

GEOLOGY OF THE COWICHAN LAKE AREA  
NTS 92C/16

Geology by N. W. D. Massey, S. T. Friday, P. Tercier  
and V. J. Rublee, 1986.

Includes geology from reports and maps by J. T. Fyles,  
A. Sutherland Brown and P. Cowley.

Compilation by N. W. D. Massey

Scale 1:50,000  
Kilometres 0 1 2 3 4

LEGEND

INTRUSIVE ROCKS

MINOR INTRUSIONS (age unknown): pyroxene-feldspar diabase (A); feldspar porphyry (f); hornblende-feldspar porphyry (H)

JURASSIC

ISLAND INTRUSIONS: diorite, granodiorite, quartz diorite often with abundant xenoliths, apatite

TRIASSIC

SILLS AND DYKES: diabase and gabbro (coeval with Karmutsen Formation)

VOLCANIC AND SEDIMENTARY ROCKS

UPPER CRETACEOUS

NANAIMO GROUP  
 HASLAM FORMATION: argillite, shale and minor sandstone

COMOX FORMATION: boulder conglomerate, sandstone and conglomerate

LOWER JURASSIC

BONANZA GROUP: feldspar basalt, andesite, dacite, tuff, sandy tuff, crystal tuff, lapilli tuff and breccia, with minor argillite and sandstone

UPPER TRIASSIC

VANCOUVER GROUP  
 PARSON BAY FORMATION: laminated siltstone, argillite, tuff, flaggy and biohermal limestone

QUATSINO FORMATION: massive and bedded micrite, bioclastic micrite, laminated tuffaceous argillite and siltstone, hyaloclastite with limestone clasts

KARMTUSEN FORMATION: pillowed and massive basaltic flows, hyaloclastite and hyaloclastite breccia

UPPER SILURIAN TO LOWER PERMIAN

SICKER GROUP  
 MOUNT MARK FORMATION: crinoidal limestone, bedded limestone, marble, chert, cherty argillite and siltstone

CAMERON RIVER FORMATION: ribbon chert, cherty tuff, graphitic argillite, intercalated thinly bedded sandstone, siltstone and argillite, epiclastic sandstone, conglomerate

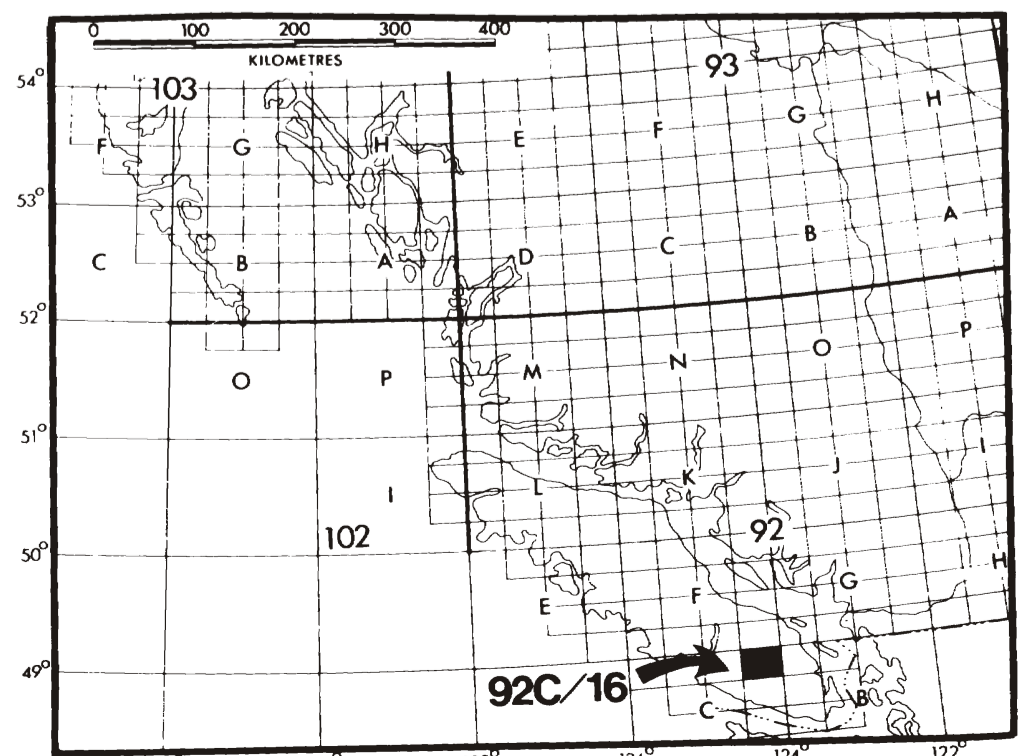
MCLAUGHLIN RIDGE FORMATION: thickly bedded tuff, tuffaceous sandstone and lithic tuff, crystal tuff, heterolithic lapilli tuff and breccia, aphyric and pyroxene porphyritic flows, rhyolite, dacite, laminated tuff and chert

