episodes of decalcification and redeposition which can be recognized by the veins and veinlets crisscrossing each other. Where the rock has been decalcified there is no reaction to the dilute HCl and the surfaces have taken on a 'sand papery' texture and are sometimes brownish-tan in color. This alteration reaches out west of the dyke for at least 25 meters. Due to poor exposure, no alteration has yet been observed on the eastern flank of the dyke/structures.

Pyrobitumen is noted in outcrops of calcareous, brecciated, sediments close to the discovery showings at Orp Creek (Photo #2). Pyrobitumen is also mentioned in the logs for drill hole 103-88-1 and styolitic limestone and pyrobitumen are also noted in the logs of hole 103-88-4 (Leighton, 1989).

Discussion & Summary:

In very general terms, the 'geological setting' of a mineral deposit refers to a number of key factors that are critical to the genesis of these mineral deposits. For most mineral deposits these factors include; (1) - mineral bearing fluids, (2) - a plumbing system of faults and structures for the fluids to travel along with brecciation and fracturing – or 'ground' preparation for deposition and, finally, (3) - a reason for the minerals to drop out of solution to form a deposit. The gold and silver deposits along the *Carlin Nevada Trend* are no different and, although all deposits are different, they are all similar (snowflakes) in the sense that the setting is always very much the same. Carlin-style deposits can be found pretty well all around the world with the 'setting' being what determines the classification.

The Carlin trend itself occurs mainly in (Paleozoic) calcareous sediments that occur in an area that is about 65 kilometers long by 80 kilometers wide. This trend of mineral occurrences and deposits in northeastern Nevada was formed when a tectonic crustal block, or terrain, collided with the North American Plate. The resulting pressures and temperatures associated from the collision produced hot springs along the suture zone (Figure #4). The hot springs, or diapirs, that formed along the suture zone brought minerals, including gold and silver, to the surface and precipitated the minerals in fractures, fissures and faults in the host rock. If the event(s) are episodic, then there is more chance that the occurrence(s) will be economic (Gold Investing News, 2010).

Carlin-style deposits are often hosted in, or proximal to, limestones or calcareous sediments which are either close to, or hosted in, rock that is 'iron rich'. The sulphides (a soluble iron) are critical for the gold to drop out of solution. The other, 'tracer', elements (As-Hg-Sb) can be deposited separately if there is only the calcareous host but if the soluble iron is present, then the gold can be deposited with the tracers.

The gold is generally very finely disseminated through the rock and virtually impossible to see without the aid of a microscope. The grades of the gold can also be quite low but, since it is finely disseminated through the host, it is possible for large tonnage, open pit styles of mining to be utilized in mining and allowing these deposits to be very profitable.

One of the most significant alterations noted at Carlin deposits is evidence of decalcification and, to a lesser extent, silicification along the structures. Multiple pulses of decalcification and redeposition can occur. (Ozcan Yigit et al, 2003 & Rob Carne, 2015) and this can be 'read' where one sees over lapping and crisscrossing of small calcite veinlets. This can be seen to some extent in Photo #4.

The *Orp Project* appears to have enough of the ingredients required to legitimize classifying it as a "Carlin style" occurrence. Strong evidence supporting the possibility of a Carlin-style setting includes:

1. <u>Geology</u> - The Orp claim lies within sequence of limestone and calcareous sediments in proximity to volcanic rocks and the active 'suture zone' resulting from the collision of the Wrangellia Terrain, and it's subduction under, the North American Plate.
2. <u>Mineralized Solutions</u> – Geothermally heated waters (diapirs) that have vented proximal to the suture zone and that have deposited Carlin-style indicator minerals. The indicator minerals at

the Orp claims are typical of Carlin-style deposits and include orpiment (massive), realgar, cinnabar and possible stibnite. The boiling textures of the Orpiment deposition can be seen in Photo #3.

3. Ground Preparation – Structural disruption to the geological assembly has been defined within the claim boundaries as well as in the surrounding areas along the prevailing trend of the regional geology. Multiple areas of faulting with intense brecciation, fracturing and shearing have been found on the Orp property - Photo #2 shows the brecciation of the Parson Bay sediments on the west bank of the San Josef River at the discovery occurrences.

