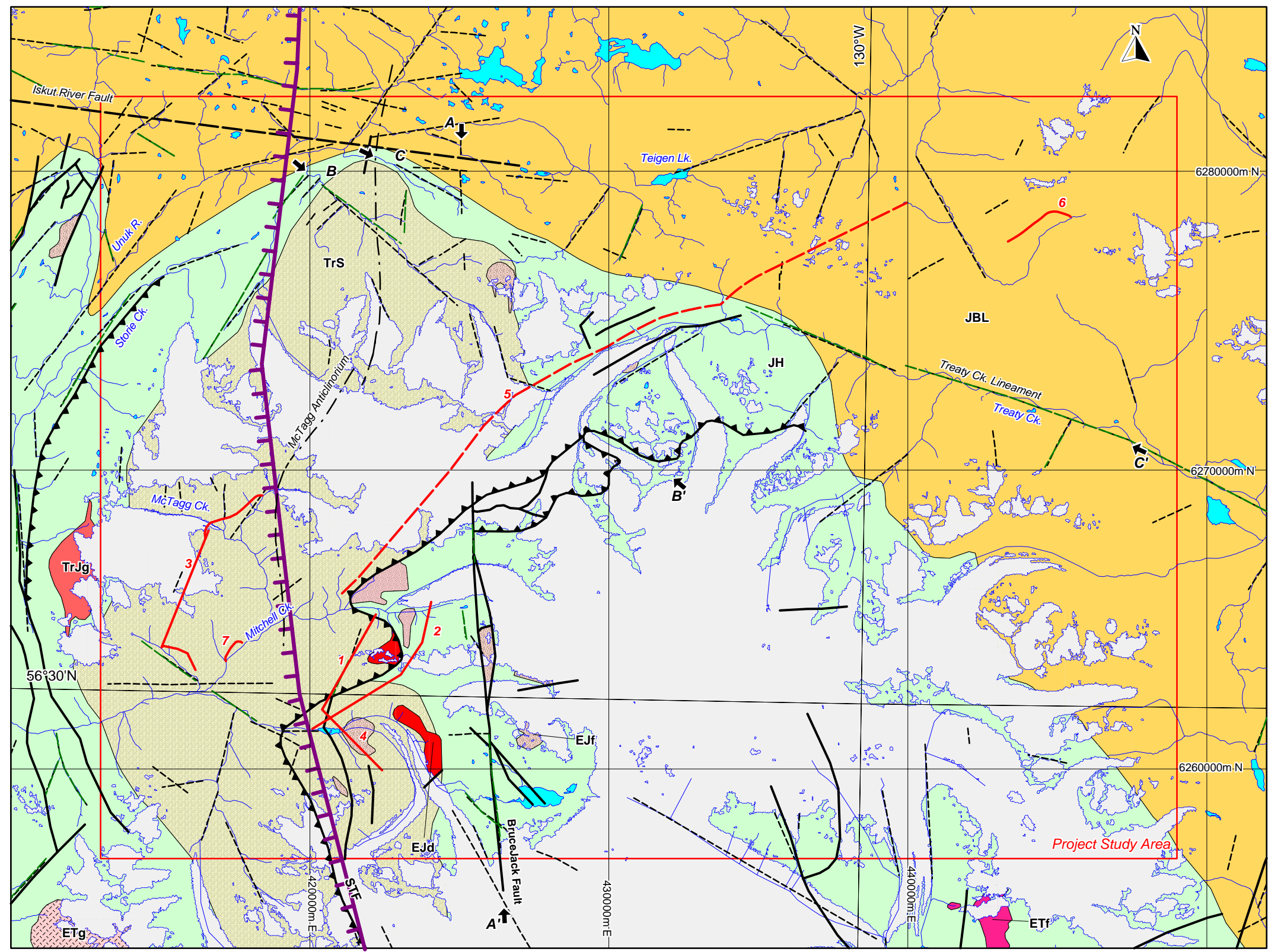


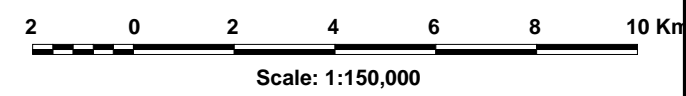
Appendix H11

*Drawings – KSM Project Area Structural Geology
Assessment*



- Explanation**
Tectonic Units from Massey et al, 2005
- Jurassic to Tertiary feldspar porphyry
 - Early Jurassic Melville and Lehto Plutons, Mitchell Intrusions, Red Bluff Porphyry Stock
 - Early Jurassic Eskay Porphyry, Knipple Porphyry or Inel Stock
 - Early Jurassic Texas Creek Plutonic Suite - Summit Lake or Texas Creek Stocks
 - Triassic to Jurassic quartz monzonite
 - Late Triassic Stikine, McQuillan or Katete Mountain Plutonic Suites
 - Upper Jurassic to Lower Cretaceous Bowser Lake Group - Undivided
 - Middle Jurassic Hazelton Group
 - Upper Triassic Stuhini Group

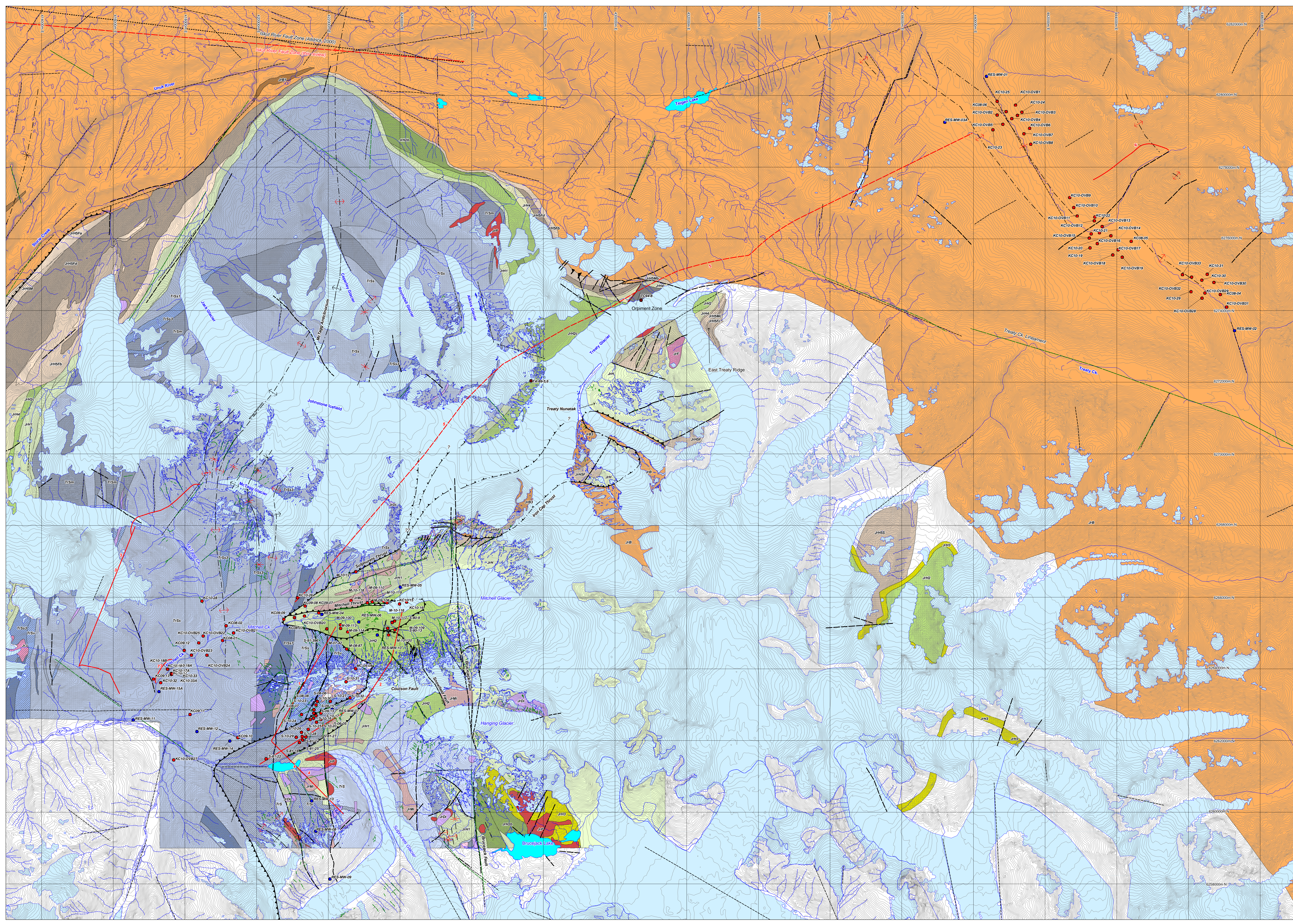
- thrust fault (Massey et al, 2005)
- high angle fault (Massey et al, 2005)
- topographic lineament (this study)
- prominent lineament on satellite imagery (this study)
- eastern margin of Eskay Rift (Aldrick 2005)
- snowfields, glaciers