NITINAT FORMATION: pyroxene-feldspar phyrlic agglomerate, breccia and lapilli tuff, massive and pillowed flows, massive tuffaceous sandstone, lithic tuff, laminated tuff and chert

SYMBOLS

- Geological contact (defined, approximate, transitional).....
- Limit of drift covered area.....
- Roof pendant (unit code indicated; too small to map separately).....
- Limit of mapping.....
- Bedding (horizontal, inclined, overturned).....
- Bedding estimated from pillows (inclined).....
- Schistosity (inclined, vertical).....
- Fault (defined, approximate).....
- Thrust fault (defined, approximate, assumed) teeth indicate upthrust side with dip indicated.....

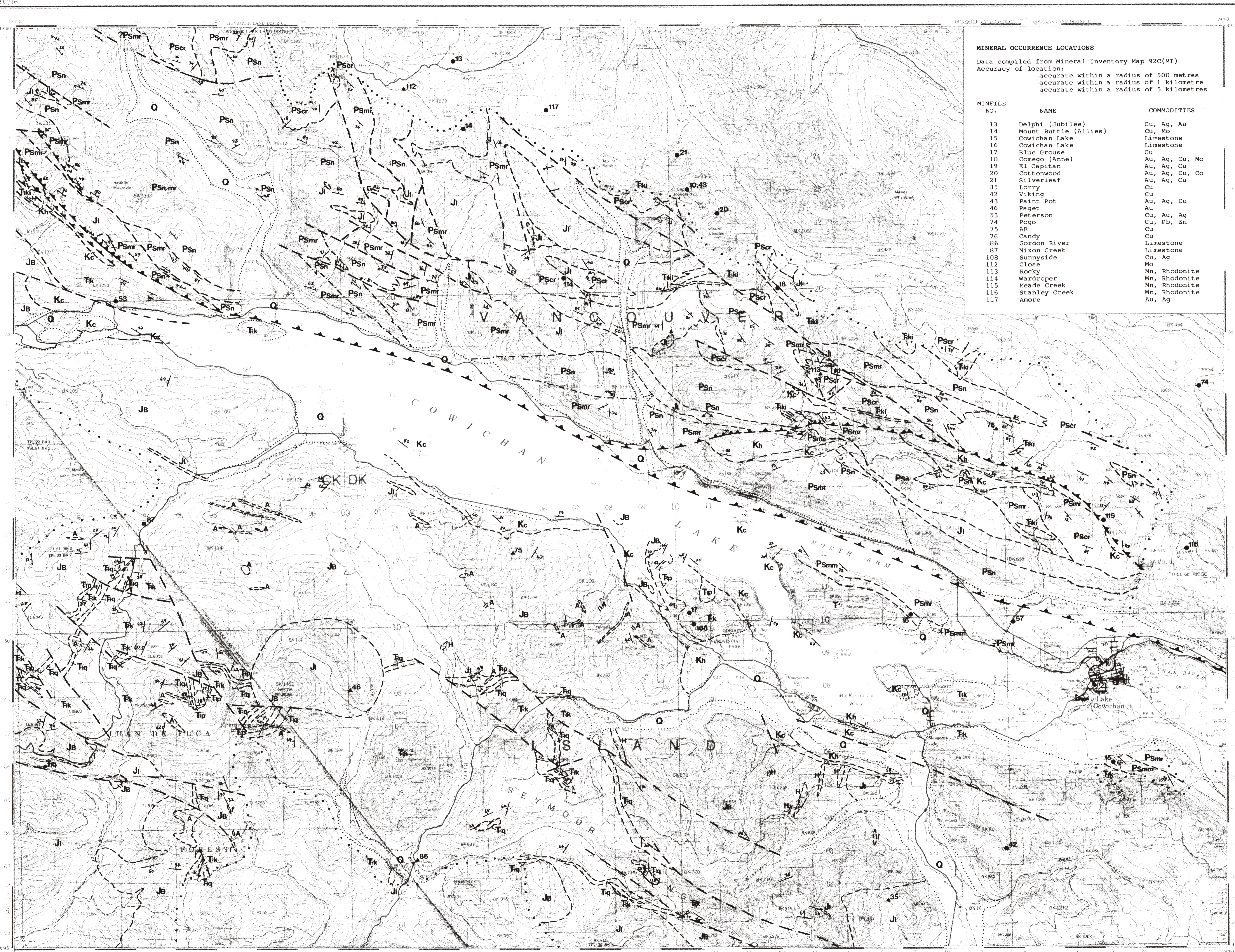
LOCATION MAP



MINERAL OCCURRENCE LOCATIONS

Data compiled from Mineral Inventory Map 92C(MI)  
Accuracy of location:  
accurate within a radius of 500 metres  
accurate within a radius of 1 kilometre  
accurate within a radius of 5 kilometres

MINFILE NO.	NAME	COMMODITIES
13	Delphi (Jubilee)	Cu, Ag, Au
14	Mount Buttle (Allies)	Cu, Mo
15	Cowichan Lake	Limestone
16	Cowichan Lake	Limestone
17	Blue Grouse	Cu
18	Comego (Anne)	Au, Ag, Cu, Mo
19	El Capitan	Au, Ag, Cu
20	Cottonwood	Au, Ag, Cu, Co
21	Silverleaf	Au, Ag, Cu
35	Lorry	Cu
42	Viking	Cu