4. Soil geochemistry (Leighton, 1974 & 1989) has defined an elongated anomalous zone of arsenic (and mercury) which is up to 200 meters at the widest point. The zone trends approximately 500 meters northwest through the property and is open to both the south and the north.

   Gold was also analysed for in both geochemical surveys, but the results were thought to be insignificant at time in the reports for 1974 and 1989. Present day interpretation of the values of gold in geochemical surveys over Carlin-style occurrences suggests that values over 5 ppb should can be considered anomalous (Carne, personal communication 2015).

   There are no analytical assay sheets included in the 1974 report but there are maps showing the location of the geochemical soil samples as well as results for copper, mercury, arsenic and gold. For some unexplained reason, most of the gold values have a 'less than' symbol (<) preceding the values with many values, if they can be trusted, are over 25 ppb with highs of 100, 150 and 200 ppb. Not having the actual assay sheets leaves little value in the results of this survey.

   The author does have the assay sheets for the 1989 work and, once they are studied in detail, they may be included in a future report. Some comments regarding this analysis are in the following paragraph.

The geological setting of the mineralization at the Orp project is clearly that of a Carlin-type occurrence but it should be pointed out that the presence of gold in rock is yet to be proven. Since the discovery of the orpiment and realgar in 1974, rock samples from the discovery occurrence have been analysed and the gold values have always been disappointingly low and, until recently, it was thought that one had to sample the rock with high arsenic and mercury. If there is a lack of soluble iron in the rock, which there is at the Orp discovery occurrence, then the gold will not have been able to drop out of solution and will have stayed in solution until contacting rock with soluble iron. This location needs to be determined and the historic soil geochemistry of the area may be way to do it.

The results of the soil geochemical survey carried out in 1989 are contained at the back of the 1989 Geological and Drilling report in Appendix II (Leighton, 1989). Sample numbers for the survey are the actual grid location so the results can easily be plotted on to a base map. There are many soil geochemical samples that are equal to or greater than 5 parts per billion with quite a few exceeding 20 ppb and two greater than 100 ppb. Although the author has not yet plotted these sample results, there are occasional clusters of 'anomalous' gold that appear to occur in a crude 'halo-like' pattern distal to

the anomalous arsenic and mercury. Some "clusters anomalies "also appear to be close to structures that have been mapped and interpreted in the most recent work of 2018.

Recommendations:

1. More mapping is needed to clarify the geological time scale of the property, ie, the sequence of the rocks identified on the Orp property from the oldest (Karmutsen Formation volcanics) through the Quatsino Formation (limestone), the Parson Bay Formation (volcanics and sediments) and into the oldest rocks of the Bonanza Group (volcanics and sediments). This will help with the overall mapping in regards to the complexity of the structural influence for mineral deposition.

2. It is recommended that select samples be taken from the dyke rock, the 'interpreted' lower Parson Bay volcanic rocks and from the de/recalcified limestone at the discovery showings for petrographic interpretation.

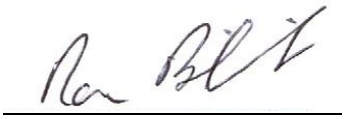
3. Plot historical soil geochemistry (Leighton, 1989) on maps overlaying the geological maps to create targets for future work.

4. Follow up on 'cluster' and 'single point' soil geochemical anomalies from the 1989 geochemical survey with specific attention paid to arsenic and mercury away from the discovery occurrence.

5. Follow up on all anomalous gold in soil geochemistry from the 1989 survey with attention paid to those anomalies that appear to be on trend with the main structures.

6. Create better access into the property brushing out the old logging roads and cutting foot trails through the thick salal and underbrush.

Respectfully Submitted,



Ron Bilquist
03 April, 2019

REFERENCES :

-Bilquist, Ronald J. – ARIS # 32396*; Assessment Report on the Prospecting Survey of the Orp #1 Mineral* Claim; 01 July 2011.

-Bilquist, Ronald J. – *Geochemical & Geology of the Orp #1 Mineral Claim*; 12 April 2016.

-Bobrowsky, P.T. and Sibbeck, S.J. – *Geochemistry of Northern Vancouver Island Area, British Columbia (92L/15, 6W,11W, 12);* Energy, Mines and Petroleum Resources, Open File 1996-7; July 1996.

-Candel, Joseph, - *Mega Quake,* Daily Mail, 22 April 2011.