Klohn Crippen Berger			
KSM Project			
Skeena Mining Division, B.C.			
Regional Lineament Compilation (Tectonic units from Massey et al, 2005)			
DWG: 534-5	02/18/2011	Scale 1:150,000	Figure: 1

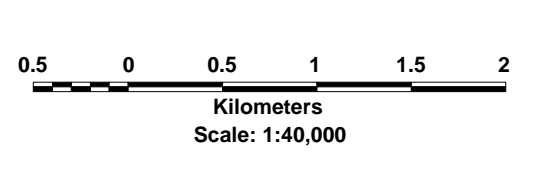
- 1 Sulphurets - Mitchell conveyer tunnel
- 4 Kerr - Sulphurets surface conveyor
- 2 Mitchell Glacier diversion tunnel
- 5 Mitchell - Teigen twin tunnels
- 3 McTagg water diversion tunnels
- 6 East catchment diversion tunnel
- 7 water storage dam diversion tunnel

UTM 9 NAD83



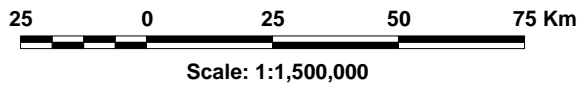
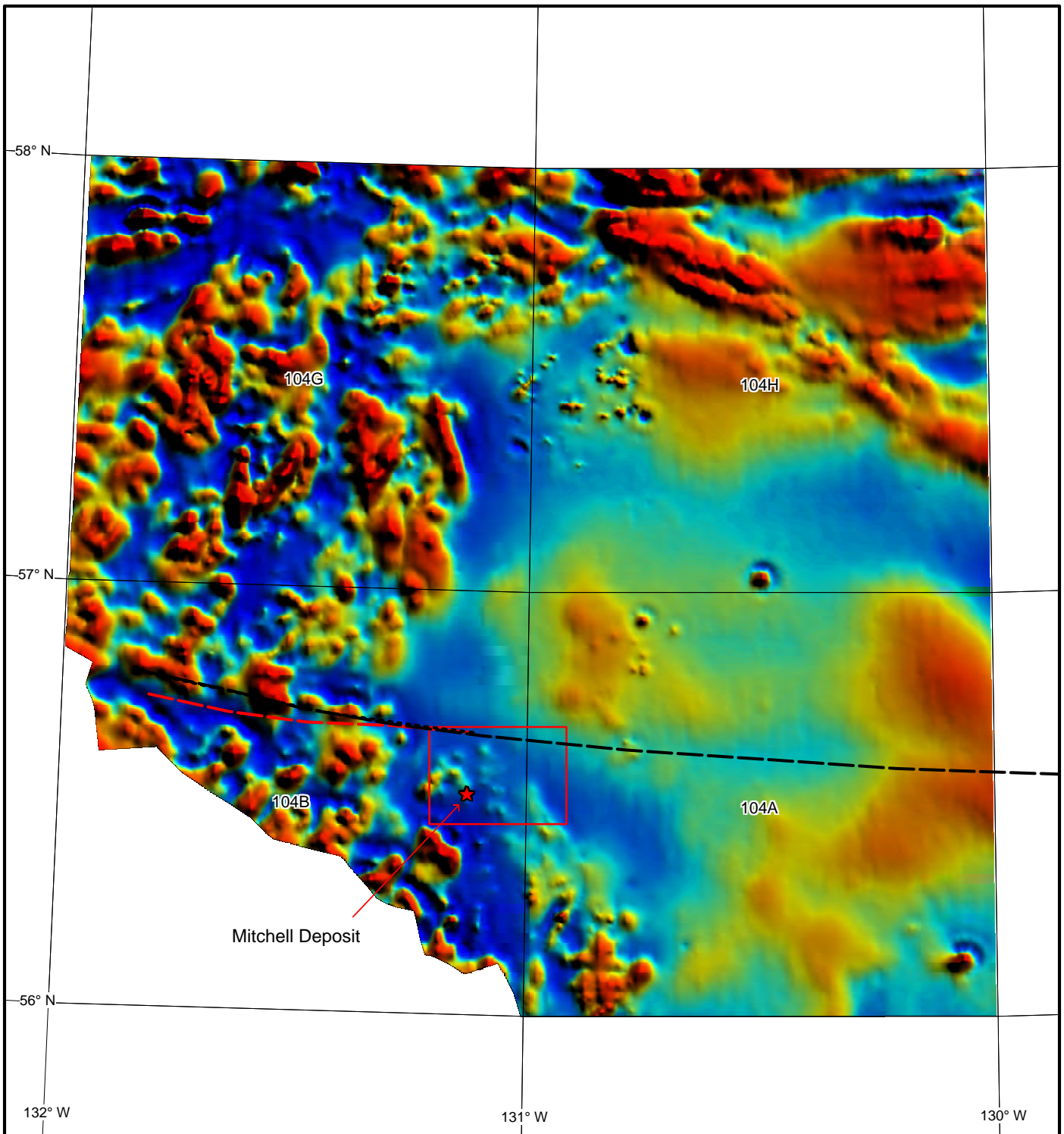
- Rock Units (after MORU mapping)**
- Bowser Lake Group**
- JFB undifferentiated sedimentary rocks
 - JB2 thinly bedded mudstone, siltstone
- Hazelton Group**
- JH1 undifferentiated sedimentary and volcanic rocks
- Salmon River Formation**
- JRS10 intertillated sedimentary rocks
 - JRS2 undifferentiated felsic volcanics
 - JRS3 epiclastic breccia, volcanic conglomerate
 - JRS4 pillowed flows, pillow breccia
- Betty Creek Formation**
- JBC4 undifferentiated sedimentary rocks
 - JBC6 turbidic mudstone, siltstone
 - JBC7 felsic volcanic rocks
 - JBC8 andesitic volcanic and epiclastic rocks
 - JBC9 epiclastic rocks
 - JBC10 andesitic volcanic breccia
- Jack Formation**
- JJA1 undifferentiated sedimentary rocks
 - JJA4 clast supported granitoid pebble to boulder conglomerate
- Stuhini Group**
- TS1 undifferentiated volcanic and sedimentary rocks
 - TS2 undifferentiated volcanic rocks
 - TS3 undifferentiated andesitic volcanic flows
 - TS4 heterolithic conglomerate
 - TS5 undifferentiated sandstone, mudstone, conglomerate, limestone
 - TS6 thin to medium bedded argillite, siltstone, turbidites
 - TS7 pale green, thinly bedded siliceous siltstone
 - TS8 thickly to medium bedded, feldspathic fine grained sandstone
 - TS9 green andesitic boulder conglomerate
 - TS10 mafic volcanic rocks
- Jurassic Intrusives**
- JDI1 unnamed dioritic plutons, stocks
 - JDI2 alkali plagioclase-hornblende porphyry
 - JDI3 granite, monzonite, quartz monzonite, monzodiorite
 - JDI4 Bluejacket Lake K-feldspar megacrystic porphyry

- Structures**
- thrust fault; exposed, ice covered
 - high angle fault; exposed, ice covered
 - anticline, synform; exposed, covered
 - syncline, synform; exposed, covered
 - topographic lineaments
 - TM lineaments
- Development Facilities**
- 1 Mitchell ore haul tunnel
 - 2 Mitchell water diversion tunnel
 - 3 McTagg water diversion tunnels
 - 4 conveyor
 - 5 Mitchell - Teigen twin tunnels
 - 6 East catchment diversion tunnel
- Rescan well ● Kuhn Clippin drill hole, other holes reviewed