43	Paint Pot	Au, Ag, Cu
46	Paget	Au
53	Peterson	Cu, Au, Ag
74	Pogo	Cu, Pb, Zn
75	AB	Cu
76	Candy	Cu
86	Gordon River	Limestone
87	Nixon Creek	Limestone
108	Sunnyside	Cu, Ag
112	Close	Mo
113	Rocky	Mn, Rhodonite
114	Wardroper	Mn, Rhodonite
115	Meade Creek	Mn, Rhodonite
116	Stanley Creek	Mn, Rhodonite
117	Amore	Au, Ag







PROVINCE OF BRITISH COLUMBIA
MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

OPEN FILE 1987/2 SHEET 2 OF 9

GEOLOGY OF THE COWICHAN LAKE AREA
NTS 92C/16

Geology by N. W. D. Massey, S. T. Friday, P. Tercier and V. J. Rublee, 1986.

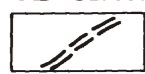
Includes geology from reports and maps by J. T. Fyles, A. Sutherland Brown and P. Cowley.

Compilation by N. W. D. Massey

LEGEND FOR SHEETS 3 - 9

INTRUSIVE ROCKS

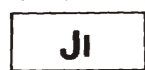
AGE UNCERTAIN



MINOR INTRUSIONS

- A pyroxene-feldspar diabase (?Jurassic)
F feldspar, quartz-feldspar porphyry (?Paleozoic or Jurassic)
H hornblende-feldspar porphyry (?Jurassic or Tertiary)

LOWER TO MIDDLE JURASSIC



ISLAND INTRUSIONS

- a aplite
b mafic dykes
d diorite, gabbro
f feldspar porphyry
g granodiorite
m diorite with abundant mafic xenoliths
n granodiorite with abundant mafic xenoliths
q quartz diorite
z quartz monzonite