-Carne, Rob – *Personal communication regarding the setting of Carlin-style occurrences*, July & August 2015.

-Earle, Steven – *Physical Geology*, BC Open Textbook Project (opentextbc.ca/geology/), 2015.

-Fortuna, John; Kesler, Stephen E., Stenger, David P. – *Source of Iron for Sulfidation and Gold Deposition, Twin Creeks Carlin-Type Deposit, Nevada;* Economic Geology, 01 September 2003.

-Gold Investment News – *The Geology of the Carlin Trend*, October 4th 2010.

-Jackaman, W. –*Regional Stream Sediment and Water Geochemical Data, Vancouver Island, B.C*. compiled by W. Jackaman, Noble Exploration Services Ltd for GeoScience B.C. Rpt 2011-4; March 2011.

-Leighton, D.G. – Property File, Document #840519; *Report on the S.J. Claims - Winter Harbour Area, British Columbia - For British Newfoundland Exploration Limited;* D.G. Leighton, Stokes Exploration Management Co. Ltd; 1974.

-Leighton, D.G. – ARIS # 18568; *Geological & Drilling Report on the Holberg Property by D.G. Leighton,* March 28, 1989.

-MinFile # 102I 012 – *Realgar, Orp.*

-More, Gord & Yorath, Chris – *Where Terrains Collide: The Geology of Western Canada*; Geological Survey of Canada, DVD Video, 1992.

-Muller, J.E., Northcote, K.E. and Carlisle, D. – *Geology and Mineral Deposits of Alert-Cape Scott Map-Area Vancouver Island*, British Columbia; Geological Survey of Canada, Paper 74-B, 1974.

-Nixon, G.T., Hammack, J.L., Koyanagim V.M., Snyder, L.D., Payie, G.J., Panteleytev, A., Massey, N.W.D, Hamilton, J.V., Orr, A.J., Friedman, R.M., Archibald, D.A., Haggart, J.W., Orchard, M.J., Tozer, E.T., Tipper, H.W., Poulton, T.P., Palfy, J. and Cordey, F. – *Geology, Geolchronology, Lithogeochemistry and Metamorphism of the Holberg-Winter Harbour Area, Northern Vancouver Island BC;* Geological Survey, GEOSCIENCE MAP 2011-1.

Link **http://cmscontent.nrs.gov.bc.ca/geoscience/PublicationCatalogue/GeoscienceMap/BCGS_GM2011-01.pdf**

-Ozcan Yigit, Eric P. Nelson, Murray W. Hitzman, Albert H. Hofstra - *Structural Controls on Carlin-Type Gold Mineralization in the Gold Bar District, Eureka County, Nevada*; Economic Geology,01 Sept 2003.

Link **http://cmscontent.nrs.gov.bc.ca/geoscience/PublicationCatalogue/GeoscienceMap/BCGS_GM2011-01.pdf**

-Teal, Lewis and Jackson, Mac – *Geologic Overview of the Carlin Trend Gold Deposits;* GeoScienceWorld, January 01, 1997.

AUTHORS QUALIFICATIONS:

- I have worked full time in mining exploration since 1968 (50 years). During this time I have been self employed as a prospector as well as employed by numerous exploration companies on both salary and contract basis. My work has been primarily prospecting but duties from time to time have also included trenching, trench mapping, drilling and blasting, claim staking, line cutting and grid construction, geochemical surveys, geophysical surveys, geological mapping, draughting, diamond drilling and drill supervision. I have also been involved with project generation and research within a number of regional projects in Canada, Argentina and Mexico and have worked with a wide variety of geological models and concepts.

- During my career I have prospected throughout Canada – British Columbia, Saskatchewan, the Yukon, NWT and Nunavut as well as Argentina and Mexico.

- I have written an exam to qualify as a prospector for the Department of Mines and Petroleum Resources. This exam took place at the department office in Nanaimo in 1975 and was supervised by W.C. Robinson, P. Eng.

- In 1992 I successfully completed the *Petrology for Prospectors Course* sponsored by the Ministry of Energy, Mines and Petroleum Resources: course instructor T.A. Richards, Ph.D.

- In 1994 I took a short course on Drift Exploration in glaciated and mountainous terrain put on by the BCGS Branch Short Course, Cordilleran Roundup; January 24, 1994.