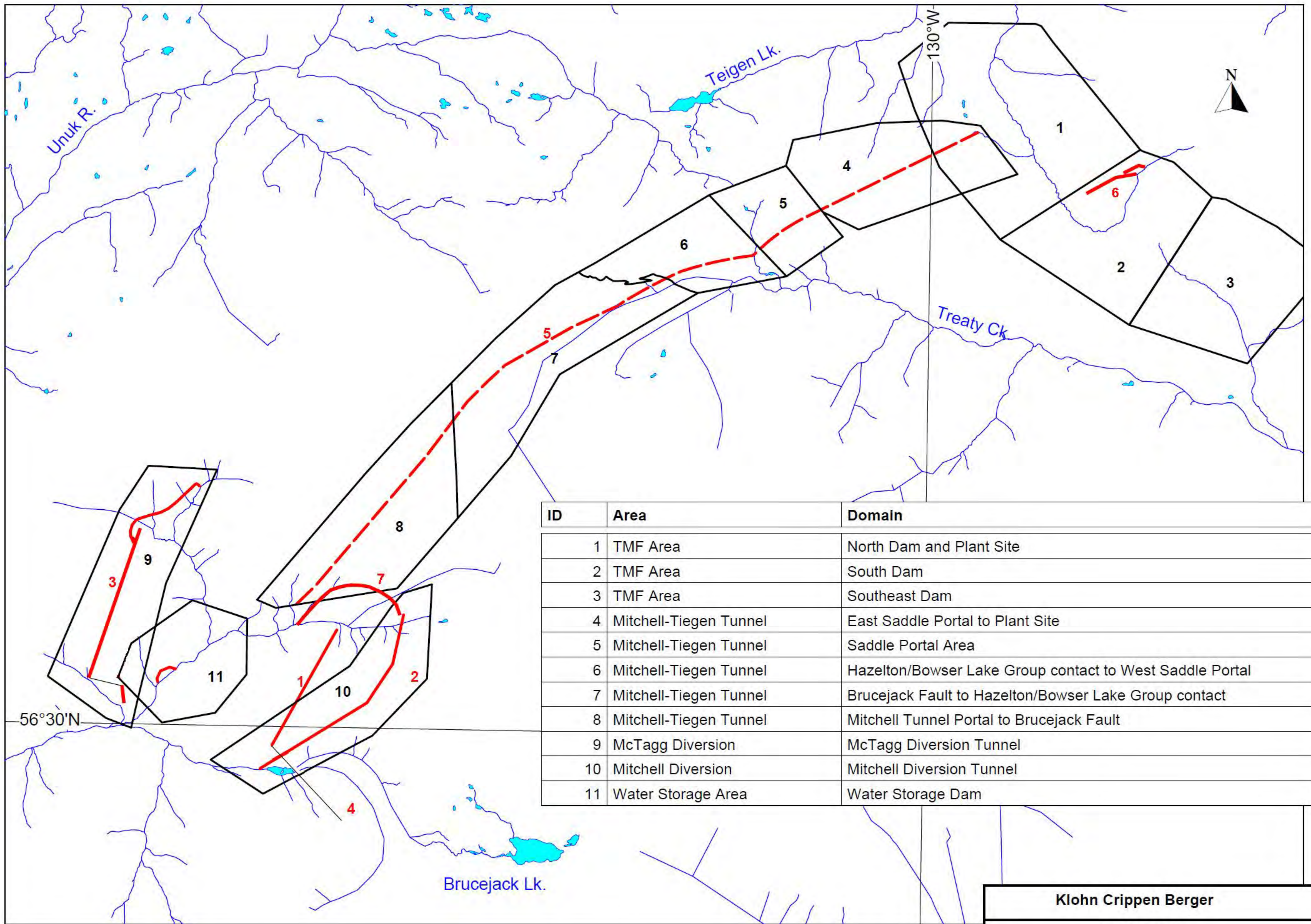
Klohn Crippen Berger		
KCBM Project		
Skeena Mining Division, B.C.		
Bedrock Geology		
DWG: S348	02/18/2011	Scale 1:40,000 Figure: 2
Earth Resource Services Inc.		

UTM 9 NAD83
Contour Interval: 20m



The dotted black line is the Iskut River fault from Alldrick (2000), the dashed red line is the fault alignment from this review.
The red rectangle is the project study area.

Klohn Crippen Berger			
KSM Project			
Skeena Mining Division, B.C.			
Aeromagnetics of Northwestern B.C. with Interpretations of the Iskut River Fault. Levelled data from GDC			
DWG: 534-10	02/18/2011	Scale: 1:1.5M	Figure: 3



1 ore haul tunnel 2 Mitchell tunnel 3 McTagg tunnels 4 surface conveyor 5 Mitchell - Teigen tunnel
 6 East Catchment tunnel 7 Mitchell Dewatering Adit

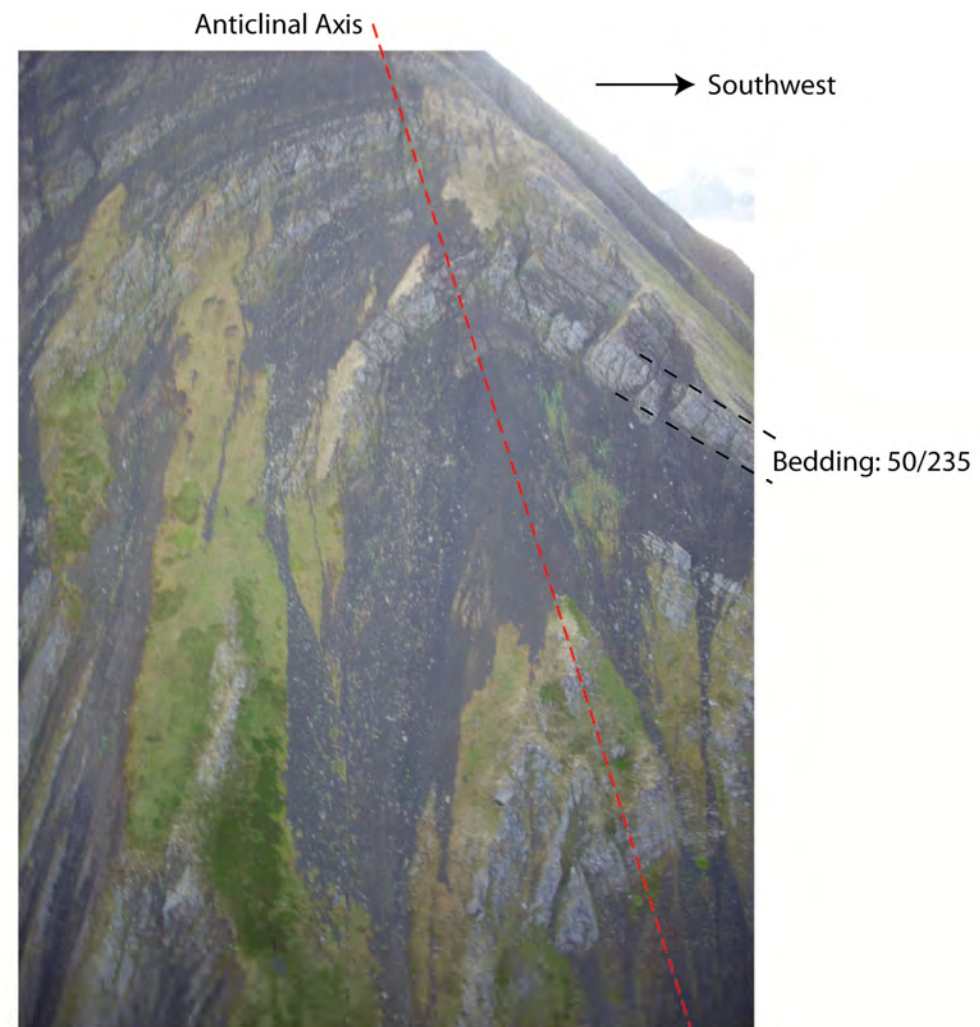
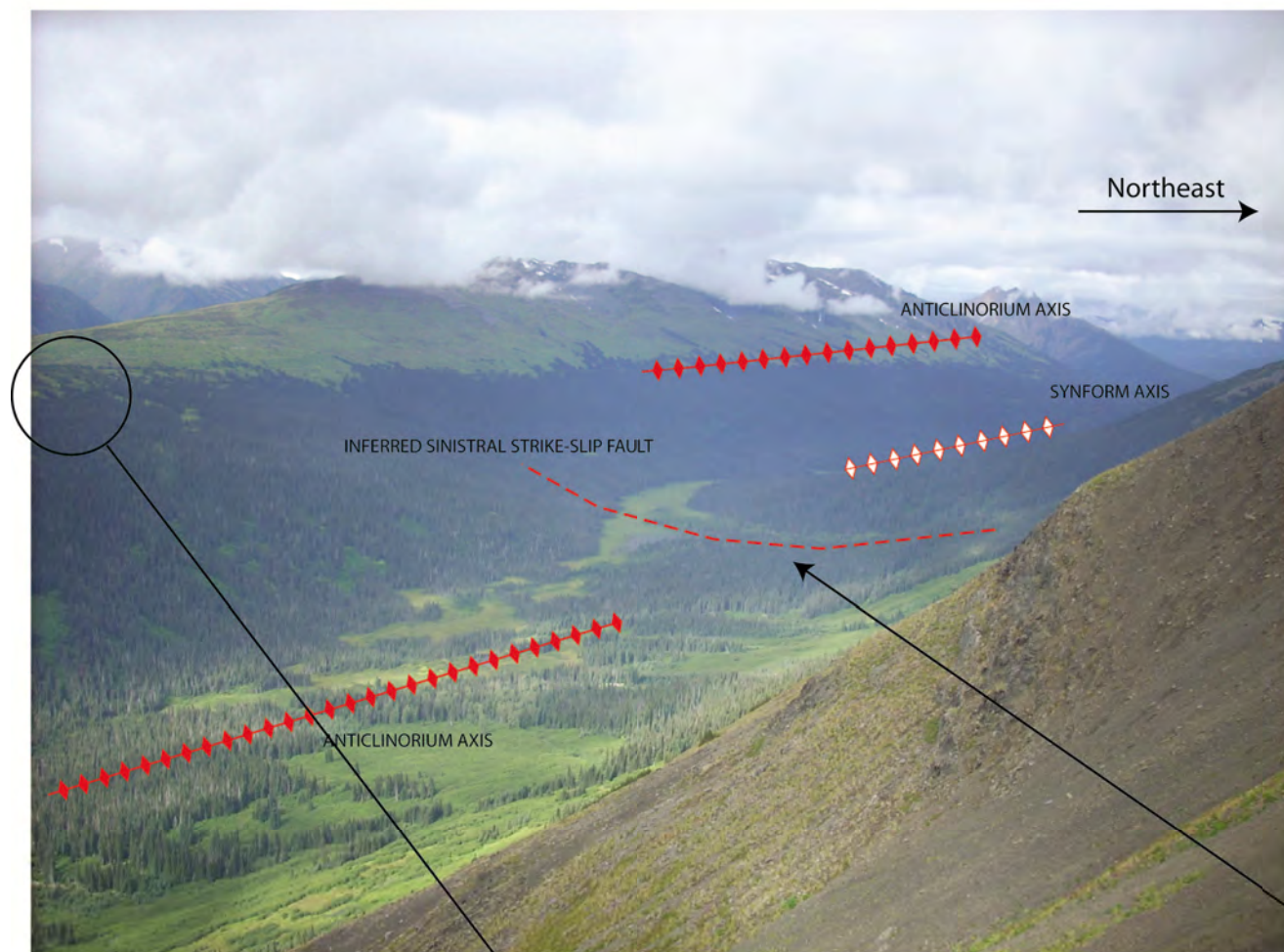
Klohn Crippen Berger

