



PROVINCE OF BRITISH COLUMBIA
Ministry of Energy, Mines and Petroleum Resources
GEOLOGICAL SURVEY BRANCH

PRELIMINARY MAP 63
GEOLOGICAL SETTING OF THE SOUTH HALF
OF THE ELK VALLEY COALFIELD
SOUTHEASTERN BRITISH COLUMBIA
(PART OF 82G/15 AND 82J/2)

GEOLOGY COMPILED BY
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CARTOGRAPHY BY M. TAYLOR



LEGEND

- QUATERNARY**
Qd 7R gravel, sand, silt, alluvium
- CRETACEOUS**
UPPER CRETACEOUS
Kbr BELLY RIVER FORMATION: grey and green silty shale; grey and green crossbedded sandstone
LOWER CRETACEOUS
Kbl BIAIRMORNE GROUP: chert-pebble conglomerate; sandstone; green and massive silty mudstone; chert nodular limestone
- JURASSIC AND CRETACEOUS**
KOOTENAY GROUP
Kke ELK FORMATION: grey silty sandstone; albite and silty mudstone; humic and sapropelic coal; rare conglomerate
JKki MIST MOUNTAIN FORMATION: dark grey siltstone and mudstone; humic coal; grey silty sandstone; black carbonaceous shale; rare conglomerate
JKki - Bk MIST MOUNTAIN FORMATION/MORRISSEY FORMATION: undivided
Jko MORRISSEY FORMATION: light grey sandstone, locally conglomerate; carbonaceous shale and coal
- JURASSIC**
Jf FERNIE FORMATION: dark grey and black shale; grey siltstone and sandstone; limestone; phosphite
- TRIASSIC**
Tsr SPRAY RIVER GROUP: dark grey silty shale, siltstone and shale; light grey dolomitic or albitic argillaceous limestone
- PENNSYLVANIAN AND PERMIAN**
PPrm ROCKY MOUNTAIN SUPERGROUP: light grey quartzitic, dolomitic, and calcareous sandstone; dark grey sandstone; silty dolomite; cherty dolomite; chert
- MISSISSIPPIAN**
RUNDLE GROUP
Met ETHERINGTON FORMATION: light grey limestone, cherty limestone, and calcarenite limestone; grey limestone and calcarenite limestone; light grey sandy and silty dolomite
Mmh MOUNT HEAD FORMATION: undivided
Mmh1 Camoran and Manton Members: dark grey and black dense limestone; light grey to black silty dolomite and limestone
Mmh2 Loomis and Saller Members: grey limestone and calcarenite limestone; light grey sandy and silty dolomite
Mlv LIVINGSTONE FORMATION: light grey silty calcarenite and calcarenite limestone; cherty limestone; dolomite
Mbf EXSHAW AND BANFF FORMATIONS: black shale; dark grey cherty argillaceous limestone; black chert; calcarenite limestone
- DEVONIAN**
Dpa PALLASER FORMATION: dark grey fine crystalline limestone and dolomite limestone

- SYMBOLS**
Geological boundary defined, approximated, assumed, projected under cover
Bedding, top known: horizontal, inclined, vertical, overturned
Thrust fault, seath in direction of dip: defined, approximated, assumed
Transverse fault, arrow indicates relative movement: assumed
Normal fault, solid circle indicates down-thrown side: defined, approximated, assumed
Anticline (defined, approximated; arrow indicates plunge)
Syncline (defined, approximated; arrow indicates plunge)
Articline, asymmetric (overturned)
Phosphate prospect
Abandoned well
Contours in feet
British Columbia/Alberta border
Coal Mine
1 - Forcing Coal Ltd., Forcing River Operations
2 - Westair Mining Ltd., Greenhills Operations
3 - Crown Resources Ltd., Line Creek Mine
4 - Westair Mining Ltd., Balmer Operations

DESCRIPTIVE NOTES
This compilation shows the regional setting and general geology of coal deposits in the British Columbia portion of map sheets 82G/15 and 82J/2. The eastern and western boundaries of the mapping are the traces of the Lewis and Slocan thrust faults, respectively. The Greenhills and Alexander Creek synclines underlie the south half of the Elk Valley Coalfield.

All southeastern British Columbia coal occurrences are within the Lewis thrust sheet. West-east horizontal displacement of the thrust sheet was at least 19 kilometers at the latitude of Forcing Mountain (Dahlstrom et al., 1962). Folds in the surface of the Lewis thrust were mapped in outcrop in the Toronto Pass area and inferred in the subsurface from evidence acquired during drilling of the California Standard Forcing Mountain well (Dahlstrom et al., 1962). Outcrop expressions of subsurface folds in the Toronto Pass area include a syncline in the east and the combination of the Forcing Mountain anticline and the anticline which passes through Waslatkin Range and Greenhills Range (82G/15) in the west. The west-dipping Etiskoon normal fault, part of the Flathead fault system (Price, 1985a), can be traced over nearly the entire length of the map. Synclinal coal occurrences on Hammer Ridge at the north end of the Crowneast Coalfield and in the Greenhills syncline from occurrences throughout the length of the Alexander Creek syncline.

Coal deposits in southeastern British Columbia occur in the Jurassic-Cretaceous Kootenay Group. Kootenay Group overlies the massive Ferme Formation of Jurassic age. The basal Kootenay sandstone, the Morrissey Formation, is a coastal deposit which forms a consistent, easily mapped unit. The overlying Mist Mountain Formation has average total thickness of 500 metres; 8 to 12 per cent consists of humic coal seams which range in thickness to 12 metres or more. The overlying Elk Formation contains lenticular humic and sapropelic coal seams up to approximately 1 metre in thickness. No marine strata are known in either the Mist Mountain or Elk Formations. Overlying the Kootenay Group is the Carboniferous, the basal conglomerate of the Lower Cretaceous Bialmorne Group.

Detailed geology of coal deposits in the south half of the Elk Valley Coalfield can be found in Grieve and Pearson (1985) and Grieve and Fraser (1985).

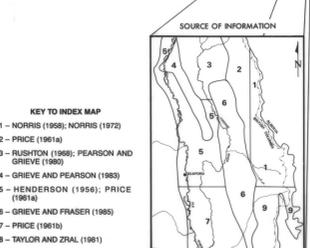
¹B.C. Ministry of Energy, Mines and Petroleum Resources.
²Geological Survey of Canada.

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LOCATION MAP



SOURCE OF INFORMATION



- KEY TO INDEX MAP**
1 - NORRIS (1958); NORRIS (1972)
2 - PRICE (1961a)
3 - RUSHFORD (1968); PEARSON AND GRIEVE (1980)
4 - GRIEVE AND PEARSON (1983)
5 - HENDERSON (1956); PRICE (1961b)
6 - GRIEVE AND FRASER (1985)
7 - PRICE (1961c)
8 - TAYLOR AND ZHAI (1981)
9 - PRICE (1961b and 1982b)