UPPER TRIASSIC



SILLS AND DYKES (COEVAL WITH KARMUTSEN FORMATION)

- i diabase and gabbro

VOLCANIC AND SEDIMENTARY ROCKS

UPPER CRETACEOUS

NANAIMO GROUP



- Haslam formation
a argillite, shale
s sandstone



- Comox formation
s sandstone, pebbly sandstone
g granule conglomerate
p pebble conglomerate
b boulder conglomerate
l limestone

LOWER JURASSIC



BONANZA GROUP

Sedimentary rocks

- c conglomerate
s sandstone, granule sandstone
u argillite, siltstone +/- sulphides
l limestone, calcarenite

Volcanic rocks

- t tuff, sandy tuff
r maroon tuff, tuffaceous sandstone
p feldspar crystal tuff, lapilli tuff
k pyroxene-feldspar crystal lapilli tuff, breccia
n mafic tuff, lapilli tuff
h heterolithic lapilli tuff (mafic-intermediate)
j heterolithic lapilli tuff with limestone clasts
b heterolithic breccia
g monolithic lapilli tuff (mafic-intermediate)
e felsic lapilli tuff
m aphyric, massive mafic flows
o porphyritic basalt
f feldspar basalt, andesite (may be intrusive in part)
a andesite, porphyritic andesite
d dacite

UPPER TRIASSIC

VANCOUVER GROUP



PARSON BAY FORMATION

- t laminated tuff, tuffaceous argillite, argillite
l laminated siltstone, argillite
b lapilli tuff +/- felsic clasts
r calcarenite, sandy limestone
s flaggy limestone, biohermal limestone
p porcelaneous limestone



QUATSINO FORMATION

- q massive micrite
r bedded micrite, bedded calcirudite
u bioclastic micrite, sparite
o oolitic limestone
c hyaloclastite, hyaloclastite breccia with limestone clasts
t laminated tuff, tufaceous argillite, argillite
l laminated siltstone, argillite



KARMUTSEN FORMATION

- m massive flows
g glomeroporphyritic flows
p pillowed flows
b pillow breccia
h hyaloclastite, hyaloclastite breccia
a glomeroporphyritic hyaloclastite breccias
c hyaloclastite, hyaloclastite breccia with limestone clasts
t laminated tuff, tufaceous argillite, argillite
i diabase, gabbro dykes and sills

UPPER SILURIAN TO LOWER PERMIAN
SICKER GROUP

BUTTLE LAKE SUB-GROUP



MOUNT MARK FORMATION

- j limestone, crinoidal limestone, bedded limestone, marble
t intercalated thinly bedded sandstone, siltstone, argillite
c chert



CAMERON RIVER FORMATION

- c chert, cherty tuff
l laminated tuff, cherty tuff
t intercalated thinly bedded sandstone, siltstone, argillite
g graphitic argillite +/- sulphides
s massive tufaceous sandstone
k lithic tuff, lithic tufaceous sandstone
u epiclastic sandstone, granule and pebble conglomerate
h heterolithic conglomerate, breccia
e felsic tuff, crystal tuff
r rhyolite, dacite (flows and intrusions)

YOUBOU SUB-GROUP



MCLAUGHLIN RIDGE FORMATION

- s massive tuff, tufaceous sandstone
k lithic tuff, lithic tufaceous sandstone
u epiclastic sandstone, granule and pebble conglomerate
t intercalated thinly bedded sandstone, siltstone, argillite
l laminated tuff, cherty tuff
c chert, cherty tuff
f feldspar crystal tuff, lapilli tuff
a pyroxene crystal tuff, lapilli tuff
b pyroxene rich volcanic breccia, agglomerate
n heterolithic lapilli tuff, breccia
h heterolithic conglomerate
o massive aphyric mafic flows
q pyroxene porphyry (flows and intrusions)
d felsic lapilli tuff, crystal lapilli tuff
e felsic tuff, crystal tuff
r rhyolite, dacite (flows and intrusions)
w hornfelsed sediment (?sandstone)
y chlorite schist (protolith uncertain)
z maroon and green phyllite (protolith uncertain)