KSM Project
 Planned Tunnels and
 Geotechnical Domains

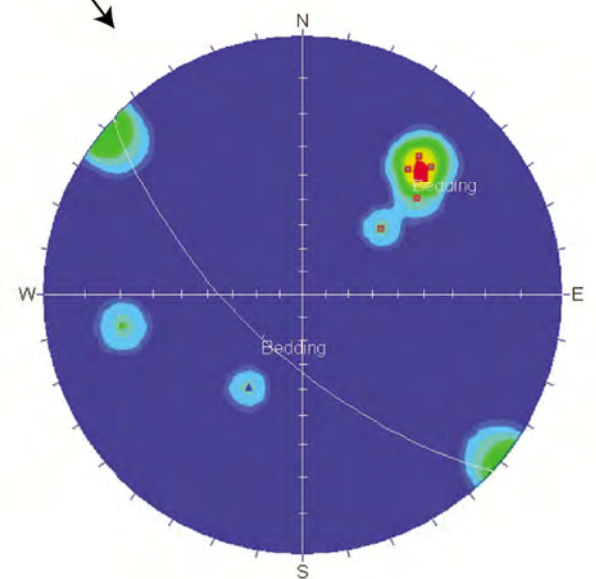
DWG: 534-12

10/26/10

Figure: 7

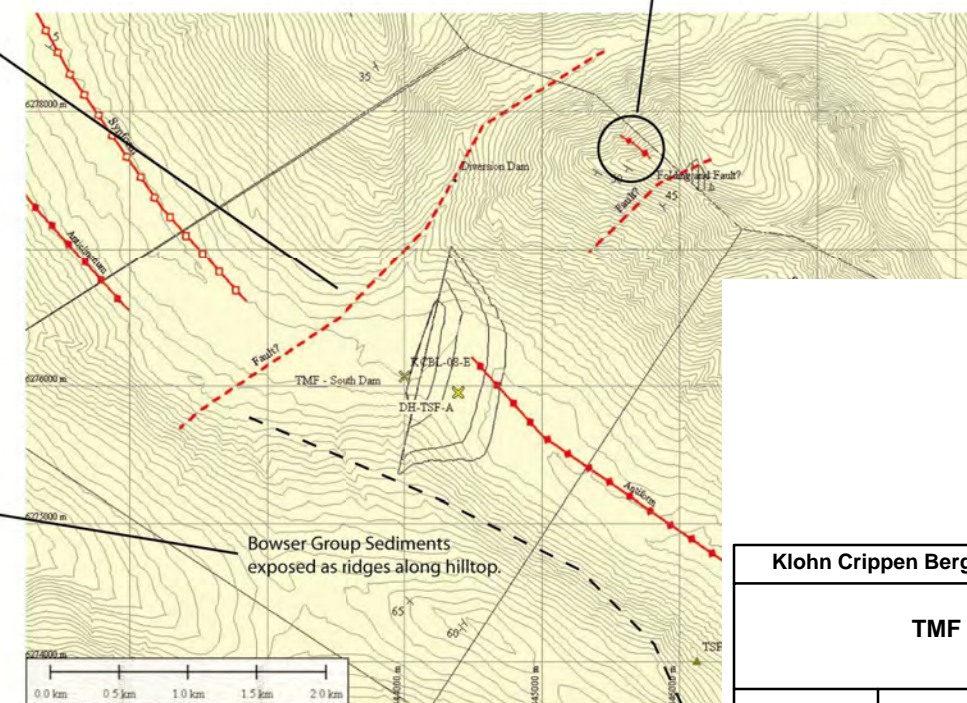


Tight antiform on north-eastern slopes above the South Dam.

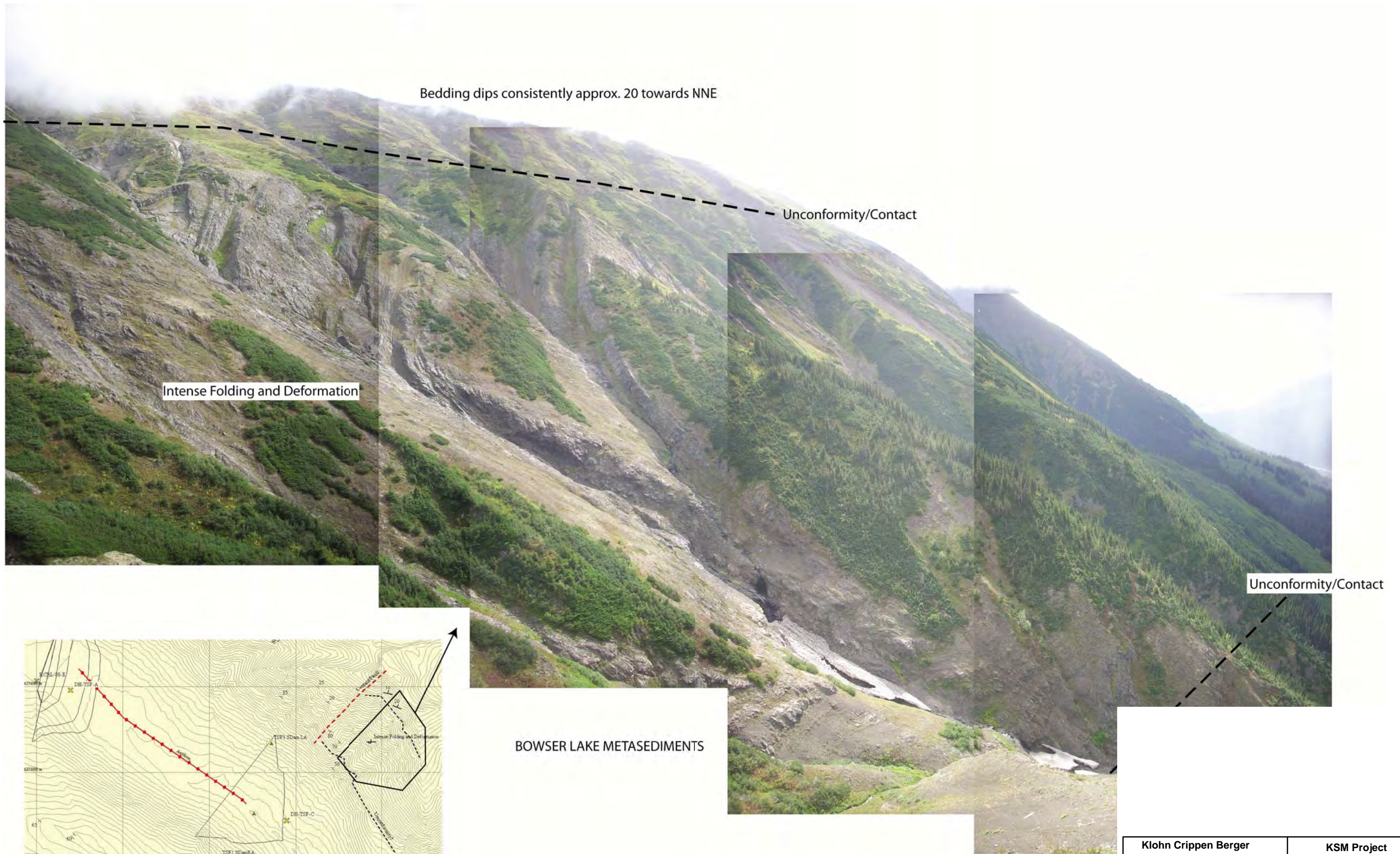


TYPE
 ■ bedding [5]
 ▲ cleavage [1]
 ▲ joint [3]

Equal Angle
 Lower Hemisphere
 8 Poles
 8 Entries



Klohn Crippen Berger	KSM Project
TMF South Dam Domain (Domain 2)	
DWG: 534-13	10/26/10
Figure: 10	