- I have been on a number of mine tours; copper porphyries include *Island Copper* in B.C., *Bingham* and *Silver Bell North* in Utah and Nevada*; Escondida*, *Zaldivar*, *Spence* and Chuquicamata in Chile. I have had tours of a number of small epithermal gold mines in the *Carlin Trend* of Nevada as well as the *Skookum Mine* in the south west Yukon.

Signed 

Ronald J. Bilquist

Dated at Gabriola B.C. this 3rd day of April, 2019

Cost Statement:

Exploration Work type	Comment	Days			Totals
Personnel (Name)* / Position	**Field Days**	**Days**	**Rate**	**Subtotal***	
Ron Bilquist/Geol Mapping	June 4 - 7, 2018	4	$650.00	$2,600.00	
				$2,600.00	**$2,600.00**
Office Studies	**List Personnel (Office)**				
Database compilation					
General research	Ron Bilquist	2.5	$550.00	$1,375.00	
Report preparation	Ron Bilquist	4.0	$550.00	$2,200.00	
Printing				$28.00	
				$3,603.00	**$3,603.00**
Ground Exploration Surveys	**Area in Hectares/List Personnel**				
Geol Mapping	204.91 Ha/ Ron Bilquist				
Transportation		**No.**	**Rate**	**Subtotal**	
truck rental		4.00	$125.00	$500.00	
fuel			$0.00	$275.09	
ferry	Nanaimo to Gabriola			$33.75	
				$808.84	**$808.84**
Accommodation & Food	**Rates per day**				
Camp		4.00	$125.00	$500.00	
Meals	actual costs		$0.00	$127.99	
				$627.99	**$627.99**
Equipment Rentals					
Field Gear (Specify)	GPS,dig cam,cell	4.00	$20.00	$80.00	
Other (Specify)	Chain saw	4.00	$25.00	$100.00	
				$180.00	**$180.00**
Freight, rock samples					
Freight			$0.00		
Analysis				$0.00	
				$0.00	**$0.00**
TOTAL Expenditures					**$7,819.83**

Photos

Confluence Orp Creek w/San Josef River. View North-west.

"Parson Bay Breccia"

