



Memo To: File, cc V.A.P., T.S., B.L.

885865

From: R. H. Pinsent

Date: March 10th, 1992

Subject: "New Discoveries at Buttle Lake: by Steve Juras."

Notes from a GSC "brown-bag" lunch meeting discussion
by Steve Juras of Westmin Resources.

(1) A few years ago, Westmin realized that it had to explore for relatively low tonnage, precious metal-rich, sulphide lenses of the "HW - North" type.

(2) The Company undertook a regional study of "HW horizon" stratigraphy and detailed analysis of the then known "HW - North" lenses. These data were used in the design of the current underground exploration programme.

(3) The talk focussed on the facies variability of the "HW horizon" stratigraphy and the geometry of the "HW - North lenses".

(4) The "HW horizon" comprises a package of rocks that shows remarkable lithologic consistency in a (grid) east - west direction and remarkable variability in a (grid) north - south direction, across the axis of a trough.

Felsic flows pass southward into a trough that contains a mixed assemblage of felsic flows and fragmentals (coarse and fine), mafic flows, ultramafic extrusives (unaltered fragments in rhyolite), sediments (argillites and cherts) and sulphides. These, in turn, grade southward into a package of an mafic to intermediate volcanic flows on the southern flank of the trough.

(5) Main "HW" lens is a pyritic body, capped by argillite near the base of the unit. The "HW - North" lenses are smaller, structurally controlled zones slightly higher up section (?).

(6) The "HW - North" lenses fall within a broad zone. They are controlled by local (en echelon) growth faults parallel to the basin axis. Each lens is different in shape and local geometry.

(7) The No. 5 lens is controlled by a syn-depositional growth fault that cut an andesitic flow. The fault focusses fluid flow and filled a half-graben depression on it's north flank with sulphide. The lens is assymetric in that the sulphide mound formed in a depression peripheral to the alteration pipe. The outpouring of fluid must have been rapid as the system was overrun by felsic tuff and sediment.

(8) The 37+00 block is similarly controlled by a growth fault. Sulphide deposition occured in a depression above the feeder vent on the north side of the fault. Mineralization was longer lived. The "orebody" is highly irregular in outline as sulphide competed for space with volcanic material and sediment channeled in from outside. The system was swamped by debris but mineralization continues up section as lenses and sulphide clasts.

(9) Sulphide clasts locally constitute ore! Some depressions contain 10 - 50% of large sulphide clasts interspersed with sediment. These zones have to be drilled at a spacing of 7m - 10m to define grade.

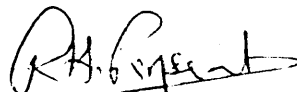
(10) The picture is one of intense geologic activity along the axis of the trough. The growth faults focus fluid flow and mineralization but there is active erosion and intense competition for space. Lenses may or may not get a chance to grow to mineable size.

(11) The lenses require detailed drilling on a 15m x 15m grid to establish shape, size and grade.

Notes by RHP

(12) The Gap and Battle zones are likely to be of this type. Current drill spacing (100m to 200m) is designed to locate lenses not evaluate them. The Company will be hard put to do the necessary drilling to come up with a reserve prior to actually producing from the Battle lens in 1993.

(13) Steve feels that the Company will probably head for the best target identified and try to delineate a small portion of the deposit prior to production. The rest will have to be assessed later.



R. H. Pinsent



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Ministry of
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GEOLOGICAL SURVEY BRANCH

768 → Myra Falls (Geology)
MEMORANDUM

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Memo To: HW File

From: Robert Pinsent

Date: April 27th, 1992

Subject: HW Mine, Westmin Resources; Buttle Lake: V.I.

Notes on HW Mine stratigraphy and mineralization
derived from a mine visit on 24th April 1992:

(1) The main feature is a northwest-southeast oriented zone of complex "mine stratigraphy" between a felsic centre to the northeast and a sediment basin to the southwest. Unfolded the zone would be at least 6.0 miles long and 1.0 mile wide. Facies are continuous along strike and discontinuous across strike.

(2) The "mine stratigraphy" package is localized within the Sicker Group. Rick Walker feels that similar rock packages occur at Port Alberni (Debbie/Yellow) and Chemainus (Lara). He feels that they are critical centres 40 miles apart. (Nick Massey does not agree).

(3) The package is folded and forms an anticline. The northeast limb is steep. It hosts numerous small, high-grade, lenses (Myra, Rice, Lynx). These on aggregate have contributed around 7.0 mt of ore. The HW and Battle lenses are on the shallow/flat southwestern portion of the anticline.

(4) The Lynx and HW lenses are underlain by stockworks. They appear to be the main centres of hydrothermal activity. They are approximately 4,500' apart. Rick thinks that there may be another centre on Thelwood Creek, a further 4,500' to the southeast.

(5) Rick feels that the main Lynx and HW deposits were formed from hot water in a deep rift environment. There is no evidence of steam explosion activity. The precious metal rich lenses are distal in terms of the main hydrothermal centres.



(6) The shapes of the sulphide lenses are controlled by a combination of fault controlled paleosurface topography and later deformation. Deposits were formed in strike extensive basins that were later compressed along the same axis. The result is a 4-5 X extension along strike.

*eg. Buchans
model
(100)*

(7) Deformation is inhomogenous. It is strongest in felsic rocks and weakest in mafic rocks. Sulphide bodies are recrystallized and locally rolled (ball-bearing).

(8) There has been some sulphide remobilization into veins within around 500' of the lenses. Vein material is generally a good indicator of stratabound mineralization.

(9) Note that the anticlinal structure controlling the deposit is cut by Myra Creek. This created a few small (subeconomic) sulphide exposures at the Price etc. None of the main lenses are exposed and there is very little evidence of alteration or mineralization visible on surface. It is hard to identify a massive sulphide system from above!