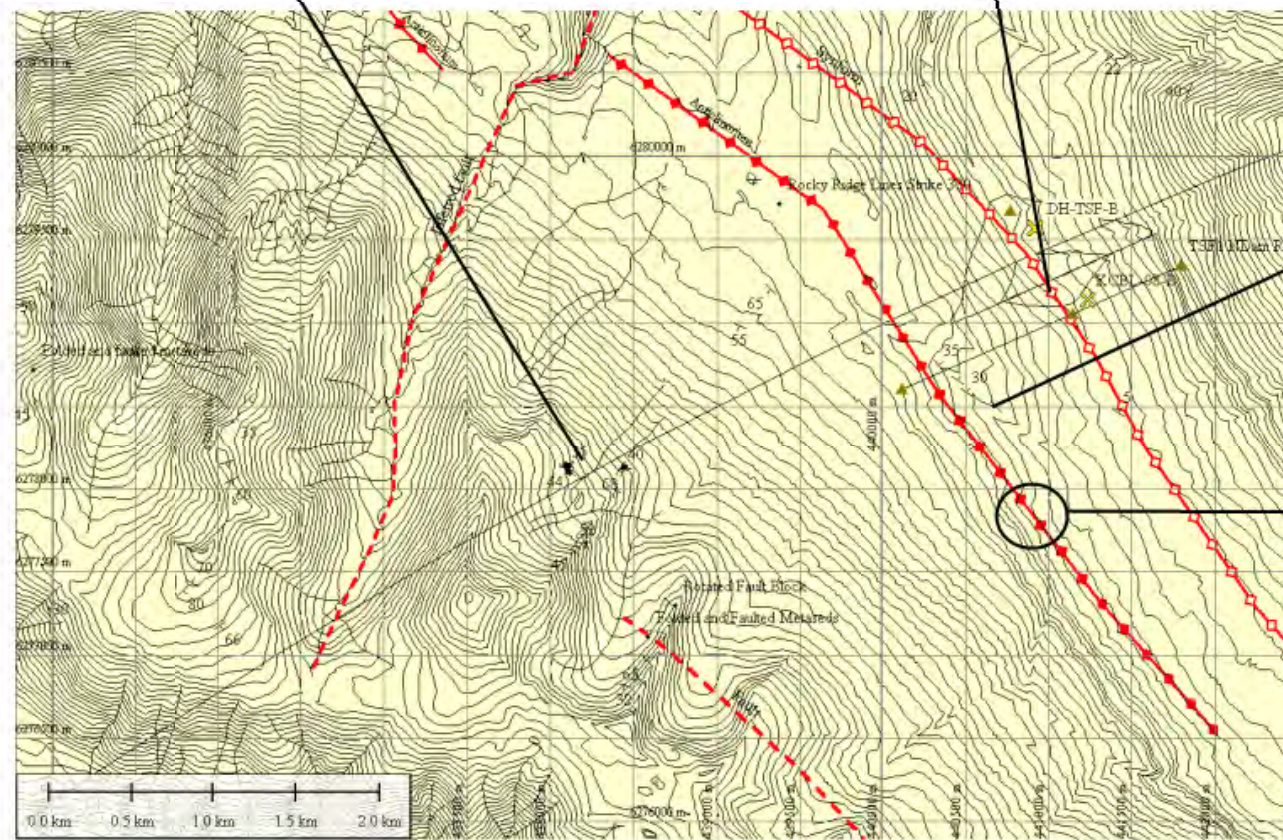
Klohn Crippen Berger	KSM Project
TMF Southeast Dam Domain (Domain 3)	
DWG: 534-14	10/26/10
Figure: 11	



Bowser Lake Group Sediments
Interbedded sandstone and siltstone



Bedding at 30/030



Regional antiform axis. Note complementary synform axis to north east.

Klohn Crippen Berger	KSM Project
East Saddle Portal to Plant Site Domain (Domain 4)	
DWG: 534-15	10/26/10
Figure: 12a	



Looking east from the ridge at GR E:436021 N:6277758 show moderately weathered Bowser Group Lake Sediments well exposed in mountain side. Faulting and ductile deformation is evident. Rock is generally R3-R4 with GSI=45-60.



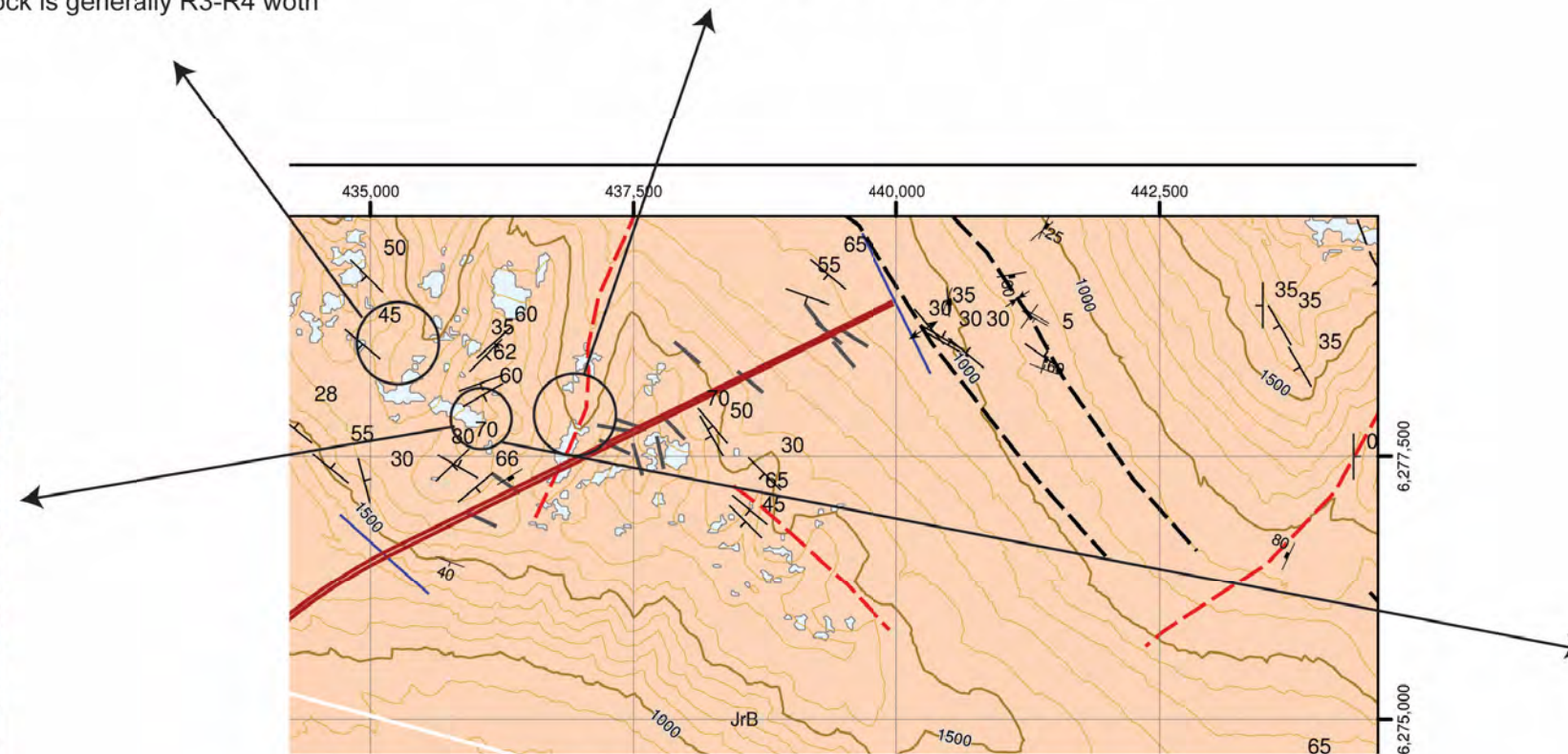
Looking north from GR 436048, 6278374 down towards Teigen Creek. An inferred fault runs down the valley.



Orange-brown metamorphosed sandstone with quartz veinlets. Frost shattering is evident near the top of the outcrop. GSI=50-60.



Frost shattered sandstones exposed at 1950 m elevation.



Geological map of MTT from East Saddle Portal to Plant Site.



Frost shattered mudstones of the Bowser Lake Group exposed at 1950 m elevation.