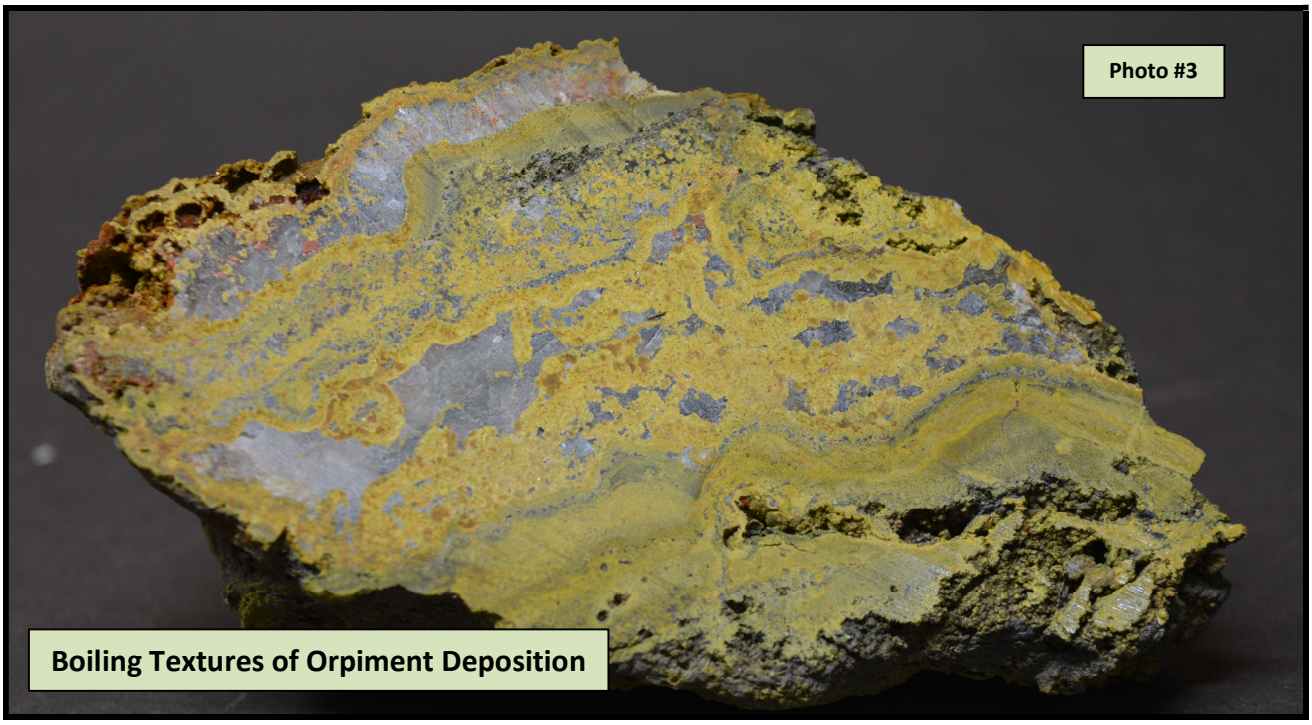


Photo #3
Boiling Textures of Orpiment Deposition


Photo #4
Cinnabar in Recalcified Grey Limestone

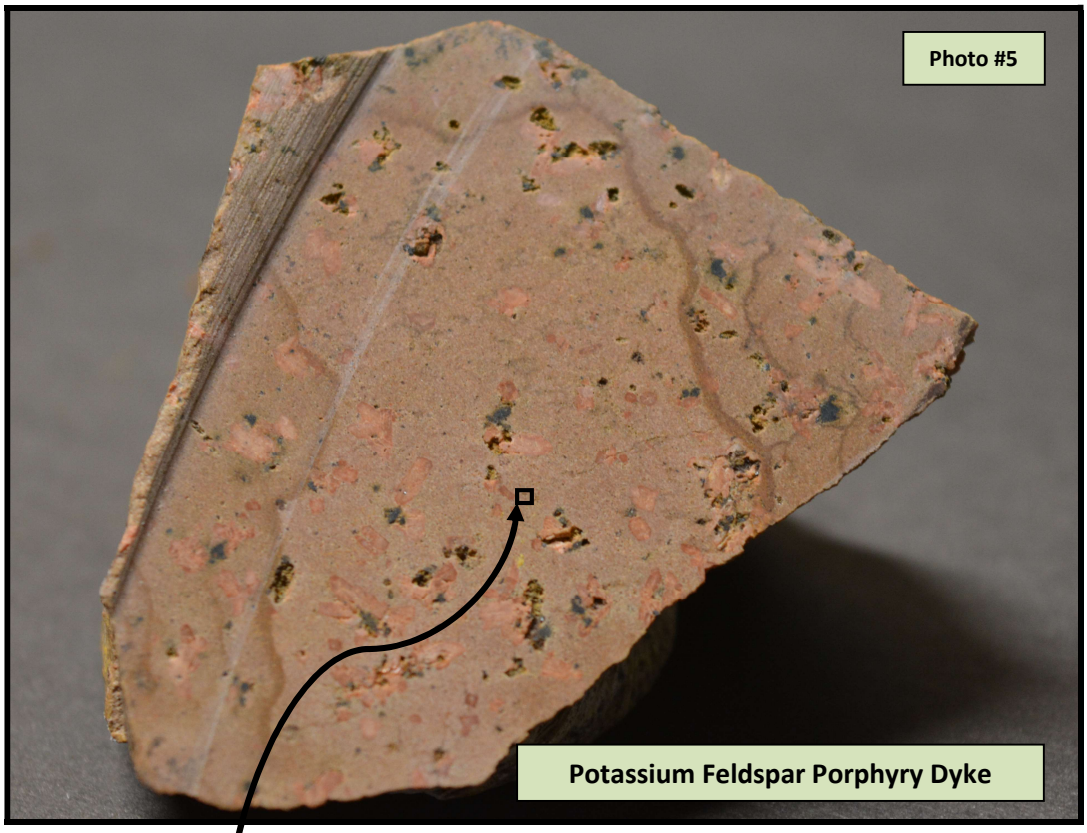


Photo #5
Potassium Feldspar Porphyry Dyke

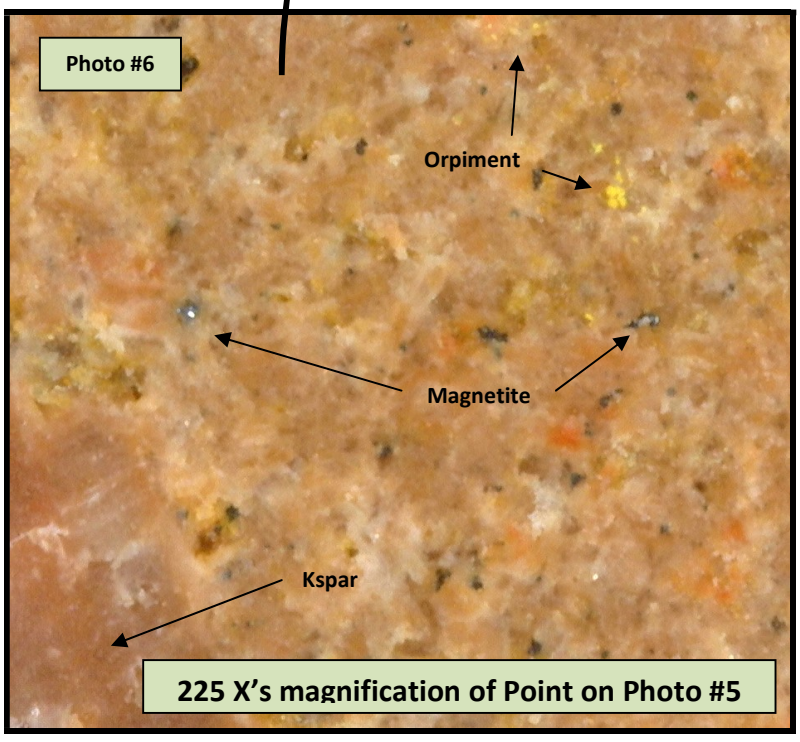


Photo #6
Orpiment
Magnetite
Kspar
225 X's magnification of Point on Photo #5

Tenure #1057291

Tenure #604241

---North---

564 500

565 000

5611 800

5611 500

5611 000

5610 500

564 200

565 000

Holberg 8 km -->

decommissioned bridge

overgrown fsr (trail)

GPS located 1988 grid station 5250N + 4930E

GPS located 1988 grid station 5050N + 4750E

Float, Pbv (?)

DDH 88-3&4

DDH 88-1&2

carbonate/limonite

"Discovery Showings"
Ame,Orp,Rlg,Cin;decalcification & redeposition

Orp Creek

San Josef River

over grown fsr

** Grid from ARIS # 18568, Leighton 1989.

5600 E.
5500 E.
5400 E.
5300 E.
5200 E.
5100 E.
5000 E.
4900 E.
4800 E.
4700 E.
4600 E.
4500 E.

5300 N.
5200 N.
5100 N.
5000 N.
4900 N.
4800 N.
4700 N.
4650 N.
4550 N.