(10) The Battle and Gap zones are being drilled from an access drift coming from the Lynx Mine. The lenses will be mined through the HW shaft. The Company is driving a decline from the current 18th Level. This will circle above the Battle Zone to provide access for 15 metre spaced definition drilling and come in underneath to allow for exploitation.

(11) The Company will probably extend the main 24th Level Haulage drift to extract the ore.

(12) The Gap and Battle zones are both in HW stratigraphy. The Gap zone is in the upper part and the Battle is on the Main zone level.

(13) The Company has so far drilled the Battle lens on three sections. It is subhorizontal, approximately 40' thick and 700' wide. Based on past experience of the lenses, the Company expects it to extend for approximately 3,500' along strike. It could contain around 3.5 million tonnes.

(14) Westmin expanded the HW mill to handle 4,000 t/d at a time when they were reducing their capacity to mine ore. The Company has had a tough time making the 4,000 t/d target.

(15) The "mine stratigraphy" package is covered by a thick, regionally extensive silicious chert unit that is probably the result of marine deposition. There are two cycles of productive rhyolite and the possibility of a third at depth as the HW Mine bottomed in rhyolite.

A handwritten signature in black ink, appearing to read 'R. H. Pinsent', with a stylized, sweeping flourish extending from the end.

R. H. Pinsent



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DATE: February 10, 1993

FILE: Myra Falls

TO: Managers, District Geologists

FROM: Tom Schroeter, Bob Lane

SUBJECT: **MEG Notes "Geology and Exploration of the Battle-Gap Massive Sulphide Lenses"**

Speaker: Georgina Price

Introduction: Harlan Meade

Thanks: Tom Schroeter

Note: Brief **update** notes (i.e. since Roundup '93 talk)

- 330 m NW **right** lateral offset of Battle-Gap lenses from HW ore body (along the Schaft Fault)
- 330 m NE **left** lateral offset between the HW main lens and the Trumpeter zone. Also 100 m of dip-slip
- **Battle Lens:**
 - 750 x 30 x 250 m (dip) in size
 - correlative to HW Main Lens trend
 - exploration drill spacing @ 16 m centres; definition drill spacing @ 10 to 15 m centres
 - chert in hanging wall
 - facies changes at margin of basins equals multiplicity of lenses (basin slumping/thrusting)
 - Battle lens cut off at south end by fault
- **Gap Lens:**
 - 200 x 30 x 60 m in dimension
 - correlative to HW North Lens trend
 - lies stratigraphically above Battle Lens - suspected to be a **distal** facies of the Battle Lens
 - 'Hub' of 60 m thick section of VMS
 - some VMS mineralization caught up in fault slices
 - very complex ore mineralogy (i.e. sphalerite, galena, barite [locally > 30%], pyrite, tennantite, chalcocite, bornite and visible electrum)
 - currently 10 ddh into Gap Lens

NEW 1993 (4th quarter of '92) RESERVES:

Gap Lens: 1.15M tonnes @ 2.9 g/t Au, 175.5 g/t Ag, 2.1% Cu, 1.2% Pb, 13.9% Zn

Battle Lens: 3.7M tonnes @ 1.2 g/t Au, 24.5 g/t Ag, 2.7% Cu, 0.5% Pb, 12.9% Zn

- Historical Production = 13.5M tonnes

Reserves to Jan. '93 = 15.5M tonnes

Total = 29M tonnes (and building!); truly a world class deposit

- **Exploration costs** est. @ \$1.50/tonne of ore; cost of \$750 per metre for driving 8 x 8 ft. exploration drift (over 2 km long); Total Battle-Gap exploration costs to date are approx. \$6 million
- **Value of ore** = \$100/tonne
- **Potential:** Trumpeter zone plus several others
- **Questions:**
 - 1) Any correlation between high Au and high Ba? - "perhaps in Battle-Gap lenses, but not enough data in other areas"
 - 2) Any relationship between linear troughs and growth faults? - "tough to see" (due to structural disruptions)



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Memo To: Greg McKillop & Ray Crook

From: Robert Pinsent

Date: September 12th, 1993

Subject: SOUTHWESTERN DISTRICT MONTHLY REPORT: AUGUST 1993

SUMMARY:

August was a slow month for exploration and land-use. Both are stalled for lack of funds!

Mineral exploration is limited to very few properties. On a positive note, last year's resurgence of interest in industrial mineral and dimension-stone quarry production remains intact. The office has received numerous queries and expressions of interest over the course of the summer. The ministry's recent jurisdictional agreement with B.C. Lands should be a real benefit to property owners.

EXPLORATION HIGHLIGHTS:

1) WESTMIN RESOURCES INC. continues to implement a definition drill programme at the H-W Mine at Myra Falls. Company staff are drilling the east end of the Battle zone on 15 metres sections. Results to date indicate that the zone is comprised of several discrete lenses. The "Top" lens is a particularly "high-grade" lens of, zinc-rich, massive sulphide.

The company recently reported a gold-enriched zone in the "South Trough" lens, a short distance to the south of the "Top". The gold appears to be structurally controlled and unrelated to the formation of the sulphide lens. It is probably a local, epigenetic, overprint.

Westmin hopes to resolve its labour dispute this fall and work toward producing ore from the Battle zone as soon as underground development will allow.

2) LA ROCK MINING CORPORATION has had some exploration success drilling short (<150 metre) diamond drill holes into deformed volcanic rocks on the Brandywine property near Whistler. The company has identified an, approximately 15 metre thick, quartz-sericite alteration zone that contains small amounts of galena and sphalerite and a traces of visible gold. Gold values are erratic, but 1.5 metre intercepts commonly run between 0.05 and 0.2 ounces per ton gold.