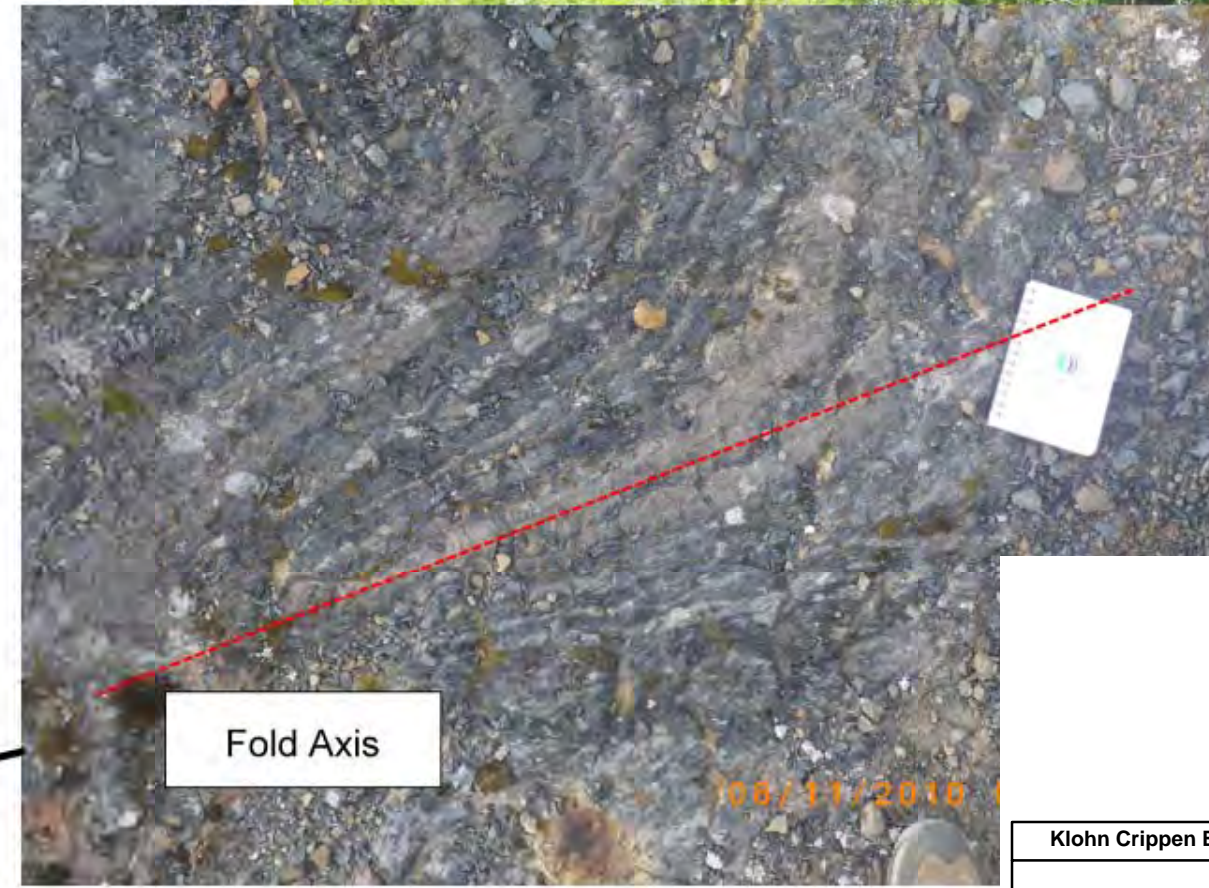
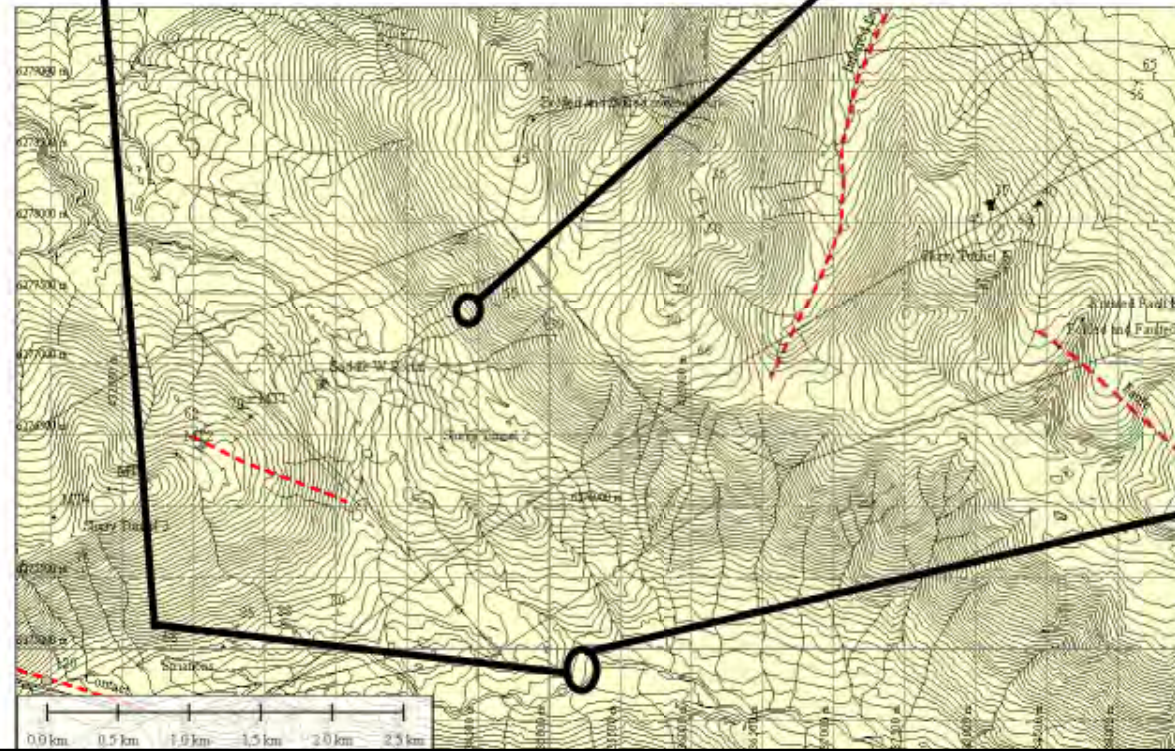
Klohn Crippen Berger	KSM Project
East Saddle Portal to Plant Site Domain (Domain 4)	
DWG: 534-15	10/26/10
Figure: 12b	

**Bowser Lake Group Sediments
Interbedded sandstone and siltstone**



View along strike, facing north

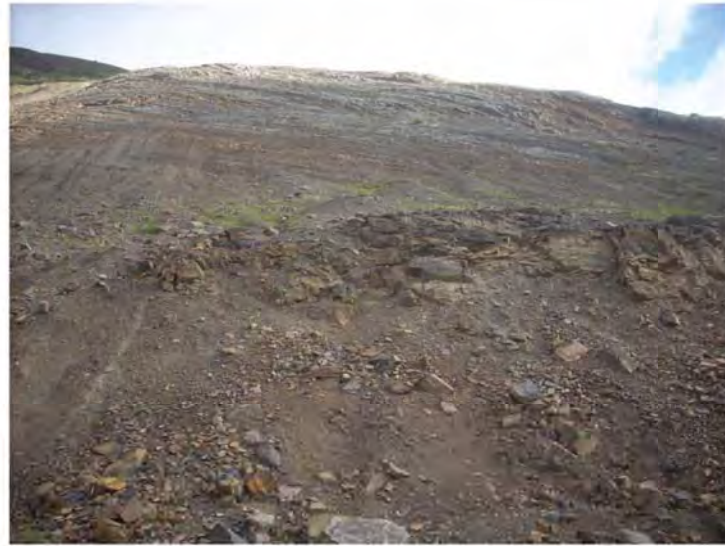
Bedding oriented
60/080



Fold Axis

Steeply plunging fold axis, one of many south of saddle porta

Klohn Crippen Berger	KSM Project
Saddle Portal Area (Domain 5)	
DWG: 534-16	10/26/10
Figure: 13	

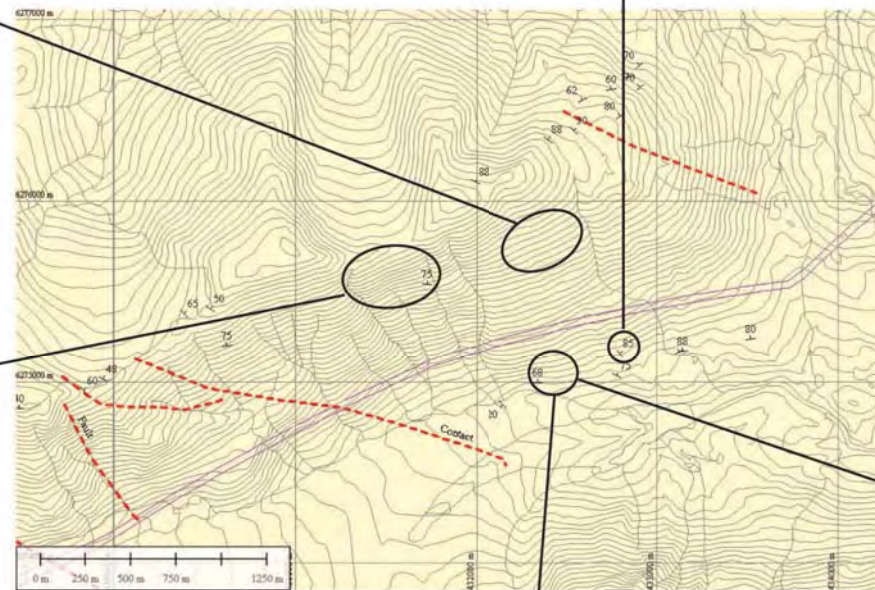


Mudstones and sandstones of the Bowser Lake Group Sediments exposed on the northern side of Treaty Creek. Bedding dips approximately 55° NNW.

Bedding orientation of Bowser Group Sediments changes to 80/040 in base of Treaty Creek.