NITINAT FORMATION

- a pyroxene crystal tuff, lapilli tuff
b pyroxene rich volcanic breccia, agglomerate
m monolithic lapilli tuff, breccia
n heterolithic lapilli tuff, breccia
h heterolithic conglomerate, breccia
o massive aphyric mafic flows
p pillowed flows
q pyroxene porphyry (flows and intrusions)
f feldspar crystal tuff, lapilli tuff
d felsic lapilli tuff, crystal lapilli tuff
r rhyolite, dacite (flows and intrusions)
s massive tuff, tufaceous sandstone
k lithic tuff, lithic tufaceous sandstone
u epiclastic sandstone, granule and pebble conglomerate
l laminated tuff, cherty tuff
t intercalated thinly bedded sandstone, siltstone, argillite

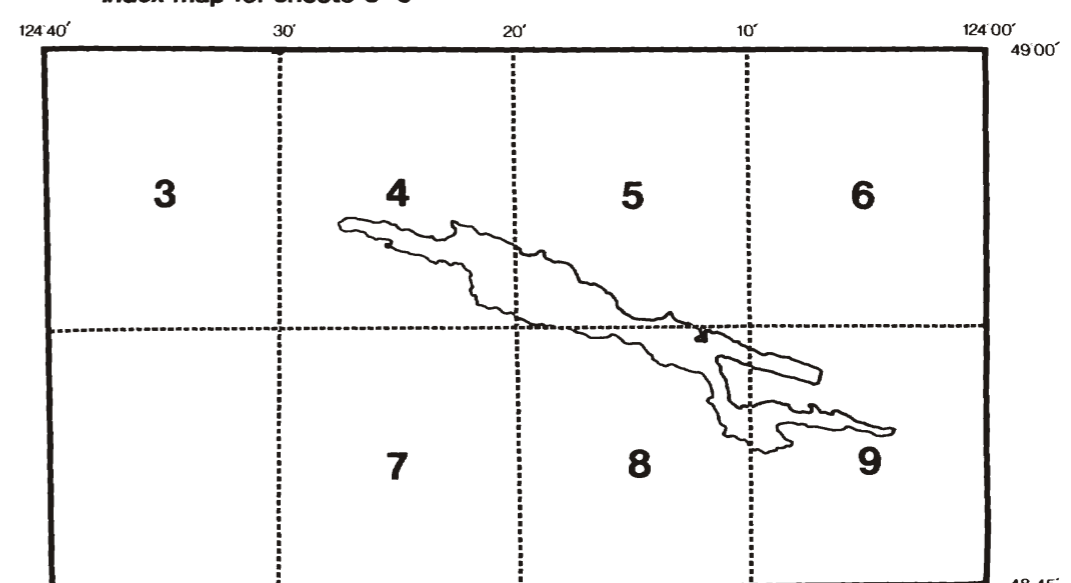
Notes:

- a This is a field legend and applies to all seven 1:20 000 maps. Not all lithologies listed are present on each map.
b Position in the legend of lithologies within each formation does not imply any age or stratigraphic relationship.
c Where two or more lithologic codes are shown for an outcrop, the designated units are interbedded and are listed in approximate order of abundance. Where a comma is used to separate two or more lithologic codes, an intrusive relationship is implied.

SYMBOLS

- Geological contact (defined, approximate, transitional).....
Limit of drift covered area.....
Limit of mapping.....
Bedding (horizontal, inclined, overturned).....
Strike and dip of pillows, tops known .....
Schistosity (inclined, vertical).....
Fault (defined, approximate).....
Thrust fault (defined, approximate, assumed) teeth indicate upthrust side with dip indicated.....
Shearing and dip.....
Axes of minor folds.....
Lination of unknown age
S intersections.....
Microcrenulation.....
Anticline (with plunge indicated).....
Syncline (with plunge indicated).....
Fossil locality.....