4450 N.
4350 N.
4250 N.
4150 N.

Kv
Qlst
Pbv
Pbs
Bd
Bv

LEGEND

-Outcrop
-Subcrop or proximal float
-Marshy area
DDH88-01&02 -Diamond drill hole (1988)
-Sink hole
-Stream
-Road/trail

GEOLOGY

Geological Contact; defined, assumed
Fault/shear; defined, assumed
Brecciation
Attitude (strike w/dip)

LOWER JURASSIC — Bonanza Subgroup
Bv Bonanza Volcaniclastic & Sediments
Bd Bonanza K-spar Porphyry Dyke

UPPER TRIASSIC — Parson Bay Formation
Pbs Calcareous Mudstone, Siltstone, Shale
Pbv Basalt, Tuff Breccias, Lapilli Tuff, Flows

Qlst Grey to White Limestone

MID – UPPER TRIASSIC — Karmutsen Formation
Kv Basaltic Pillow & Flow Basalts, Rare Sediments

Mineral Symbols

Chalcopyrite	Ccp	Malachite	Mal
Chalcocite	Cct	Realgar	Rlg
Orpiment	Orp	Cinnabar	Cin
Quartz	Qz	Carbonate Alt	Cb
Amethyst	Ame	Pyrite	Py

0 50 100 200 Mts.
SCALE

Orp Mineral Claims

Scale: 1 : 2500
Date: March 2019
Drawn By: RJB

Geological Mapping

**Geology modified from 2015 mapping.

Tenures 604241 & 1057291

Figure # 5

CLEARPRINT®
24 X 36