Looking west up the Treaty Glacier. Betty Creek Volcanics are exposed in the far distance while Bowser Lake Group Sediments are visible as scree in the foreground.



Bowser Lake Group Sediments exposed on north west ridge above Treaty Creek dipping approximately 60° towards NNE.



Chevron folds within volcanics of the Salmon River Formation exposed in the Treaty Creek valley floor.

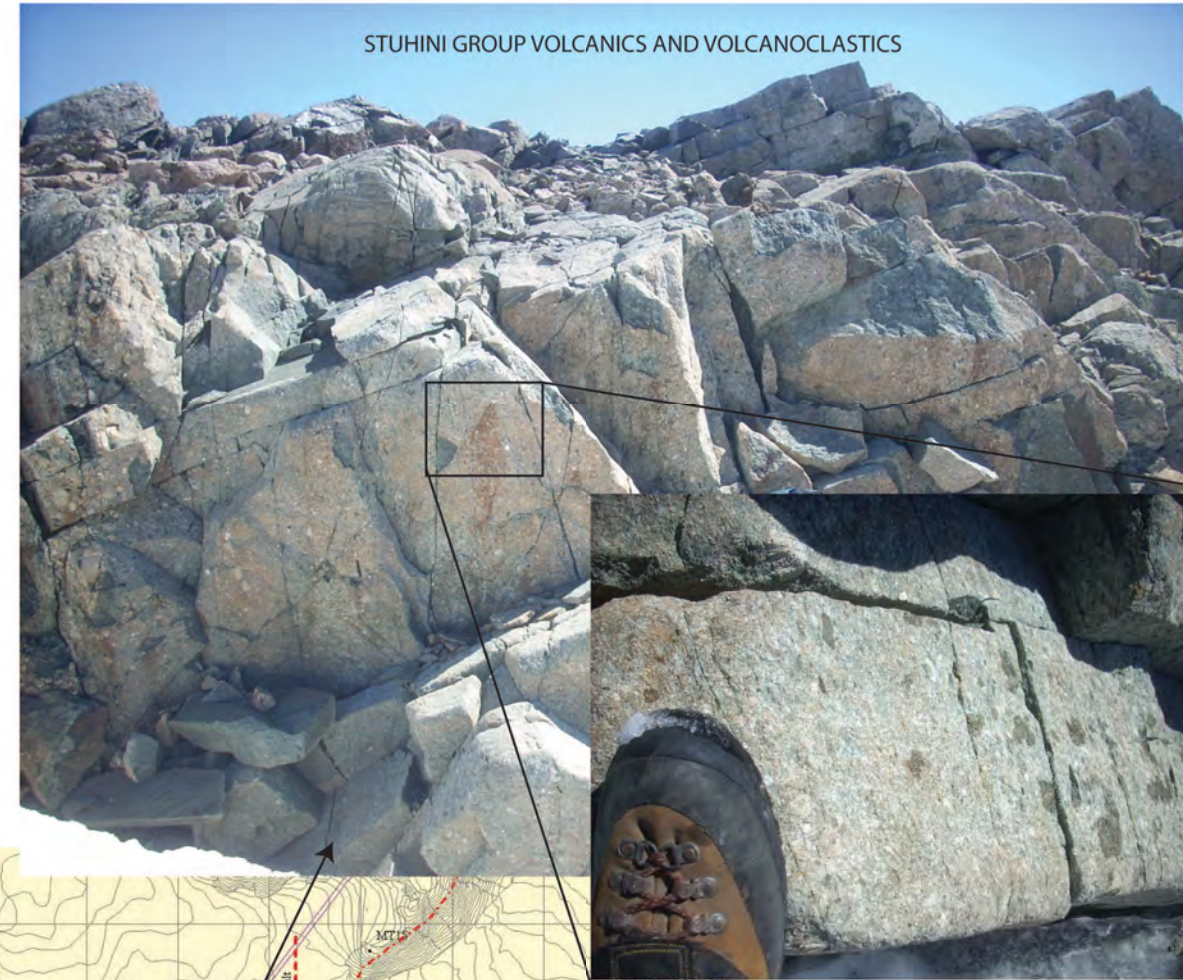


Local drag fold and fault zone within purplish brown Bowser Lake Sediments in Treaty Creek Valley bottom. Beds dip approximately 65° towards 010; fault dips approximately 30° towards 280.

Klohn Crippen Berger		KSM Project	
Hazelton/Bowser Lake Group Contact to West Saddle Portal (Domain 6)			
DWG: 534-21	11/01/10		Figure: 14



Stuhini Volcanics; R4-R5; MW; bluish grey; fine grained, andesite or dacite? Weathered surfaces have chert type texture. Volcanoclastic rocks also present. Joint surfaces are rough, irregular. JRC = 10-14 for most joint sets. GSI=50-60.

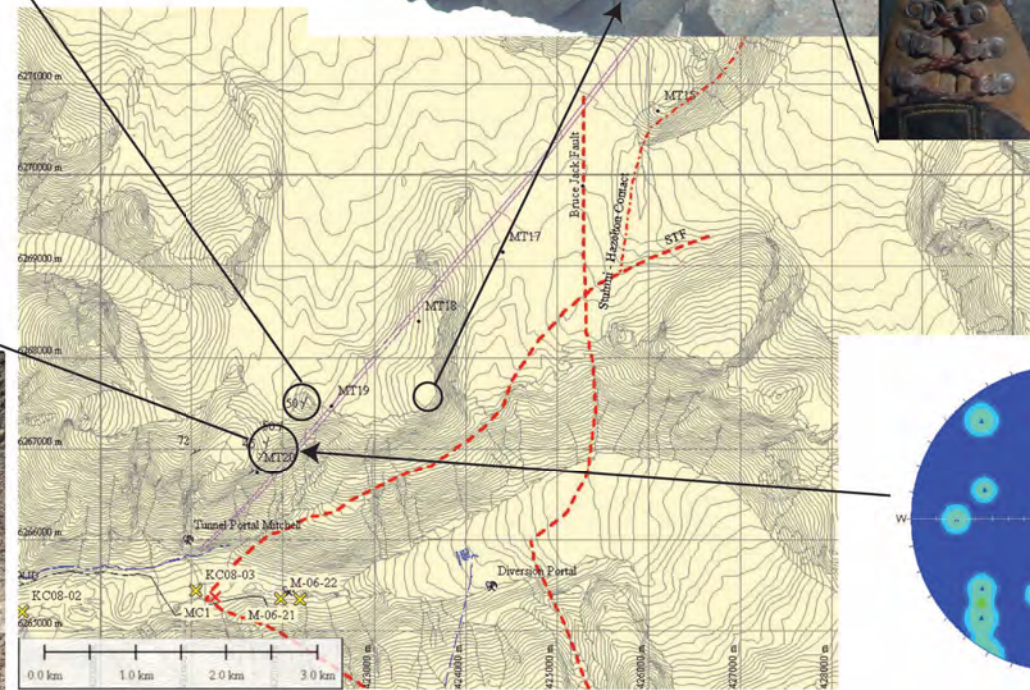


STUHINI GROUP VOLCANICS AND VOLCANOCLASTICS

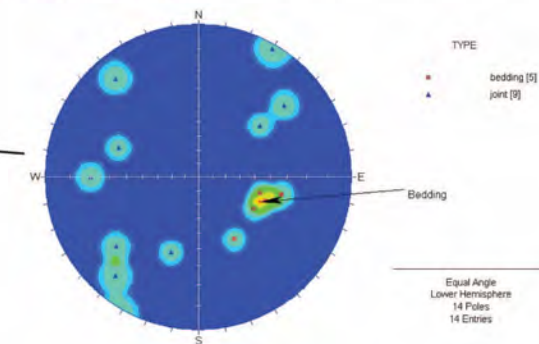


STUHINI GROUP SEDIMENTS

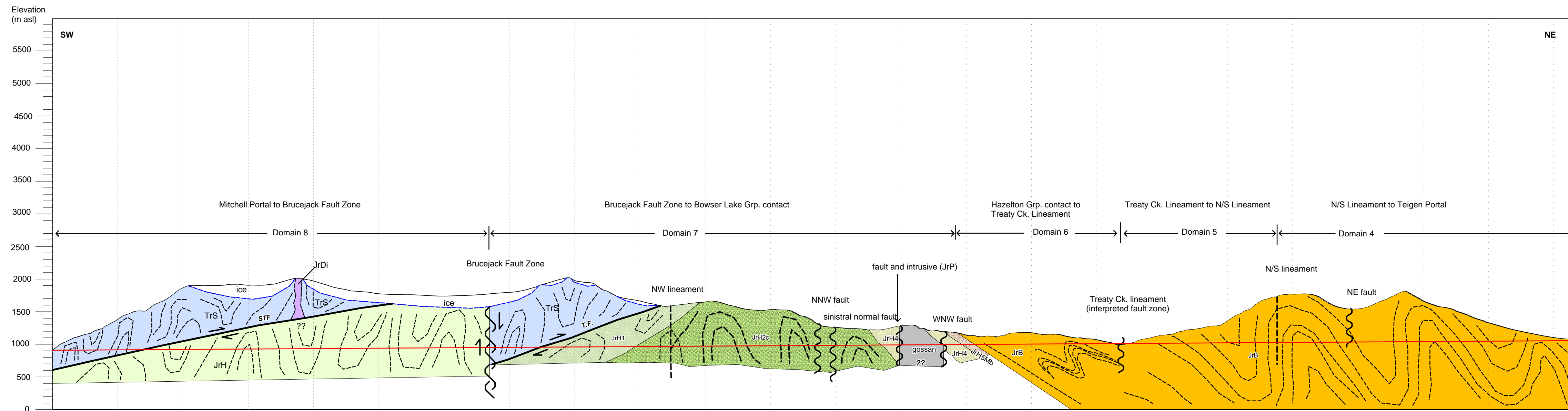
Volcanoclastics / Breccia with phyllite beds. Blue-black; to brown R3-R4; clastis 5cm diameter; matrix supported; clastis show some alignment parallel to foliation. Local qtz veinlets. GSI=45-55.