Index map for sheets 3-9





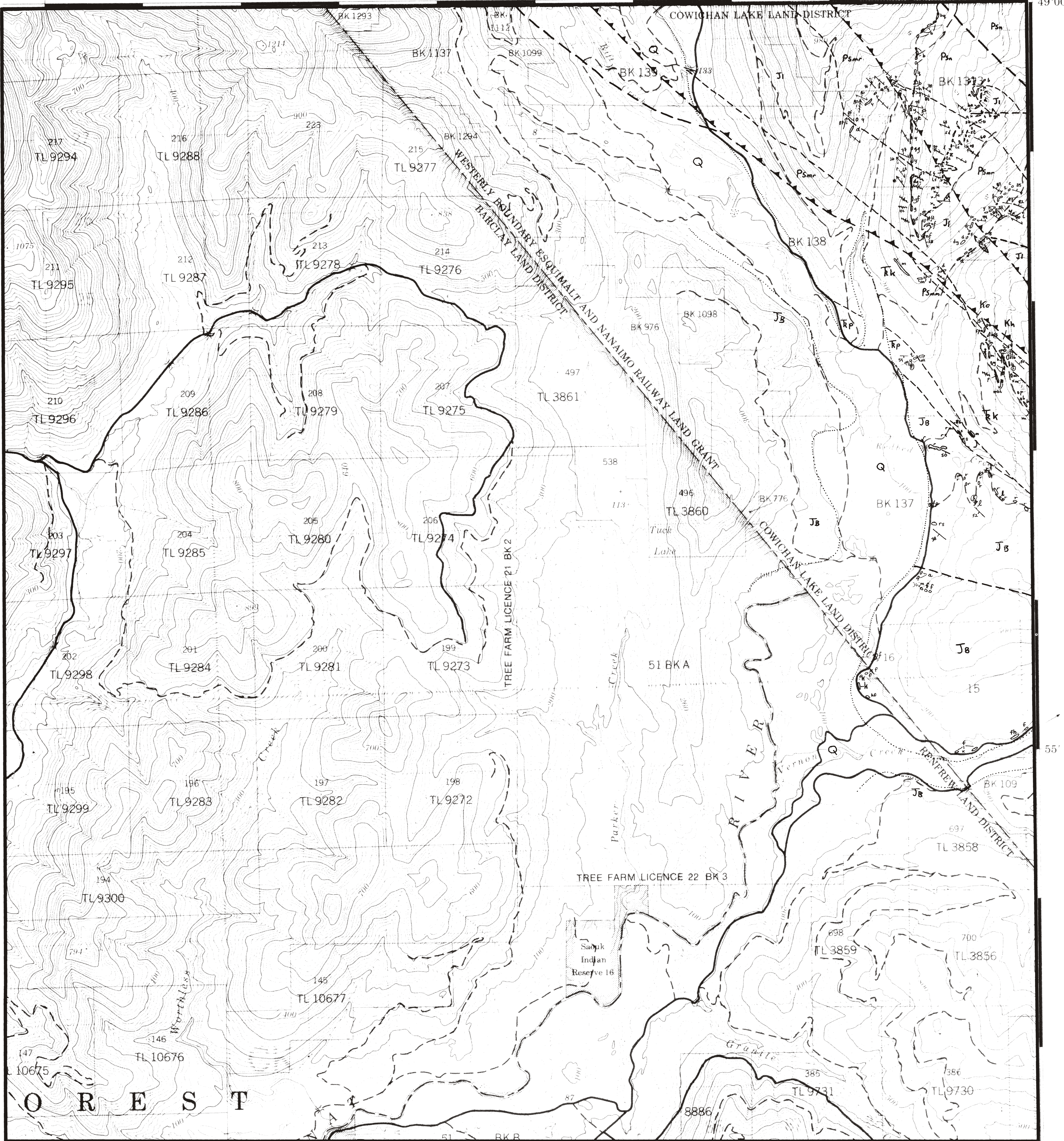
40'

35

DUNSMUIR LAND DISTRICT

124°30'

49°00'