Grey green volcanoclastics. Clasts up to 30cm long; MW; R4-R5. JRC=6-8 for most joint surfaces. Rock well cemented; matrix supported. Blocky rock mass due to orthogonal joint sets. GSI=55-65.

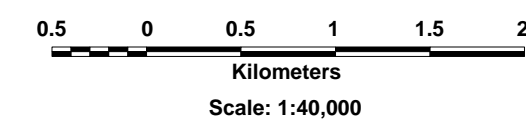


Klohn Crippen Berger	KSM Project
Mitchell Tunnel Portal to Brucejack Fault (Domain 8)	
DWG: 534-17	10/26/10
Figure: 16	



Depiction of folds is conceptual, not factual
 Mitchell - Teigen tunnel alignment shown by red line


View Northwest




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KSM Project			
Skeena Mining Division, B.C.			
Mitchell - Teigen Tunnel Profile			
(rock unit legend given in Figure 20)			
DWG: 534-20	10/27/10	Scale: 1:40,000	Figure: 17

Mitchell-Teigen Tunnel Profile Rock Unit Legend


Bowser Lake Group

 JrB undifferentiated sedimentary rocks


Jurassic Intrusives

 JrDi unnamed dioritic plutons, stocks


Hazelton Group


 JrH undifferentiated sedimentary and volcanic rocks

Salmon River Formation


 JrH5Mb pillowed flows, pillow breccia

Betty Creek Formation


 JrH4 undifferentiated sedimentary rocks

 JrH2c andesitic volcanic breccia

Jack Formation

 JrH1 undifferentiated sedimentary rocks

Stuhini Group

 TrS undifferentiated volcanic and sedimentary rocks

Klohn Crippen Berger

KSM Project

Skeena Mining Division, B.C.

Mitchell - Teigen Tunnel Legend

DWG: 534-20a

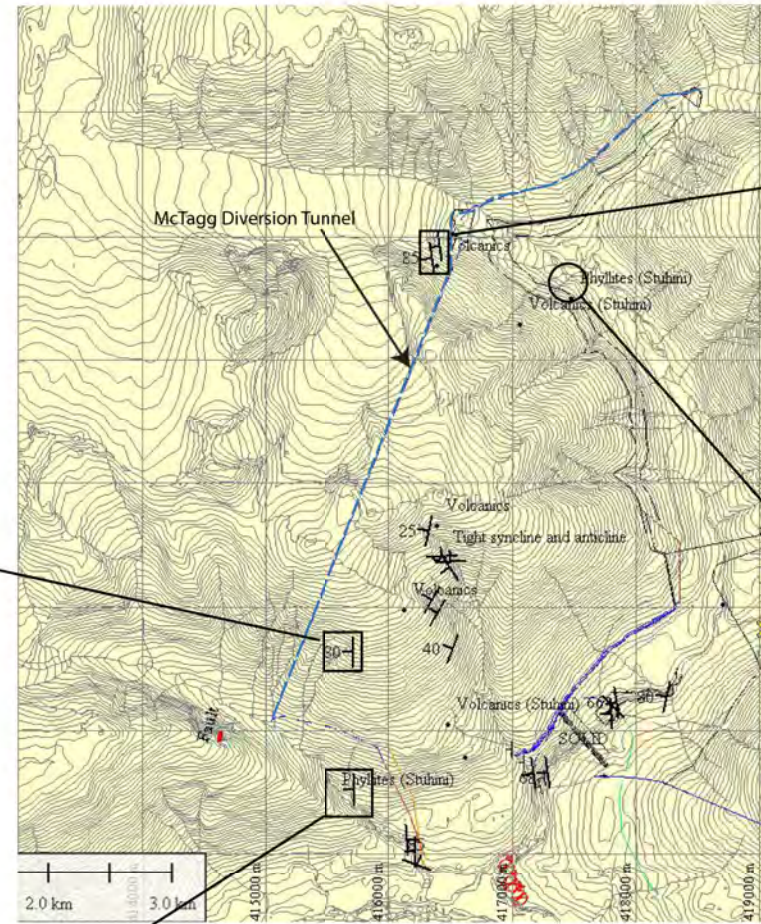
10/27/10

Figure: 18



TrSs. Stuhini Sediments.
Undifferentiated sandstone, mudstone, conglomerate, limestone.

Bluish grey-green, fine grained metasediments. MW, R5, bloky; orthogonal joint sets.
JRC=6-8; GSI=50-65. Joint sets: 3 plus 3

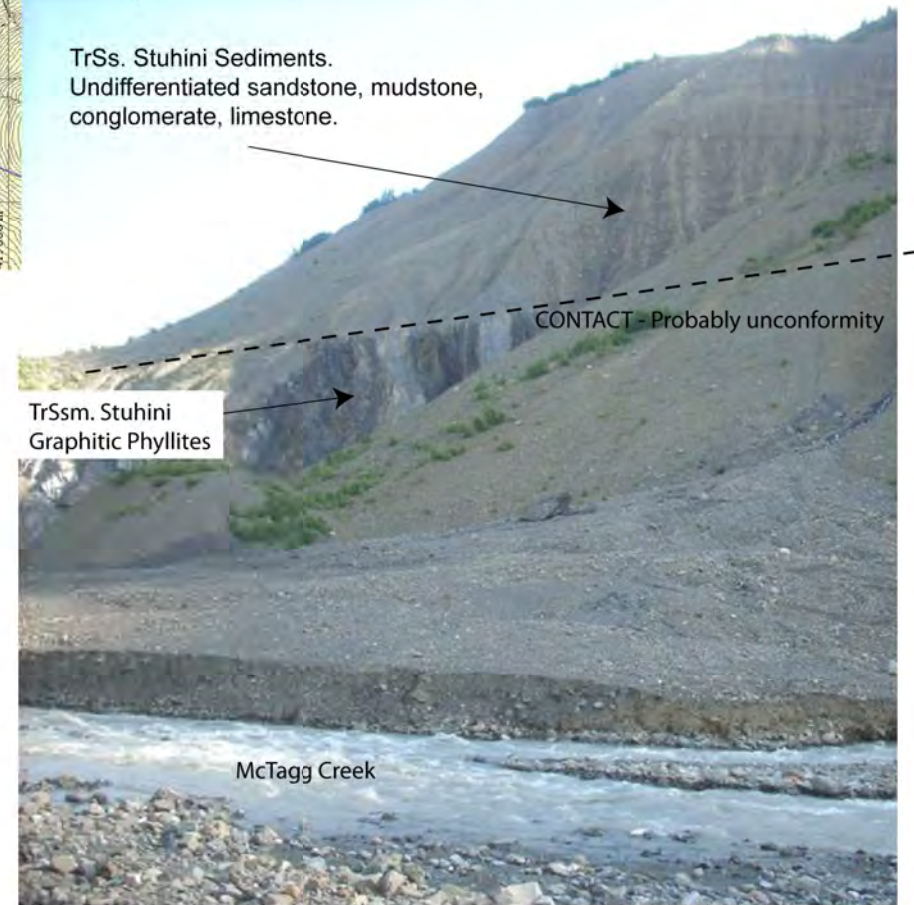


JrDi. Unnamed dioritic plutons and stocks.

Volcanics; blocky intrusives?
Bluish-grey to Fe brown; MW; R5, fine-med grained, porphyritic; 3 main joint sets plus 2 extra. JRC = 6-8; tight; no infill. Fracture frequency: Horizontal = 10/m Vertical = 8/m. GSI=55-65



TrSs. Stuhini Sediments.
Undifferentiated sandstone, mudstone, conglomerate, limestone.



Local folding and possible fault. Foliation direction changes from east to west; folded graphitic beds.



TrSsm. Stuhini Graphitic Phyllites. Brownish grey to bluish black. MW to HW, R2-R3. GSI=40-50; graphitic clay beds exist every 10m to 20m, typically 1m-0.5m wide; often deformed.

Foliation is tight, closely spaced (1-3cm spacing); JRC=2-4; persistent >3m. Other joints are orthogonal; JRC=4-6

Klohn Crippen Berger	KSM Project
McTagg Diversion Tunnel (Domain 9)	
DWG: 534-19	10/26/10
Figure: 19	