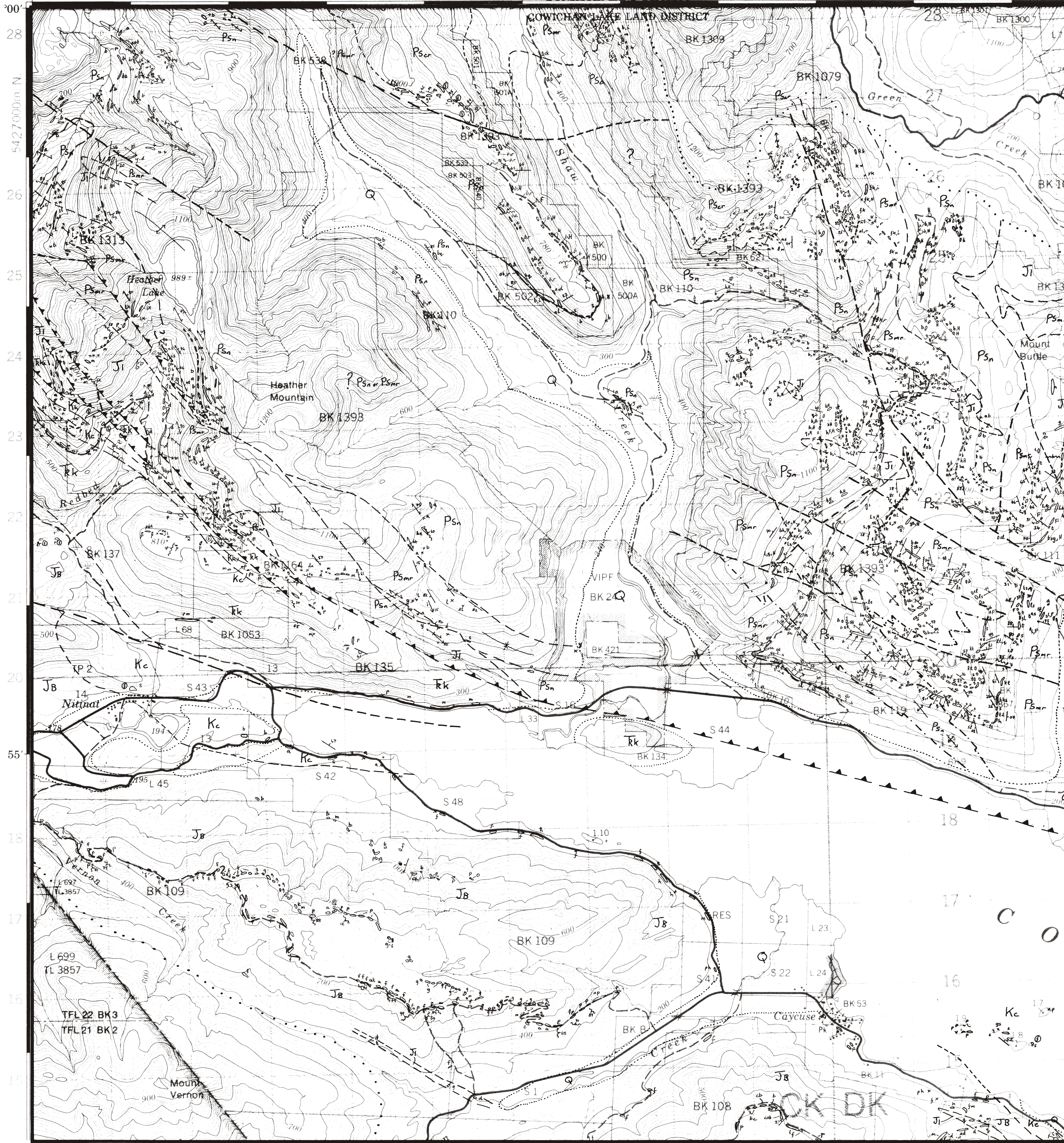
O R E S T

Scale 1:20000





124°30'39"1000m. E 92 93 94 95 96 25' DUNSMUIR LAND DISTRICT 99 400 01 02 20' 03



Scale 1:20000







